

The copyright of this thesis vests in the author. No quotation from it or information derived from it is to be published without full acknowledgement of the source. The thesis is to be used for private study or non-commercial research purposes only.

Published by the University of Cape Town (UCT) in terms of the non-exclusive license granted to UCT by the author.

University of Cape Town

Evidence-based practice in the occupational therapy profession in South Africa and the Western Cape

Helen Buchanan (OCRHEL001)

Thesis presented for the degree of Doctor of Philosophy in
Occupational Therapy in the Department of Health & Rehabilitation
Sciences, University of Cape Town

August 2011

Supervisor: Professor Jennifer Jelsma

(Department of Health & Rehabilitation Sciences, University of Cape Town)

Co-supervisor: Dr Nandi Siegfried

(South African Cochrane Centre, Medical Research Council, 2008-2010;
School of Public Health, University of Cape Town)

Declaration

I, Helen Buchanan, hereby declare that the work on which this thesis is based is my original work, except where acknowledgements indicate otherwise.

Neither the whole work nor any part of it has been, is being, or is to be submitted for another degree in this or any other university.

This thesis is presented in fulfilment of the requirements for the degree of PhD.

I empower the University of Cape Town to reproduce for the purpose of research either the whole or any portion of the contents in any manner whatsoever.

Signature:

Date:

University of Cape Town

Acknowledgements

I am deeply indebted to the following people for their part in helping me complete this work:

First and foremost, I would like to acknowledge the love, support and encouragement of **James, Murray and Kirsty** over the years it has taken me to complete this thesis. I would not have been able to do it without their understanding, patience and long-suffering in allowing me so much time from our family life;

My mom, sisters and extended family for their support, interest and encouragement;

My supervisors, **Jennifer Jelsma** and **Nandi Siegfried** for their patience, guidance, feedback and support throughout - I have learnt an enormous amount from them;

Fadia Gamielien (research coordinator), **Lauren Bluck, Pippa Langley, Janet Whelan, Althea Barry, Tsotleho Fane, Mamosa Leshoele and Oletlile Moshawa** (research assistants), for their involvement and assistance in various ways at different stages of the research;

All the study participants, for making the research possible by so generously giving of their time and input;

The National Research Foundation, Faculty of Health Sciences University Research Committee, UCT and **South African Medical Research Council** for funding the research;

Mary Law and **Annie McCluskey** who generously provided expert guidance at various stages of the research;

Anneli Hardy, Carl Lombard and **Henri Carrara** for statistical advice;

Ruth Watson, who introduced me to evidence-based practice, assisted in designing the survey for study 1 and gave feedback on my early writing;

Katrina Bannigan for guidance in the early planning of the thesis and constructive feedback on the first draft of chapter 1;

Madi Duncan for generously giving of her time to read and give feedback on the introduction;

My friends and colleagues in the Division of Occupational Therapy for giving me the space to take study leave and encouraging me to 'just keep swimming';

Harsha Kathard and my **colleagues and friends in the Department of Health and Rehabilitation Sciences** for their support and encouragement;

Lyn Holness and the **Emerging Researchers Programme** for providing support and opportunities to enable me to develop the skills to conduct this research;

Jill Stevenson for editing this thesis and ensuring I made the deadline.

Table of Contents

Declaration	i
Acknowledgements	ii
Table of Contents	iv
List of Tables	xii
List of Figures	xvi
List of Abbreviations	xvii
Glossary of Terms	xix
Abstract	xxiii
Executive Summary	xxv
Chapter 1: Introduction	1
1.1 Background	1
1.2 Evidence-based practice (EBP).....	2
1.2.1 The need for EBP	2
1.2.2 Defining EBP.....	3
1.2.3 The development of evidence-based occupational therapy (EBOT).....	5
1.3 Contextualising the research setting	6
1.3.1 Health status	6
1.3.2 The health system.....	7
1.3.3 Occupational therapy in SA.....	9
1.4 Occupational therapy and EBP in SA	10
1.5 Facilitators and barriers to implementing EBOT in SA.....	12
1.5.1 Professional and ethical imperatives.....	12
1.5.2 Service demands	14
1.5.3 Availability and access to resources for EBP.....	15
1.5.4 Availability, relevance and quality of research.....	15
1.5.5 Training opportunities in EBP	17

1.5.6 Summary of facilitators and barriers to EBOT	17
1.6 Thesis structure.....	19
1.6.1 Explanation of terminology.....	19
1.6.2 Research questions, aims and objectives	20
1.6.3 Outline of chapters	23
1.7 Summary	23
Chapter 2: Literature review - The development of EBP and its implementation in occupational therapy.....	25
2.1 About this chapter	25
2.2 Method of conducting the literature search	25
2.2.1 Criteria for considering studies for this review	25
2.2.2 Search methods.....	26
2.2.3 Data collection and analysis.....	26
2.3 Search results.....	26
2.3.1 Search 1: Origin and development of EBP	27
2.3.2 Search 2: Philosophy of occupational therapy	27
2.3.3 Search 3: Adoption of EBP by occupational therapy.....	28
2.4 Results and Discussion	29
2.4.1 Philosophical foundations of evidence-based practice	29
2.4.2 The philosophy of occupational therapy	31
2.4.3 Implementing EBP in Occupational Therapy	32
2.5 Conclusion.....	40
Chapter 3: Systematic review of occupational therapists' EBP knowledge, attitudes and behaviour.....	41
3.1 Background	41
3.2 Methods.....	41
3.2.2 Search methods for identifying studies.....	43
3.2.3 Data collection and analysis.....	43
3.3 Results.....	43

3.3.1 Description of studies	44
3.3.2 Location of studies	52
3.3.3 Outcomes	52
3.3.4 Instruments used to measure outcomes	54
3.3.5 Results of included studies	57
3.4 Discussion	65
3.4.1 Main findings	65
3.4.2 Consistency with other literature	66
3.4.3 Strengths	67
3.4.4 Limitations	67
3.4.5 Bias in studies	67
3.5 Conclusions	68
3.5.1 Implications for practice	68
3.5.2 Implications for research	69
Chapter 4: Study 1 - Evidence-based practice perceptions, skills and behaviour among occupational therapists in South Africa	70
4.1 About this chapter	70
4.2 Rationale for the study	70
4.3 Study purpose	71
4.4 Research questions	71
4.5 Study aims and objectives	71
4.6 Method	72
4.6.1 Study design	72
4.6.2 Study population and sampling	72
4.6.3 Data collection	73
4.6.4 Instrumentation	73
4.6.5 Procedure	75
4.6.6 Data management	76
4.6.7 Data analysis	77

4.6.8	Ethical and legal considerations	78
4.7	Results.....	79
4.7.1	Demographic and practice characteristics	79
4.7.2	Access to sources of information	83
4.7.3	Perceptions of EBP.....	83
4.7.4	Training.....	84
4.7.5	Knowledge of EBP	87
4.7.6	Skills in EBP	88
4.7.7	EBP behaviour.....	89
4.7.8	Future development of EBOT in SA.....	94
4.7.9	Summary.....	95
4.8	Discussion.....	96
4.8.1	Generalisability of the results.....	96
4.8.2	Perceptions of EBP.....	97
4.8.3	Training in EBP	98
4.8.4	Skills in EBP	100
4.8.5	Application of EBP and access to resources	101
4.8.6	Strengths of the study	105
4.8.7	Study limitations.....	105
4.9	Conclusion.....	107
4.10	Recommendations	108
Chapter 5:	Literature review - Instrument development.....	109
5.1	About this chapter	109
5.2	Selecting measurement instruments.....	109
5.3	Determining the outcomes for evaluating the effectiveness of EBP educational interventions.....	111
5.4	Psychometric properties of outcome measures.....	112
5.4.1	Measurement error	112
5.4.2	Reliability.....	114

5.4.3 Validity	117
5.4.4 Responsiveness	119
5.4.5 Clinical utility.....	121
5.5 Questionnaire design	122
5.6 Testing a questionnaire.....	123
5.7 A systematic review of instruments measuring EBP learner outcomes.....	124
5.7.1 Objectives.....	124
5.7.2 Methods.....	124
5.7.3 Results.....	126
5.7.4 Discussion.....	138
5.8 Conclusion.....	143
Chapter 6: Study 2 - Developing and validating the instruments for the RCT	144
6.1 About this chapter	144
6.2 Aims 144	
6.3 Methods.....	144
6.3.1 Identifying the instruments	145
6.3.2 Selecting the instruments.....	148
6.3.3 Development of the OTEBP questionnaire.....	150
6.3.4 Testing the OTEBP questionnaire	153
6.3.5 Development of the audit checklist.....	157
6.4 Results.....	160
6.4.1 OTEBP questionnaire	160
6.4.2 Audit checklist.....	166
6.5 Discussion.....	168
6.5.1 Psychometric properties of the questionnaire.....	168
6.5.2 Psychometric properties of the audit checklist.....	172
6.5.3 Suitability of the instruments for the OTEBP trial	173
6.5.4 Final instruments.....	174
6.6 Conclusion.....	175

Chapter 7: Literature review - Randomised controlled trials.....	177
7.1 About this chapter	177
7.2 Randomised controlled trails (RCTs).....	177
7.2 Different types of trials: pragmatic versus explanatory	178
7.3 Evaluating trial quality	180
7.3.1 Sequence generation.....	181
7.3.2 Allocation concealment.....	183
7.3.3 Blinding.....	184
7.3.4 Incomplete outcome data	184
7.3.5 Other potential sources of bias	185
7.4 Limitations of RCTs.....	186
7.5 Summary	187
Chapter 8: Study 3 - A pilot RCT of the effectiveness of an interactive compared to a didactic educational intervention in improving EBP knowledge.....	188
8.1 About this chapter	188
8.2 Literature review.....	188
8.2.1 Review of interventions for increasing EBP knowledge and practice	188
8.2.2 Content of the educational interventions.....	192
8.3 Rationale for the study	194
8.4 Research hypothesis, aims and objectives	195
8.5 Study context	196
8.6 Methods.....	196
8.6.1 Trial design.....	196
8.6.2 Participants	196
8.6.3 Randomisation	200
8.6.4 Settings and location where data was collected	201
8.6.5 Outcomes.....	201
8.6.6 Interventions.....	203
8.6.7 Procedure.....	206

8.6.8 Data management	210
8.6.9 Data analysis	210
8.6.10 Ethical and legal considerations	212
8.7 Results	213
8.7.1 Baseline measurements.....	215
8.7.2 12 week measurements.....	222
8.7.3 Within-group changes between baseline and 12 weeks.....	228
8.7.4 Assessment of the OT EBP trial.....	233
8.8 Discussion.....	233
8.8.1 Main findings of the trial	234
8.8.2 Profile of participants and sample size	234
8.8.3 Effectiveness of the IE and DE in increasing EBP knowledge, attitudes and behaviour	235
8.8.4 Generalisability	242
8.8.5 Strengths and limitations.....	242
8.9 Conclusion.....	247
Chapter 9: Summary, recommendations and conclusion	248
9.1 About this chapter	248
9.2 Summary of the results of each study	248
9.2.1 Study 1: EBP perceptions, skills and behaviour among occupational therapists in SA	248
9.2.2 Study 2: Developing and validating the instruments for the OTEBP trial	249
9.2.3 Study 3: A pilot RCT of the effectiveness of an interactive compared to a didactic educational intervention in improving evidence-based practice knowledge	250
9.3 Recommendations	252
9.3.1 Recommendations for practice	252
9.3.2 Recommendations for research	254
9.3.3 Recommendations for education	255
9.4 Conclusion.....	256

References	257
Appendix I: Details of searches conducted	277
Appendix II: Sources of questionnaire items and modifications made	279
Appendix III: Occupational Therapists' Perceptions of Evidence Based Practice: A Survey	280
Appendix IV: Covering letter	287
Appendix V: Ethics approval letter for Study 1	289
Appendix VI: Missing data for Study 1.....	290
Appendix VII: Associations between perceptions and demographic characteristics	292
Appendix VIII: Interview guide for face validity and utility pilot study	294
Appendix IX: Grading rubric for baseline SAFT.....	295
Appendix X: Changes made to KABQ in baseline questionnaire	299
Appendix XI: Baseline Questionnaire	301
Appendix XII: Frequencies for Access to sources of evidence	310
Appendix XIII: Inter-rater reliability for 15-item audit checklist	311
Appendix XIV: Problems encountered and changes made to Audit checklist.....	312
Appendix XV: 12 week questionnaire.....	313
Appendix XVI: Audit checklist	321
Appendix XVII: Grading rubric for 12 week SAFT	322
Appendix XVIII: Audit grading rubric	326
Appendix XIX: CONSORT 2010 checklist of information to include when reporting a randomised trial*	328
Appendix XX: Information sheet for Study 3	330
Appendix XXI: Consent form for Study 3	333
Appendix XXII: Description of the educational interventions in the OT EBP trial .	335
Appendix XXIII: Observer checklists for interventions	344
Appendix XXIV: Ethics approval letter for Study 3	347
Appendix XXV: Approval letter from Department of Health	348
Appendix XXVI: Letter of permission from managers	349

List of Tables

Table 1: Professional documents guiding occupational therapy practice in SA.....	13
Table 2: Facilitators and barriers to EBOT in SA	18
Table 3: Aims, objectives and rationale for the different studies in the thesis.....	22
Table 4: Statements on evidence-based occupational therapy (EBOT)	38
Table 5: Characteristics of studies investigating knowledge, attitudes and research application by occupational therapists.....	45
Table 6: Taxonomy of variables measuring EBP knowledge, attitudes and behaviour of occupational therapists	52
Table 7: Categorisation of constructs measured in included studies.....	53
Table 8: Instruments used in studies of occupational therapists included in this review	55
Table 9: Demographic profile of respondents (N=124).....	80
Table 10: Main caseload of respondents *	80
Table 11: Practice profile of respondents (N=124).....	81
Table 12: Sample and population proportions by province *	82
Table 13: Results for hypothesis tests for demographic and practice variables (N=124).....	83
Table 14: Respondents with access to sources of evidence (N=124) *	83
Table 15: Perceptions of EBP (N=124)	84
Table 16: Hypothesis tests for relationships between EBP training and other variables	85
Table 17: Associations between EBP training and perceptions of EBP	86
Table 18: Methods, priorities and formats for EBOT in SA in the future (N=124)	87
Table 19: Sources of hearing about EBP (N=96) *	88
Table 20: Confidence in EBP skills (N=124).....	88
Table 21: Reasons for lack of confidence (N=84)	88
Table 22: Sources used to assist clinical decision-making (N=124).....	89
Table 23: Reasons for lack of success in finding evidence (N=124).....	90
Table 24: Types of research design and EBP methods used (N=124).....	91

Table 25: Hypothesis tests for experience and sources of evidence used in clinical decision-making.....	91
Table 26: Results for hypothesis tests for qualification and sources of evidence used.....	92
Table 27: Odds ratios and 95% CIs for success finding evidence	93
Table 28: Odds ratios and 95% confidence intervals for ability to apply evidence.....	94
Table 29: A process for selecting and developing measurement instruments for research	110
Table 30: Classification of learner outcomes (Nabulsi <i>et al.</i> , 2007)	112
Table 31: Characteristics of included instruments with their psychometric properties.....	129
Table 32: Identified instruments with specific outcomes for each learner construct	135
Table 33: Psychometric properties of instruments	137
Table 34: Domains and measurement instruments for learner outcomes.....	149
Table 35: Psychometric properties required for instruments in the OTEBP questionnaire.....	153
Table 36: Participants' practice areas.....	162
Table 37: Inter-rater reliability for the SAFT at times 1 and 2.....	162
Table 38: Test-retest reliability for the SAFT	162
Table 39: Responsiveness of the SAFT for the total sample (N=46).....	163
Table 40: Cronbach's alpha for factors at baseline and 12 weeks	164
Table 41: Test-retest reliability for dichotomous items in KABQ.....	164
Table 42: Test-retest reliability of modified KABQ items	165
Table 43: Test-retest reliability of FATQ items	165
Table 44: Changes to the questionnaire after reliability studies.....	166
Table 45: Inter-rater reliability for the 10-item audit checklist.....	167
Table 46: Responsiveness of the audit checklist for the total sample (N=40)	168
Table 47: Constructs measured and types of items for each instrument	173
Table 48: Format and construction of the final baseline questionnaire	174
Table 49: Constructs measured in the questionnaire	175
Table 50: Key differences informing explanatory and pragmatic attitudes in trials (Godwin <i>et al.</i> , 2003, Roland and Torgerson, 1998, MacPherson, 2004, Schwartz and Lellouch, 1967)	178
Table 51: Summary of systematic reviews of interventions to improve professional practice .	189

Table 52: Description of settings from which study participants were recruited	197
Table 53: Content of the interventions in the OTEBP study.....	203
Table 54: Participant attendance at educational sessions	215
Table 55: Baseline demographic and practice characteristics of participants	216
Table 56: Areas of practice for each group.....	216
Table 57: Description of facilities, clinicians and managers in each group	217
Table 58: Comparison of access to sources of information	217
Table 59: Access to information sources at work or outside	218
Table 60: Baseline knowledge scores for each group.....	218
Table 61: Baseline attitude scores for each group	219
Table 62: Baseline readiness to use EBP.....	219
Table 63: Perceived support for accessing and using EBP.....	219
Table 64: Baseline behaviour scores for the modified KABQ and audit checklist.....	220
Table 65: Baseline EBP behaviour on the modified KABQ (numerical items)	220
Table 66: Baseline self-rated EBP behaviour (binary items).....	220
Table 67: Baseline reasons for not using EBP.....	221
Table 68: Preferences for receiving evidence.....	222
Table 69: 12-week knowledge scores for each group	223
Table 70: 12-week attitude scores for each group.....	223
Table 71: 12-week readiness to use EBP	224
Table 72: Perceived support for EBP at 12 weeks	224
Table 73: 12-week behaviour scores for the modified KABQ and audit checklist	224
Table 74: 12-week EBP behaviour on the modified KABQ (numerical items).....	225
Table 75: Frequencies for items for the most recent client for whom evidence was required. 225	
Table 76: Reasons for not using EBP at 12 weeks	226
Table 77: Barriers to EBP for each group.....	227
Table 78: Preference for receiving evidence at 12 weeks	228
Table 79: Within-group comparison of knowledge scores.....	229
Table 80: Percentage of occupational therapy practice grounded in evidence.....	230

Table 81: Within-group comparison of modified KABQ attitude scores	230
Table 82: Within-group comparison of readiness to use EBP	230
Table 83: Changes in readiness to use EBP.....	231
Table 84: Within-group comparison of EBP behaviour scores	231
Table 85: Within-group comparison of modified KABQ behaviour items.....	232
Table 86: Within-group changes in numerical modified KABQ behaviour items.....	232
Table 87: Risk of bias table for OTEBP study	233
Table 88: Content of evidence 'packages'	340

University of Cape Town

List of Figures

Figure 1: Flow chart for article selection for search 1	27
Figure 2: Flow diagram for article selection for search 2	28
Figure 3: Flow chart for article selection for search 3	29
Figure 4: Flow chart of study selection	44
Figure 5: Comparison of distribution of respondents by province.....	82
Figure 6: Proportion with EBP training per province.....	84
Figure 7: Flow diagram of articles selected from database searches	127
Figure 8: Flow diagram of the trial procedure.....	207
Figure 9: CONSORT flow diagram for the OTEBP trial	214
Figure 10: Proportion in each group accessing sources of information at least monthly.....	221
Figure 11: Barriers to EBP for each group.....	226
Figure 12: Box-and-whisker plots for baseline and 12-week total SAFT scores.....	229
Figure 13: Box-and-whisker plots for baseline and 12 week audit scores	231

List of Abbreviations

AFT	Adapted Fresno Test of Competence in Evidence-based practice
AOTA	American Occupational Therapy Association
CAPs	Critically appraised papers
CATs	Critically appraised topics
CHC	Community health centre
CI	Confidence interval
CSR	Chart-stimulated recall
CPD	Continuing professional development
DE	Didactic educational intervention
DG	Didactic group
DOH	Department of Health
EBM	Evidence-based medicine
EBHC	Evidence-based healthcare
EBOT	Evidence-based occupational therapy
EBP	Evidence-based practice
ENHR	Essential National Health Register
EOVs	Educational outreach visits
EROS	Edmonton Research Orientation Survey
FATQ	Familiarity and Access to Technology Questionnaire
GDP	Gross domestic product
GNI	Gross national income
GPs	General practitioners
HPCSA	Health Professions Council of South Africa
ICC/s	Intra-class correlation coefficient/s
IE	Interactive educational intervention
IG	Interactive group

IQR	Inter-quartile range
IRR	Inter-rater reliability
ITT	Intention-to-treat
KABQ	Knowledge, attitude and behavior questionnaire
KAQ	Knowledge Acquisition Questionnaire
MDGs	Millennium Development Goals
MSA	Measures of sampling adequacy
NGOs	Non-governmental organisations
OTARG	Occupational Therapy Africa Regional Group
OTASA	Occupational Therapy Association of South Africa
OTEBP trial	Occupational Therapy evidence-based practice trial
PEMs	Printed educational materials
PI	Principal investigator
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
RCCPS	Readiness to Change Clinical Practice Scale
RCT/s	Randomised controlled trial/s
SA	South Africa/n
SACC	South African Cochrane Centre
SAFT	Shortened Adapted Fresno Test
SAJOT	South African Journal of Occupational Therapy
SAs	South Africans
SPSS	Statistical Package for the Social Sciences
UCT	University of Cape Town
UK	United Kingdom
UNDP	United Nations Development Programme
US	United States
WC	Western Cape
WFOT	World Federation of Occupational Therapists

Glossary of Terms

Attitude	The term 'attitudes' relates to the affective domain and includes views, perceptions, beliefs and intentions with regard to EBP (Nabulsi <i>et al.</i> , 2007). Attitudes to EBP may also incorporate '... a health professional's agreement/acceptance of the evidence, their perceived clinical applicability of the evidence, and their motivation and sense of self-efficacy to adopt EBP' (Menon <i>et al.</i> , 2009, p 1025).
Audit and feedback	'... any summary of clinical performance of health care over a specified period of time given in a written, electronic or verbal format' (Jamtvedt <i>et al.</i> , 2006, p 9).
Behaviour	'Actual performance of EBP in practice' (Shaneyfelt <i>et al.</i> , 2008, p 1117), for example, searching databases for evidence, accessing information sources, using evidence to select an intervention.
Behaviour change	Changes in the frequency of using EBP knowledge or skills in practice, for example increased application of research evidence in clinical practice (Nabulsi <i>et al.</i> , 2007).
Critically appraised papers (CAPs)	CAPs provide a one-page summary and appraisal of a single article considered to be 'important and clinically relevant' to occupational therapy (Bennett <i>et al.</i> , 2006, p 9).
Critically appraised topics (CATs)	CATs are 'brief summaries of evidence from more than one research paper on a specific topic of interest, but are less rigorous than systematic reviews' (Bennett <i>et al.</i> , 2006, p 9).

Developing country	The main classification system used by World Bank is based on gross national income (GNI) per capita. This system categorises countries into low-income, middle-income or high-income based on their GNI. Low-income and middle-income countries are sometimes referred to as ‘developing countries’ (The World Bank Group, 2010a).
Didactic educational intervention	These are ‘predominantly lectures or presentations but which may have included question and answer periods’ (Forsetlund <i>et al.</i> , 2009).
Educational outreach	‘... used to describe a personal visit by a trained person to health professionals in their own settings’. Other terms used for this process include university-based educational detailing, public interest detailing and academic detailing’ (O'Brien <i>et al.</i> , 1997, O'Brien <i>et al.</i> , 2007).
Interactive educational intervention	‘Sessions that involved some type of interaction amongst participants in small (<10 participants), moderate (10-19 participants), or large (>19 participants) groups. The interaction could involve role play, case discussion, or the opportunity to practise skills’ (Forsetlund <i>et al.</i> , 2009).
Knowledge	‘The acquisition of awareness or facts, data, information, ideas or principles to which one has access through formal or individual study, research, observation, experience or intuition’ (Wojtczak, 2002, p 451).
Knowledge acquisition	‘... the development and expansion of a health professional’s knowledge base’ (Menon <i>et al.</i> , 2009, p 1025).

Knowledge transfer	<p>‘a systematic approach to capture, collect and share tacit knowledge in order for it to become explicit knowledge. By doing so, this process allows for individuals and/or organizations to access and utilize essential information, which previously was known intrinsically to only one or a small group of people’ (Government of Alberta, cited by Graham <i>et al.</i>, 2006).</p>
Knowledge translation	<p>‘... a dynamic and iterative process that includes synthesis, dissemination, exchange and ethically-sound application of knowledge to improve the health of Canadians, provide more effective health services and products and strengthen the health care system’ (Canadian Institutes of Health Research, 2010, p 4). In this thesis, this definition is understood to include all people, not only Canadians.</p>
Multi-faceted intervention	<p>A combination of ‘two or more interventions, such as educational meetings and reminders’ (Forsetlund <i>et al.</i>, 2009).</p>
Opinion leaders	<p>‘... able to influence other individuals’ attitudes or overt behavior informally in a desired way with relative frequency’ (Rogers, 2003, p 27).</p> <p>Opinion leaders may use formal or informal strategies to effect change in practice. (Doumit <i>et al.</i>, 2007).</p>
OTseeker	<p>An occupational therapy evidence database developed in Australia that contains systematic reviews and randomised controlled trials of interventions. Trials are rated to enable users to judge their quality (Bennett <i>et al.</i>, 2003a, McKenna <i>et al.</i>, 2004).</p>

Perception	'The process of becoming aware or conscious of a thing or things in general; the state of being aware' (Oxford English Dictionary, 2011a).
Practice	'The carrying out or exercise of a profession, especially that of medicine or law' (Oxford English Dictionary, 2011b)
Practice behaviour	'... the process or actions used by a health professional to provide care for their patients (e.g. behaviour of a standardized assessment tool).' (Menon <i>et al.</i> , 2009, p 1025).
Reminders	'Any intervention, manual or computerised, that prompts the healthcare provider to perform some action' (Forsetlund <i>et al.</i> , 2009).
Skills	'EBP skills are distinguished from knowledge by participants applying their knowledge by performing EBP steps in some type of clinical scenario, such as with a standardized patient, written case, computer simulation, OSCE or direct observation' (Shaneyfelt <i>et al.</i> , 2008, p 1117). Skills differ from behaviour as they entail acquiring competence in specific areas outside the practice environment.
Tailored interventions	'... strategies to improve professional practice that are planned taking account of prospectively identified barriers to change' (Baker <i>et al.</i> , 2010).

Abstract

Research from upper-income countries has revealed the difficulties occupational therapists experience in implementing evidence-based practice (EBP). This thesis investigated the state of EBP in occupational therapy in South Africa (SA) and evaluated the effectiveness of two EBP educational interventions. The research consisted of three linked studies.

Study 1 was a national cross-sectional survey of 436 registered occupational therapists. Results showed positive perceptions of EBP but poor confidence in EBP skills. Limited success finding and applying evidence was reported and respondents relied on their clinical experience rather than research. The study highlighted the need for training to equip occupational therapists to implement EBP.

Study 2 described the development of a questionnaire and audit checklist to evaluate EBP knowledge, attitudes and behaviour. The instruments were tested and found to be sufficiently robust for evaluating EBP educational interventions.

Study 3 was a randomised controlled trial that tested whether an interactive educational intervention (IE) was more effective than a didactic one (DE) for improving EBP knowledge, attitudes and behaviour in occupational therapists. No significant differences were detected for the primary outcome (knowledge) at 12 weeks (IE: median SAFT score=21.0, range=2.0-25.0; DE: median SAFT score=19.0, range=9.0-24.0; $U=182.5$, $p=0.078$). Examination of within-group changes revealed significant improvements in knowledge in both groups (IE: $T=4.0$, $p<0.001$; DE: $T=12.0$, $p=0.002$). There was also a significant change in attitudes (one sub-scale only) ($T=33.0$, $p=0.039$) and behaviour (audit score) ($T=64.5$, $p=0.044$) in the IE group. Power analysis showed that the study was powered at 43% which may explain the failure to identify significant differences at 12 weeks. There was, however, a trend towards the IE being more effective. Conducting a high quality pragmatic trial was feasible in this context.

Although occupational therapists appear to be positive about EBP, concerted efforts are required to equip them with the skills for implementation. Convenient access to the internet and evidence databases is essential to enable EBP. Although the didactic and interactive interventions had equivalent effects at 12 weeks, within-group analysis indicated that the IE may be more effective. Training should therefore include interactive components to effect changes in EBP knowledge and behaviour. Realistic ways of implementing EBP in the public health service should be explored and record-keeping strengthened to encourage therapists to monitor the effectiveness of their practice. More pragmatic trials should be conducted to produce the evidence needed for occupational therapy practice.

University of Cape Town

Executive Summary

The need for this research emerged from 1) a recognition of the importance of EBP in providing quality occupational therapy services in SA, and 2) the noticeable lack of research conducted in resource-constrained countries that could inform effective strategies for implementing EBP.

The thesis therefore set out to investigate the situation of EBP in occupational therapy to determine what actions were required to increase its application to practice. The thesis consists of three linked studies.

In **Study 1** a cross-sectional design was used to collect information about the perceptions, skills and behaviour of South African occupational therapists towards EBP. A national postal survey was conducted with a random sample of 436 registered occupational therapists. A 30% response rate (129/436) was obtained. Most (99%) had positive perceptions about EBP but poor confidence in EBP skills (for example, 26% felt confident in determining study designs). Of the 84 respondents (68%) who gave reasons for their lack of confidence, 31% indicated limited knowledge and skills. Respondents reported limited success finding (46%) and applying evidence (36%) and relied on their clinical experience (87%) rather than research (40%). Over 70% had heard about EBP but few (25%) had received training. Despite the high proportion with computer (98%) and internet (92%) access, few (22%) had used the internet to access research information. A greater proportion of new graduates reported success finding research evidence (64%) and those with more experience stated they were more able to apply evidence (89%). The most popular choices for future EBP training were workshops (82%), short in-service training sessions (80%) and brief summaries of evidence (76%). Few (44%) wanted to learn the skills to search for and appraise research for themselves. The study showed that South African occupational therapists appeared to have similar constraints in implementing EBP as described in previous studies. The urgent need for additional EBP training was highlighted and particular aspects to be included in training sessions were identified.

Study 2 described the development and validation of the instruments that were used in a RCT (the OTEBP trial). The choice of instruments was informed by a systematic review conducted by

the PI. A self-report questionnaire was developed from existing validated instruments that were modified for the OTEBP trial. These were the Adapted Fresno Test of Competence in EBP (AFT) (McCluskey and Bishop, 2009, McCluskey and Lovarini, 2005), the Knowledge, attitudes, behaviour questionnaire (KABQ) (Johnston *et al.*, 2003, MacDermid *et al.*, 2006), the Readiness to Change Clinical Practice Scale (RCCPS) (MacDermid *et al.*, 2010, MacDermid *et al.*, 2006), the Knowledge Acquisition Questionnaire (KAQ) (MacDermid *et al.*, 2006) and the Familiarity and Access to Technology Questionnaire (FATQ) (MacDermid *et al.*, 2006). An audit checklist was designed using literature and expert opinion. The SAFT was selected as the primary outcome measure while the remaining instruments measured the secondary outcomes. The instruments underwent several stages of validity testing.

Face validity and clinical utility of the instruments in the questionnaire were evaluated using a semi-structured focus group. Each item was examined after which changes were made to instructions, methods of completion, language and layout to improve its face validity and clinical utility. The median completion time for the questionnaire was 23.5 minutes. Test-retest and inter-rater reliability (IRR) were established with a sample of 26 occupational therapists that completed the questionnaire twice with a one-week interval between completions. IRR for the SAFT was determined by the PI and a research assistant independently scoring both sets of questionnaires, and responsiveness was calculated using baseline and 12-week data from the OTEBP trial. Internal consistency of the KABQ was determined through item analysis of baseline measurements (38 ordinal items) from the trial using Cronbach's alpha and factor analysis with principal axis factoring as the extraction method.

Test-retest (ICC=0.95, 95% CI: 0.88-0.98) and IRR were excellent (time 1: ICC=1.0; time 2: ICC=0.99, 95% CI: 0.97-1.00) for SAFT total scores. The overall mean change in knowledge on the SAFT was 6.2 points on the 30 point scale (SD=6.3, 95% CI: 5.2-7.9), and the effect size was large ($d=1.0$) showing its ability to detect clinically important change over time. Factor analysis of the KABQ identified a single knowledge factor ($\alpha=0.801$), two behaviour factors ($\alpha=0.826$ and 0.805) and three attitude factors ($\alpha=0.753$, 0.809 and 0.802). Internal consistency was high for

all factors except one attitude factor. Most of the remaining KABQ items had acceptable test-retest reliability as did the FATQ and the RCCPS. The audit checklist had moderate to perfect IRR (kappa ranged from 0.6 to 1.0) but responsiveness was small ($d=0.30$) indicating that the instrument did not seem able to detect small changes in behaviour. Overall, the instruments measured all the necessary outcomes for evaluating an EBP educational intervention recommended by Nabulsi *et al* (2007) and demonstrated adequate psychometric properties.

Study 3 employed a pragmatic randomised controlled trial (RCT) that used a two-group parallel design with matched-pair stratification by type (clinician/manager) and knowledge score. The trial aimed to: 1) determine whether an IE was more effective than a DE for improving EBP knowledge, skills and use at 12 weeks, and 2) to investigate the feasibility of conducting a RCT with occupational therapists in a public health setting. All occupational therapists employed by the Western Cape Department of Health (DOH) who worked a minimum of a 20 hour week were eligible (N=98). Fifty-eight occupational therapists consented to participate and were randomly allocated to either an interactive (IE) or a didactic (DE) educational intervention using coin tossing. Data was collected at baseline and 12 weeks using a questionnaire and audit checklist. The primary outcome was increased EBP knowledge at 12 weeks shown by an improved total SAFT score. Secondary outcomes were improved knowledge (modified KABQ), attitudes (modified KABQ) and behaviour (audit checklist and modified KABQ). Data were collected at the health facilities where participants were employed. Raters for the audit were blinded but participants and the provider could not be blinded.

Thirty participants were allocated to receive the IE and 28 the DE. Twenty-five participants in the IE and 21 in the DE completed the trial and were included in the 12 week analysis. Results revealed no significant difference between the groups in the primary knowledge outcome at 12 weeks (IE: median SAFT score=21.0, range=2.0-25.0; DE: median SAFT score=19.0, range=9.0-24.0; U=182.5, $p=0.078$). Examination of within-group changes revealed significant improvements in knowledge in both groups (IE: T=4.0, $p<0.001$; DE: T=12.0, $p=0.002$), but the IE also showed a significant increase in behaviour on the audit score (T=64.5, $p=0.044$) and

attitudes for one KABQ sub-scale ($T=33.0$, $p=0.039$). As the study was powered at 43%, it may have failed to detect significant differences at 12 weeks. Conducting a high-quality RCT was feasible and the risk of bias was assessed as low. The OTEBP trial adds strength to the existing evidence that both didactic and interactive educational interventions can improve knowledge, but it seems that interactive interventions may be more effective for changing behaviour. High-quality pragmatic trials can feasibly be conducted within the public health service.

The main recommendations arising from this thesis are:

- Substantial effort must be directed at equipping occupational therapists to implement EBP. To this end, short in-service training sessions must be provided throughout SA as part of the CPD programme offered by the Occupational Therapy Association of SA (OTASA);
- Evidence-based summaries relevant to the SA context should be disseminated to provide the evidence required for practice;
- The outcome instruments for the OTEBP trial were sufficiently robust and should be used in future studies;
- The SAFT has strong psychometric properties and, being more user-friendly and less intimidating than the AFT, is suitable in contexts where EBP is in the early stages of implementation;
- The audit checklist is a useful instrument to monitor record-keeping. IRR was adequate but responsiveness was low and therefore a larger trial is needed to determine whether a greater effect size can be shown;
- Although didactic as well as interactive training significantly increased EBP knowledge, interactive workshops seemed to be more effective for changing EBP behaviour. Training should therefore include interactive components.
- Training sessions must cover where to find evidence, how to search for evidence and how to apply evidence to practice, and must take cognisance of the barriers identified in the survey and the RCT;
- The Department of Health needs to be convinced of the necessity of providing convenient access to the internet and evidence databases to its employees;

- Record-keeping should be improved to enable therapists to monitor the effectiveness of their practice;
- Recognising the barrier of high workloads in the public health service, realistic ways of implementing EBP must be explored;
- More pragmatic trials could be conducted in the public health service to produce the evidence required for occupational therapy practice.

University of Cape Town

Chapter 1: Introduction

1.1 Background

Health professionals are expected to be familiar with recent research and apply the findings to ensure patients receive the best possible treatment and that resources are used effectively (Graham *et al.*, 2006). It is well known that research findings are frequently not applied in practice with the consequence that many patients do not receive optimal care (Dans *et al.*, 2004, Garner *et al.*, 1998, Graham *et al.*, 2006, Melgaard, 2004, Rowe *et al.*, 2005, Siddiqi *et al.*, 2005). This discrepancy between research findings and what actually occurs in practice is 'one of the driving forces behind the development of EBP' (Dawes *et al.*, 2005).

Translating what is empirically known into practice is important in any healthcare setting, but is even more critical in developing countries where resources are limited and have to be directed towards effective and safe interventions (Dans and Dans, 2000b, Daya, 2000, Garner *et al.*, 1998, McMichael *et al.*, 2005, Santesso and Tugwell, 2006, Siddiqi *et al.*, 2005). Acknowledging the limitations in health care in developing countries and the resultant threat to the health of the population, the World Health Organization has actively promoted EBP as one way of strengthening weak health systems (World Health Organization, 2003). In support of this initiative organisations such as the World Bank, the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the United Nations Development Programme (UNDP), have prioritised the application of research findings to practice (Nuyens and Lansang, 2006). Implementing research findings in practice has also been identified as a means for attaining some of the Millennium Development Goals (MDGs)¹ (Rowe *et al.*, 2005, Santesso and Tugwell, 2006).

¹ 'The MDGs focus the efforts of the world community on achieving significant, measurable improvements in people's lives by the year 2015'. Three of the eight MDGs focus directly on health, namely reducing child mortality, improving maternal health and combating HIV/AIDS, malaria and other diseases (The World Bank Group, 2010c)

1.2 Evidence-based practice (EBP)

The term 'evidence-based medicine' (EBM) was first mentioned in the medical literature in 1991 (Guyatt, 1991) but soon expanded to include other allied health professions. To include these other health professionals and affirm the importance of a 'united commitment to the principles of 'best practice'' (Dawes *et al.*, 2005), the term EBM was extended to 'evidence-based practice' and 'evidence-based health care' (Bennett and Bennett, 2000, Bennett *et al.*, 2006, Ottenbacher *et al.*, 2002, Taylor, 2007).

1.2.1 The need for EBP

Although EBP has been criticised as a Western innovation with limited relevance for developing countries (Chinnock *et al.*, 2005, Daya, 2000, Hoj, 2005, Lowe, 2000), the poor quality of health services in these countries justifies its importance (Dans and Dans, 2000a, Dans *et al.*, 2004, McMichael *et al.*, 2005, Volmink *et al.*, 2001). In resource-constrained contexts, such as SA, it is vital that resources are directed towards healthcare services that influence health positively rather than those that are ineffective or harmful (Chinnock *et al.*, 2005, Garner *et al.*, 1998, Garner *et al.*, 2006, McMichael *et al.*, 2005, Siddiqi and Newell, 2005, Siddiqi and Robinson, 2006). Additionally, the cost to patients of providing ineffective healthcare interventions must be recognised. Even when health care is free, patients incur transport costs to access healthcare facilities. Thus, providing ineffective interventions makes health professionals 'responsible for exacerbating patient's deprivation and poverty' (Garner *et al.*, 1998, p 531). The many barriers to EBP are often cited as reasons for lack of implementation, but several authors have demonstrated that health practitioners can devise creative solutions to overcome these challenges (Chinnock *et al.*, 2005, Dans and Dans, 2000a, Pakenham-Walsh and Mayosi, 2001, Siegfried and Volmink, 2003, Volmink *et al.*, 2001).

1.2.2 Defining EBP

The most well-known definition is that of Sackett (1996, p71) who defined EBM as ‘the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients’. This definition reflects the importance of combining professional experience with relevant research in decision-making to enable health practitioners to provide patients with the best care (Sackett, 1997, Sackett *et al.*, 1996, Taylor, 1997, Taylor, 2007, Tickle-Degnen, 1999). A consensus statement to clarify EBP was developed as one of the outcomes of an international conference for evidence-based healthcare teachers and developers (Dawes *et al.*, 2005):

‘Evidence-based practice (EBP) requires that decisions about health care are based on the best available, current, valid and relevant evidence. These decisions should be made by those receiving care, informed by the tacit and explicit knowledge of those providing care, within the context of available resources.’

Underlining has been added to highlight terms that convey assumptions which will be outlined here. The first assumption is that EBP encompasses decision-making about health care which leads one to question who is involved in making the decisions. Reading further reveals that the health practitioner decides on the most appropriate intervention with input from the patient. This may not be relevant in some societies however. For example, in Africa the *Ubuntu* philosophy embraces a culture of collectivism and decisions are made according to how they serve the well-being of the family and community rather than the individual (Broodryk, 2002, Pityana, 1999).

Secondly, what is regarded as evidence has to be traced back to philosophical stances about knowledge (Cresswell, 2003) and truth (Higgs and Smith, 2006). Evidence-based practice has its roots in logical empiricism which claims that truth has its basis in factual, objective information (Higgs and Smith, 2006). This understanding of knowledge, referred to as post-positivism (Cresswell, 2003), forms the foundation of experimental research (DePoy and Gitlin, 2005).

Alternative knowledge claims have been discussed. For example, Cresswell (2003) described three alternative knowledge forms (social constructivism, advocacy/participatory knowledge claims and pragmatism) while Higgs and Smith (2006) outlined nine (hermeneutics, systems theory, feminism, phenomenology, critical theory, African philosophy, critical rationalism, postmodernism and nihilism). Although rooted in different philosophies, these are all forms of naturalistic inquiry in which 'knowledge is based on how the individual perceives experiences and how he/she understands his/her world' (DePoy and Gitlin, 2005, p 25). This viewpoint assumes that 'it is not possible to separate the outside world from an individual's ideas, language, and perceptions of that world' (DePoy and Gitlin, 2005, p 25).

Thirdly, the person interpreting the needs of the patient and matching these to evidence does so using particular professional domains of reasoning. Evidence-based practice as applied by different health professionals is therefore situated within the philosophy, values and theory underpinning that profession, and therefore the way in which it is practiced will differ between professional groups.

Fourthly, the concept of providing care operates within a particular worldview that determines the type of evidence that is accessed. The philosophy underpinning a profession influences thinking about what is regarded as high-quality evidence. Medicine has a strong grounding in positivism and quantitative research which 'assumes that phenomena are measurable using the deductive principles of the scientific method' (Bowling, 2009, p 129). The biomedical approach and positivist nature of medical practice is ideally suited to EBM (Sackett, 1997, Sackett *et al.*, 1996, Sackett *et al.*, 2000). As EBP originated in medicine, high-quality evidence has traditionally been regarded as quantitative research designs which have been organised into a hierarchy based on the extent to which bias may have influenced the study results (Evans, 2003). Occupational therapy practice straddles positivistic and naturalistic ways of knowing and therefore quantitative and qualitative approaches to knowledge-generation are desirable.

Lastly, evidence is context-specific in that the questions generated within practice settings dictate the kind of evidence needed. As expressed in the definition of EBP, the application of evidence is reliant on its availability. Availability implies having convenient access to information sources such as electronic databases and 'a health care infrastructure committed to best practice' (Dawes *et al.*, 2005). Thus any disjunction between what is known and what is practiced resides as much in the resource context within which the practitioner functions as it does in the service provider.

1.2.3 The development of evidence-based occupational therapy (EBOT)

Occupational therapy was slow to adopt EBP (Hayes, 2000, Walker, 2003) with the first articles appearing in 1997, six years after it had first been written about in medicine. One of these articles advocated that 'the evidence-based approach does appear to be a perfect way to blend theory and practice and to demonstrate the benefits and effectiveness of occupational therapy' (Taylor, 1997, p 472). This rationale for implementing EBP has since been affirmed by several occupational therapy authors (Lloyd-Smith, 1997, Reagon *et al.*, 2008, Walker, 2003). Additional benefits of EBP cited are: provision of effective interventions (Ballinger and Wiles, 2001, Bannigan, 2004, Reagon *et al.*, 2008, Walker, 2003), efficient services (Coster, 2005), survival of the profession (Holm, 2000, Reagon *et al.*, 2008) and 'filling in knowledge gaps' (Reagon *et al.*, 2008).

Despite strong support for EBP, application of evidence by occupational therapists has been limited (Bennett *et al.*, 2003b, Brown *et al.*, 2010b, Cameron *et al.*, 2005, Copley and Allen, 2009, Dysart and Tomlin, 2002, Gustafsson and Yates, 2008, Humphris *et al.*, 2000, Lopez *et al.*, 2008, Lyons *et al.*, 2010, Salls *et al.*, 2009, Sweetland and Craik, 2001). Initiatives to support and develop EBOT include the production of a variety of resources ranging from journal articles outlining the steps of EBP and critically appraised papers on topics relevant to occupational therapy, to internet sites and books (Bennett *et al.*, 2006). The number of systematic reviews and randomised controlled trials relevant to occupational therapy has also increased (Illott *et*

al., 2006). Testimony to the importance given to EBP is its inclusion in documents such as the World Federation of Occupational Therapists (WFOT) code of ethics (World Federation of Occupational Therapists, 2004), the WFOT Revised Minimum Standards for the Education of Occupational Therapists (Hocking and Ness, 2002), the 2017 Centennial Vision of the American Occupational Therapy Association (AOTA) (American Occupational Therapy Association, 2007) and various position papers (Canadian Association of Occupational Therapists *et al.*, 2009, Nicholson, 2006). These developments demonstrate the considerable progress the profession has made towards the goal of becoming evidence-based (Bennett *et al.*, 2006, Walker, 2003).

1.3 Contextualising the research setting

Implementing EBOT in SA presents unique challenges arising from the context in which health services are provided and the extent to which the health system is positioned to provide supporting infrastructure. To appreciate the influence these contextual factors may have on EBP, information is presented about the health status of the nation, health system and occupational therapy profession.

1.3.1 Health status

South Africa is faced with a quadruple burden of disease constituting a high rate of infectious diseases, specifically HIV, high injury levels due to violence and road traffic accidents, diseases and conditions related to poverty and under-development², and chronic diseases³ (Bradshaw, 2009, Bradshaw and Nannan, 2004, Harrison, 2009). The disease profile reflects the health disparities between different population groups brought about by the inequalities of colonialism and apartheid (Bradshaw and Nannan, 2004, Ntuli and Day, 2004). Of concern is

² Conditions resulting from factors such as childhood and maternal underweight, lack of access to clean drinking water and lack of sanitation (Harrison, 2009).

³ Examples include hypertension, stroke, ischaemic heart disease, diabetes mellitus, cancer and chronic kidney disease (Harrison, 2009).

that these inequalities are worsening and are further aggravated by factors such as unemployment (Sanders and Chopra, 2006). Over and above the quadruple burden of disease is a worrying decline in the health status of the population over the last decade, evidenced by the increased mortality rate for children and young adults, and the reduction in life expectancy, primarily due to HIV (Bradshaw, 2009, Bradshaw and Nannan, 2004). The quadruple burden of disease requires that multiple health challenges have had to be addressed simultaneously (Bradshaw and Nannan, 2004) placing additional strain on already limited resources (Lehrman, 2008). Much of the evidence needed to address these unique and complex health challenges has yet to be generated and requires research spanning quantitative and qualitative paradigms.

1.3.2 The health system

One of the major challenges of the democratic government has been the restructuring of the health system (Lehrman, 2008) to reduce the disparities and inequalities in health care and health status between population groups and provinces (African National Congress, 1994). A district health system based on the primary health care philosophy (Lutge *et al.*, 2008) was instituted and healthcare services restructured to ensure efficient and effective use of scarce resources (Department of Health, 1997). Expanding access to health care, particularly in under-served areas, has formed a continuous focus in re-prioritising government health expenditure (Department of Health, 2008). In an effort to provide services to those who previously did not receive them, health profession posts in tertiary hospitals were abolished or redistributed to previously under-served areas. Rapid discharge of patients from tertiary and secondary hospitals enabled resources to be re-directed and used more equitably (Duncan and Alsop, 2006). Compulsory community service was instituted for all graduating health professions⁴ to provide the general population with greater access to services (Pick *et al.*, 2000) and to address the inadequate numbers and inequitable distribution of health personnel, (Duncan *et al.*, 2005, Ntuli and Day, 2004).

⁴ This was implemented for doctors in 1998 and occupational therapists in 2003 (Reid, 2003).

Although a greater number of people have access to health care facilities, good quality health services are still not available to the majority (Shisana, 2008). One reason for this is the reduction in total health expenditure. From 2005 to 2007, health expenditure declined from 9.1% of the gross domestic product (GDP) to 8.6% (The World Bank Group, 2010b). A further issue is the lack of equity in funding between public and private sectors (World Health Organization, 2009). In 2008, approximately 8% of GDP was spent on health services of which 5% was used in the private sector (Botha, 2008). Considering that the public service caters for about 85% of the population (Botha, 2008), this imbalance is extremely concerning. In addition, SA health expenditure falls short of the 15% target proposed in the Abuja Declaration for countries within the African Union (Botha, 2008).

Progress has been made towards restructuring the health system and developing policies and guidelines informing service provision (Forman *et al.*, 2004), but the inequalities between population and wealth groups, urban-rural areas and education levels continue to exist (Bradshaw, 2009). There are also substantial challenges to creating a unified health system (Lutge *et al.*, 2008), notably poor prevention and control of diseases⁵, inequitable resource allocation between private and public sectors, weaknesses in health systems management⁶ (Harrison, 2009) and the high staffing vacancy rate (Lehrman, 2008). This context of health system reforms creates an ideal backdrop against which to introduce innovations such as EBP because of the necessity for change (Garner *et al.*, 1998). The need for EBP in SA has been supported by Nchinda (2002, p 1699) who stated that 'active promotion of evidence-based decision-making at all levels of the health field is a necessary step in the direction of improving the health of the population'.

⁵ Notably, HIV, tuberculosis and alcoholism (Harrison, 2009).

⁶ Poor quality of care in key programmes is one of these (Harrison, 2009).

1.3.3 Occupational therapy in SA

South African occupational therapists have a four-year bachelor's degree and are employed in the public or private sectors or non-governmental organisations (NGOs). Public service posts are mainly in the health and education sectors. Therapists in the private sector work in private practices, hospitals or rehabilitation centres, or companies such as in the insurance industry. Occupational therapists employed in NGOs are predominantly involved in community-based rehabilitation or community development programmes.

South Africa is under-resourced in terms of therapist-to-population ratios compared with developed countries (Watson and Fourie, 2004a). There has been a slight increase in occupational therapists in the public service since 2000, but the ratio of therapists to population remains unacceptably low. In 2009 there were 0.6 occupational therapists per 10,000 population for SA compared with 7.0 for Australia, 4.0 for Canada and 5.0 for the UK (World Federation of Occupational Therapists, 2010). Inequities across services are evident in the ratio of occupational therapists per 10,000 population which was reported as 0.013 for mental health facilities (Lund *et al.*, 2010). In addition, only 24% (838/3508) of the total number of occupational therapists registered with the Health Professions Council of SA (HPCSA) in 2010 were working in public service. The remaining 76% would have been employed in the private sector (Day and Gray, 2009, Lehrman, 2008), not working during that year, or working abroad (Day and Gray, 2009).

Due to low therapist to population ratios, occupational therapists in the public service are expected to see large numbers of patients, many of whom have multiple and complex health problems. Added to this, resources for providing services are limited, many practitioners are inexperienced (Duncan and Alsop, 2006) and infra-structures to support practice are under-resourced and poorly developed (Watson and Fourie, 2004a). The limited amount of evidence available to inform occupational therapy practice in this context presents further challenges for implementing EBP.

From the above descriptions, it is clear that the SA health system is still in a process of transition towards a full interpretation of the Alma Ata declaration of primary health care⁷ (International Conference on Primary Health Care, 1978). This context pressures the profession to reconceptualise occupational therapy because of the devolution of services to more basic levels of care (Duncan *et al.*, 2005); the movement away from a disease-focused, curative model of healthcare towards promotion and prevention; (Watson, 2004) and the link between health and social development (Galvaan, 2006). The introduction of compulsory community service has resulted in graduate occupational therapists working in previously under-serviced areas of the country⁸ (Pick *et al.*, 2000) which has expanded occupational therapy practice from predominantly urban hospital-based services with a biomedical orientation to community-based rural services with a development focus. Occupational therapy services span different government departments including health, social development, education and labour. These shifts in the scope of occupational therapy practice necessitate evidence that extends beyond randomised controlled trials (RCTs).

1.4 Occupational therapy and EBP in SA

The appropriateness of EBP for the SA context has been questioned. Reasons cited for these concerns are limited resources to support EBP, low numbers of occupational therapists to address the health needs of the country, and the need to explore indigenous knowledge systems rather than taking on western concepts (Joubert, 2003, Joubert, 2005). In the context of medicine it has been argued that it is in these conditions that EBP is really needed:

'The desperate health situation in developing countries tends to trivialize EBM as just another of those western innovations – highly advanced and, extremely expensive and

⁷ Health was defined as 'a state of complete physical, mental and social wellbeing, and not merely the absence of disease or infirmity' (International Conference on Primary Health Care, 1978).

⁸ Particularly in rural areas where occupational therapy services were unavailable.

totally useless. We propose however, that it is exactly this desperate situation, which justifies the need to practice EBM' (Dans et al., 2004).

In contrast to the high number of publications from countries such as Australia, Canada, the UK and the US, South African (SA) occupational therapists have been slow to embrace EBP. A hand-search of the South African Journal of Occupational Therapy (SAJOT) and *Focus*, the Official newsletter of the Occupational Therapy Association of South Africa (OTASA) by the principal investigator (PI) in 2005⁹, revealed few references to EBP. It was first mentioned in a SAJOT editorial in 2000 as 'a means to offer a state-of-the-art clinical¹⁰ service to our clients' with the journal being endorsed as a vehicle for promoting EBP (Randall, 2000, p 2). In a subsequent SAJOT, Fourie (2001) supported Randall's position but argued that a SA occupational therapy understanding of EBP should be further deliberated rather than unquestioningly accepting the Canadian occupational therapy interpretation¹¹. A few years later, a newsletter for private occupational therapy practitioners advocated using multiple sources of evidence in decision-making, recognised the importance of building an 'evidence-based culture' and suggested continuing education as 'one strategy for applying research evidence to practice' (Fourie, 2004, p 9). A slightly different view was reflected by Uys (2004) who promoted the role of evidence-based outcomes to document the success of occupational therapy interventions. Although reservation has been expressed about the applicability of EBP to SA (Joubert, 2004, Joubert, 2005), others have promoted the use of EBP by illustrating how the different steps in the process could be applied in practice (Watson and Buchanan, 2005).

⁹ This was at the start of this thesis. From 2006 to 2010 there was one further article published in the SAJOT that included content on EBP.

¹⁰ The term 'clinical' places an emphasis on biomedical practice.

¹¹ Evidence-based occupational therapy: 'client-centred enablement of occupation based on client information and a critical review of relevant research, expert consensus and past experience' (Canadian Association of Occupational Therapists *et al.*, 2009).

The PI undertook some investigation into the extent to which EBP was being promoted among students and qualified occupational therapists. A questionnaire was emailed to the heads of the eight occupational therapy undergraduate programmes offered at SA universities in 2004. Responses revealed that three universities included EBP in their curricula and one emphasised accurate clinical documentation and generating research rather than equipping students to be research-users. Enquiry into EBP training opportunities for qualified therapists revealed that until 2004, the only known training was workshops on evidence-based health care presented by the South African Cochrane Centre (SACC), a research unit based at the Medical Research Council. These were one-day courses offered in the main centres of SA as part of continuing education for health professionals to introduce the concepts of EBP. Although they were targeted at all health professions, they had a strong medical focus. These investigations exposed the limited opportunities available for students and qualified occupational therapists to equip themselves with the knowledge and skills needed to apply EBP.

1.5 Facilitators and barriers to implementing EBOT in SA

Barriers to implementing EBP may occur in a variety of areas including the healthcare system; the political, social, educational and practice environment; the practitioner and the patient (Haines *et al.*, 2004). Understanding potential facilitators and barriers is critical for developing appropriate strategies to increase EBOT, and are therefore described below.

1.5.1 Professional and ethical imperatives

In SA, occupational therapy practice is governed by the Health Professions Council of South Africa (HPCSA) which is a statutory body responsible for protecting the public and guiding health professionals (Health Professions Council of South Africa). Within the HPCSA, issues relevant to occupational therapy are dealt with by the Professional Board for Occupational Therapy and Medical Orthotists/Prosthetists. The professional organisation responsible for promoting and developing occupational therapy nationally is OTASA (Occupational Therapy

Association of South Africa) while the World Federation of Occupational Therapists (WFOT) fulfills this function internationally (World Federation of Occupational Therapists). Registration with the HPCSA is compulsory for all practicing health professionals but membership of OTASA and WFOT is voluntary. Documents supporting EBP produced by these afore-mentioned bodies include the Minimum Standards for Practice¹² (Professional Board for Occupational Therapy and Medical Orthotics/Prosthetics, 2004), the WFOT Code of Ethics¹³ (World Federation of Occupational Therapists, 2004) and the Occupational Therapy Code of Ethics and Professional Conduct¹⁴ for practice in SA (Occupational Therapy Association of South Africa, 2005). Statements referring directly or indirectly to EBP were extracted from these documents and are presented in Table 1 (relevant sections are underlined and bold).

Table 1: Professional documents guiding occupational therapy practice in SA

Document	Statement related to application of research
World Federation of Occupational Therapists (WFOT) Code of Ethics (World Federation of Occupational Therapists, 2004)	<i>Developing professional knowledge</i> '... participate in professional development through life-long learning and apply their acquired knowledge and skills in their professional work which is <u>based on the best available evidence</u> '.
Standards of Practice for Occupational Therapists (Professional Board for Occupational Therapy and Medical Orthotics/Prosthetics, 2004)	<i>Direct services - Standard I : Professional standing and responsibility</i> 'is knowledgeable about research and <u>applies research findings ethically and appropriately</u> in service delivery processes ...'. 'systematically <u>assesses</u> the efficiency and <u>effectiveness of occupational therapy services</u> and designs and implements appropriate processes to support quality service delivery'. <i>Indirect services - Standard VI: Research</i> 'is <u>informed about new developments</u> within the profession by <u>regularly reading material</u> relevant to the area of practice.' ' <u>applies research principles during direct and indirect service delivery</u> and documents outcomes'. ' <u>evaluates the effect of occupational therapy service delivery</u> '.
Code of Ethics and Professional Conduct (Occupational Therapy Association of South Africa, 2005)	<i>Section D - Responsibility towards the self and the profession</i> 'Occupational therapy personnel shall achieve and continuously maintain high standards of competence and <u>be aware of current trends</u> and legislation <u>or developments affecting their practice</u> '.

¹² Part of a clinical governance framework to facilitate accountability for the quality of services. Guidelines for other parts of this framework, of which EBP is one, have yet to be developed (Professional Board for Occupational Therapy and Medical Orthotics/Prosthetics, 2004).

¹³ Describes 'appropriate conduct for OTs' and is used by member associations, such as OTASA, to develop a detailed code of ethics to meet the specific needs of a country (World Federation of Occupational Therapists, 2004).

¹⁴ Provides guidelines for appropriate professional values and standards considered to be 'fundamental to the maintenance of good professional practice' (Occupational Therapy Association of South Africa, 2005).

At an international level, the WFOT Code of Ethics explicitly states that practice should be based on 'best available evidence' while nationally the HPCSA Minimum Standards of Practice document encompasses the EBP process in its references to applying research findings, assessing effectiveness, reading current professional literature, and evaluating and documenting treatment outcomes. The OTASA Code of Ethics and Professional Conduct has taken a more covert position in stating that occupational therapists should 'be aware of current trends and legal issues or developments affecting their practice'. These documents are aligned with the views of Coster (2005) and Holm (2000) that EBP is an essential part of the ethical responsibility of occupational therapists.

Further impetus for EBP is the introduction of the continuing professional development (CPD) policy by the HPCSA In January 2007. This policy 'assures continued competency by establishing, maintaining, and updating professional performance, knowledge, and skills' (Health Professions Council of South Africa, undated). To retain their registration with the HPCSA, health professionals are required to accumulate a prescribed number of CPD points annually.

1.5.2 Service demands

Heavy demands are placed on occupational therapists as a result of low patient-to-therapist ratios and the ongoing transformation of public health services. In addition to overcoming health system weaknesses and implementing new systems, the infrastructure¹⁵ to facilitate EBP is not available. These challenges require creative strategies to implement EBP.

¹⁵ Infrastructural requirements include easy and convenient access to computers, the internet and academic databases, and a culture that promotes evidence-based practice through providing time in work hours for therapists to access and appraise evidence and fostering a culture of multi-disciplinary care that is evidence-based.

1.5.3 Availability and access to resources for EBP

Many therapists in the public service do not have access to academic libraries, computers or internet facilities at work, particularly in rural areas (Duncan and Alsop, 2006). The Department of Health (DOH) has instituted a roll-out plan to provide all departments with computer facilities but this is progressing slowly and internet access is currently only available to the director/head of the relevant department. Conversely, therapists in some State hospitals, particularly tertiary teaching hospitals, have access to sophisticated technology, academic library facilities and computers and the internet (Joubert, 2005). Scarcity of resources to facilitate and support EBP in the public sector is a barrier to EBP. Elsenberg (2002) stated that both efficiency (best use of scarce resources) and equity (allocating resources to those with the greatest needs) must govern the way in which research findings are used in practice. Considering the health burden in SA, it is crucial that occupational therapists use scarce resources optimally by ensuring their services are effective. Therefore, research evidence needs to be applied (and produced) to inform practice.

1.5.4 Availability, relevance and quality of research

Accessing relevant research to inform practice in resource-constrained countries can be challenging. A study found that most medical journals favoured publishing articles pertaining to health priorities of the developed world (Horton, 2003). Furthermore, Langer *et al* (2004) discovered that most medical and public health publications originated in America and Western Europe with a low proportion emanating from developing countries. This results in issues that are vitally important for research in Africa (and SA) being neglected or ignored (Joubert, 2005). Consequently, health practitioners need to have knowledge both of evidence-based interventions and gaps in evidence and exercise judgment when evidence is lacking (Hofmeyr, 2003).

The lack of credible research has been acknowledged as a major limitation to implementing EBOT internationally (Dirette *et al.*, 2009, Illott, 2004, Rappolt, 2003). The situation in Africa is

even worse because the overwhelming need for services relegates research to the last priority (Crouch, 2001). Low research output has been identified as a weakness of occupational therapy in SA (Joubert, 2005, Watson and Fourie, 2004b). A recent survey confirmed that few occupational therapists in SA are involved in producing research (Pitout, 2010). Even when research is conducted, it is seldom published (Du Toit and Wilkinson, 2009). In addition to low research output, the research that is produced in developing countries is often of poor quality (Langer *et al.*, 2004). Lack of research capacity has been linked with difficulties applying existing knowledge to address health problems (Nchinda, 2002). Therefore, to build research capacity training must involve translating findings from research into local settings (Hoj, 2005, Nchinda, 2002).

Achieving optimal health care is reliant to some extent on a 'rational and responsive research agenda' (Singh, 2004, p 1393). This imperative echoes Nchinda (2002) who emphasised the importance of setting focused research priorities. The Essential National Health Register (ENHR) is a ranked list of priority health problems aimed at addressing specific SA health problems (Singh, 2004). In this register, health priorities are based on a burden of disease approach and rankings reflect the quadruple burden of disease (Lutge *et al.*, 2008). Acknowledging the impact of health system weaknesses on the health of the nation, a second list of research priorities focuses on health systems issues (Lutge *et al.*, 2008). Of relevance is the number of priorities linked to EBP. For example, 'health information systems' is ranked second, while 'quality of care' and 'quality of health delivery and support systems' are ranked fourth and sixth respectively (Lutge *et al.*, 2008). These priorities further affirm the need for the research reported in this thesis. Although the ENHR is in existence, the occupational therapy profession has not yet developed a research plan to create and disseminate the knowledge required for practice in this context. The absence of such a coordinated research strategy results in research being fragmented and poorly disseminated (Pitout, 2010). Poor dissemination of research findings will impede the growth of the profession and result in it being poorly recognised (Du Toit and Wilkinson, 2009).

1.5.5 Training opportunities in EBP

The lack of development of EBOT in SA may be partly due to a lack of knowledge and skill and limited resources to support it. As noted earlier, in 2004 few occupational therapy curricula included EBP and no occupational therapy-specific training was available for qualified therapists. It was likely that few occupational therapists had been trained in EBP with a resultant lack of skills for implementing the steps in the EBP process. Raising awareness of the drivers for EBP and building capacity in EBP skills would allow occupational therapists to develop appropriate ways of applying it in the SA health care context.

1.5.6 Summary of facilitators and barriers to EBOT

An understanding of the specific barriers and facilitators to EBP in a particular context is essential for informing strategies aimed at its implementation. The potential facilitators and barriers to EBOT in SA (identified in this chapter) were categorised according to the areas described by Haines *et al* (2004) and are summarised in Table 2.

Table 2: Facilitators and barriers to EBOT in SA

	Facilitators	Barriers
Professional environment	<ul style="list-style-type: none"> EBP is a professional and ethical obligation (Coster, 2005, Health Professions Council of South Africa, n.d., Holm, 2000, Occupational Therapy Association of South Africa, 2005, World Federation of Occupational Therapists, 2004) Compulsory CPD policy creates opportunities for implementing activities related to EBP (Health Professions Council of South Africa, undated) Increasing number of EBOT resources, e.g. critically appraised papers, internet sites and books (Bennett <i>et al.</i>, 2006) Increasing number of occupational therapy systematic reviews and research articles (Illott <i>et al.</i>, 2006) Changes in the conceptualisation of occupational therapy practice (Galvaan, 2006, Watson, 2004) requires different evidence and may act as a driver for discovering suitable ways of applying EBP 	<ul style="list-style-type: none"> Poor occupational therapy research outputs (Crouch, 2001, Du Toit and Wilkinson, 2009, Joubert, 2005, Pitout, 2010, Watson and Fourie, 2004b) Poor evidence-based culture among SA occupational therapists (Fourie, 2004) Lack of coordinated occupational therapy research priorities for SA (Pitout, 2010) Relevance of research produced in well-resourced countries questioned (Joubert, 2005) Gaps in available research relevant to occupational therapy practice globally (Bennett <i>et al.</i>, 2007, von Zweck, 2004) and particularly for the health conditions and type of practice in SA Different types of occupational therapy practice calls for different research designs (Bennett and Bennett, 2000, Humphris, 2005, Tickle-Degnen and Bedell, 2003) – emphasis has been on randomised controlled trials (RCTs) and systematic reviews of RCTs (Taylor and Savin-Baden, 2001)
Healthcare system	<ul style="list-style-type: none"> Context provides opportunities for innovation due to changes in the health system (Garner <i>et al.</i>, 1998) Development of a national list of health research priorities (Lutge <i>et al.</i>, 2008, Schneider, 2001, Singh, 2004) Planned roll-out of computers and internet access in public health facilities Demands for changes in practice resulting from the changes in the health system (Duncan <i>et al.</i>, 2005, Watson, 2004) Recognition of the role of EBP in improving healthcare may act as an incentive for its implementation (Dans and Dans, 2000a, Dans <i>et al.</i>, 2004, McMichael <i>et al.</i>, 2005, Nchinda, 2002, Volmink <i>et al.</i>, 2001) 	<ul style="list-style-type: none"> Inequitable resource allocation between public and private health sectors, across provinces and urban/rural areas (Harrison, 2009) Weaknesses in health systems management (Harrison, 2009) Poor infrastructure to support EBP (Harrison, 2009) Limited resources in public health services (Harrison, 2009) Staff shortages (Lehrman, 2008) Low therapist-to-population ratio (Watson and Fourie, 2004a, World Federation of Occupational Therapists, 2010) Mismatches between evolving occupational therapy practice paradigms and contextual drivers for primary health care¹⁶ Failure to provide access to appropriate research information (Duncan and Alsop, 2006, Joubert, 2005)
Practice environment	<ul style="list-style-type: none"> Larger facilities have access to the internet and academic libraries (Joubert, 2005) 	<ul style="list-style-type: none"> High workloads and limited time for EBP (Joubert, 2005) Access to the internet, electronic database and academic libraries not provided (Duncan and Alsop, 2006)
Educational environment	<ul style="list-style-type: none"> CPD policy provides opportunities to offer EBP training (Fourie, 2004) 	<ul style="list-style-type: none"> Limited EBP training opportunities (based on my own investigation)
Practitioner	<ul style="list-style-type: none"> Requirement to accumulate CPD points in order to remain registered (Health Professions Council of South Africa, undated) acts as an incentive for EBP 	<ul style="list-style-type: none"> Limited training opportunities in EBP therefore knowledge and skills likely to be low Lack of access to the internet, electronic database and academic libraries (Duncan and Alsop, 2006)

¹⁶ Due to the quadruple burden of disease, services required are largely biomedically orientated

1.6 Thesis structure

Terminology used in this thesis is explained, the research questions, aims and objectives, presented and an outline provided of the chapters in the remainder of the thesis.

1.6.1 Explanation of terminology

Based on its per capita gross national income (GNI), SA is classified as an 'upper-middle income' economy (The World Bank Group, 2010a), but this classification fails to reflect the vast disparities evident across the different sectors of society. The population distribution by age and gender represents that of a developing rather than an industrialised¹⁷ country with a relatively large percentage of children aged 14 years or younger and a low percentage of people of 65 years or older (Statistics South Africa, 2005). As resource issues impact on the delivery of quality health care in the public health system, the term 'resource-constrained' rather than 'upper-middle income' country is used throughout this thesis to describe SA.

The studies in this thesis are situated within a biomedical orientation to practice in the health sector rather than a development orientation straddling different service sectors. Evidence-based practice is viewed as one way of contributing to current initiatives to improve the quality of services in the public sector (Department of Health, 2008). Exploring the implementation of EBP within the health sector also increased the likelihood of finding relevant and appropriate research for practice because of the greater availability of research supporting biomedically-orientated occupational therapy practice. For this reason, the language used in this thesis is purposely related to health as reflected in the use of the term 'patients' rather than 'clients'. This orientation is also reflected in terms such as 'treatment' and 'clinical'. As the type of research design used in EBP depends on the questions being asked, 'evidence' was conceptualised to incorporate all forms of research design (Bennett and Bennett, 2000, Herbert

¹⁷ A previous World Bank's classification listed countries as 'developing' or 'industrial' (The World Bank Group, 2010a).

et al., 2005, Taylor, 2007) rather than purely quantitative designs. However, the emphasis of the educational intervention in Chapter 8 was on evidence supporting effective interventions.

Several terms are used in the literature 'to describe the concept of moving knowledge into action' (Graham *et al.*, 2006, p 13). Different terms are used by different disciplines (Estabrooks *et al.*, 2006) and the lack of consistent definitions has resulted in them being used interchangeably (Graham *et al.*, 2006). The most commonly used terms include knowledge translation, knowledge transfer, knowledge exchange, research utilisation, implementation, diffusion and dissemination (Estabrooks *et al.*, 2006, Graham *et al.*, 2006). 'Knowledge transfer' was considered most congruent with the rationale for the thesis which was to share information and develop knowledge and skills for implementing EBP (Graham *et al.*, 2006). 'Knowledge translation' was initially deemed appropriate for the interactive intervention in chapter 8, but relates more to interventions addressing specific knowledge to practice gaps while education is considered a transfer strategy (Graham *et al.*, 2006). The terms 'knowledge', 'skills', 'attitudes' and 'behaviour' are used to capture the outcomes of interest and are defined in the Glossary of terms.

1.6.2 Research questions, aims and objectives

The paucity of publications on EBP in the SA occupational therapy literature suggests a lack of engagement with this topic. To identify the need for appropriate action, information about occupational therapists' knowledge, attitudes, and current use of EBP was required. The first priority was to gather this information. Given the limited training opportunities, knowledge and skills were assumed to be low suggesting the need for some kind of intervention. The second part of the research therefore focussed on identifying the most suitable intervention for improving knowledge, attitudes and behaviour and testing its effectiveness in the SA context.

The research questions are:

1. What perceptions, skills and knowledge do occupational therapists in SA have about EBP, to what extent are they applying it, and to which sources of information do they have access?
2. What type of intervention is most suited to the needs of occupational therapists in SA and how effective is it for increasing knowledge, attitudes and behaviour regarding EBP?

The aims are presented in Table 3 with the objectives and rationale for each.

University of Cape Town

Table 3: Aims, objectives and rationale for the different studies in the thesis

Aim	Study no.	Objective	Rationale
To determine the perceptions, skills and application of EBP in a representative sample of SA occupational therapists, and to ascertain whether they had adequate access to information sources required for EBP	1	<ol style="list-style-type: none"> 1. Determine whether demographic and practice profile influenced EBP behaviour 2. Determine whether respondents had adequate access to EBP information sources by investigating what was currently available 3. Establish perceptions of EBP and determine whether these influenced behaviour 4. Ascertain the proportion of respondents with EBP training and determine training needs and preferences 5. Determine confidence in EBP skills 6. Establish success in finding and applying EBP 7. Generate a profile of characteristics of respondents who were successful in finding and applying evidence 	Several studies investigating the knowledge, attitudes and application of EBP by occupational therapists have been conducted in upper-income countries (Australia, Canada, the US and the UK). It cannot be assumed that the findings from these studies can be generalised to resource-constrained countries. To inform action plans for implementing EBP, baseline data was required. This would also contribute to the occupational therapy literature.
To identify, modify or develop instruments to evaluate EBP knowledge, attitudes and behaviour, and to establish their psychometric properties	2	<ol style="list-style-type: none"> 1. Establish face validity 2. Determine reliability, namely internal consistency, inter-rater and test-retest reliability 3. Establish internal consistency 4. Calculate responsiveness of numerical instruments 	As a RCT had not previously been done in this context, a systematic review was conducted to identify instruments with sufficiently robust properties for evaluating the trial outcomes. While the plan was to use existing instruments, it was acknowledged that the study context might require some modifications to ensure the instruments' appropriateness and applicability.
To investigate the effectiveness of two educational interventions (interactive or didactic) in increasing EBP knowledge, attitudes and behaviour in a group of occupational therapists in the Western Cape	3	<ol style="list-style-type: none"> 1. In a sample of occupational therapists in the Western Cape to: <ul style="list-style-type: none"> • Establish baseline EBP knowledge, skills and behaviour; • Establish readiness to implement EBP; • Determine the sources of information available to support EBP; • Establish the extent to which current practice was based on evidence. 2. To determine whether there were any significant changes between baseline and 12 weeks and to compare the extent of change between the two groups in: <ul style="list-style-type: none"> • EBP knowledge, attitudes and behaviour; • Readiness to implement EBP; • The extent to which current practice was based on evidence. 3. To establish the impact of the intervention at 12 weeks by determining if there were any significant differences between the groups in: <ul style="list-style-type: none"> • EBP knowledge, attitudes and behaviour; • Readiness to implement EBP; • The extent to which current practice was based on evidence; • Perceived barriers and supports to EBP. 4. To determine the feasibility of conducting a high quality RCT in a group of occupational therapists in the public health service of the Western Cape Province, SA. 	In the absence of published RCTs to test the effectiveness of educational interventions to improve EBP knowledge, attitudes and behaviour in occupational therapists in a resource-constrained context, a pilot RCT was conducted. The educational intervention was informed by systematic reviews found in <i>The Cochrane Library</i> . Examination of these reviews suggested that interactive educational interventions were most effective for changing behaviour. There was inconclusive evidence about the effectiveness of educational meetings compared with other interventions but the reviewers surmised they were likely to be similar to interventions such as educational outreach and audit and feedback. As no RCTs had been conducted with this population it was not known whether a trial was feasible in this setting. To ensure the findings could be applied in 'usual' settings where occupational therapists in the public health service worked, a pragmatic trial was conducted because of the flexibility inherent in this design to accommodate different service sites and participants. The trial would inform the need for a larger, well-powered study.

1.6.3 Outline of chapters

Chapter two presents a brief history of the origins and development of EBP with an emphasis on its implementation within occupational therapy. **Chapter 3** is a systematic review of occupational therapy studies investigating EBP knowledge, skills, attitudes or behaviour. This review informed the selection of the data collection instrument used for a national SA occupational therapy survey. **Chapter 4** reports on **Study 1**, a survey conducted to determine EBP perceptions, skills, application and access to information sources in a representative sample of SA occupational therapists. The survey findings were used to determine training needs and to inform the content of the intervention reported in chapter 8. **Chapter 5** outlines a systematic review of instruments measuring EBP knowledge, attitudes and behaviour used in studies of occupational therapists. The review was used to identify suitable instruments to evaluate the outcomes of the RCT reported in Chapter 8. **Chapter 6 (Study 2)** describes the process of modifying and testing the outcome instruments for the RCT to determine their psychometric properties. **Chapter 7** reviews the literature on RCTs with particular attention to determining the quality of trials and evaluating risk of bias. **Chapter 8 (Study 3)** presents a RCT investigating the effectiveness of an interactive educational intervention compared with a didactic intervention in increasing EBP knowledge, attitudes and behaviour in a group of occupational therapists in the public health service of the Western Cape Province of SA. **Chapter 9** concludes the thesis by summarising the main findings and recommendations arising from the three studies.

1.7 Summary

This chapter acknowledged the expectation for health professionals to base their practice on research evidence. It also exposed the implementation of EBP as an elusive goal. The call to promote EBP to strengthen health systems in developing countries and an international drive to facilitate the implementation of EBP in occupational therapy provided the impetus for examining appropriate ways in which this could be done in a resource-constrained context. Adding further weight to the

need for this research was the limited activity with regard to EBP in occupational therapy in SA compared to countries such as Australia, Canada, the UK and the US.

To contextualise the study, information pertaining to health status in SA and issues related to the SA health system and the occupational therapy profession was presented. Potential facilitators and hindrances to EBOT were identified and discussed with reference to the literature. Acknowledging the differences between the SA healthcare context, with the overwhelming health challenges arising from the quadruple burden of disease and the ensuing demands on service delivery, and that of developed countries in which EBOT was being implemented, suggested the need for research to discover effective ways of preparing occupational therapists to deliver evidence-based services. Considering the lack of publications on EBP by occupational therapists in resource-constrained countries, the research would contribute a different perspective to the body of knowledge available to promote and support the development of EBOT (Bennett *et al.*, 2006, Coster, 2005, Illott *et al.*, 2006). The terminology used in this thesis was explained and the research questions, aims and objectives presented. Lastly, the structure for each chapter of the thesis was outlined. The literature reviewed to provide the background information to this thesis is presented in Chapter 2.

Chapter 2: Literature review - The development of EBP and its implementation in occupational therapy

2.1 About this chapter

This chapter is a systematic review of the background literature for this thesis. The chapter is organised into three main sections. The first section traces the origins of evidence-based medicine (EBM) as the forerunner of evidence-based practice (EBP), and discusses its philosophical assumptions about what constitutes knowledge. The second section explores the philosophy of occupational therapy and its impact on the way EBP is applied. The third section examines the complementarities between the philosophy behind EBP and those of occupational therapy, with a view to identifying potential disjuncture between the two, and how EBP needs to be applied for occupational therapy to remain true to its philosophy.

Literature relevant to the three studies contained in this thesis is reviewed in the chapter preceding each study.

2.2 Method of conducting the literature search

This literature review used a systematic approach. This entailed consulting a librarian to determine the most effective way of conducting the searches to ensure that relevant literature was accessed, selecting suitable articles for the review and appraising these articles. Details for each step of this process are described in detail.

2.2.1 Criteria for considering studies for this review

Selection criteria were developed to identify relevant articles. For the first section on the history and development of EBM, articles had to provide information about the origin, history or the philosophical foundations of EBM. Articles for the second section on the adoption of EBP by occupational therapy had to discuss the history of EBP within occupational therapy, what EBP can offer occupational therapy or the

implications of adopting EBP. The third section required articles to explore the fit between EBP and occupational therapy in terms of its philosophy or the challenges of implementing EBP in occupational therapy.

2.2.2 Search methods

Pubmed¹⁸ and CINAHL¹⁹ (via EBSCOhost)²⁰ were selected as the most appropriate databases for locating articles on the topics outlined for this literature review. The search strategies are available in Appendix I.

2.2.3 Data collection and analysis

Citations for identified articles were printed and duplicates removed manually. The review author screened the titles and abstracts of all identified articles and removed studies that were obviously not relevant. Full text reports of the remaining studies were retrieved and inclusion criteria applied to select relevant articles. Five full text reports were unavailable in SA so were excluded.

2.3 Search results

Results for each search are shown using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow diagram (Moher *et al.*, 2009). Articles unavailable in SA were excluded due to the high costs in obtaining them.

¹⁸ The US National Library of Medicine database which contains 'citations for biomedical literature from Medline, life science journals and online books' (Pubmed home).

¹⁹ CINAHL is a database that indexes 'journals from nursing and allied health' (Nursing and allied health literature CINAHL via EBSCOhost).

²⁰ EBSCOhost houses a wide range of databases, one of which is CINAHL. It allows several databases to be selected and searched simultaneously (EBSCO Publishing. Provider of EBSCOhost).

2.3.1 Search 1: Origin and development of EBP

The selection process for search 1 is shown in Figure 1.

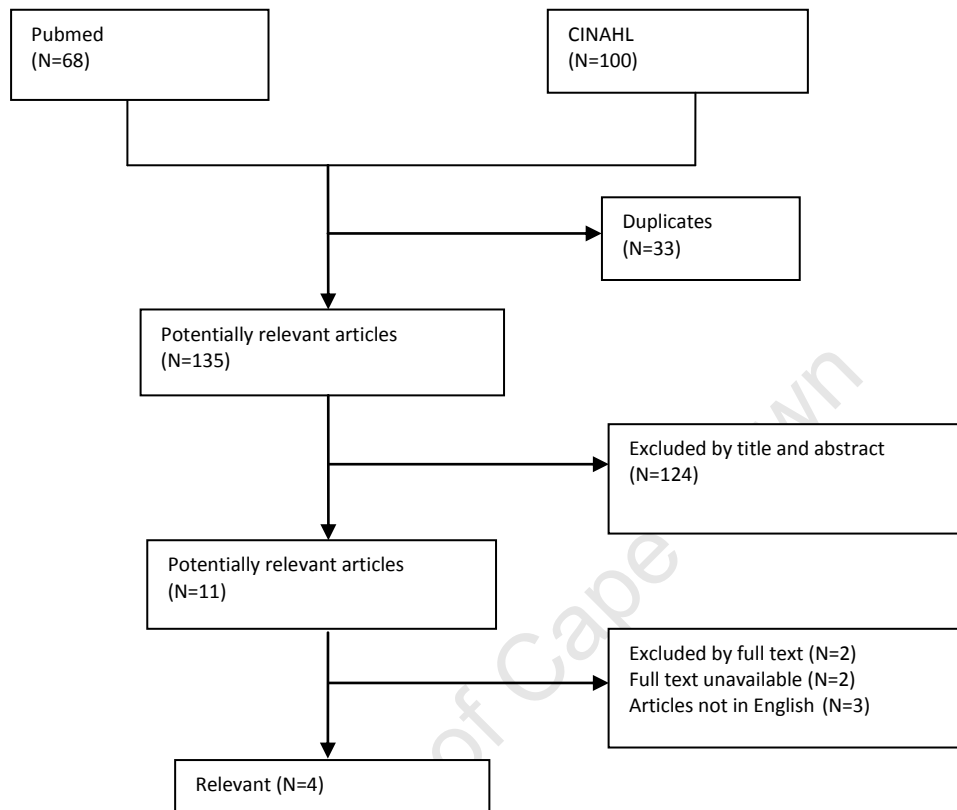


Figure 1: Flow chart for article selection for search 1

2.3.2 Search 2: Philosophy of occupational therapy

The process of selecting appropriate articles is shown in Figure 2.

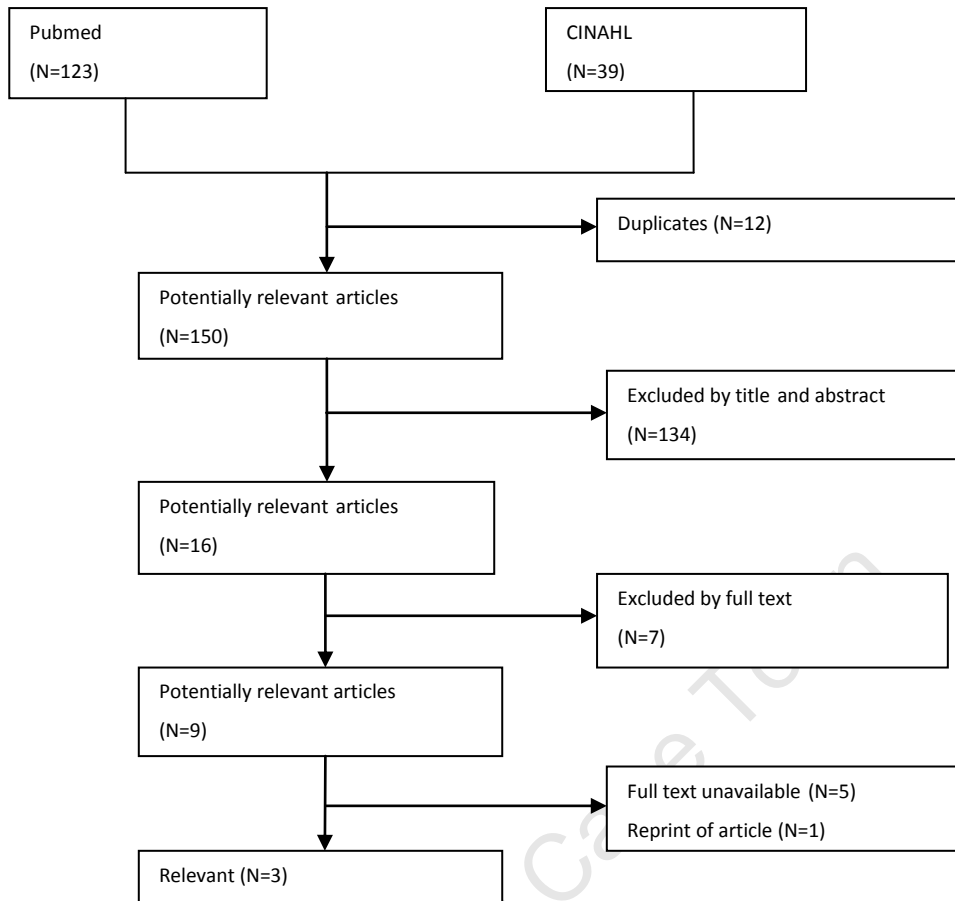


Figure 2: Flow diagram for article selection for search 2

2.3.3 Search 3: Adoption of EBP by occupational therapy

The selection process for search 3 is shown in Figure 3.

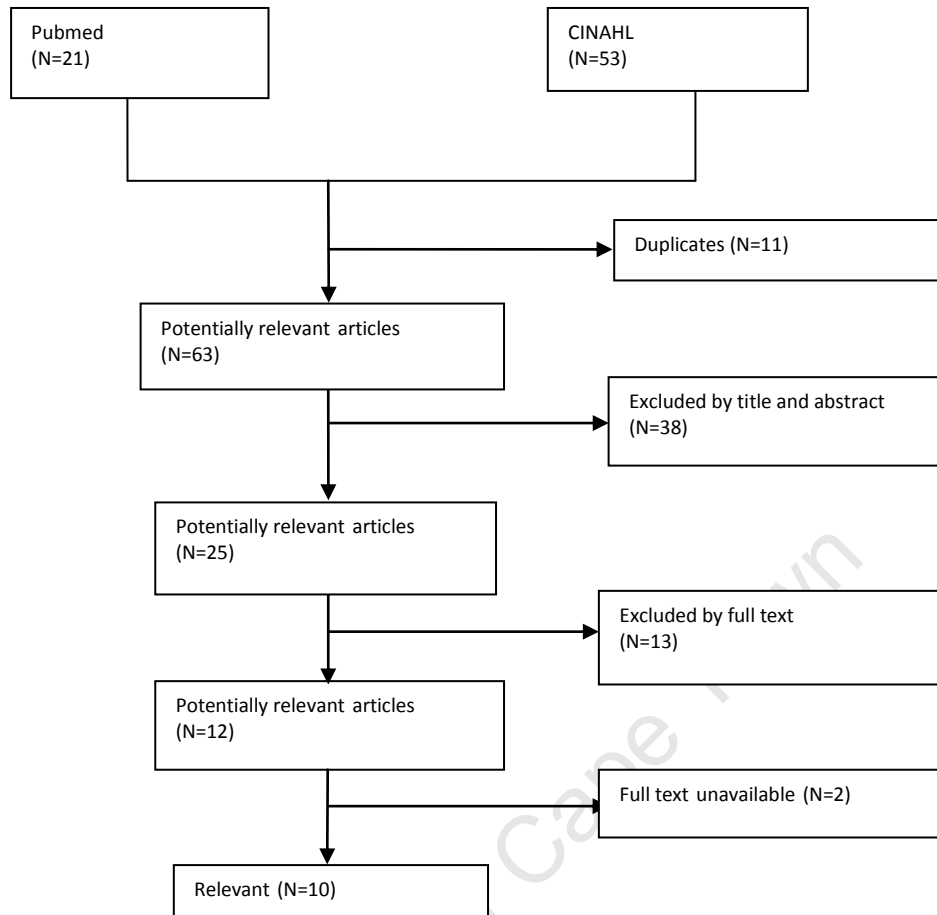


Figure 3: Flow chart for article selection for search 3

2.4 Results and Discussion

The results for each section of this review will be presented and discussed separately.

2.4.1 Philosophical foundations of evidence-based practice

The term 'EBM' first appeared in the literature in 1992 (Aravind and Chung, 2010) but its origins have been traced back to ancient times (Claridge and Fabian, 2005). Over the centuries it has evolved considerably with the impetus for 'modern day' EBM appearing to have arisen from concerns about practice variation, greater variety in diagnostic and therapeutic options, an increased culture of shared decision-making with patients and an appreciation of the complexity involved in

decision-making (Elstein, 2004). While most attention has been paid to the work of Archie Cochrane and David Sackett, its principles were already being applied by Florence Nightingale over a century earlier (Aravind and Chung, 2010).

Archie Cochrane, a British epidemiologist, is credited as the first person to stress the importance of RCTs for determining the effectiveness of interventions (Claridge and Fabian, 2005). Cochrane's rationale was based on the premise that as healthcare resources are limited they should be allocated to interventions shown to be the most beneficial. His promotion of RCTs to inform decision-making has formed the foundation of the EBM movement (Aravind and Chung, 2010). His work led to the establishment of the Cochrane Centre in the UK, now known as The Cochrane Collaboration (Claridge and Fabian, 2005, Herbert *et al.*, 2005).

The Cochrane Collaboration was formed in 1993 to address the gap between knowledge generated through research and the application of this knowledge in practice (Pollock, 1998). The Collaboration is an international non-profit organisation providing access to up-to-date information about the effects of healthcare interventions globally (Claridge and Fabian, 2005, Palmer and Brice, 2005). The Collaboration is dedicated to the systematic process of locating, appraising, synthesising and disseminating information relating primarily to RCTs about healthcare interventions (Claridge and Fabian, 2005, Hayes and McGrath, 1998, Palmer and Brice, 2005). The Collaboration also generates high quality systematic reviews of RCTs produced by volunteer health professionals who work in one of a number of collaborative review groups (Claridge and Fabian, 2005, Taylor, 2007). To ensure the relevance of the systematic reviews, a variety of people, including lay people and health professionals from all disciplines, are encouraged to participate (Hayes and McGrath, 1998).

David Sackett, through his involvement in developing a new medical curriculum at McMaster University in Canada, has similarly had a profound impact on the development of EBM and was the first person to define it (Claridge and Fabian,

2005). This early definition recognised the involvement of ‘current best evidence’ to make decisions about health care while being mindful of patient preferences (Sackett *et al.*, 1996). From this brief history, it is evident that EBM is strongly positioned in science and RCTs (Elstein, 2004). Cresswell (2003) stated that strategies of inquiry are based on assumptions about what constitutes knowledge and how it becomes known. To understand ‘the implications of how EBP is interpreted and understood’ the inherent assumptions that informed the development of EBP should be scrutinised (Whiteford, 2005). Therefore, the assumptions held by ‘science’ as a strategy of inquiry must be examined. Science, or experimental research, is based on a positivist, empirical approach that regards knowledge as ‘part of a reality that is separate and independent from individuals and that is verifiable through the scientific method’ (DePoy and Gitlin, 2005, p 24). Knowledge is logical and is generated objectively through unbiased measurement of the phenomenon under investigation (Cresswell, 2003, DePoy and Gitlin, 2005, Higgs and Smith, 2006). Furthermore, positivism is also reductionist in that phenomena can be broken down into smaller parts that can be tested (Cresswell, 2003, DePoy and Gitlin, 2005).

2.4.2 The philosophy of occupational therapy

Early pioneers of the occupational therapy profession recognised the value of occupation in achieving health and well-being (Meyer, 1977, West, 1968). The focus on achieving health and participation through engagement in occupations is unique to occupational therapy (American Occupational Therapy Association, 2008). This focus gives rise to the core beliefs of the profession namely ‘the positive relationship between occupation and health and a view of people as occupational beings’ (American Occupational Therapy Association, 2008, p 625). These beliefs require the client-therapist relationship to a collaborative one in which therapists bring their knowledge about the contribution of occupation to health and well-being, while ‘clients bring their life experiences and their hopes and dreams for the future’ (American Occupational Therapy Association, 2008, p 647). A spectrum of practice ranging from a biomedical understanding of health to one that is concerned with

participation and social justice (Whiteford and Wright-St Clair, 2005) requires evidence that spans both medical and social sciences.

2.4.3 Implementing EBP in Occupational Therapy

Despite positivity towards EBP, the occupational therapy profession has experienced practical and conceptual challenges to its implementation (Bennett *et al.*, 2006). While the basic principles of EBM have been acknowledged to apply to occupational therapy (Egan *et al.*, 1998), several articles in the occupational therapy literature have identified fundamental differences in the philosophy and values of occupational therapy and medicine and highlighted the differences in applying EBP in occupational therapy (Egan *et al.*, 1998, Ottenbacher *et al.*, 2002). Warnings have been given about accepting EBP without considering the potential impacts it may have on the profession (Ballinger and Wiles, 2001, Ducret and Mareda, 2007) and therapists have been urged to 'be proactive in contributing to the continual evolution of EBP' (Ballinger and Wiles, 2001, p 255). At the heart of this debate is concern that adopting EBP as conceptualised for medicine will result in occupational therapy 'suffer[ing] the unintended consequence of sidelining important dimensions of our practice ... and unintentionally nurturing a deterministic practice, thereby furthering the dominance of biomedical approaches in human health' (Cusick, 2001, p 110).

2.4.3.1 What is regarded as evidence in EBP?

While EBM has made a substantial contribution to making research information available to healthcare practitioners and facilitating the interpretation of study findings, its failure to incorporate evidence generated through research methodologies other than experimental studies has been widely criticised (Ballinger and Wiles, 2001, Cusick, 2001, Hyde, 2004, Joubert, 2005, Taylor and Savin-Baden, 2001, Whiteford, 2005, Wyer and Silva, 2009). According to Elstein (2004, p S187) by 'minimizing the role of subjective beliefs and values, and by [making] clinical decision-making appear relatively effortless' EBM has been made attractive. The predominant focus on intervention has resulted in systematic reviews of RCTs being

ranked at the top of the evidence hierarchy (Centre for Evidence-based Medicine, 2011). While Sackett (1997, , 1996) pointed out that EBM was not restricted to RCTs and that the best evidence should be used to answer the clinical question, the examples he provided used research designs founded in positivism.

Kinsella and Whiteford (2009) argued that implicit in the way EBP has been practiced are value judgements about what is considered best evidence. They asserted that the emphasis on quantitative research 'represent[s] a potential threat to the autonomy and integrity of occupational therapy in the future' (Kinsella and Whiteford, 2009, p 255). Over-reliance on 'objective' evidence ascribes greater value to statistics rather than individual narratives which runs counter to the client-centred approach of occupational therapy (Hyde, 2004, Whiteford, 2005). In response to this concern, several occupational therapists have advocated for the profile of qualitative research to be raised (Ballinger and Wiles, 2001, Cusick, 2001, Hyde, 2004, Taylor and Savin-Baden, 2001, Whiteford, 2005). In the view of Hammell (2001) and Whiteford (2005) qualitative research is valuable because it captures information from the client's perspective. Valuing traditional experimental research more highly than other forms of evidence perpetuates the power relationship between researcher and participant and reinforces the experience of alienation and not feeling heard (Hammell, 2001, Joubert, 2005). Conversely, such criticisms of RCTs imply a devaluing of intervention studies (Illott, 2004).

Eva and Paley (2004) disputed such criticisms of quantitative research arguing that numbers provide a different way of understanding just as thick qualitative descriptions do. They disagreed with the notion that quantitative researchers are 'committed to the quantitative paradigm and the implausible philosophical theory that quantification is all there is', concluding instead that both quantitative and qualitative paradigms can provide answers to certain questions and make a contribution to the range of evidence available (Eva and Paley, 2004, p 48). Considering the complexity of occupational therapy interventions, Lee and Miller (2003) advocated for the inclusion of a diverse range of evidence into the decision-

making process. Others have similarly called for equal valuing of all research paradigms and designs acknowledging their potential for informing occupational therapy practice (Lee and Miller, 2003, Tickle-Degnen and Bedell, 2003). Such a repertoire of potential sources of knowledge has been suggested as being more compatible with the beliefs and values of the occupational therapy profession (Blair and Robertson, 2005). Taking this approach to EBP would ensure that the research needed for practice would be conducted and that the evidence for developing and sustaining occupational therapy services would be available (von Zweck, 2004).

Reagon *et al* (2008) argued for the acceptance of other forms of evidence, such as client values, clinical experience and contextual factors, in addition to research evidence. This is similar to the concept of 'wise practice' which has been suggested as more congruent with the way in which occupational therapists practice (Kinsella and Whiteford, 2009). This kind of practice has been perceived as encompassing 'a synthesis of evidence derived from different sources and experience, as applied within a particular context, and with a particular person or persons' (Kinsella and Whiteford, 2009, p 255). While the importance of the client's perspective, professional expertise and context is not negated, research evidence should be used in combination with these factors to arrive at the best possible decisions about client care (Hoffmann *et al.*, 2010).

The value of both qualitative and quantitative research methodologies has been well supported in the occupational therapy literature with the emphasis being on selecting the most relevant research rather than its level (Hyde, 2004, Taylor and Savin-Baden, 2001, Walker, 2003, Whiteford, 2005). To this end, alternative hierarchies for different types of questions are available (Bennett and Bennett, 2000, Bluhm, 2005, Evans, 2003) including those for qualitative research (Daly *et al.*, 2007). Tickle-Degnen and Bedell (2003, p 234) took the position that the hierarchy of evidence should not be used to the exclusion of all other 'relevant, valid and available research evidence for clinical decision making'. Instead they proposed a heterarchy of evidence which provides methods of evaluating information from

different types of research studies to gather information to answer a variety of questions that may be asked by a client or therapist. Along similar lines, Humphris (2005) proposed a continuum of evidence and Whiteford (2005) expanded this notion by adding knowledge and expertise to thereby allocating equal value to all types of evidence. Before the advent of EBP, health professionals were more reliant on expertise and client information (Hoffmann *et al.*, 2010), both of which may be subject to bias. Evidence-based practice has afforded a greater appreciation of the role of research in informing the best possible intervention for clients. Therefore, EBP empowers both clients and practitioners to make informed decisions based on high-quality evidence rather than being solely reliant on the practitioner's experience which may be subject to bias.

The lack of a full explanation on how to integrate information from research studies into clinical practice prompted Wyer and Silva (2009) to suggest a more appropriate model of EBM as one in which shared decision-making was accorded more importance with external evidence playing a subsidiary, albeit important role (Wyer and Silva, 2009). While this view of EBP may be consistent with the client-centred approach of occupational therapy (Egan *et al.*, 1998, Taylor and Savin-Baden, 2001), EBP was developed in response to the concern that health practitioners were conscientious about obtaining information from patients and using professional expertise but less so in using research to inform clinical decision-making (Hoffmann *et al.*, 2010). To ensure that clients are given the best possible treatment, evidence must be given a prominent position but should be used in conjunction with clients perspectives, contextual factors and professional expertise (Hoffmann *et al.*, 2010). In this thesis, 'evidence' refers specifically to research, which should be appropriate for the question being asked, and may therefore incorporate different study designs across both quantitative and qualitative paradigms. As described by Hoffmann *et al* (2010), this evidence should not be used in isolation but should be considered together with client input and professional expertise within a specific context.

2.4.3.2 Client-centred practice, context and EBP

A potential lack of congruence between EBP (with its reliance on quantitative evidence) and the philosophical roots of client-centred occupational therapy practice has been raised in several articles (Ballinger and Wiles, 2001, Blair and Robertson, 2005, Ducret and Mareda, 2007, Hammell, 2001, Lee and Miller, 2003). The commitment of occupational therapists to client-therapist collaboration has resulted in some disquiet about the possibility that EBP could 'result in non-empathetic, depersonalized, mechanistic intervention' (Cameron, 2009, p 54). The importance of the client's perspective in EBP has been emphasised by several authors (Cameron, 2009, Hoffmann *et al.*, 2010). Additionally, as occupational therapy intervention occurs in a specific context, EBP must acknowledge these contextual factors (Lee and Miller, 2003). Consequently, the client's perspective and understanding of the context of the intervention needs to be considered together with research evidence to ensure that the best course of action is chosen (Cameron, 2009). This includes the cultural context within which occupational therapy interventions are provided (Ballinger and Wiles, 2001). The importance of context in EBP has been affirmed by Hoffmann *et al* (2010) who included it as a fourth component in their definition of EBP. Client-centred EBOT requires therapists to incorporate indigenous ways of knowing into their decision-making in order to provide best practice (Nicholson, 2006). This requires therapists to interpret research findings generated in a different context and integrate this with their understanding and experience of indigenous knowledge systems to provide the most effective intervention. Appreciation of the cultural context presents the added challenge of considering how indigenous knowledge may be incorporated as a type of evidence (Joubert, 2005, Nicholson, 2006).

2.4.3.3 Professional expertise

Of additional concern is the implied under-valuing of professional expertise through its ranking at the lowest level on the evidence hierarchy. This has resulted in a call for a greater appreciation of professional experience and client preferences as

outlined by Sackett (Taylor and Savin-Baden, 2001). Law and Baum (1998) pointed out that EBP does not ignore the importance of the client's perspective or the therapist's expertise, but rather places more emphasis on applying research knowledge in practice along with clinical judgement and consideration of client preferences. In occupational therapy, professional experience is recognised and valued as a component of the complex reasoning process that occurs in practice along with knowledge and research evidence (Whiteford, 2005). The consensus statement from an international conference for evidence-based healthcare teachers and developers (Dawes *et al.*, 2005) identified the three elements of clinical decision-making as research evidence, professional knowledge and client opinion. The choice of words 'evidence-based' implies that evidence should be part of the practitioner's knowledge base which should be shared with patients so that an informed decision can be made as reflected in the words 'informed by ... knowledge of those providing care' (Dawes *et al.*, 2005). Understanding evidence as part of the practitioner's professional experience that is used together with input from the client and the therapist's expertise, upholds the core occupational therapy value of a collaborative relationship between therapist and client (American Occupational Therapy Association, 2008). This conceptualisation of EBP is affirmed by the consensus definition that decisions are made by 'those receiving care, informed by the tacit and explicit knowledge of those providing care' (Dawes *et al.*, 2005) (underlining added for emphasis).

2.4.3.4 Evidence-based occupational therapy

Two statements about EBOT, that demonstrate how EBP may be conceptualised to align with the philosophical beliefs underpinning occupational therapy, are presented in Table 4.

Table 4: Statements on evidence-based occupational therapy (EBOT)

'Evidence-based occupational therapy (EBOT) is the 'client-centred enablement of occupation based on client information and a critical review of relevant research, expert consensus and past experience' (Canadian Association of Occupational Therapists (CAOT) <i>et al.</i> , 2009).
'Evidence-based occupational therapy is the systematic consideration of information from multiple sources in clinical decision-making. Information is critiqued for its reliability and relevance to the situation at hand, and applied to practice in conjunction with the client within a client-centred, occupational therapy paradigm. Evidence-based practice also involves the development of occupational therapy's theory base which, in due course, partially informs these decisions. The approach is not a directive one, but rather serves to illuminate information-rich choices for clients and their therapists' (Reagon <i>et al.</i> , 2008, p 435).

Throughout this thesis, the term 'EBOT' will be used to convey the way in which EBP is conceptualised and applied to the practice of occupational therapy.

2.4.3.5 Practical challenges

Despite the obvious benefits of EBOT, numerous barriers to its implementation have been reported (Dubouloz *et al.*, 1999, Lloyd-Smith, 1997, Pain *et al.*, 1996, Upton, 1999c), the most common being lack of time and lack of skill (Bennett *et al.*, 2003b, Curtin and Jaramazovic, 2001, Dysart and Tomlin, 2002, Humphris *et al.*, 2000, McCluskey, 2003b). In response to these challenges, an international EBOT conference was held in 2004 to draw on the collective expertise of occupational therapists globally and to develop action plans to 'improve resources for evidence-based occupational therapy education and practice' (Coster, 2005, p 357). While countries such as the UK have adopted a systemic approach in which 'a whole system of service improvement across primary, secondary and community care' has been implemented in an effort to ensure that evidence is disseminated and applied in practice (Illott, 2003, p 351), not all countries have the infrastructure or resources to support this. A more recent proposal encompasses taking a global approach to implementing EBOT entailing international collaboration to create more evidence, ensure occupational therapy knowledge is freely available and, implementing actions to use existing evidence (Illott *et al.*, 2006).

Considerable effort has been directed towards developing resources to facilitate the implementation of EBOT (Coster, 2005). Books (Law, 2002, Taylor, 2007) and regular

journal columns, such as the evidence-based practice forums in the *American Journal of Occupational Therapy* (AJOT), have been published; websites of resources guiding therapists in the steps of EBP have been developed (McMaster University School of Rehabilitation Science, 2008); and, a web portal containing resources to support the teaching and application of EBOT established (Law and Bennett, 2011). Accepting that time and lack of skill to find and appraise research articles affects many occupational therapy practitioners, several initiatives have focused on providing easy access to relevant evidence. For example, the development of OTseeker, an occupational therapy evidence database, addresses the difficulty of finding and appraising relevant articles (Bennett *et al.*, 2003a, McKenna *et al.*, 2004). Access to critically appraised topics (CATs) and critically appraised papers (CAPs) has been made possible through the OTCATS website (McCluskey, 2003a). Of noteworthy mention are efforts enabling free access to evidence sources to occupational therapists globally through OTseeker and OTCATS. Further discussion of resources available to support EBP have been presented elsewhere (Bennett *et al.*, 2006, Coster, 2005, Lieberman *et al.*, 2003). In addition, many occupational therapy education programmes across the world include EBP in their curricula to ensure graduates are equipped with the skills for EBOT (Bennett *et al.*, 2006).

Difficulty implementing EBP has been attributed partly to the paucity of evidence to inform occupational therapy practice, variations in research that prevent the synthesis of results, and poor methodological rigour (Hayes, 2000, Illott, 2004). Additionally, a substantial amount of occupational therapy research is never published and while it may be available, it is not accessible (Taylor, 1997). In some areas of occupational therapy, evidence is so limited that it precludes EBP. This is often the case with conditions prevalent in resource-constrained countries. Strategies to overcome these barriers include using research from other professions (Hayes, 2000, Lloyd-Smith, 1997); ensuring that clinicians are equipped to interpret and apply research; and, drawing on the tools developed by the Cochrane Collaboration to stay informed about effective interventions (Hayes, 2000).

2.5 Conclusion

The literature reviewed in this chapter identified a potential disjunction between the philosophical underpinnings of EBM and those of occupational therapy. While EBM was originally more reliant on positivist research paradigms, several articles were presented that advocate drawing on the most appropriate research design to inform practice. Although some have criticised EBP for undervaluing the client's perspective and the roles of context and clinical experience, it was acknowledged that in order to provide the best possible intervention to clients, research needs to form the basis for decision-making. Definitions of EBP make it clear that research evidence should be used in combination with clinical expertise, contextual information and client perspectives as all these elements play an important role in the decision-making process.

Despite the willingness of occupational therapists to incorporate evidence into their practice, practical challenges such as lack of time and lack of skills are barriers to its implementation. In response, much effort has been placed on conducting research, disseminating information and developing suitable resources to enable occupational therapists to apply evidence in practice.

Chapter 3: Systematic review of occupational therapists' EBP knowledge, attitudes and behaviour

3.1 Background

Occupational therapists around the world are being encouraged to adopt EBP and much effort has been directed towards research into different aspects of EBP to gather data and understanding about how best to get evidence into occupational therapy practice. The implementation of EBP, however, is largely dependent on occupational therapy practitioners having the knowledge and skills to do so, and along with this, positive attitudes towards it. To plan strategies aimed at getting evidence into practice, information is also needed on the extent to which occupational therapists are using evidence in their practice. While several studies have been done in different countries around the world, to date there has been no systematic review focussed on occupational therapists' knowledge, skills and attitudes towards EBP. Such a review would prove invaluable not only for summarising research conducted in this area, but also for informing the profession about its global readiness to become evidence-based. It would also describe the progress made towards becoming an evidence-based profession by tracking changes over the past decade. This chapter presents a systematic review that synthesises information from studies on occupational therapists' knowledge, skills, attitudes and behaviour with regard to EBP. The review addressed the following questions:

1. What attitudes or perceptions do occupational therapists have about EBP?
2. What is the level of EBP knowledge and/or skills among occupational therapists?
3. To what extent are occupational therapists using EBP?

3.2 Methods

The selection criteria, search methods and methods of collecting and extracting data for the review are described in this section.

3.2.1 Criteria for considering studies for this review

3.2.1.1 Types of studies

Descriptive cross-sectional studies with survey designs or qualitative studies that investigated the review questions were included.

3.2.1.2 Types of participants

Studies had to include qualified occupational therapists. Studies with rehabilitation therapists were included if occupational therapists were specified as participants.

3.2.1.3 Types of outcomes

Studies investigating different aspects related to EBP knowledge, skills, attitudes, and behaviour were included. Studies investigating barriers or enablers to EBP, or use of a specific database, were excluded unless they contained information about knowledge, attitudes or general application of EBP. In a review of several EBP studies, Nabulsi *et al* (2007) found that knowledge and skills were defined in various ways across the studies and incorporated a range of aspects such as knowledge of information sources, skills in accessing information, knowledge and skills in critical appraisal, statistics, knowledge about epidemiology and development of problem-solving and clinical skills. They further concluded that researchers tended to confuse 'knowledge' and 'skill' often using them interchangeably. For the purpose of this review, knowledge was defined as 'the acquisition or awareness of facts, data, information, ideas or principles to which one has access through formal or individual study, research, observation, experience or intuition' (Wojtczak, 2002, p 451) while 'skill' was understood as the application of knowledge (Shaneyfelt *et al.*, 2008). Skill is differentiated from behaviour in that skills are usually applied outside of the practice environment so might encompass practising a search or appraising an article, whereas behaviour relates directly to the actual practice environment. The understanding of the term 'attitudes' related to the affective domain and included

views, perceptions, beliefs and intentions with regard to EBP (Nabulsi *et al.*, 2007). The term 'EBP behaviour' was adopted for the current review to incorporate any aspect pertaining to applying evidence in practice.

3.2.2 Search methods for identifying studies

Seven electronic databases (Africa-wide: NiPAD, CINAHL, Health Source: Nursing/academic edition, MEDLINE, PsycARTICLES, PsycINFO and Pubmed) were selected as being most likely to include articles relevant for the review and were searched from their inception to July 2010²¹. The first six databases were searched simultaneously with EBSCOHost. Details of search terms are available in Appendix I. Reference lists for all relevant articles were checked to identify other relevant articles. No attempt was made to identify unpublished materials.

3.2.3 Data collection and analysis

Citations for articles identified in the searches were imported into *Endnote* and duplicates removed. The PI screened the titles and abstracts of all articles and removed studies that were obviously not relevant. The full text of the remaining studies was retrieved and the inclusion criteria applied to select relevant articles. The full text for five articles was not available in SA so these studies were excluded from the review. Data was extracted from each article using a summary Table.

3.3 Results

A total of 415 potentially relevant citations were identified. After removal of duplicates, there were 333 potentially relevant articles. Articles were screened for eligibility and 29 fulfilled the inclusion criteria. The flow diagram explaining the selection process for the review is shown in Figure 4.

²¹ For the initial study, a search was done in October 2003. This was updated in July 2010 for the purpose of this systematic review.

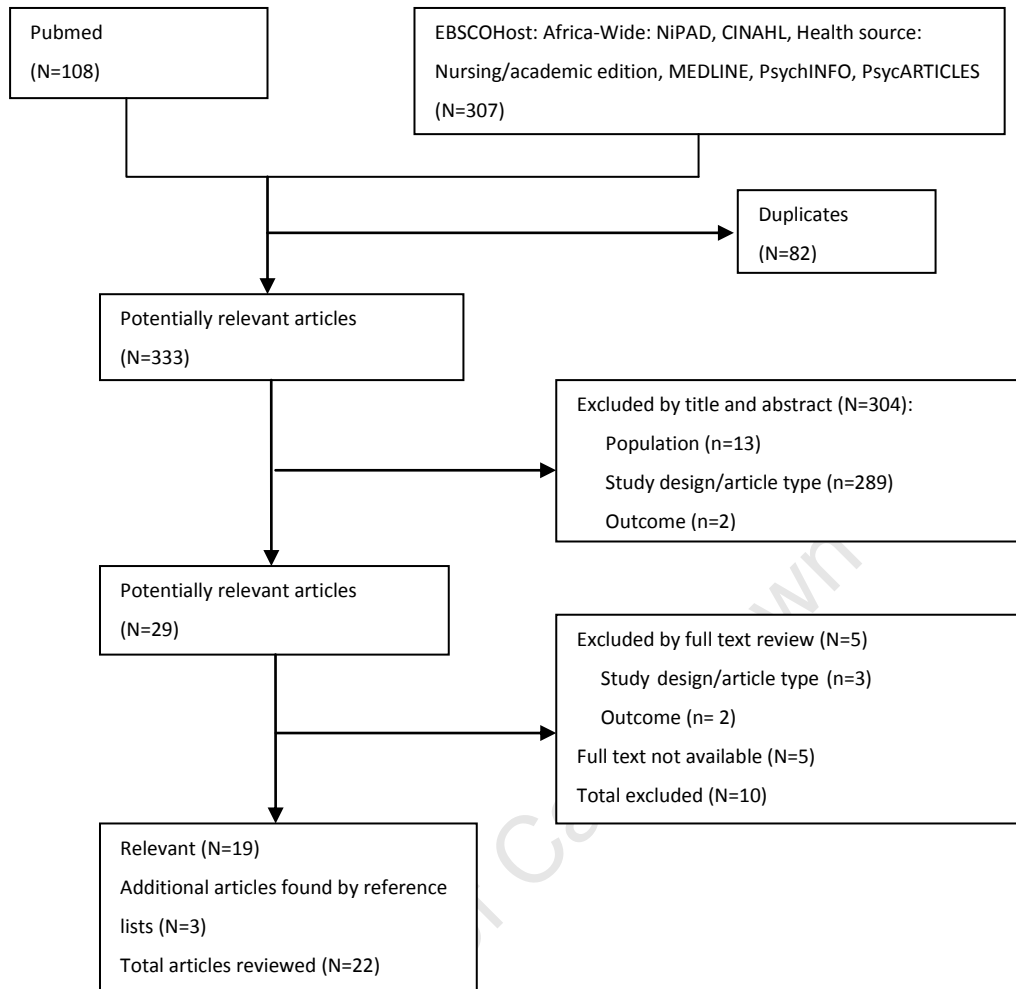


Figure 4: Flow chart of study selection

3.3.1 Description of studies

Of the 22 included studies, 20 used descriptive survey designs. Eighteen of the 20 used postal questionnaires to gather data, while one used an online questionnaire and another asked participants attending a workshop to complete a questionnaire prior to its start. Two studies used qualitative designs, namely grounded theory and action research. Characteristics of included studies are summarised in Table 5. Studies are reported in chronological order according to year of publication. Only outcomes of relevance to this review have been included.

Table 5: Characteristics of studies investigating knowledge, attitudes and research application by occupational therapists

Author (year)	Place	N	Response rate (%)	Participants and settings	Study design (method of data collection)	Data collection period	Outcomes measured	Conclusion
Upton (1999a) ²²	Wales, UK	207	70	38 PDs ²³ 84 OTs ²⁴ 38 SLPs ²⁵ 135 PTs ²⁶ Settings: not provided	Survey (postal questionnaire (Upton and Lewis, 1998, p 451))	April – July 1997	Self-reported knowledge of EBP Self-reported EBP skills Self-reported attitudes to EBP	Knowledge rated low by >50% Technical skills rated lower than personal/interpersonal skills EBP rated as fundamental to practice by 80%
Upton (1999b) ¹	As above	As above	As above	As above	As above	As above	Self-reported application of the 5 steps of EBP Self-reported application of different sources of evidence	Results not reported for each profession. Involved patients in their care most frequently but rarely appraised literature Acted most on evidence from their own practice and least on evidence from the internet
Dubouloz, Egan, Vallerand & von Zweck (1999)	Ottawa-Carleton region, Canada	8	N/A	OTs in rehabilitation centres/ general hospitals (n=5), community-based (n=2) or private practice (n=1)	Grounded theory (individual, semi-structured interviews)	Not reported	Perceptions of EBP Experiences of using EBP	EBP seen as a way of gaining insight and associated with research. All types of research activities perceived as important. Need for further research expertise expressed. Clinical experience viewed highly with scientific literature in second place, consultation with peers and other colleagues third and clients fourth. EBP seen as a possible threat to routine OT practice.
Humphris, Littlejohns, Victor, O'Halloran & Peacock (2000)	South Thames region, England, UK	66	75	OTs in 7 acute NHS trusts, including 2 teaching hospitals	Survey (postal questionnaire designed by authors)	4 months in 1998	Attitudes to research Self-rated application of research to guide practice Availability of resources for EBP	Positive attitudes to research application 86% read research articles and 73% looked for research related to their practice but only 23% implemented research findings 95% had library access and 53% had internet access

²² Results reported for the entire group. Separate figures not reported for occupational therapists.

²³ PDs: podiatrists

²⁴ OTs: occupational therapists

²⁵ SLPs: speech-language pathologists

²⁶ PTs: physiotherapists

Author (year)	Place	N	Response rate (%)	Participants and settings	Study design (method of data collection)	Data collection period	Outcomes measured	Conclusion
Curtin & Jaramazovic (2001)	South West & South East, England & Channel Islands, UK	500	77	Senior OTs in community trusts (n=219, 44%), acute/hospital trusts (n=169, 34%) and social services (n=64, 13%)	Survey (postal questionnaire designed by authors)	Not stated	Views and perceptions of EBP Self-rated involvement in types of EBP activities	Perceived EBP to be part of professional duty and a goal for OT Most frequent research-related activities were problem-solving with colleagues, attending courses and reading journal articles. Fewer than 50% conducted searches of the literature. Clinical experience regarded as more important than research.
Metcalfe, Lewin, Wisner, Perry, Bannigan & Moffett (2001)	Northern and Yorkshire region, UK	572	80	152 OTs ²⁷ 76 SLPs ²⁸ 287 PTs ²⁹ 51 DTs ³⁰ Setting: NHS (n=370, 65%), social services (n=19, 3%), private practice (n=33, 6%), combination (n=51, 9%), other (n=34, 6%)	Survey (postal questionnaire (Closs and Lewin, 1998, Metcalfe <i>et al.</i> , 2000))	1998	Perceived importance of research	98% agreed that research is important for practice. Although 51% felt treating patients was more important than reading research, few (6%) had no internet in finding and reading research.
Sweetland & Craik (2001)	UK	161	81	OTs registered with the National Association of Neurological Occupational Therapists working with adult stroke patients. Settings not described.	Survey (postal questionnaire designed by authors)	Not stated	Factors influencing knowledge of stroke treatment Frequency of using EBP with stroke patients Factors influencing the application of EBP	Greatest influences on knowledge were working with other therapists (76%), attending postgraduate courses (61%) and using techniques that worked (61%) 56% always or usually used evidence 48% used custom and practice daily while none used research papers daily Factors influencing practice were relevance (53%), lack of EBP knowledge (38%) and time (31%)

²⁷ OTs: occupational therapists

²⁸ SLPs: speech-language pathologists

²⁹ PTs: physiotherapists

³⁰ DTs: dieticians

Author (year)	Place	N	Response rate (%)	Participants and settings	Study design (method of data collection)	Data collection period	Outcomes measured	Conclusion
Dysart & Tomlin (2002)	US	209	58	OT in the AOTA working in schools (n=52, 21%), rehabilitation facilities (n=44, 18%), hospitals (n=34, 14%), early intervention settings (n=27, 11%), skilled nursing facilities (n=27, 11%), home health (n=20, 8%), mental health n=15, 6%), other (n=27, 11%)	Survey (postal questionnaire designed by first author)	Spring 2000	Confidence in EBP skills Value of using research in practice Frequency of implementing research Access to EBP resources and frequency of use	59% had difficulty using electronic databases and only 33% were confident in appraisal 54% felt research should be used more in practice Majority had access to all sources of evidence Journal articles and texts used most frequently and computer resources least. Having a Masters degrees and research experience were associated with greater use of electronic databases 57% implemented research-based intervention plans
McCluskey (2003)	New South Wales, Australia	67	79	OTs attending an EBP workshop working in the public (n=49, 74%) or private (n=17, 26%) sectors	Survey (adapted from Upton & Lewis (1998))	May 2000	Self-rated knowledge and skills Participation in EBP continuing education events Access to the internet	Poor ability in first 3 steps of EBP; more confident in computer skills and evaluating practice Few had attended EBP education sessions Majority had internet access at home or at work
Philibert, Snyder, Judd & Windsor (2003)	Louisiana, California, Massachusetts, Texas, Florida & Minnesota, US	328	54	OTs registered with AOTA ³¹ working in hospitals (n=55, 17%), schools (n=52, 16%), rehabilitation corporations (n=19, 6%), home health (n=19, 6%) or early intervention centres (n=19, 6%)	Survey (postal questionnaire based on Kirk et al (1976) and McKee <i>et al.</i> (1987))	July 2000	Sources of knowledge used to guide practice Attitudes towards and application of research in practice	Sources used most frequently to guide practice were continuing education and mentoring clinicians with the internet/Listserve ³² being used least often Research was perceived to generate knowledge and as being useful, but there was less certainty about the usefulness of research to inform practice

³¹ AOTA: American Occupational Therapy Association

³² A Listserve is a 'computer program that automatically distributes an e-mail message to individuals who are part of a list; messages can usually only be sent or received by members on the list'. (The World Bank Group, 2010a)

Author (year)	Place	N	Response rate (%)	Participants and settings	Study design (method of data collection)	Data collection period	Outcomes measured	Conclusion
Bennett, Tooth, McKenna, Rodger, Strong, Ziviani, Mickan & Gibson (2003)	Australia	649	44	OTs registered with OT AUSTRALIA in hospitals (n=201, 31%), in the community (n=238, 37%), private practice (n=87, 13%), schools (n=27, 4%) or a number of settings (n=43, 7%)	Survey (postal questionnaire adapted from McColl <i>et al</i> (1998))	September 2000	Confidence in EBP skills Attitudes to EBP Sources used in clinical decision-making Access to and use of databases and the internet	Most confident with doing literature searches and determining the significance of study results, and least confident in determining study design and validity, and using <i>The Cochrane Library</i> Positive attitudes to EBP 56% used research as a basis for clinical decisions but more relied on their experience (96%)
Pain, Magill-Evans, Darrah, Hagler & Warren (2004)	Two rural/small urban areas in Western Canada	165	Unknown ³³	58 OTs 63 PTs ³⁴ 44 SLPs Settings: hospitals, long-term care facilities, private practice and education	Survey (postal questionnaire using instruments of Varcoe & Hilton (1995) and Pain <i>et al</i> (1996) and one developed for study; individual interviews)	Not stated	Self-rated knowledge of research concepts Self-rated general application of research Availability and use of sources of information	Poor confidence and ability in understanding and appraising research OTs used research most when planning to change treatment Majority had access to all sources of evidence but textbooks and colleagues were used most >80% had access to the internet and 60% used it
Cameron, Ballantyne, Kulbitsky, Margolis-Gal, Daugherty & Ludwig (2005)	United States and Puerto Rico	131	26	OTs registered with AOTA in multiple settings (n=37, 28%), school-based settings (n=33, 25%), out-patient care (n= 10, 8%), home care (n=8, 6%), skilled nursing (n=8, 6%), private practice (n=8, 6%), other (n=27, 21%)	Survey (postal questionnaire based on Humphris <i>et al</i> (2000))	Not stated	Attitudes to EBP Application of EBP in intervention planning Resources available to support EBP	Majority agreed that research builds a scientific foundation for OT Few used EBP on a regular basis Importance and use of research decreased with level of education and years of experience 53% agreed or somewhat agreed that they had access to sources of evidence at work

³³ Sites that agreed to participate had project coordinators who drew the random sample. The total number of professionals selected was unknown as the number of refusals was not recorded.

³⁴ PTs: Physiotherapists; SLPs: Speech-language pathologists

Author (year)	Place	N	Response rate (%)	Participants and settings	Study design (method of data collection)	Data collection period	Outcomes measured	Conclusion
Upton & Upton (2006)	UK	Total=66 6 OTs=118	Total: 67 OTs: 73	14 professional groups including OTs Setting: no information given	Survey (postal questionnaire developed from Upton & Lewis (1998))	Not reported	Self-reported EBP knowledge and skills Frequency of completing the EBP steps Use of evidence from different sources	42% of OTs perceived their knowledge of EBP as low compared to 38% who rated knowledge at the midpoint and 20% who rated it high OTs rated their skills in monitoring their own practice and ability to determine use of evidence highest, and research skills and critical analysis were rated lowest Most used sources of evidence were information from own practice and colleagues in the same profession. The internet was least used.
Caldwell, Coleman, Copp, Bell & Ghazi (2007) ³⁵	UK	85	43	26 SWs 29 OTs 19 nurses 10 PTs Setting: acute (n=32, 38%), local authorities (n=24, 28%) or independent/voluntary (n=5, 6%)	Cross-sectional survey (postal questionnaire developed by authors)	After June 2003	Views on EBP Experience of research changing practice Access to and frequency of using databases	Majority agreed that most colleagues in their profession favoured EBP but over 50% felt they did not have enough time to implement it OTs more likely not to report examples about changes in practice due to accessing research 15% did not have access to electronic databases 40% had not used electronic databases in the past year
Lopez, Vanner, Cowan, Samuel, Shepherd (2008)	5 north-eastern states in the US	142	18	OTs in short-term rehabilitation	Cross-sectional survey (postal questionnaire designed by the researchers)	Not reported	Perceptions of EBP	Negative perceptions about applying research evidence with 26% reporting difficulty applying research in practice 58% felt there was insufficient research relevant to occupational therapy 83% agreed that client evidence research evidence and professional expertise were equally important
Cooke, Bacigalupo, Halladay & Norwood (2008) ¹¹	UK	368	24	Social services OTs (N=189) and social workers (N=179) working in 2 councils in community settings (n=171, 47%), town centre offices (n=132, 36%) and hospitals (n=37, 10%)	Cross-sectional survey (postal questionnaire developed by the researchers)	2005	Access to and use of sources of research evidence	Results not given by profession. Internet was most available and most used source of evidence; research workshops and literature databases were least available but research-based guidelines were used most seldom Those with Masters degrees used more sources of evidence

³⁵ Results were not sub-divided into different professional groups but were reported for the whole sample only.

Author (year)	Place	N	Response rate (%)	Participants and settings	Study design (method of data collection)	Data collection period	Outcomes measured	Conclusion
Gustafsson & Yates (2009)	Australia	55	22	OTs on a neurological Listserve working in stroke units/acute hospitals (n=18, 33%), inpatient rehabilitation unit (n=23, 42%), outpatient rehabilitation unit (n=16, 29%), community agency/home care/community centre (n=5, 9%), private practice (n=1, 2%), hostel/nursing home (n=1, 2%), other (n=4, 7%)	Survey (online or printed questionnaire)	Not stated	Use of evidence-based interventions for stroke patients	Inconsistent application of evidence-based interventions for stroke Use of treatment techniques with little supporting evidence
Salls, Dolhi, Silverman & Hansen (2009)	Pennsylvania, United States	930	15	OTs. No information on practice settings.	Survey (postal questionnaire adapted from Jette <i>et al</i> (2003) and Dysart & Tomlin (2002))	February 2007	Attitudes to EBP EBP knowledge Use of EBP	Positive attitudes to EBP (>96% felt it was important to occupational therapy practice) >50% had received some training in EBP Majority were confident finding and appraising research articles Few used electronic databases (12%), read or reviewed literature (33%) or used literature in their practice (24%)
Copley, Allen (2009)	Australia	9	N/A	Paediatric OTs working in a university-based OT clinic	Action research (focus groups)	Not stated	Sources of evidence used in practice Perceptions of evidence	Participants used both research-based and practice-based evidence to make clinical decisions Wide support for research-generated evidence but many barriers limit its use in practice Application of research findings requires skill: research studies do not use only single interventions, whereas in practice several interventions may be used simultaneously; findings from research need to be adapted for the practice context. Research alone was insufficient to inform practice due to lack of availability of research on certain interventions

Author (year)	Place	N	Response rate (%)	Participants and settings	Study design (method of data collection)	Data collection period	Outcomes measured	Conclusion
Brown, Tseng, Casey, McDonald & Lyons (2010)	Australia, Taiwan and the United Kingdom	Total: 69 Aus: 6 UK: 138 Taiwan: 412	Total: 57 Aus: 45 Taiwan: 91 UK: 30	Paediatric OTs. No information on practice settings.	Survey (postal questionnaire - KAP survey (Van Mullem <i>et al.</i> , 1999))	Not stated	Self-reported research knowledge, attitudes and practice	Knowledge, attitude and practice subscales moderate apart from one factor in the attitude subscale (identifying clinical problems) Attitudes towards research highest and practices lowest No significant differences in knowledge, attitudes and practice between Australia and UK Significantly higher knowledge and practice in research in Taiwanese participants
Lyons, Casey, Brown, Tseng & McDonald (2010)	United Kingdom	145	30	Paediatric OTs in out-patient/ community-based (n=114, 79%), in-patient (n=4, 3%), mixed (n=9, 6%), other settings (n=13, 9%)	Survey (postal questionnaire; instruments by Van Mullem <i>et al</i> (1999) and Pain <i>et al</i> (1996))	Not reported	Self-reported research knowledge, attitudes and practices Overall research orientation	Attitudes towards conducting and using research were rated highest while practice was lowest. Research orientation was moderate. Accessing new information to guide practice was rated highest followed by 'valuing research' (attitudes) and use of research (EBP)

3.3.2 Location of studies

The highest number of studies was from the UK (11/29) with five from Australia and the US respectively, two from Canada, and one each from Taiwan and Puerto Rico³⁶. One article reported a collaborative research study involving Australia, Taiwan and the UK (Brown *et al.*, 2010b), and one involved the US and Puerto Rico (Cameron *et al.*, 2005). The total number of countries represented thus exceeds the number of studies reviewed. No articles were found that reported the perspectives of occupational therapists in middle- or low-income countries.

3.3.3 Outcomes

Taxonomy of the different variables measuring aspects of EBP knowledge, attitudes and behaviour was developed to categorise studies according to the construct/s measured. As shown in Table 6, studies measured a variety of aspects for each construct.

Table 6: Taxonomy of variables measuring EBP knowledge, attitudes and behaviour of occupational therapists

<p>Knowledge and skills</p> <p>Overall knowledge of EBP</p> <p>Knowledge of sources of evidence</p> <p>Knowledge and understanding of research, e.g. study design and statistics</p> <p>Level of skill in the components of EBP, e.g. searching for and appraising information</p> <p>Level of confidence in skills for the components of EBP</p>
<p>Attitudes</p> <p>Attitudes to EBP</p> <p>Perceptions/views of key aspects of EBP</p> <p>Demands of EBP</p> <p>Perceptions of evidence</p> <p>Views on the relevance of research to practice</p> <p>Attitudes to research and the use of research information</p> <p>Value of using research in practice</p>
<p>Behaviour</p> <p>Application of the steps of EBP to practice</p> <p>Involvement in EBP activities, e.g. reading, attending courses and giving presentations</p> <p>Frequency of applying EBP</p> <p>Frequency of accessing sources of evidence</p> <p>Application of different sources of evidence</p> <p>Valued features of different sources of evidence</p> <p>Applying research in practice</p> <p>Experience of research changing practice</p>

³⁶ All these countries are classified as high income countries (The World Bank Group, 2010a)

Evidence-based knowledge and/or skills were investigated in ten studies, attitudes in 16 and behaviour in 17. For EBP knowledge and/or skills, five studies were conducted in the UK, three in Australia, two in the US, and one each in Canada and Taiwan. One study compared occupational therapists in Australia, Taiwan and the US. The highest number of studies measuring attitudes was in the UK (8/16) with five in the US, three in Australia and one each in Canada, Puerto Rico and Taiwan. With regard to EBP behaviour, nine studies were conducted in the UK, four in Australia and the US and one each in Canada, Puerto Rico and Taiwan. Table 7 provides an overview of the constructs investigated in each included study.

Table 7: Categorisation of constructs measured in included studies

Author (year)	Knowledge &/or skills	Attitudes	Behaviour
Upton (1999a)	X	X	
Upton (1999b)			X
Dubouloz, Egan, Vallerand & von Zweck (1999)		X	
Humphris, Littlejohns, Victor, O'Halloran & Peacock (2000)		X	X
Curtin & Jaramazovic (2001)		X	X
Metcalfe, Lewin, Wisher, Perry, Bannigan & Moffett (2001)		X	
Sweetland & Craik (2001)	X		X
Dysart & Tomlin (2002)	X	X	X
McCluskey (2003)	X		
Philibert, Snyder, Judd & Windsor (2003)		X	X
Bennett, Tooth, McKenna, Rodger, Strong, Ziviani, Mickan & Gibson (2003)	X	X	X
Pain, Magill-Evans, Darrah, Hagler & Warren (2004)	X		X
Cameron, Ballantyne, Kulbitsky, Margolis-Gal, Daugherty & Ludwig (2005)		X	X
Caldwell, Coleman, Copp, Bell & Ghazi (2006)		X	X
Upton & Upton (2006)	X		X
Lopez, Vanner, Cowan, Samuel, Shepherd (2008)		X	
Cooke, Bacigalupo, Halladay & Norwood (2008)		X	X
Gustafsson & Yates (2009)			X
Salls, Dolhi, Silverman & Hansen (2009)	X	X	X
Copley, Allen (2009)		X	X
Brown, Tseng, Casey, McDonald & Lyons (2010)	X	X	X
Lyons, Casey, Brown, Tseng & McDonald (2010)	X	X	X
Total number of studies	10	16	17

3.3.4 Instruments used to measure outcomes

Of the 20 surveys, seven developed their own instruments for the study. Some were based on literature and/or information from experts (Caldwell *et al.*, 2007, Cooke *et al.*, 2008, Gustafsson and Yates, 2008, Lopez *et al.*, 2008, Sweetland and Craik, 2001) while two developed questionnaires based on focus-group findings (Curtin and Jaramazovic, 2001, Humphris *et al.*, 2000). Twelve studies used existing instruments of which five made modifications to suit the context. Table 8 provides a summary of the existing instruments used, the aspects they measured and their psychometric properties.

University of Cape Town

Table 8: Instruments used in studies of occupational therapists included in this review

Instrument (Developer)	Studies using instrument	Type of instrument	Aspects measured	Validity and reliability
Kirk <i>et al</i> (1976) and McKee <i>et al</i> (1987)	Philibert <i>et al</i> (2003)	Postal survey	Previous research experiences Usefulness of information sources (McKee <i>et al.</i> , 1987) Journal reading patterns Sources of knowledge used to guide practice Attitudes to and application of research	Attitude items significantly related to total score ($r \geq 0.56$, $p < 0.001$) (Kirk <i>et al.</i> , 1976) Questionnaire modified after face and content validity and clinical utility tested in a pilot study (Philibert <i>et al.</i> , 2003) Internal consistency for attitudes towards and use of research were 0.89 and for 0.78 respectively (Philibert <i>et al.</i> , 2003)
General Use of Research (Varcoe and Hilton, 1995)	Pain <i>et al</i> (2004) - adapted	Questionnaires posted & collected at interview	Use of research	Established content validity with peer review (Varcoe and Hilton, 1995) Internal consistency: 0.87 (Pain <i>et al.</i> , 2004)
Edmonton Research Orientation Survey (EROS) (Pain <i>et al.</i> , 1996)	Pain <i>et al</i> (2004) Lyons <i>et al</i> (2010)	Postal survey As above	Overall research orientation Self-rated knowledge of research Participation in research-related activities	Internal consistency: 0.93 (Pain <i>et al.</i> , 1996) EROS scores correlated with research involvement and training levels (Pain <i>et al.</i> , 1996) 4 sub-scales identified: valuing research, research involvement, being at the leading edge and EBP (Pain <i>et al.</i> , 1996)
McColl <i>et al</i> (1998)	Bennett <i>et al</i> (2003b) - adapted	Postal survey	Attitudes to, and use of EBP Confidence in EBP skills and barriers to its use EBP training needs	Content and face validity tested (Bennett <i>et al.</i> , 2003b)
Upton & Lewis (1998)	Upton (1999a) Upton (1999c) McCluskey (2003b) - adapted Upton & Upton (2006)	Postal survey As above Completed at EBP course Postal survey	Knowledge, attitudes and use of clinical effectiveness and EBP Perceived knowledge of components of EBP Barriers and solutions	Test-retest reliability ranged from 0.80 to 0.92 (Upton and Lewis, 1998) Internal consistency: ranged from 0.74 to 0.88 (Upton and Lewis, 1998) High face validity (Upton and Lewis, 1998) Good content validity (Upton and Lewis, 1998)
Barriers and Attitudes to Research in the Therapies (BART) (Closs and Lewin, 1998, Metcalfe <i>et al.</i> , 2000)	Metcalfe <i>et al</i> (2001) - adapted	Postal survey	Attitudes and beliefs about research (based on combining responses to questions related to perceived importance of research and perceived barriers	Good internal consistency for perceived importance of research scale (Cronbach's alpha= 0.63) and high internal consistency for the perceived barriers scale (Cronbach's alpha=0.78) Scales had themes of: perceived importance of research and perceived barriers 2 factors in perceived importance of research scale and 6 in perceived barriers scale
Research Knowledge, Attitudes and Practices of Research (KAP) Survey (Van Mullem <i>et al.</i> , 1999)	Brown <i>et al</i> (2010b) Lyons <i>et al</i> (2010)	Postal survey As above	Knowledge, attitudes and practice in conducting and using research	5 factors identified in the three sub-scales (Lyons <i>et al.</i> , 2010) Content validity: 0.84 (Van Mullem <i>et al.</i> , 1999) Test-retest reliability for sub-scales: 0.77 to 0.83 (Van Mullem <i>et al.</i> , 1999) Internal consistency of sub-scales: 0.93 to 0.97 (Van Mullem <i>et al.</i> , 1999) and 0.95 to 0.97 (Eller <i>et al.</i> , 2003)
Humphris <i>et al</i> (2000)	Humphris <i>et al</i> (2000) Cameron <i>et al</i> (2005) - adapted	Postal survey As above	Participation in research Use of research Resources Barriers and enablers	Content validity established (Humphris <i>et al.</i> , 2000) Factor analysis reduced the questionnaire to 9 questions about EBP (Cameron <i>et al.</i> , 2005)

Dysart & Tomlin (2002) and Jette <i>et al</i> (2003)	Salls <i>et al</i> (2009) ³⁷ - adapted	Postal survey	Availability of EBP resources Use of EBP Knowledge and attitudes to EBP Supports and barriers to EBP	Content validity tested (Salls <i>et al.</i> , 2009)
--	---	---------------	---	--

University of Cape Town

³⁷ Not stated in article how closely the adapted questionnaire resembled those of Dysart and Tomlin, and Jette, and therefore validity and reliability established by these authors has not been included.

3.3.5 Results of included studies

Study findings are discussed for each domain.

3.3.5.1 Knowledge and skills in EBP

The earliest study, a UK survey of four groups of Welsh health professionals (including occupational therapists) reported low to moderate ratings for different EBP skills (Upton, 1999a). 'Converting information needs into a research question' was rated lowest (mean=3.1, SD=1.4)³⁸ and ability to apply information and review practice were rated highest (mean=4.6 and 4.8 respectively) (Upton, 1999a). A later national UK survey of 14 health care professions using the same questionnaire confirmed these findings (Upton and Upton, 2006). Forty-two percent (36/86) of the occupational therapists rated their EBP knowledge as low and only 20% (18/86) as high. Self-reported ratings of different EBP skills revealed scores to be similar to those of the Welsh sample (Upton and Upton, 2006) showing that in the seven years between the studies there had been no obvious improvement in UK occupational therapists perceptions of their EBP knowledge and skills.

An Australian study similarly found a high proportion of occupational therapists attending an EBP workshop had difficulties generating a clinical question (37/67, 56%), conducting database searches (34/67, 50%) and critical appraisal (35/67, 53%) (McCluskey, 2003b). Another Australian study involving 649 occupational therapists registered with OT AUSTRALIA³⁹ reported respondents to be most confident in conducting literature searches (61%) and determining the clinical significance of results (50%) and less so in determining study design (38%) and validity (38%), and using the Cochrane database (16%) (2003b). As these studies used different questionnaires, comparison of the results was difficult.

³⁸ Scoring was on a seven-point scale with one being poor and seven best.

³⁹ The recognised body for occupational therapists in Australia

With regard to EBP skills, an Australian survey revealed poor knowledge of electronic databases and sources of evidence (53/67, 79%) but knowledge of general computer skills and evaluating and changing practice in response to new evidence scored higher (McCluskey, 2003b). A survey of AOTA members reported slightly higher confidence levels in using the internet as a research tool (93/209, 45%) compared with using electronic databases (41/209, 20%) (Dysart and Tomlin, 2002). A later US survey found that two thirds of respondents (N=930) were familiar with search engines relevant to occupational therapy and 70% were confident finding research evidence to answer clinical questions (Salls *et al.*, 2009).

Lack of ability in appraising research articles due to difficulties understanding research design, statistics and research articles has been found in Canada (Pain *et al.*, 2004), Australia (Bennett *et al.*, 2003b, McCluskey, 2003b), the US (Dysart and Tomlin, 2002) and the UK (Metcalf *et al.*, 2001). Respondents in one study expressed frustration at their inability to appraise research, stating that they resorted to drawing on the conclusions of others (Pain *et al.*, 2004). In contrast to this, a study conducted in 2009 found that 78% of respondents felt confident in reviewing professional literature (Salls *et al.*, 2009). Lack of skills in various aspects of research has been identified as a barrier to EBP (Bennett *et al.*, 2003b, Dysart and Tomlin, 2002, Lyons *et al.*, 2010, McCluskey, 2003b, Metcalfe *et al.*, 2001, Philibert *et al.*, 2003).

Therapists with postgraduate qualifications and more recent graduates seem to be better equipped for EBP. Bennett *et al.* (2003b) established that therapists with postgraduate qualifications were more confident in EBP skills while Dysart and Tomlin (2002) identified those with Masters degrees as more confident using electronic databases. In addition, years of experience seems to be inversely related to confidence using the internet (Dysart and Tomlin, 2002), literature searching and using *The Cochrane Library* (Bennett *et al.*, 2003b).

A comparison of self-reported EBP knowledge among paediatric occupational therapists in Australia, Taiwan and the UK found moderate knowledge sub-scale scores for all three groups (Brown *et al.*, 2010b). Only the UK group scored high for two of the five knowledge factors, namely 'identifying clinical problems' and 'administering research implementation' (Brown *et al.*, 2010b, Lyons *et al.*, 2010). Other than a low score for knowledge related to 'administering research implementation' by the Australian therapists, all other knowledge factors across the three countries received moderate scores (Brown *et al.*, 2010b). Participants in Taiwan reported significantly higher overall knowledge compared to those in Australia and the UK (Brown *et al.*, 2010b).

3.3.5.2 Attitudes to EBP

In an early qualitative study that explored the perceptions of EBP held by eight participants in a region of Canada, three categories demonstrating their ambivalence towards EBP emerged (Dubouloz *et al.*, 1999). Firstly, EBP was revealed as a process of looking for understanding and a possible threat to the '*level of comfort acquired during years of practice ...*' (p. 450). Secondly, while research was viewed as central to demonstrating treatment effectiveness, it also generated feelings of inadequacy because of a lack of research expertise. Lastly, research was not always relevant and participants had difficulty applying it to occupational therapy (Dubouloz *et al.*, 1999). These perceptions influenced participants' abilities to apply evidence in practice. The study culminated in a grounded theory that provides insights into the concerns occupational therapists may have with EBP and could be useful for planning strategies to increase EBP behaviour.

The importance of research for occupational therapy practice was identified in several UK surveys (Cooke *et al.*, 2008, Curtin and Jaramazovic, 2001, Humphris *et al.*, 2000, Lyons *et al.*, 2010, Metcalfe *et al.*, 2001, Upton, 1999a) as well as studies in Australia (Bennett *et al.*, 2003b) and the US (Salls *et al.*, 2009). This strong support for EBP was confirmed in an Australian action research study where participants acknowledged its role in improving practice (Copley and Allen, 2009). Positive

attitudes towards EBP have further been illustrated in other reported benefits of EBP including improving client care (Bennett *et al.*, 2003b), assisting therapists in their work (Cooke *et al.*, 2008) and increasing confidence in practice (Curtin and Jaramazovic, 2001). In one survey, 87% of respondents found research useful in daily practice and felt they needed to increase their use thereof (Salls *et al.*, 2009). Further confirmation of positive attitudes to EBP was evident in a survey of UK paediatric occupational therapists who rated their willingness to engage in five EBP activities as moderate to high (Lyons *et al.*, 2010). In a follow-up survey of occupational therapy, physiotherapy and social work graduates⁴⁰ from three London universities, the majority agreed that most of their colleagues supported EBP (Caldwell *et al.*, 2007).

A further illustration of the commitment of occupational therapists to applying research in practice is the high agreement by American Occupational Therapy Association (AOTA) members in two separate studies that more therapists should use research in their practice (Dysart and Tomlin, 2002) and that research generates knowledge and is useful to occupational therapists (Philibert *et al.*, 2003). The perception that research helps build a scientific basis for occupational therapy practice was confirmed in a larger national survey of AOTA members (Cameron *et al.*, 2005), and a study of occupational therapists working in short-term rehabilitation settings identified that client evidence, research evidence and professional expertise were equally important in decision-making (Lopez *et al.*, 2008).

In contrast to these positive views, Curtin and Jaramazovic (2001) reported that approximately 60% of their respondents felt EBP was time-consuming and difficult because of a lack of time. This was corroborated by Caldwell *et al.* (2007) whose UK study revealed that 48% of their sample⁴¹ felt their colleagues lacked the time to implement EBP, and 46% felt EBP placed additional demands on them. Findings from

⁴⁰ Includes occupational therapists, physiotherapists and social workers. Results not separated by profession.

⁴¹ Graduates with two years or less experience

an Australian survey differed in that fewer respondents felt EBP placed too many demands on their time (194/626, 31%) or that it was of limited value (138/626, 22%) (Bennett *et al.*, 2003b). The demands of EBP were confirmed in a later UK survey which reported that while 65% (55/85) felt their practice would improve with greater access to research literature, 54% (46/85) perceived it as an additional demand (Caldwell *et al.*, 2007). Cameron *et al* (2005) found that the importance of research findings for occupational therapy practice decreased as qualification levels and experience increased. The researchers attributed this to therapists with more experience and higher qualifications having greater professional experience to rely on, while less experienced therapists were forced to rely more heavily on research evidence (Cameron *et al.*, 2005). Although professional experience plays a key role in EBP, this trend of relying more upon experience than research evidence is concerning considering that 'experience is very subject to flaws of bias' (Hoffmann *et al.*, 2010, p 5).

Negative attitudes towards the importance of spending time reading research were also reported. A UK survey identified that 51% (71/139) felt patient treatment was more important than reading research articles, and 48% (67/139) did not regard finding and reading research as a high priority (Metcalfe *et al.*, 2001). Similarly, respondents in the US study by Philibert *et al* (2003) only somewhat agreed that research should be the 'most essential element guiding occupational therapy practices'. These findings were supported by Lopez *et al* (2008) who reported that occupational therapists working in short-term US rehabilitation facilities had negative perceptions towards applying research findings. In this study, 58% felt there was insufficient research relevant to occupational therapy.

Copley and Allen (2009) identified several barriers to applying evidence to practice in their action research study, including difficulty applying evidence to the context of practice and difficulty finding research about 'less clinical' and 'less standardised' interventions. These barriers necessitated complex reasoning to apply research findings to heterogeneous groups, or when using interventions for which there was

no evidence (Copley and Allen, 2009). In support, Humphris *et al* (2000) reported that 12% of their respondents found research findings too complex to apply in practise.

A study comparing the attitudes towards EBP of paediatric occupational therapists in Australia, Taiwan and the US, found no significant differences across the three different countries (Brown *et al.*, 2010b). Respondents scored high across all three countries for attitudes towards 'identifying a clinical problem'. All other attitude factors were moderate for all countries, except 'implementing research into practice' which was rated high by the UK therapists.

3.3.5.3 EBP behaviour

The extent to which occupational therapists were applying EBP varied across studies and countries. In the UK, relatively high EBP usage was reported with an early study finding that most respondents were trying to implement EBP despite heavy workloads (Upton, 1999c). While the most practised step was involving patients in decision-making, and the least practised was critically appraising literature, the extent to which the different EBP components were being used by occupational therapists could not be determined as results were not analysed for each professional group (Upton, 1999a). Humphris *et al* (2000) identified that 73% (48/66) of their UK respondents actively looked for evidence to inform their practice while 56% (37/66) actually based their practice on research. Canadian therapists reported using research most when deciding to change client treatment (Pain *et al.*, 2004).

Results for the US have been less positive. A survey conducted in 2000, reported moderate application of EBP (Dysart and Tomlin, 2002) while later surveys revealed usage to be low (Cameron *et al.*, 2005, Philibert *et al.*, 2003). As these American studies included only AOTA members, who may have been more active in keeping up-to-date with research, the findings may be biased in favour of research use in comparison to the population of American occupational therapists. However, a study of AOTA and non-AOTA members confirmed that while few therapists were using

EBP, many wanted to improve their EBP skills (Salls *et al.*, 2009). These studies revealed little change in EBP use by occupational therapists in the US between 2000 and 2009.

Two studies investigated EBP use with occupational therapists working with stroke patients. In a national UK survey, 6% (7/117) reported using EBP all the time while 50% (58/117) used it most of the time. On the other hand, 42% (49/117) used EBP occasionally and 3% (3/117) never used it (Sweetland and Craik, 2001). Respondents tended to rely on evidence from lower levels of the hierarchy of evidence. Custom and practice⁴² was used daily by a high proportion while no-one used research articles daily. A later study to establish the extent to which occupational therapists in stroke rehabilitation used evidence-based interventions revealed a mismatch between existing evidence and practice (Gustafsson and Yates, 2008). Interventions with strong evidence bases were seldom used while those with limited or weak evidence were used often (Gustafsson and Yates, 2008). A study involving paediatric occupational therapists found moderate application of research in Australia, Taiwan and the UK indicating a possible lack of knowledge to implement research findings (Brown *et al.*, 2010b, Lyons *et al.*, 2010). Taiwanese respondents reported significantly higher application of research than those in Australia and the UK (Brown *et al.*, 2010b).

Despite the assertion that EBP involves 'integrating individual expertise with the best available external clinical evidence' (Sackett *et al.*, 1996) (p. 71), it seems that the reality is very different and that greater emphasis has been placed on using clinical experience rather than research findings (Bennett *et al.*, 2003b, Curtin and Jaramazovic, 2001, Dubouloz *et al.*, 1999, Salls *et al.*, 2009). A US survey revealed that the majority of respondents used continuing education, mentors and authority above research to guide their practice (Philibert *et al.*, 2003), while in Canada, the most common information sources were textbooks, colleagues and journals (Pain *et*

⁴² Not defined in the article but seems to incorporate tradition or routine practice and interventions that seem to work with patients

al., 2004). Closer scrutiny of UK occupational therapists' use of the internet, through which research findings can be accessed relatively easily, revealed a lack of certainty about using such evidence (Upton, 1999a). In the US, Dysart and Tomlin (2002) found that few therapists used computer resources other than internet websites, and Salls *et al* (2009) reported that few of their respondents used databases frequently to search for evidence. A later Canadian survey reported greater success with 60% using the internet as a source of information (Pain *et al.*, 2004). This latter study may indicate that internet usage is increasing.

Lack of access and lack of convenient access to the internet were identified as barriers to EBP (Dysart and Tomlin, 2002, McCluskey, 2003b). Therapists in urban areas were likely to have better access than those in smaller communities (Pain *et al.*, 2004). Internet access also seemed to vary across countries. For example, a UK survey reported low internet access (53%) (Humphris *et al.*, 2000) but studies in the US, Australia and Canada, found the majority had access either at work or at home (Dysart and Tomlin, 2002, McCluskey, 2003b, Pain *et al.*, 2004). A connection was found between access to sources of evidence and use thereof (Cooke *et al.*, 2008). For example, Cooke *et al* (2008) established that therapists working in central offices used the internet and research summaries significantly more than those in community or hospital settings. However, access to information sources does not necessarily indicate increased use thereof as illustrated in a UK study where usage of electronic databases was low despite the majority having access (Caldwell *et al.*, 2007). Similarly, a US study reported respondents to be only occasionally accessing research information on internet sites despite the majority having internet access (Dysart and Tomlin, 2002).

Occupational therapists seem to have shown some progress towards appreciating more robust sources of evidence. For instance, a study in 2006 reported a lack of willingness to use evidence from journal articles or the internet as opposed to evidence from colleagues or generated from their own practice (Upton and Upton, 2006), but a more recent study revealed more frequent use of the internet than

consulting senior colleagues⁴³ (Cooke *et al.*, 2008). The study could not however ascertain whether research or other sources of information had been accessed on the internet (Cooke *et al.*, 2008). An action research study found that participants used all sources of evidence in their practice and that these were both 'research-based' and 'practice-generated' (Copley and Allen, 2009).

In contrast to the findings of Cameron *et al* (2005), two earlier studies reported that respondents with a higher academic degree accessed research findings significantly more frequently (Bennett *et al.*, 2003b, Dysart and Tomlin, 2002). Additionally, having a higher qualification was associated with basing more clinical decisions on research evidence (Bennett *et al.*, 2003b), being more confident in EBP (McCluskey, 2003b) and using more sources of evidence (Cooke *et al.*, 2008). Therapists with less than five years' experience were more confident in EBP skills (McCluskey, 2003b) and significantly more likely to use higher levels of evidence than those with more experience (Sweetland and Craik, 2001). Since these studies were conducted, there has been an increase in the number of occupational therapy education programmes that incorporate EBP into their curricula (Bennett *et al.*, 2006) which suggests that graduate therapists will be better equipped in the skills required for EBP.

3.4 Discussion

The main findings of this review are presented, their consistency with other studies examined and the strengths and limitations of the review discussed.

3.4.1 Main findings

Knowledge and skills in EBP were moderate to low across all countries in the included studies. It does not appear that knowledge and skills have increased much over the 10 years spanning these publications. In keeping with the relatively new EBP

⁴³ Only 19% had consulted a senior colleague in the past three months

movement, it appears that recent graduates and those with postgraduate degrees may be better equipped with the knowledge and skills needed for EBP.

Most studies revealed that occupational therapists are generally positive about EBP with strong agreement about the importance of research for practice. Furthermore, this positivity towards EBP has not waned over time. However, the conflicting perceptions of EBP in several studies indicate that further exploration of issues, which may be unique to occupational therapy, is needed.

Implementation of EBP was highly variable across studies and countries. It seems that despite best intentions, occupational therapists are struggling to use evidence regularly in their practice. These difficulties in implementing EBP may be partly due to the barriers that exist. Barriers related to lack of knowledge and skill should be addressed by providing training opportunities. Improving knowledge and skill may also reduce one of the most commonly reported barriers, namely lack of time. To make EBP achievable for therapists, the barriers of lack of access and lack of convenient access to research information, require urgent attention.

3.4.2 Consistency with other literature

Application of EBP was low across all countries. The high number of studies conducted in the UK and the possibly higher usage of EBP compared with other countries is probably due to the priority given to applying research evidence within the NHS (Humphris *et al.*, 2000). Despite support for EBP, studies have found that occupational therapists tend to place greater value on clinical experience than research evidence (Bennett *et al.*, 2003b, Curtin and Jaramazovic, 2001, Dubouloz *et al.*, 1999, Dysart and Tomlin, 2002, Salls *et al.*, 2009). This finding supports definitions of EBP (Dawes *et al.*, 2005, Sackett, 1997, Sackett *et al.*, 1996) which articulate the roles of research evidence together with clinical expertise and patient preference in reaching the best decision about the care of the individual. The strong reliance on clinical experience as opposed to research findings may stem from a lack of knowledge and skills which further demonstrates a need for effective EBP training.

There are some indications that use of the internet as a source of evidence is increasing. However, lack of information about the types of evidence being retrieved makes judgement on its quality impossible.

3.4.3 Strengths

Strengths of this review include use of specific inclusion criteria, a clearly described search strategy, flow diagram showing the number of articles retrieved, and, the process of excluding articles until only those relevant were retained. Summary tables provide descriptive details of included studies, outcomes measured and measurement instruments.

3.4.4 Limitations

Only one reviewer was involved in conducting the searches and selecting articles for the review. Ideally, searches should have been replicated to ensure all relevant studies were retrieved, and a second reviewer should have scrutinised the identified articles to ensure consensus in those included and excluded. Including only published studies in the review could have introduced bias as unpublished studies may have reported different findings.

A further limitation was that some articles were unavailable in SA as full text and could only be obtained from overseas libraries at considerable cost. These articles were therefore excluded. It is possible that the journals in which these articles are published have lowered circulation and may therefore represent different perspectives or populations.

3.4.5 Bias in studies

Included studies used a variety of questionnaires to collect data and even where studies used existing questionnaires, these were modified. This made comparison of findings across studies difficult. In addition, the studies measured a variety of factors

for the constructs that were measured. This lack of homogeneity made combining the results impossible. Moreover, all surveys used self-report questionnaires rather than objective accounts of practice. As therapists' perceptions of their practice may differ from actual practice, caution should be exercised in interpreting the findings (Curtin and Jaramazovic, 2001, Humphris *et al.*, 2000, Pain *et al.*, 2004, Upton, 1999a).

All studies included in this review were conducted in high-income countries. It is thus unclear whether the findings can be generalised to middle- or low-income countries where substantial differences in the structure and resourcing of occupational therapy services may exist.

3.5 Conclusions

Conclusions will be drawn in terms of their implications for practice and research.

3.5.1 Implications for practice

The positivity towards EBP and low levels of knowledge and skills indicate that training opportunities are likely to be well-received by occupational therapists. While training should be provided for all wishing to receive it, an Australian study highlighted the need for further training of therapists who qualified prior to 1999⁴⁴ and those with only bachelor's degrees. Thus continuing professional development programmes must include EBP training targeted at therapists with different levels of knowledge and skill. Developing and strengthening knowledge and skills will increase the possibility of research evidence being applied in practice. Findings suggest that training courses should provide information on electronic evidence sources, conducting electronic searches and evaluating research articles. Positive attitudes to

⁴⁴ Five years prior to an Australian survey which found that therapists who had graduated in the previous five years (i.e. 1999-2003) were more confident in conducting database searches indicating that some university programmes were teaching the skills required for EBP McCluskey (2003b). By implication, Australian therapists who qualified before this time would have received no EBP training.

EBP need to be fostered by providing meaningful and realistic training and implementing strategies to enable therapists to overcome barriers to EBP. In particular, actual application of research to practice needs to increase. This requires the occupational therapy profession globally to take a multi-faceted approach. Strategies need to address the processes of enabling therapists to implement EBP and producing research evidence. Providing access to information to those who require it must receive priority attention, having been reported as a barrier to implementing EBP. This includes ensuring therapists have convenient access to the internet and evidence databases, and that easy-to-read summaries of high-quality evidence for specific conditions are developed and disseminated. All WFOT-accredited education programmes should incorporate EBP modules in their curricula, and occupational therapy associations should provide varying levels of continuing education in EBP.

3.5.2 Implications for research

Research should be conducted into effective strategies aimed at 'getting research into practice' in different contexts in which occupational therapy services are provided. In addition, action plans must be developed to address areas where there is little or no research.

This review was unable to source data from middle- or low-income countries. While the reviewed studies are helpful in anticipating some of the issues that may confront occupational therapists in these countries, the findings cannot be generalised to contexts in which healthcare systems are less-resourced and where differences in training and practice environments as well as clients exist. Therefore, studies investigating EBP knowledge, skills, attitudes and behaviour of occupational therapists in resource-constrained countries must be done. This information will provide valuable information to inform the adoption of EBP by the occupational therapy profession globally.

Chapter 4: Study 1 - Evidence-based practice perceptions, skills and behaviour among occupational therapists in South Africa

4.1 About this chapter

The systematic review in Chapter 3 concluded that despite active efforts to promote and implement EBP, the knowledge and skills of occupational therapists in upper-income countries were at best moderate and application was low. It cannot be assumed that the findings of the review can be generalised to resource-constrained countries, however, as the context in which occupational therapists practice differs substantially. The need for developing countries to gather information about issues that may influence the implementation of EBP has been affirmed by Bennett *et al* (2003b) and Brown *et al* (2010b). A survey to gather baseline information on SA occupational therapists' perceptions, skills and behaviour regarding EBP was therefore justified, both as a contribution to the occupational therapy literature, and to plan effective strategies for implementing EBOT.

4.2 Rationale for the study

Opportunities for occupational therapists in SA to learn about, and develop the skills required for EBP, have been limited. Considering that many occupational therapists in SA are unable to access international journals, and the reported poor research culture (Du Toit and Wilkinson, 2009, Joubert, 2003), it was assumed that many would not have heard of EBP and relatively few would be applying research findings regularly in their practice. Baseline information about EBP knowledge, perceptions, skills and behaviour as well as training needs and access to information sources, was therefore needed to plan further research aimed at implementation.

The terms 'perceptions', 'views' and 'attitudes' have been used by different authors to capture subjective understandings and opinions about EBP (Bennett *et al.*, 2003b, Curtin and Jaramazovic, 2001, Dubouloz *et al.*, 1999, Philibert *et al.*, 2003, Upton, 1999a). 'Perceptions' is used in this chapter because, as a relatively new concept to occupational therapy in SA, it was assumed that therapists would not have had sufficient time to form deeply-held beliefs about EBP, but would have started forming their own opinions about it. As few training opportunities has been available, knowledge levels were assumed to be low and it was thus considered more appropriate to focus on the skills therapists already had that could be used for EBP.

4.3 Study purpose

The purpose of the study was to establish baseline behaviours of SA occupational therapists regarding EBP and to determine the sources of information available to support it.

4.4 Research questions

There were three main research questions, namely:

1. What perceptions, skills and knowledge do occupational therapists in SA have about EBP and to what extent are they using it?
2. How many occupational therapists in SA have received EBP training and what are their ongoing training needs?
3. To what sources of information do occupational therapists in SA have access?

4.5 Study aims and objectives

The aim of the study was to determine the perceptions, skills and knowledge regarding EBP in a representative sample of SA occupational therapists, and to ascertain whether they had adequate access to the required information sources.

The study objectives were to:

1. determine whether respondents had adequate access to information sources for EBP by investigating what was currently available;
2. establish respondents' perceptions of EBP and determine whether these influenced their application thereof;
3. ascertain the proportion of respondents who had received EBP training and determine training needs and preferences;
4. determine respondents' confidence in EBP skills;
5. determine respondents' success in finding and using EBP;
6. determine whether demographic and practice profile had any influence on EBP behaviour; and,
7. generate a profile of characteristics of respondents who were successful in finding and applying evidence.

4.6 Method

4.6.1 Study design

A cross-sectional descriptive, analytical design was used.

4.6.2 Study population and sampling

The study population included all occupational therapists working in SA in 2004. To prevent non-coverage error, the register of the HPCSA, rather than the OTASA membership list⁴⁵, was used as the sampling frame. There were 2723 registered occupational therapists in January 2004.

⁴⁵ Relatively few occupational therapists are OTASA members. In 2004, 35.8% (976/2723) of the occupational therapists on the HPCSA database were members (OTASA office, email communication, 29 September 2009).

The required sample size was calculated using *EpiCalc 2000, version 1.02* (Gilman and Myatt, 1998). The calculation was based on the approximate prevalence of occupational therapists using EBP on a regular basis. The following parameters were entered:

Estimated prevalence: 10%

Precision: 0.05

Confidence level: 95%.

The required sample size was 138. The mean response rate from surveys of occupational therapists in the systematic review in Chapter 3 was 51%. To allow for exclusions and non-response, 450 random numbers were generated⁴⁶ (refer to 4.7.5.1 for details).

To ensure the selection of participants was not biased and that everyone had an equal chance of inclusion, participants were randomly selected from the HPCSA address list. The only exclusion criterion was an address outside SA. Details of the procedure for selecting the random sample are described in 4.6.5.1.

4.6.3 Data collection

As the study population was fairly large and geographically scattered, a postal survey was deemed most suitable and cost-effective for collecting information (Curtis and Redmond, 2009, Edwards *et al.*, 2003). Data collection occurred over a four-month period (May-August 2004).

4.6.4 Instrumentation

Two surveys in the systematic review (Chapter 3) included items measuring EBP knowledge, attitudes and behaviour. These were conducted in Australia (Bennett *et*

⁴⁶ To obtain a 51% response rate 409 questionnaires needed to be sent out. This was increased to 450 to allow for exclusions during the random sampling process and to provide a higher chance of obtaining sufficient responses.

al., 2003b) and the US (Dysart and Tomlin, 2002) and both seemed suitable for the current study. As the questionnaire by Dysart and Tomlin (2002) had no reported psychometric properties it was discarded in favour of that by Bennett *et al* (2003b) which had established face and content validity. The latter questionnaire was adapted for occupational therapists from a previous study of general practitioners (McColl *et al.*, 1998). Two demographic items from a SA survey of psychiatrists and mental health general practitioners (Siegfried *et al.*, 2003) were included.

Questionnaires were obtained from the authors who gave permission for their adaptation and use.

Relevant items were selected from the above-mentioned questionnaires by the PI and a senior occupational therapy colleague with considerable research experience. Items were adapted to ensure their applicability and transferability to the context of occupational therapy practice in SA. Full details of changes made and sources of items included in the final questionnaire are available in Appendix II. Assuming that some therapists would not have heard about EBP and relatively few would be implementing it regularly, questionnaire items were related to EBP perceptions, skills, behaviour, training, and availability of sources of information rather than testing knowledge of concepts such as statistical terms. The questionnaire contained a combination of open and closed questions and tick boxes were used to ensure it could be completed in the shortest possible time. Likert items had four-points with one as least desirable and four most desirable. The choice of an even or odd number of options is dependent on the needs of the research being undertaken (Streiner and Norman, 2008); in this case, it was important to obtain a response on one of the ends of the scale rather than a neutral (median) response.

The final draft questionnaire was examined by two EBP experts at the South African Cochrane Centre and refinements made based on their feedback. For example, 'the internet' was added to question 17 and more space was allowed for writing responses to questions that had an option of 'other'. To test face validity and utility, the questionnaire was piloted with three occupational therapists (two clinicians and

a part-time lecturer) and a physiotherapy lecturer with research experience. This resulted in minor changes to the layout, order of presentation and instructions.

The questionnaire contained the following sections (see Appendix III):

- Section 1: EBP concepts & perceptions (item 1-4)
- Section 2: Demographic and practice information (item 6-16)
- Section 3: The use of EBP in clinical decision-making (item 17-28)

This section included items measuring reliance on different sources of evidence (item 17); success finding, extracting and applying evidence (item 18, 20, 21); types of research used and methods of applying EBP (item 19, 22); access to sources of evidence (item 25); and, self-reported confidence in EBP skills (item 26).

- Section 4: Training in EBP (item 29-31).

4.6.5 Procedure

4.6.5.1 Sampling

Each of the 2723 occupational therapists on the HPCSA address list was allocated a number⁴⁷. Random numbers were generated in *Excel*. Anticipating that some of the numbers generated would be for therapists with overseas addresses who would be excluded, 450 random numbers were generated. Names of therapists whose row numbers were selected were entered onto an *Excel* spreadsheet that was used for the questionnaire mailing. Once participants with SA addresses had been selected, the final number of questionnaires that were sent out was 436.

4.6.5.2 Data collection

Questionnaires were posted in May 2004. A covering letter explaining the purpose of the study and requesting permission to use data from completed questionnaires was

⁴⁷ The address list was an *Excel* file. The *Excel* row number was used as the participant number.

included (see Appendix IV). As in the study by Siegfried *et al* (2003), questionnaires were coded with a personal identification number linked to each participant's name to ensure that a reminder could be sent to non-respondents. The following strategies for increasing response rates in postal surveys were used (Edwards *et al.*, 2003):

- covering letters provided assurance of confidentiality;
- a university letterhead was used for the covering letter;
- no questions of a sensitive nature were included;
- a second letter and questionnaire was sent to non-respondents after seven weeks; and,
- a non-monetary incentive (book on EBP) was offered to respondents who returned the questionnaire by the due date⁴⁸.

Other strategies applied to improve response rates included a one-page covering letter using the salutation 'Dear Colleague', prepaid self-addressed envelopes and easy response options in the questionnaire (Gore-Felton *et al.*, 2002).

4.6.6 Data management

Data was entered into *STATISTICA* 8 (StatSoft Inc, 2008) by a research assistant as questionnaires were received. Entries were checked for accuracy by the PI once all data had been entered. Hard copies of questionnaires were double-checked against data entries to verify accuracy and changes were made where needed. Following the process used by Chan and Altman (2005), data was checked for accuracy a third time by the PI several months later rather than employing a second person to do this.

⁴⁸ Numbers on all questionnaires returned within the stipulated time were placed in a container and one was randomly drawn by a person not involved in the study. The winner was notified by email and the book was sent by registered mail.

4.6.7 Data analysis

Data were analysed using STATISTICA 8 (StatSoft Inc, 2008). Responses to closed questions were quantitatively analysed. Frequencies and proportions were calculated for demographic and practice variables. To determine the representivity of the sample, all names on the HPCSA list that were selected for the study were sorted in ascending order by postal codes. These were further categorised into provinces using the post office sorting lines document (South African Post Office). *EpiCalc 2000, version 1.02* (Gilman and Myatt, 1998) was used to calculate sample and population proportions by province and a test of proportions was conducted to determine differences between them.

Hypothesis testing for relationships between nominal variables were explored using the Pearson chi-square test or, if cells had expected counts of five or less, with Fisher's exact test. The Mann-Whitney U Test was used to test for significant differences between ordinal variables. A p-value of 0.05 was considered to be significant. Response categories were collapsed for items with small cell numbers. For example, categories for item 17 were aggregated and presented as 'not at all/rarely' and 'often/very often'. Responses to open questions were captured verbatim in *Excel* and a thematic content analysis was conducted (Boynton, 2004). A research assistant looked for patterns of responses for each item and grouped similar units of meaning into categories that captured the main themes (Hosking *et al.*, 1995). The categories and initial codes were reviewed by the PI to check accuracy (Hosking *et al.*, 1995).

To determine whether specific characteristics were predictors for finding and applying evidence (dependent variables), seven independent variables (age, years of experience, qualification, urban or rural practice, sector of work, province and EBP training) were selected for inclusion in a multivariate logistic regression model. The analysis was done in several steps. Firstly, the STATA [tabulation] command was used for all variables to check the coding of the data and identify any missing values. Next, in order for the regression analysis to be done, data was recoded to '0' or '1'.

Two-by-two tables were constructed for each dependent variable against the selected independent variables. A univariate analysis was then performed on each dependent variable against the selected independent variables using generalised linear modelling, binomial family, log link to estimate prevalence ratios (PR) and 95% CIs. The so-called crude estimates of PR were calculated in *STATA* adjusted for age since age has such an important effect on almost all analyses. As 'qualification', 'years of experience', 'place of work' and 'province' had few responses in some cells; categories for these variables were collapsed and recoded. All variables were recoded into two categories, except for 'province' which was collapsed into Gauteng, Western Cape and all remaining provinces. Multivariate analysis was not warranted given the small sample size and because none of the univariate analyses showed significant associations, these variables were selected for the estimation of adjusted odds ratios.

4.6.8 Ethical and legal considerations

Ethical approval was granted by the UCT Health Sciences Faculty Human Research Ethics Committee (REC REF. 011/2004) (see Appendix V). A covering letter requesting participation was sent with each questionnaire (see Appendix IV). The covering letter contained a detailed explanation about the purpose of the study, explained how the data would be used and provided information on ethics approval. Signed consent was not requested but the covering letter contained the following statement: *'Please note that if you complete this questionnaire you agree to our using the content.'* Completion of the questionnaire and postage back to the researcher was therefore viewed as consent.

Questionnaires were coded with a personal identification number. The PI alone had access to these numbers and the linked names. All responses were treated confidentially. Once the final results of the survey were completed, the list of the linked names and respondents' questionnaire numbers were destroyed. There was low risk to participants as the questions were not of a personal nature. Data was treated confidentially at all times to avert potential harm to participants. To further

reduce this risk, data was maintained in a secure setting at the Department of Health and Rehabilitation Sciences, UCT.

Acknowledging that exposing a possible lack of knowledge among respondents could potentially cause harm or inconvenience when publication occurs, results of the study are reported with due sensitivity and a clear explanation of possible confounding factors. Overall, the anticipated benefits of the study outweighed the risks to individual occupational therapists or the occupational therapy community and the risks were negligible.

4.7 Results

A response rate of 29.6% (129/436) was obtained. Four questionnaires were returned to sender - three due to address changes and one as the therapist was overseas - and were excluded from the analysis. An additional questionnaire completed by a therapist working overseas was also excluded as the study was of occupational therapists working in SA. The sample analysed was therefore 124 of 436 representing 28.4% of the mailed sample.

Five items had no missing data. Missing data for the remaining items varied between 0.8% and 59.7% per question. Items measuring application of EBP had the highest percentage of missing data. Missing data is reported in the tables and a full list is available in Appendix VI.

4.7.1 Demographic and practice characteristics

Table 9 presents the demographic data of respondents. Most had no post-graduate qualification, were 40 years of age or younger, and had more than ten years experience. Two of 124 qualified outside SA.

Table 9: Demographic profile of respondents (N=124)

Item no.	Variable	No. (%)
6.	Highest OT qualification	
	Undergraduate diploma/bachelors degree	85 (68.6)
	Postgraduate diploma/certificate	27 (21.8)
	Postgraduate degree	12 (9.7)
	Total	124 (100.0)
7.	Age	
	<30yrs	41 (33.1)
	31-40yrs	49 (39.5)
	41-50yrs	20 (16.1)
	>50yrs	14 (11.3)
	Total	124 (100.0)
9.	Years experience in OT	
	<2 yrs	12 (9.7)
	2-5 yrs	18 (14.5)
	5-10 yrs	32 (25.8)
	>10yrs	62 (50.0)
	Total	124 (100.0)

Proportions for main caseloads are shown in descending order in Table 10.

Table 10: Main caseload of respondents*

Area	No. (%)
Paediatrics	71 (57.3)
Adult physical & Geriatrics	50 (40.3)
Mental health/psychosocial & intellectual impairment	32 (25.8)
Community development	21 (16.9)
Management	21 (16.9)
Education	17 (13.7)
Mix	13 (10.5)
Other (including client assessment and training)	39 (31.5)
Missing data	9 (7.3)

* Many respondents worked in more than one area and therefore totals exceed sample size

Table 11 shows the respondents' practice profile. Most (114/124; 91.9%) had contact with clients and worked in urban areas in the private sector. The largest number of respondents worked in Gauteng followed by the Western Cape. Two of 124 respondents worked in a combination of provinces, namely Gauteng/ Limpopo and Gauteng/North West.

Table 11: Practice profile of respondents (N=124)

Item no.	Variable	No. (%)
12.	Province	
	Eastern Cape	3 (2.4)
	Free State	10 (8.1)
	Gauteng	47 (38.2)
	KwaZulu Natal	16 (13.0)
	Limpopo	1 (0.8)
	Mpumalanga	7 (5.7)
	Northern Cape	1 (0.8)
	North West	5 (4.1)
	Western Cape	35 (28.5)
	Missing	1 (0.8)
	Total	126 (102.4)*
11.	Location of work	
	Urban	102 (82.3)
	Rural	13 (10.5)
	Combination**	4 (3.2)
	Missing	5 (4.0)
	Total	124 (100.0)
13.	Sector	
	Public only	47 (37.9)
	Private only	64 (51.6)
	Combination	8 (6.5)
	Missing	5 (4.0)
	Total	124 (100.0)
14.	Public Sector works sites	
	Teaching /other hospital	16 (29.1)
	CHC/community	11 (20.0)
	School	12 (21.8)
	University	5 (9.1)
	Combination of above/other	9 (16.4)
	Missing	2 (3.6)
	Total#	55 (100.0)
15.	Private Sector work sites	
	Private occupational therapy practice	59 (81.9)
	Non-governmental Organisation (NGO)	2 (2.8)
	Insurance Company	1 (1.4)
	Other	3 (4.2)
	Combination	6 (8.3)
	Missing	1 (1.4)
	Total##	72 (100.0)
	Combination of public & private	
	Other hospital & private OT practice	2 (25.0)
	Combination in public, NGO & other private	1 (12.5)
	School & private OT Practice	5 (62.5)
	Total	8 (100.0)

* Respondents working in more than one province (N=2) were entered under each province; the total therefore exceeds 124 (100%)

** These were combined with 'urban' in the analysis

Sum of no. in public sector and no. working in both public & private

Sum of no. in private sector and no. working in both public & private

Figure 5 shows the comparison of the population and sample for each province.

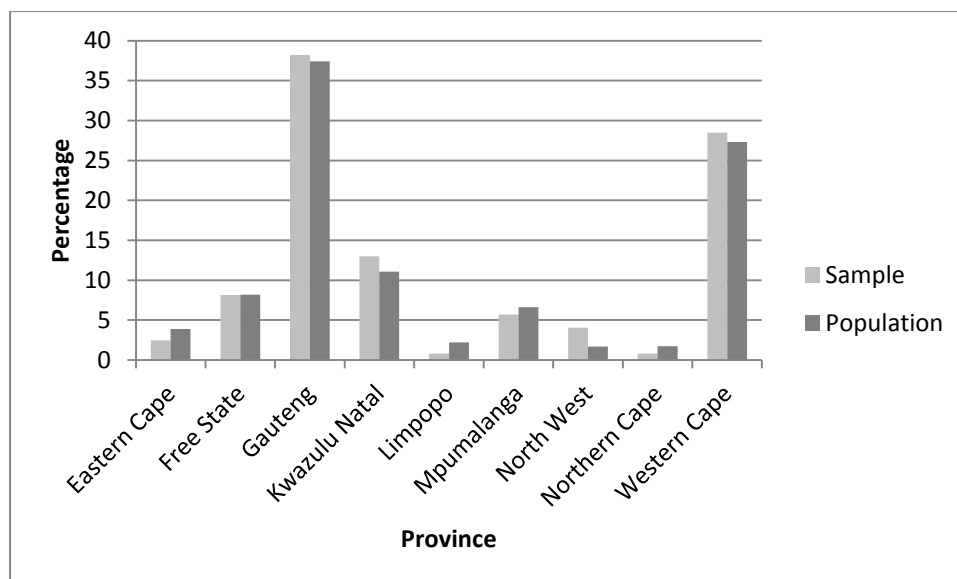


Figure 5: Comparison of distribution of respondents by province

As depicted in Table 12, there were no significant differences between sample (N=124) and population (N=2864) proportions, indicating that the sample mirrored the distribution of occupational therapists per province at the time of the survey.

Table 12: Sample and population proportions by province *

Province	Sample % (N=124)	Population % (N=2684)	p-value (two-tailed)	95% CI for difference in proportions
Eastern Cape	2.4	3.9	0.567	-1.8-4.7
Free State	8.1	8.2	0.875	-5.3-5.4
Gauteng	37.9	37.4	0.932	-8.4-10.0
KwaZulu-Natal	12.9	11.1	0.301	-4.5-8.4
Limpopo	0.8	2.2	0.472	-0.7-3.5
Mpumalanga	5.7	6.6	0.834	-3.7-5.5
Northern Cape	0.8	1.7	0.688	-1.2-3.0
North West	4.0	1.7	0.107	-1.6-6.3
Western Cape	28.2	27.3	0.861	-7.4-9.7

* Two participants worked in two provinces and were added to both provinces in which they worked

Results for hypothesis tests are shown in Table 13. As expected, those with postgraduate qualifications had more years of experience ($p= 0.015$). No other significant differences were found.

Table 13: Results for hypothesis tests for demographic and practice variables (N=124)

Variable	No. (%)	No. (%)	No. (%)	Total No. (%)	Mann-Whitney U Test	p-value (two-tailed)
Experience (years)	Undergraduate qualifications	Postgraduate qualifications			1206.5	0.015
<2	12 (14.1)	0 (0.0)		12 (9.7)		
2-5	14 (16.5)	4 (10.3)		18 (14.5)		
5-10	22 (25.9)	10 (25.6)		32 (25.8)		
>10	37 (43.5)	25 (64.1)		62 (50.0)		
Total	85 (100.0)	39 (100.0)		124 (100.0)		
Age (years)	Urban	Rural	Combination	Total	185.0	0.767
<30	29 (28.3)	9 (69.2)	2 (50.0)	40 (33.6)		
31-40	44 (43.1)	3 (23.1)	0 (0.0)	47 (39.5)		
41-50	19 (18.6)	0 (0.0)	0 (0.0)	19 (16.0)		
>50	10 (9.8)	1 (7.7)	2 (50.0)	13 (10.9)		
Total*	102 (99.8)	13 (100.0)	4 (100.0)	119* (100.0)		
Experience (years)	Urban	Rural	Combination	Total	189.0	0.817
<5	18 (17.7)	9 (69.2)	1 (25.0)	28 (23.5)		
>5	84 (82.4)	4 (30.8)	3 (75.0)	91 (76.5)		
Total*	102 (100.1)	13 (100.0)	4 (100.0)	119* (100.0)		
Experience (years)	Public sector	Private sector	Combination	Total	1258.0	0.143
<2	10 (21.3)	2 (3.1)	0 (0.0)	12 (10.1)		
2-5	7 (14.9)	8 (12.5)	1 (12.5)	16 (13.5)		
5-10	7 (14.9)	19 (29.7)	6 (75.0)	32 (26.9)		
>10	23 (48.9)	35 (54.7)	1 (12.5)	59 (49.6)		
Total*	47 (100.0)	64 (100.0)	8 (100.0)	119* (100.0)		

*Totals are less than 124 due to missing data

4.7.2 Access to sources of information

Table 14 shows access to different sources of evidence. A surprising number had access to computers and the internet but few had access to an academic library.

Table 14: Respondents with access to sources of evidence (N=124)*

Resources	N	No. (%)
Computer	123	121 (98.4)
Colleagues - other	117	113 (96.6)
Colleagues - OTs	119	112 (94.1)
Internet	118	108 (91.5)
Journals	107	82 (76.6)
Professional library	96	49 (51.0)

*Missing data were excluded from the total for calculating %s

4.7.3 Perceptions of EBP

Table 15 summarises responses for perceptions of EBP. Almost all agreed or strongly agreed that EBP was important to occupational therapy and improved client care. A high proportion disagreed that EBP was of limited value in occupational therapy due to insufficient evidence and that it placed too many demands on their workload.

Table 15: Perceptions of EBP (N=124)

Item no.	Statement	N	Strongly disagree/ disagree No. (%)	Agree/ strongly agree No. (%)
1.	EBP is important to OT	118	1 (0.9)	117 (99.2)
2.	EBP improves client care	116	1 (0.9)	115 (99.1)
3.	EBP is of limited value in OT because there is not enough research evidence	113	66 (58.4)	47 (41.6)
4.	EBP places too many demands on my workload	111	62 (55.9)	49 (44.1)

*Missing data were excluded from the total for calculating %s

Chi-squared tests revealed no significant associations between perceptions of EBP and qualification, age, years of experience, province or urban/rural area (for details refer to Appendix VII).

4.7.4 Training

Although 96 of 123 respondents (78.1%) had heard about EBP, only 31 (25.0%) had received any training. Twenty-five of these (80.6%) attended training between 2002 and 2004. Figure 6 depicts the proportion of respondents in each province who had received EBP training.

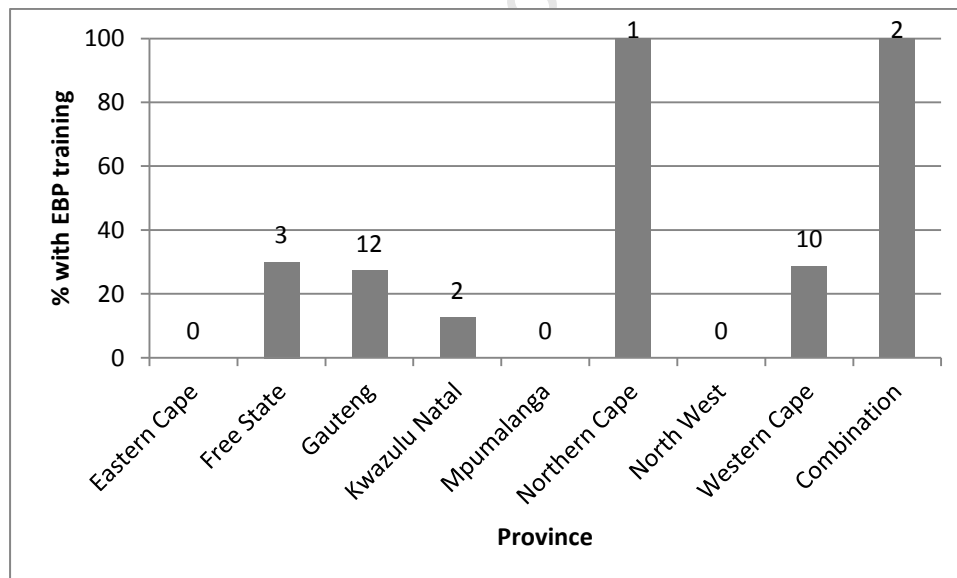


Figure 6: Proportion with EBP training per province

As shown in Table 16, there were no significant relationships between training in EBP and demographic or practice variables. There were also no associations between training in EBP and success finding, extracting or applying evidence, reliance on

different sources of evidence over the past two months and methods currently used by respondents.

Table 16: Hypothesis tests for relationships between EBP training and other variables

Item no.	Variable	N (%)	No EBP Training No. (%)	EBP training No. (%)	Chi-square	df	p-value
6.	Qualification				0.41	1	0.523
	Undergraduate	85 (69.1)	65 (70.7)	20 (64.5)			
	Postgraduate	38 (30.9)	27 (29.4)	11 (35.5)			
	Total	123 (100.0)	92 (100.1)	31 (100.0)			
7.	Age (years)				1.02	3	0.797
	<30	40 (32.5)	30 (32.6)	10 (32.6)			
	31-40	49 (39.8)	38 (41.3)	11 (35.5)			
	41-50	20 (16.3)	15 (16.3)	5 (16.1)			
	>50	14 (11.4)	9 (9.8)	5 (16.1)			
	Total*	123 (100.0)	92 (100.0)	31 (100.3)			
9.	Experience (years)						0.495*
	<2	111 (90.2)	84 (91.3)	27 (87.1)			
	≥2	12 (9.8)	8 (8.7)	4 (12.9)			
	Total*	123 (100.0)	92 (100.0)	31 (100.0)			
12.	Province						
	Eastern Cape	3 (2.5)	3 (3.3)	0 (0.0)			
	Free State	10 (8.2)	7 (7.6)	3 (10.0)			
	Gauteng	44 (36.1)	32 (34.8)	12 (40.0)			
	Kwazulu Natal	16 (13.1)	14 (15.2)	2 (6.7)			
	Mpumalanga	7 (5.7)	7 (7.6)	0 (0.0)			
	Northern Cape	1 (0.8)	0 (0.0)	1 (3.3)			
	North West	4 (3.3)	4 (4.4)	0 (0.0)			
	Western Cape	35 (28.7)	25 (27.2)	10 (33.3)			
	Combination	2 (1.6)	0 (0.0)	2 (6.7)			
	Total	122 (100.0)	92 (100.1)	30 (100.0)			
11.	Location of work				0.78	2	0.676
	Urban	101 (85.6)	74 (84.1)	27 (90.0)			
	Rural	13 (11.0)	11 (12.5)	2 (6.7)			
	Combination*	4 (3.4)	3 (3.4)	1 (3.3)			
	Total	118 (100.0)	88 (100.0)	30 (100.0)			
18.	Success finding evidence				0.50	1	0.478
	Yes	57 (51.4)	41 (49.4)	16 (57.1)			
	No	54 (48.7)	42 (50.6)	12 (42.9)			
	Total	111 (100.1)	83 (100.0)	28 (100.0)			
20.	Success extracting information from sources						1.000*
	Yes	50 (92.6)	35 (92.1)	15 (93.8)			
	No	4 (7.4)	3 (7.9)	1 (6.3)			
	Total	54 (100.0)	38 (100.0)	16 (100.1)			
21.	Success applying evidence						0.293*
	Yes	44 (78.6)	33 (82.5)	11 (68.8)			
	No	12 (21.4)	7 (17.5)	5 (31.3)			
	Total	56 (100.0)	40 (100.0)	16 (100.1)			
17.	Sources used in clinical decision-making						
	• Own clinical experience						0.559*
	Often/very often	107 (97.3)	82 (97.6)	25 (96.2)			
	Rarely/not at all	3 (2.7)	2 (2.4)	1 (3.9)			
	Total	110 (100.0)	84 (100.0)	26 (100.1)			
	• Continuing education programmes				0.01	1	0.919
	Often/very often	79 (75.2)	60 (75.0)	19 (76.0)			
	Rarely/not at all	26 (24.8)	20 (25.0)	6 (24.0)			
	Total	105 (100.1)	80 (100.0)	25 (100.0)			
	• Opinion of colleagues				0.03	1	0.857
	Often/very often	76 (71.7)	57 (71.3)	19 (73.1)			
	Rarely/not at all	30 (28.3)	23 (28.8)	7 (26.9)			
	Total	106 (100.0)	80 (100.1)	26 (100.0)			

Item no.	Variable	N (%)	No EBP Training No. (%)	EBP training No. (%)	Chi-square	df	p-value
22.	• Textbooks				1.27	1	0.260
	Often/very often	65 (62.5)	47 (59.5)	18 (72.0)			
	Rarely/not at all	39 (37.5)	32 (40.5)	7 (28.0)			
	Total	104 (100.0)	79 (100.0)	25 (100.0)	0.98	1	0.322
	• Undergraduate education						
	Often/very often	61 (60.4)	48 (63.2)	13 (52.0)			
	Rarely/not at all	40 (39.6)	28 (36.8)	12 (48.0)	0.43	1	0.510
	Total	101 (100.0)	76 (75.3)	25 (100.0)			
	• Research literature						
	Often/very often	50 (50.5)	37 (48.7)	13 (56.5)	2.28	1	0.131
	Rarely/not at all	49 (49.5)	39 (51.3)	10 (43.5)			
	Total	99 (100.0)	76 (100.0)	23 (100.0)			
	• Internet				0.07	1	0.786
	Often/very often	26 (25.7)	17 (22.1)	9 (37.5)			
	Rarely/not at all	75 (74.3)	60 (77.9)	15 (62.5)			
	Total	101 (100.0)	77 (76.2)	24 (23.8)	0.158	1	0.691
	EBP methods being used						
• Learning the skills of EBP							
Yes	42 (38.5)	31 (37.8)	11 (40.7)	0.20	1	0.655	
No	67 (61.5)	51 (62.2)	16 (59.3)				
Total	109 (100.0)	82 (100.0)	27 (100.0)				
• EBOT summaries of current research				0.20	1	0.655	
Yes	61 (56.0)	45 (54.9)	16 (59.3)				
No	48 (44.0)	37 (45.1)	11 (40.7)				
Total	109 (100.0)	82 (100.0)	27 (100.0)				
• EBOT guidelines or protocols							
Yes	60 (55.6)	46 (56.8)	14 (51.9)				
No	48 (44.4)	35 (43.2)	13 (48.2)				
Total	108 (100.0)	81 (75.0)	27 (25.0)				

* Fisher's exact test, two-tailed

No significant differences were found between training in EBP and perceptions that EBP is important to occupational therapy, improves client care or has limited value due to insufficient research, but those who had been trained were significantly more likely to disagree that EBP placed too many demands on workload (see Table 17).

Table 17: Associations between EBP training and perceptions of EBP

Item no.	Perceptions of EBP	N (%)	No EBP Training No. (%)	EBP training No. (%)	Chi-square	df	p-value
1.	Important to OT						1.000*
	Agree	116 (99.2)	86 (98.9)	30 (100.0)			
	Disagree	1 (0.9)	1 (1.2)	0 (0.0)			
	Total	117 (100.1)	87 (100.1)	30 (100.0)			
2.	Improves client care						1.000*
	Agree	114 (99.1)	84 (98.8)	30 (100.0)			
	Disagree	1 (0.9)	1 (1.2)	0 (0.0)			
	Total	115 (100.0)	86 (100.0)	30 (100.0)			
3.	Of limited value in OT due to insufficient research evidence				2.08	1	0.150
	Agree	46 (41.1)	37 (45.1)	9 (30.0)			
	Disagree	66 (58.9)	45 (54.9)	21 (70.0)			
	Total	112 (100.0)	82 (100.0)	30 (100.0)			
4.	Places too many demands on my workload				4.12	1	0.042
	Agree	48 (43.6)	40 (49.4)	8 (27.6)			
	Disagree	62 (56.4)	41 (50.6)	21 (72.4)			
	Total	110 (100.0)	81 (100.0)	29 (100.0)			

* Fisher's exact test, two-tailed

Responses for preferred methods of moving from ‘opinion based’ to evidence-based practice in the future (item 23) and main priorities for occupational therapy in SA (item 24) are portrayed in Table 18. Most interest was expressed in brief evidence-based summaries of occupational therapy research and/or evidence-based occupational therapy practice guidelines/protocols over searching for and appraising research literature. The most popular priority for the future was brief evidence-based summaries. Workshops and short in-service training sessions were rated highest for continuing education (item 30).

Table 18: Methods, priorities and formats for EBOT in SA in the future (N=124)

Item no.	Variable	N	No	Yes
23.	Method of moving from ‘opinion based’ to EBP		No. (%)	No. (%)
	Evidence-based summaries of occupational therapy research	117	21 (16.9)	96 (77.4)
	Using EBOT practice guidelines/protocols	117	27 (21.8)	90 (72.6)
	Learning skills to search for and appraise literature	117	63 (50.8)	54 (43.5)
24.	Priority			
	Evidence-based occupational therapy summaries	116	63 (50.8)	53 (42.7)
	Using EBOT practice guidelines/protocols	116	76 (61.3)	40 (32.3)
30.	Learning EBP skills	116	87 (70.2)	29 (23.4)
	Format for continuing education		Slightly/not useful	Very/extremely useful
	Workshops	120	19 (15.3)	101 (81.5)
	Short in-service training sessions	117	18 (14.5)	99 (79.8)
	Brief summaries	117	23 (18.5)	94 (75.8)
	Summaries on databases	113	31 (25.0)	82 (66.1)

Missing responses regarded as ‘no’

There were no associations between training in EBP and methods respondents were interested using in the future. Employment in urban areas was associated with a preference for summaries on databases (Fisher’s exact p, two tailed=0.038).

4.7.5 Knowledge of EBP

Ninety-six of 123 (77.4%) had heard about EBP. Main sources for hearing about EBP are shown in Table 19. As more than one option was permitted the total exceeds 100%.

Table 19: Sources of hearing about EBP (N=96)*

Sources	No. (%)
Conferences/workshops	57 (58.8)
Colleagues	53 (54.6)
Journals	45 (46.4)
Newsletters	30 (30.9)
Other [#]	16 (16.5)

* Those who had not heard about EBP were not required to respond to these items. One missing response.

[#] Visiting overseas lecturer: n=1; worked overseas: n=5; University: n=8; OTASA function: n=1; meeting: n=1; not stated: n=2

4.7.6 Skills in EBP

One item tested self-perceived skills in EBP. Categories were collapsed into 'not at all/a little confident' and 'quite/very confident' for the analysis. Table 20 shows respondents' confidence in different EBP skills. While many were quite or very confident in literature searches, they lacked confidence in determining the design of, and evaluating, a study. Few respondents felt confident using *The Cochrane Library*.

Table 20: Confidence in EBP skills (N=124)

Skill	N	Not confident	Quite/very confident
		No. (%)	No. (%)
Literature searching	122	50 (40.3)	72 (58.1)
Determining the clinical significance of study results	121	76 (61.3)	45 (36.3)
Determining the design of a study	120	88 (71.0)	32 (25.8)
Evaluating the validity of a study	121	91 (73.4)	30 (24.2)
Using <i>The Cochrane Library</i>	121	117 (94.4)	4 (3.2)

* Missing responses regarded as 'no'

Eighty-four of 124 provided reasons for their lack of confidence in the skills listed in Table 20. Forty-nine percent (41/84) had either never heard of *The Cochrane Library* or had never used it (refer to Table 21).

Table 21: Reasons for lack of confidence (N=84)

Reasons	No. (%)
Knowledge and experience in research skills inadequate	26 (31.0)
Time constraints	5 (6.0)
Poor computer literacy	4 (4.8)
Lack of motivation	4 (4.8)
Lack of access to libraries/ <i>The Cochrane Library</i>	4 (4.8)
Working in isolation	1 (1.2)
Cost of accessing information	1 (1.2)

Respondents with postgraduate qualifications were significantly more confident doing literature searches (chi-square=6.83, df=1, p=0.009) and determining the clinical significance of study results (chi-square=5.66, df=1, p=0.017). There were no associations between confidence in EBP skills and years of experience or

employment in a rural/urban area. Those who had undergone EBP training reported greater confidence using the Cochrane electronic database (chi-square=5.29, df=1, p=0.021) but not literature searches or evaluating studies.

Knowledge was tested by asking respondents to name their favourite search engine and most-used professional website. Only 37.9% (47/124) provided names of search engines with *Google* (47/124, 37.9%) and *Yahoo* (13/124, 10.5%) being most popular. A high number (65/124, 52.4%) omitted this item, wrote 'not applicable' or stated they did not use search engines or did not know how. Some (11/124, 8.9%) gave inappropriate responses such as names of websites or databases. When asked for their most-used website, 26.6% (33/124) named professional websites and the majority (86/124, 69.4%) omitted the item, wrote 'not applicable' or stated they did not use any websites. Four respondents (3.2%) used different sites depending on the information needed.

4.7.7 EBP behaviour

Forty-six percent (57/124) reported success finding research evidence pertaining to their practice in the past two months, 40% (50/124) were able to extract information and 36% (44/124) were able to apply it in practice. The sources of information they had used over the previous two months are shown in Table 22. Most relied on clinical experience and few had used research literature or the internet.

Table 22: Sources used to assist clinical decision-making (N=124)

<i>Sources</i>	<i>N</i>	<i>Not at all/rarely No. (%)</i>	<i>Often/ very often No. (%)</i>
Own clinical experience	111	3 (2.4)	108 (87.1)
Continuing education programmes	106	26 (21.0)	80 (64.5)
Opinion of colleagues	107	30 (24.2)	77 (62.1)
Textbooks	105	40 (32.3)	65 (52.4)
Undergraduate education	102	40 (32.2)	62 (50.0)
Research literature	100	50 (40.3)	50 (40.3)
Internet	102	75 (60.5)	27 (21.8)

Thirty-eight of the 67 respondents (56.7%) who had not been successful finding evidence gave reasons for their difficulties. Three reasons emerged from the post-coding analysis: respondents were not actively seeking new knowledge (10/38,

26.3%), encountered limitations in the research available (14/38, 36.8%) and experienced a variety of barriers that prevented them finding evidence (18/38, 47.4%). Further analysis of each reason identified the categories depicted in Table 23.

Table 23: Reasons for lack of success in finding evidence (N=124)

<i>Themes</i>	<i>Categories</i>	<i>No. (%)</i>
Not actively seeking new knowledge	Don't actively look for literature	7 (5.6)
	Read what is easily available	2 (1.6)
	Use accepted methods	1 (0.8)
Limitations in the research available	Limited research in certain areas	8 (6.5)
	Lack of relevant research	5 (4.0)
Barriers to finding evidence	Lack of convenient access to internet and literature	10 (8.1)
	Lack of time	5 (4.0)
	Lack of knowledge about EBP	4 (3.2)
	Lack of support from employer	1 (0.8)

Although 10 respondents gave reasons for difficulties extracting information from sources, these were related to finding rather than extracting evidence. Reasons confirmed the barriers to be: insufficient access to evidence sources (literature and the internet); limitations in the information available; difficulty accessing information; and lack of relevance of information. One respondent said extracting information from sources was 'far too complicated' and another said it was 'time-consuming'.

Eleven respondents elaborated on their difficulties applying evidence. One had not tried to apply evidence while others either found that resources were insufficient to do so (4/11) or that the evidence was not directly applicable to their context (5/11), mainly because the research was conducted in an upper-income country. One respondent felt that the medical model of training isolated professions which influenced her application of evidence to practice.

To judge their use of research literature, respondents were asked to indicate whether they had used systematic reviews and meta-analyses, RCTs and/or non-randomised experimental studies. Few were using any of these sources as depicted

in Table 24. Referring to the EBP methods they were using, respondents favoured EBOT guidelines/protocols and brief EBOT summaries of current research. Few were learning the skills of EBP, but most seemed to be attempting to base their practice on some form of evidence as only 13 of 124 (10.5%) reported not drawing on any of the forms of evidence listed.

Table 24: Types of research design and EBP methods used (N=124)

<i>Types of research used</i>	<i>N</i>	<i>Not using No. (%)</i>	<i>Using No. (%)</i>
Systematic reviews and meta-analyses of RCTs	50	24 (48.04)	26 (52.0)
RCTs	50	38 (76.0)	12 (24.0)
Non-randomised experimental studies	50	33 (66.0)	17 (34.0)
<i>EBP methods used</i>			
Learning the skills of EBP	110	67 (60.9)	43 (39.1)
Applying EBOT summaries of current research	110	49 (44.6)	61 (55.5)
Using EBOT guidelines or protocols	109	48 (44.0)	61 (56.0)

Respondents with less than two years experience were significantly more reliant on textbooks and undergraduate education when making clinical decisions (refer to Table 25).

Table 25: Hypothesis tests for experience and sources of evidence used in clinical decision-making

<i>Variable</i>	<i>Total N (%)</i>	<i>≥2 years experience No. (%)</i>	<i>< 2 years experience No. (%)</i>	<i>p-value</i>
Clinical experience				0.271 [*]
Often/very often	108 (97.3)	98 (98.0)	10 (90.9)	
Not at all/rarely	3 (2.7)	2 (2.0)	1 (9.1)	
Total	111 (100.0)	100 (100.0)	11 (100.0)	
Continuing education programmes				0.266 [*]
Often/very often	80 (75.5)	73 (76.8)	7 (63.6)	
Not at all/rarely	26 (24.5)	22 (23.2)	4 (36.4)	
Total	106 (100.0)	95 (100.0)	11 (100.0)	
Opinion of colleagues				0.736 [*]
Often/very often	77 (72.0)	69 (72.6)	8 (66.7)	
Not at all/rarely	30 (28.0)	26 (27.4)	4 (33.3)	
Total	107 (100.0)	95 (100.0)	12 (100.0)	
Textbooks				0.032[*]
Often/very often	65 (61.9)	55 (58.1)	10 (90.9)	
Not at all/rarely	40 (38.1)	39 (41.5)	1 (9.1)	
Total	105 (100.0)	94 (100.0)	11 (100.0)	
Undergraduate education				0.003[*]
Often/very often	62 (60.8)	50 (55.6)	12 (100.0)	
Not at all/rarely	40 (39.2)	40 (44.4)	0 (0.0)	
Total	102 (100.0)	90 (100.0)	12 (100.0)	
Research literature				0.318 [*]
Often/very often	50 (50.0)	47 (52.2)	3 (30.0)	
Not at all/rarely	50 (50.0)	43 (47.8)	7 (70.0)	
Total	100 (100.0)	90 (100.0)	10 (100.0)	
Internet				0.723 [*]
Often/very often	27 (26.5)	25 (27.5)	2 (18.2)	
Not at all/rarely	75 (73.5)	66 (72.5)	9 (81.8)	
Total	102 (100.0)	91 (100.0)	11 (100.0)	

^{*}Fisher's exact test, two-tailed

There were no associations between qualification level and reliance on different sources of evidence in clinical decision-making (see Table 26).

Table 26: Results for hypothesis tests for qualification and sources of evidence used

Variable	Total N (%)	Undergraduate No. (%)	Postgraduate No. (%)	Chi-square	df	p-value
Clinical experience						1.000*
Often/very often	108 (97.3)	76 (97.4)	32 (97.0)			
Not at all/rarely	3 (2.7)	2 (2.6)	1 (3.0)			
Total	111 (100.0)	78 (100.0)	33 (100.0)			
Continuing education programmes				0.63	1	0.426
Often/very often	80 (75.5)	55 (73.3)	25 (80.7)			
Not at all/rarely	26 (24.5)	20 (26.7)	6 (19.4)			
Total	106 (100.0)	75 (100.0)	31 (100.1)			
Opinion of colleagues				0.02	1	0.884
Often/very often	77 (72.0)	55 (72.4)	22 (71.0)			
Not at all/rarely	30 (28.0)	21 (27.6)	9 (29.0)			
Total	107 (100.0)	76 (100.0)	31 (100.0)			
Textbooks				1.94	1	0.164
Often/very often	65 (61.9)	42 (57.5)	23 (71.9)			
Not at all/rarely	40 (38.1)	31 (42.5)	9 (28.1)			
Total	105 (100.0)	73 (100.0)	32 (100.0)			
Undergraduate education				0.06	1	0.810
Often/very often	62 (60.8)	42 (60.0)	20 (62.5)			
Not at all/rarely	40 (39.2)	28 (40.0)	12 (37.5)			
Total	102 (100.0)	70 (100.0)	32 (100.0)			
Research literature				0.74	1	0.391
Often/very often	50 (50.0)	32 (47.1)	18 (56.3)			
Not at all/rarely	50 (50.0)	36 (52.9)	14 (43.8)			
Total	100 (100.0)	68 (100.0)	32 (100.1)			
Internet				0.05	1	0.820
Often/very often	27 (26.5)	19 (27.1)	8 (25.0)			
Not at all/rarely	75 (73.5)	51 (72.9)	24 (75.0)			
Total	102 (100.0)	70 (100.0)	32 (100.0)			

* Fisher's exact test, two-tailed

The logistic regression analysis revealed that qualification, experience, place of practice, sector, province and EBP training were not significantly associated with success finding evidence. Age was significantly associated with success finding evidence ($p=0.043$). Respondents aged 31 years or older were 0.4 times less likely to experience success finding evidence relevant to their practice than those younger than 31 years of age (refer to Table 27). The non-significant variables were removed from the model and only age was retained, however this revealed that the model had a poor ability to distinguish whether age was a predictor for success finding evidence (pseudo $r^2=0.03$).

Table 27: Odds ratios and 95% CIs for success finding evidence

Variable	Yes		Crude OR (95% CI)	p-value
Age	N	%		
< 31 years	39	64.1	1.0 (ref)	
≥ 31 years	73	43.8	0.4 (0.2-0.97)	0.043
Total	112			
Experience				
≤ 5 years	28	64.3	1.0 (ref)	
> 5 years	84	46.4	0.5 (0.2-1.2)	0.105
Total	112			
Qualification				
Undergraduate	79	54.4	1.0 (ref)	
Postgraduate	33	42.4	0.6 (0.3-1.4)	0.248
Total	112			
Place of practice				
Urban	99	49.5	1.0 (ref)	
Rural	13	61.5	1.6 (0.5-5.3)	0.417
Total	112			
Sector				
Public	51	43.1	1.0 (ref)	
Private	61	57.4	1.8 (0.8-3.8)	0.135
Total	112			
Province				
Gauteng	44	54.6	1.0 (ref)	
Western Cape	29	41.4	0.6 (0.2-1.5)	0.272
Other	39	53.9	1.0 (0.4-2.3)	0.949
Total	112			
Training				
No	83	49.4	1.0 (ref)	
Yes	28	57.1	1.3 (0.6-3.2)	0.479
Total	111			

Respondents aged 31 years or older and those with more than five years experience were significantly more able to apply evidence in the SA context (refer to Table 28). Although level of qualification appeared to have an impact on ability to apply evidence, these effects could not be tested in the multivariate analysis due to the presence of a zero value. Private practitioners appeared to be more able to apply evidence but this was not statistically significant. There were also no significant differences for ability to apply evidence and place of practice, province and EBP training. Adjusting the model to include only the significant variables (age and years experience) revealed that neither made a significant contribution to predicting ability to apply evidence. The model was therefore poor at predicting who was more successful in applying evidence (pseudo $r^2=0.14$).

Table 28: Odds ratios and 95% confidence intervals for ability to apply evidence

Variable	Yes		Crude OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value
	N	%				
Age						
< 31 years	27	63.0	1.0 (ref)			
≥ 31 years	29	93.1	7.9 (1.5-40.7)	0.01	5.4 (0.6-47.8)	0.13
Total	56					
Experience						
≤ 5 years	20	60.0	1.0 (ref)			
> 5 years	36	88.9	5.3 (1.4-21.0)	0.02	1.7 (0.3-10.8)	0.59
Total	56					
Place of practice						
Urban	48	79.2	1.0 (ref)			
Rural	8	75.0	0.8 (0.1-4.5)	0.79	-	
Total	56					
Sector						
Public	24	66.7	1.0 (ref)			
Private	32	87.5	3.5 (0.9-13.5)	0.07	-	
Total	56					
Province						
Gauteng	26	80.8	1.0 (ref)			
Western Cape	11	72.7	0.6 (0.1-3.3)	0.59	-	
Other	19	79.0	0.9 (0.2-3.9)	0.88	-	
Total	56					
Training						
No	40	82.5	1.0 (ref)			
Yes	16	68.8	0.5 (0.1-1.8)	0.26	-	
Total	56					

4.7.8 Future development of EBOT in SA

Respondents were asked for suggestions to develop EBOT in SA. Of the 41 respondents who gave suggestions, two (4.9%) did not consider EBP a priority, *albeit* useful, but most supported this approach as a requirement for effective occupational therapy practice as illustrated in this quote:

'This approach will be of great value to our profession. We would be able to make decisions on clinically proven information. This will improve the credibility of OT's within the medical profession as many decisions are made through "gut feeling". Yes, in many cases it is correct but lacks scientific backing.'

Evidence-based practice was also considered an essential aspect of developing a research culture in occupational therapy:

'I think it is essential. I think as OTs we need to develop a culture of research to produce the necessary tools and information for evidence-based practise, and it is one of my personal goals to develop my own understanding of EBP.'

Other suggestions included raising awareness among occupational therapists and improving knowledge through training (13/41, 31.7%), supporting the development of EBP skills (2/41, 4.9%), providing open access to information (2/41, 4.9%) and offering assistance with evidence-based record-keeping (2/41, 4.9%). To facilitate EBP, it was recognised that the amount of research undertaken and published needed to increase (4/41, 9.8%) and that the type of research undertaken had to be 'realistic and relevant' to the SA context (4/41, 9.8%). Mechanisms to encourage EBP included journal clubs in which articles were evaluated (2/41; 4.9%), summarising research in occupational therapy journals and providing links to full text articles (1/41, 2.4%), and holding annual research days (1/41, 2.4%).

4.7.9 Summary

Most respondents had heard about and had positive perceptions of EBP, but few had received any EBP training. Confidence was reasonable for literature searches but low for evaluating studies and using *The Cochrane Library*. This also seemed to be reflected in the high reliance on clinical experience and low use of research literature and the internet, despite the majority having internet access. Lack of success finding evidence was attributed to respondents not actively seeking evidence, limitations in the research available and barriers, such as time, knowledge and convenient access to evidence sources. Respondents younger than 31 years of age were more successful finding evidence, but those of 31 years or older and with more than five years' work experience were more able to apply evidence in the SA context. There were significant relationships between postgraduate qualifications and confidence searching for evidence and determining the significance of study findings, as well as training in EBP and confidence using *The Cochrane Library*. Brief evidence-based summaries and EBOT practice guidelines/protocols were preferred over searching for and appraising primary literature. Workshops and short in-service training sessions were rated highest for continuing education sessions.

4.8 Discussion

Generalisability of the study results will first be considered. This will be followed by a discussion of the study findings with reference to similar studies conducted with occupational therapists. Lastly, the strengths and limitations of the study will be examined.

4.8.1 Generalisability of the results

Similar to the findings of other occupational therapy surveys (Bennett *et al.*, 2003b, McCluskey, 2003b), the majority of respondents in the current study had an undergraduate qualification, more than five years' experience and worked in urban areas. Most respondents had direct contact with clients and worked in the private sector. The high number employed in the private sector was surprising but no figures could be obtained from the HPCSA or the OTASA to determine whether this was representative of the proportion of occupational therapists employed in the public and private sectors nationally. Considering that the number of occupational therapy positions in the public service is limited, it may be that more occupational therapists are working in private practice. At the time of the study, few occupational therapists in the public health sector were employed in rural areas and therefore the high proportion of respondents in urban areas probably provides an accurate reflection of the distribution within urban and rural areas. There was no significant difference between the sample and population with regard to distribution of respondents across the provinces. It is possible that the sample was not representative of the proportion of occupational therapists with fewer years of experience, although in the absence of data to confirm or refute this, it is difficult to gauge. It is also possible that the number of respondents with access to the internet may not represent the reality for many therapists. It may be that many only had access to the internet outside of work but this information was not included in the questionnaire. The association between being younger than 30 years old and working in a rural area was expected as new graduates complete one year of compulsory community service and many of these placements are in rural areas. Based on this examination of the

demographic profile of respondents, it seems that the sample was representative of the population of occupational therapists particularly with regard to provincial distribution, rural or urban practice and possibly employment in the public or private sector. Therefore, it appears that the results of this study can be generalised to the population of occupational therapists in SA. However, access to the internet at work should not be assumed.

4.8.2 Perceptions of EBP

It was encouraging that such a high percentage perceived the importance of EBP to occupational therapy and improving client care. This bodes well for the development of EBOT in SA and confirms the findings of studies in Australia, (Bennett *et al.*, 2003b, Copley and Allen, 2009), the UK (Cooke *et al.*, 2008, Curtin and Jaramazovic, 2001, Humphris *et al.*, 2000, Lyons *et al.*, 2010, Metcalfe *et al.*, 2001, Upton, 1999a) and the US (Cameron *et al.*, 2005, Lopez *et al.*, 2008, Philibert *et al.*, 2003, Salls *et al.*, 2009). However, these positive perceptions were contrasted by the relatively high percentage who perceived EBP to be of limited value in occupational therapy due to insufficient evidence (38%) and that it placed too many demands on workload (40%). Ambivalent attitudes towards EBP were similarly identified in a Canadian study (Dubouloz *et al.*, 1999).

Responses to items measuring perceptions were slightly more positive than those in a similar study (Bennett *et al.*, 2003b). This is likely due to the different sample in this study. However, the use of a four-point Likert scale may also have influenced the results as respondents were forced to make a choice on the agree or disagree side of the scale, as opposed to the five point scale used by Bennett *et al* which provided a neutral option. It could also be due to the lower percentage of respondents who had received some training in EBP compared to those in Bennett *et al*'s study. The association between EBP training and disagreement that 'EBP places too many demands on my workload' was also reported by Bennett *et al* (2003b). The perception that EBP is time-consuming concurs with the results of several other studies (Caldwell *et al.*, 2007, Curtin and Jaramazovic, 2001, Dysart and Tomlin,

2002, Salls *et al.*, 2009) and is a potential barrier to increasing implementation of EBP.

The lack of association between perceptions of EBP and employment in urban or rural areas differs from a previous study which found that respondents in rural areas were more likely to agree that EBP placed too many demands on their workload (Bennett *et al.*, 2003b). This could be due to the lower ratio of occupational therapists per 100,000 population in SA resulting in an even higher work load for rural therapists. A further aggravating factor could be lack of convenient access to the internet, making the retrieval of evidence even more time-consuming.

4.8.3 Training in EBP

The low percentage who had received EBP training (25%) was expected considering EBP was a relatively new concept in occupational therapy at the time of the study. It did, however, point to the need for concentrated efforts to provide training opportunities to all occupational therapists in SA. The paucity of occupational therapists with EBP training was widespread at the time of the study evidenced in two Australian studies which reported that 34% (Bennett *et al.*, 2003b) and 15% (McCluskey, 2003b) of their respondents had received EBP training. A SA study with psychiatrists and mental health general practitioners reported an even lower level of training with only 13% of psychiatrists and 17% of general practitioners having attended an evidence-based healthcare (EBHC) course (Siegfried *et al.*, 2003).

Lack of training or knowledge about EBP has been identified as a barrier to implementing EBOT (Curtin and Jaramazovic, 2001) and research suggests that training increases confidence in EBP skills (Bennett *et al.*, 2003b, Salls *et al.*, 2009). As awareness of the importance of using research evidence to inform practice has steadily increased, the percentage of occupational therapists with EBP training should also have increased in recent years both locally and internationally, particularly as many universities now include EBP training in their occupational therapy education programmes (Bennett *et al.*, 2006). In support of this assertion, a

fairly recent American study reported that respondents with less than five years' experience and those with postgraduate degrees were significantly more likely to have received EBP training in their occupational therapy education (Salls *et al.*, 2009). A follow-up study of nursing, occupational therapy, physiotherapy and social work graduates from three London universities found that the majority had received training in the skills required for EBP during their professional education and few had received training through short-courses at their workplace (Caldwell *et al.*, 2007).

The top two sources for hearing about EBP in the current survey were conferences/workshops and colleagues. This provides some direction in terms of potential avenues for offering training to raise awareness and improve knowledge about EBP. As discussed in Chapter 1, only three of the eight SA occupational therapy undergraduate programmes included EBP in their curricula. To ensure that graduates are equipped with the skills to implement EBP, further efforts must be made to encourage the inclusion of EBP content in all occupational undergraduate curricula. In addition, postgraduate occupational therapy programmes should build on the skills taught at undergraduate level to further equip occupational therapists to implement EBP.

Choices for facilitating the process of moving from 'opinion-based' to evidence-based practice concurred with those of Bennett *et al* (2003b). Brief summaries and guidelines/protocols were rated above searching for and appraising literature and respondents' first choice for future continuing education events was workshops. The focus for future EBOT training in SA should therefore be on providing workshops that train therapists to use pre-appraised sources of evidence such as systematic reviews, critically appraised papers, evidence-based guidelines and articles from the OTseeker database.

The association between lack of EBP training and agreement that 'EBP places too many demands on my workload' suggests that training was successful in shifting perceptions that may deter therapists from EBP. Training also seems to increase

confidence in using *The Cochrane Library* database. However, the lack of association between EBP training and success finding and applying evidence shows that training to date has not been successful in helping occupational therapists implement EBP. This may be due to an over-emphasis on the theoretical content and appraisal of articles rather than practical 'hands-on' search sessions where participants conduct searches with support available. Future training should also assist therapists to interpret and apply research findings in SA settings.

4.8.4 Skills in EBP

The current study confirms the findings of previous studies with regard to occupational therapists' lack of confidence in EBP skills (Bennett *et al.*, 2003b, Dubouloz *et al.*, 1999, McCluskey, 2003b, Upton, 1999a, Upton and Upton, 2006). Compared to therapists in Bennett *et al.*'s (2003b) study, confidence levels in the SA sample were generally lower than their Australian counterparts. Less than 60% of the current sample rated their confidence in searching as reasonable, revealing this as an area for further attention in training. Poor knowledge of electronic databases and sources of evidence were similarly reported in studies in Australia (McCluskey, 2003b) and the US (Dysart and Tomlin, 2002) just prior to the current survey. There is some indication that this may be changing as more recent studies have reported greater familiarity with search engines relevant to occupational therapy and more confidence finding research evidence to answer clinical questions, (Salls *et al.*, 2009) and implementing EBP (Caldwell *et al.*, 2007)

Similarly, lack of confidence in appraising studies is a barrier that needs addressing to truly equip occupational therapists to apply evidence in their practice. Low confidence levels in critical appraisal have been stated in several previous studies (Dysart and Tomlin, 2002, McCluskey, 2003b, Metcalfe *et al.*, 2000, Pain *et al.*, 2004), but a relatively recent one reported higher confidence levels (Salls *et al.*, 2009). This change is encouraging and indicates that the profession may gradually be moving towards achieving its goal of being an evidence-based profession. As a lack of skills in various aspects of research has been identified as a barrier to EBP (Bennett *et al.*,

2003b, Dysart and Tomlin, 2002, Lyons *et al.*, 2010, McCluskey, 2003b, Metcalfe *et al.*, 2001, Philibert *et al.*, 2003), training programmes must incorporate basic principles of research design and study quality to enable therapists to make appropriate decisions about research, even though this may be pre-appraised.

Lack of confidence using *The Cochrane Library* suggests that the majority either do not know what it is, or have not used it much. Siegfried *et al* (2003) found that 58% of psychiatrists and 69% of general practitioners were unaware of *The Cochrane Library* and very few had read or used articles retrieved from it. The current study did not request respondents to indicate whether they were aware of *The Cochrane Library* but only asked them to indicate confidence in using it. As EBP has been more widely publicised in medicine, it is likely that even fewer occupational therapists in SA are aware of *The Cochrane Library* than reported by Siegfried *et al*. Training programmes should therefore include information about this evidence source with practical 'hands on' search sessions of the databases. Other databases containing research relevant to occupational therapy, such as OTseeker, should also be included.

As in Bennett *et al*'s (2003b) study, respondents with a postgraduate qualification were more confident searching for literature and determining the clinical significance of the results of a study. However, unlike the study of Bennett *et al*, those with EBP training were not more confident in searching for literature or evaluating a study. This could be due to a lack of practical training in conducting searches and evaluating studies. The lack of association between confidence in EBP skills and years of experience, or employment in a rural/urban area in the current study indicates that respondents had relatively equal knowledge and skills in EBP.

4.8.5 Application of EBP and access to resources

There were no significant predictors of therapists' abilities to find and apply research findings. This may have been due to the small sample size. A study involving paediatric occupational therapists in Australia, Taiwan and the UK found

qualification level to be the most significant predictor of research use (Brown *et al.*, 2010a), but they cautioned that this may not have been due to the education *per se* but rather the research knowledge gained during postgraduate studies.

The poor success rate in finding and applying evidence to practice is not surprising considering the low number with EBP training and the limited confidence in EBP skills. As pointed out in previous studies (Lopez *et al.*, 2008, Metcalfe *et al.*, 2001) lack of success finding evidence may also be due to the absence of published research in some areas of occupational therapy practice and difficulty applying findings from studies conducted in developed contexts. This was supported by the results of the post-coding analysis of the open-ended questions in the current study. Low or moderate application of evidence to practice has been found in other studies (Brown *et al.*, 2010b, Cameron *et al.*, 2005, Humphris *et al.*, 2000, Lyons *et al.*, 2010, Philibert *et al.*, 2003, Salls *et al.*, 2009, Sweetland and Craik, 2001). Even when research findings are applied this may be inconsistent. A study of therapists working in stroke found that techniques with weak supporting evidence were used frequently while those that were strongly supported by research were seldom applied (Gustafsson and Yates, 2008).

The fact that respondents had largely used their clinical experience to make treatment decisions is not unusual and is supported by studies from Australia (Bennett *et al.*, 2003b, Copley and Allen, 2009), Canada (Dubouloz *et al.*, 1999) and the UK (Curtin and Jaramazovic, 2001, Sweetland and Craik, 2001, Upton, 1999a) which similarly found greater reliance on clinical experience with research playing a small *albeit* important role. Bennett *et al.* (2003b) argued that reliance on clinical experience is compatible with the EBP model which states that decision-making is informed by research findings together with clinical experience and client preferences (Sackett, 1997, Sackett *et al.*, 1996). It has been suggested that the role of research in decision-making has been over-emphasised to the detriment of understanding how the different components of EBP are used in the clinical reasoning process (Bennett *et al.*, 2003b). To this end, including clinical reasoning

processes in EBP training has been advocated as a possible way of increasing confidence in EBP skills (Bennett *et al.*, 2003b).

Low usage of research has been found in other studies. For example, in a US study, continuing education and mentors were used most often, research was rated fourth and the internet/Listserve were used the least (Philibert *et al.*, 2003). Salls *et al* (2009) similarly reported low use of electronic databases and irregular use of research literature. In the SA survey research literature and the internet were seldom used unlike in Cooke *et al's* study (2008) where the internet was the most effective source for getting evidence into practice. Still other studies have identified the necessity of using all available evidence (Copley and Allen, 2009).

It is interesting that research literature was rated lower and textbooks higher in the SA survey compared with the Australian one (Bennett *et al.*, 2003b). This is probably due to many SA occupational therapists not having access to academic libraries or the internet at work. It may also be that text books are viewed as more user-friendly because the information is more understandable and easier to interpret and apply. It is, however, unknown whether the textbooks used by therapists were current. Favouring textbooks may be reinforced if tertiary education institutions use prescribed textbooks in their courses rather than encouraging students to access journal articles. Pain *et al* (2004) reported that textbooks and colleagues were used most commonly to guide practice. Considering the high costs of textbooks in SA, it is doubtful that most occupational therapists have the most recent textbooks; as a result they may not have access to the most current research, implying that they may not be informed about current research evidence for occupational therapy interventions.

Internet usage was exceptionally low in the current study despite the majority stating they had access. It may be that they only had access at home and may have been less likely to look for information on the internet after hours due to other commitments. Unfortunately, this information was not gathered by the

questionnaire. Lack of convenient access to electronic databases has been identified as a strong barrier to EBP (Dysart and Tomlin, 2002, McCluskey, 2003b) and affects many SA occupational therapists who only have internet access through a more senior manager whose office is removed from their own. Many therapists do not even have internet access at work. This statement is supported by a SA study that reported only 50% of psychiatrists and general practitioners having access to the internet at work (Siegfried *et al.*, 2003). In addition to advocating for employers to provide convenient internet access, training programmes must include information about, and practical use of, internet resources. This will also reduce the barrier created by lack of access to academic libraries. With the increasing availability of open access information, this will be an important focus of training in SA.

Respondents reported currently using pre-appraised sources, such as EBOT guidelines/protocols and evidence-based summaries, rather than searching for and appraising primary literature themselves. It was encouraging that most seemed to be attempting to base their practice on some form of evidence. Conversely, the high percentage of missing data for items about systematic reviews, RCTs and non-randomised experimental studies could indicate a lack of knowledge about this terminology. This is concerning as it may be preventing therapists from using high quality evidence about interventions in their practice. Training must therefore include information on these types of research.

The finding that less than two years' experience was associated with reliance on undergraduate education to make treatment decisions confers with the findings of a previous Australian study (Bennett *et al.*, 2003b). Greater reliance on undergraduate training than research findings is concerning considering that, with the increasing amount of research being published, knowledge learned in undergraduate education may quickly become obsolete. This affirms the importance of including EBP in undergraduate educational curricula. Unlike Bennett *et al.*'s (2003b) findings, there was no association between EBP training and reliance on different sources for decision-making, showing that training had not sufficiently equipped respondents to

use other sources of evidence, particularly research, in their decision-making. This may have been due to the medical focus of training which may have made its application to occupational therapy challenging. The fact that respondents with more experience were more able to apply evidence in the SA context supports the role of clinical experience in EBP.

4.8.6 Strengths of the study

As it is mandatory for all occupational therapists practising in SA to be registered with the HPCSA, using the HPCSA address list as the sampling frame ensured that all occupational therapists had an equal chance of being included in the sample. In this way, non-coverage error was avoided (MacDonald *et al.*, 2009). Several strategies that have been shown to increase response rates in postal surveys were used, namely a second mailing, a non-monetary incentive, inclusion of a stamped return envelope and using a university letterhead for the covering letter (Edwards *et al.*, 2003, MacDonald *et al.*, 2009). Second mailings have been used successfully in several occupational therapy surveys (Bennett *et al.*, 2003b, Dysart and Tomlin, 2002, Philibert *et al.*, 2003) and some have even sent a third reminder to non-respondents (Curtin and Jaramazovic, 2001, Humphris *et al.*, 2000). To minimise measurement error, the questionnaire was tested for face validity and utility (MacDonald *et al.*, 2009) in two phases. In the first phase, two experts examined the questionnaire after which revisions were made based on their feedback. The revised questionnaire was then completed by four therapists and minor changes were made. A further strength was that data was entered by a research assistant and data accuracy was checked by the PI at two different time periods to reduce the possibility of inaccuracies in data entry and to minimise error (Chan and Altman, 2005).

4.8.7 Study limitations

The study limitations must be considered when attempting to generalise the findings. Firstly, the low response rate resulted in the sample size being slightly

lower than required which decreased the statistical power of the study (Gore-Felton *et al.*, 2002). Low response rates increase the standard error of measurement which affects the precision of the results and their generalisability to the population (Gore-Felton *et al.*, 2002, MacDonald *et al.*, 2009).

Secondly, the low response rate could have introduced bias as non-respondents may have differed systematically from those who chose to respond. Even when response rates are high response bias may occur; researchers have therefore been urged to examine the possible impact of non-response on the study results to judge their generalisability (McFarlane *et al.*, 2007). As demonstrated in a previous study (Perneger *et al.*, 2005) it is likely that those with positive perceptions and some knowledge of EBP were more likely to complete the survey. Consequently, it is possible that EBP knowledge, skills, perceptions and training levels may be even lower than reported here. As it was not possible to obtain characteristics of non-respondents, or reasons for their non-response, it is impossible to predict how different they were from respondents.

The response rate of 28% in the SA study was lower than the 78% achieved in a UK survey (Humphris *et al.*, 2000) but higher than the 15% attained in a US survey (Salls *et al.*, 2009). In their SA survey of psychiatrists and general practitioners, Siegfried *et al.* (2003) obtained a 51% response rate. The low response rate in the current study was disappointing considering the implementation of several strategies with demonstrated effectiveness for increasing response rates. Two US surveys obtained response rates of 26% and 15% respectively without any follow-up mailings (Cameron *et al.*, 2005, Salls *et al.*, 2009). One survey included therapists registered with AOTA who may have been more amenable to completing the questionnaire (Cameron *et al.*, 2005) and the other checked addresses with the National Change of Address database before mailing questionnaires (Salls *et al.*, 2009). Although this latter strategy could have improved the response rate in the current study, no such database exists in SA. Participants in the current study may have changed their addresses without notifying the HPCSA. For example, those who had completed their

community service in December 2003 are likely to have moved to new jobs and may not have notified the HPCSA of their address change. As the address list was obtained in April 2004 and annual registration fees are due at the end of March, it is possible that address changes may not have been updated. Upton's (1999) use of heads of department to distribute questionnaires to therapists probably contributed substantially to his high response rate, but this was not possible in the current study as it was a national survey and details on the places where occupational therapists were practising was not available.

A further possibility for the low response rate could be that the language and terminology in the questionnaire was difficult to understand so some respondents did not complete it. The questionnaire was in English which may have discouraged completion by respondents whose home language was not English⁴⁹. Lastly, respondents may have decided not to participate in the study and therefore did not return the questionnaire.

Acquiescence bias may have over-inflated the results as the questionnaire measured perceptions about practice rather than actual practice. Despite piloting the questionnaire, a design problem with the positioning of item 10 led to unnecessary missing data. As a result respondents in management or other positions with no client contact did not complete items 11 to 16 which contained practice characteristics. Item 10 should be re-positioned after item 16 to prevent this from occurring in future studies.

4.9 Conclusion

Results revealed positive perceptions but poor confidence in EBP skills confirming Upton's (1999) conclusion that the main barrier to implementing EBOT is lack of skills rather than poor attitude. Few respondents experienced success finding evidence and even fewer were able to apply it. This could be due to the limited

⁴⁹ There are 11 official languages in South Africa.

number who had received EBP training and highlights the importance of providing further training opportunities in the future. Despite an unexpected majority having access to computers and the internet, few had used the internet to access research information indicating either a lack of knowledge of what is available, or a lack of convenient access. Additionally, relatively few could access journals or academic libraries and respondents relied on their clinical experience rather than research. Although many were attempting to base their practice on evidence, new graduates reported significantly more success finding research evidence while those with more experience were more successful applying evidence. The results largely confirm those of previous studies in Australia, Canada, the US and the UK, but as the first study conducted in a resource-constrained country, it contributes valuable information to the global body of knowledge about EBOT. It would be interesting to determine whether the trends found in this survey apply in other resource-constrained countries.

4.10 Recommendations

The study findings indicate the need for further training to enable occupational therapists in SA to implement EBP. Training should be part of CPD and undergraduate and postgraduate occupational therapy education programmes to equip both qualified therapists and undergraduate students with the necessary EBP knowledge and skills. Training must include information about EBP, different forms of evidence and research designs, and use of evidence-based internet resources, emphasising the use of pre-appraised evidence rather than teaching appraisal skills. While preferred formats were workshops or short in-service training sessions, the most effective method for providing training required further investigation. Therefore, the next chapter outlines the process of selecting, modifying and determining the psychometric properties of instruments for evaluating EBP interventions, and presents a systematic review of such instruments.

Chapter 5: Literature review - Instrument development

5.1 About this chapter

This chapter discusses how to select instruments to measure the outcomes of EBP educational intervention studies. A process for selecting, modifying and testing instruments is outlined, and a classification framework for determining the outcomes to be measured in evaluation studies of EBP educational interventions is presented. Recognising the crucial role of the psychometric properties of outcome instruments in the validity of study findings, different types of validity and reliability are examined and the methods used to establish and test these properties are outlined. As many of the instruments currently available for evaluating EBP educational interventions are self-report questionnaires, principles of questionnaire design are discussed. Lastly, a systematic review of existing instruments for evaluating learner outcomes for EBP educational interventions is presented. The chapter concludes by identifying the most robust instruments available.

5.2 Selecting measurement instruments

The variables to be measured in a study should determine which instruments are selected (Bowling, 2009). There are essentially three options available: using an existing instrument; modifying an existing instrument; or developing a new one. Several authors have cautioned against developing new instruments due to the expertise required, the costs and time involved and the difficulty of making comparisons across studies (Bowling, 2009, Boynton and Greenhalgh, 2004, DePoy and Gitlin, 2005, McDowell, 2006, Streiner and Norman, 2008). For these reasons, it is preferable to use existing instruments and to modify items where necessary if permitted by the instrument developer (Bowling, 2009).

Ideally, a previously-validated instrument should be used in its original form but this may not be possible if the context in which the instrument was developed differs

from that in which the study is to be conducted (Boynton and Greenhalgh, 2004). Modifications to language and wording may be required to ensure that the instrument is valid and reliable in the new context. If instruments are changed in any way, further testing of validity and reliability is required (Corr and Siddons, 2005). Even when validated and reliable instruments are used without changes, their psychometric properties must be re-established as they may not be valid in a different context or with a different group (Boynton and Greenhalgh, 2004, Streiner and Norman, 2008). If additional items are needed, they should be added to the broader questionnaire rather than inserting them into the existing instrument (Bowling, 2009, Corr and Siddons, 2005). In cases where appropriate instruments are not available, new ones will have to be developed and validated (Boynton and Greenhalgh, 2004), but this is not recommended (McDowell, 2006).

Criteria for selecting and developing instruments for research purposes were extracted and synthesised by the PI from the work of Bowling (2009) and Streiner and Norman (2008). These are presented in Table 29. Each step of the outlined process is discussed in subsequent sections.

Table 29: A process for selecting and developing measurement instruments for research

1.	List all variables/attributes to be measured based on study aims
2.	Identify existing instruments that may be suitable
3.	Apply criteria to judge the usefulness of existing instruments and critically review the evidence available on their properties
4.	Collate appropriate, tested questions and scales to develop the first draft of the instrument
5.	List additional items and response formats to be developed
6.	Relate questions back to study aims
7.	Follow an iterative process of piloting and revising the instrument to achieve satisfactory face validity and utility
8.	Test relevant aspects of validity and reliability

Once instruments have been identified they need to be appraised to determine their acceptability (Bowling, 2009, McDowell, 2006, Streiner and Norman, 2008). Few instruments will meet all the required criteria for a study, but the researcher needs to ensure that they measure the appropriate constructs, are acceptable to the study population, are not too onerous to administer and score, and demonstrate responsiveness to change and adequate reliability and validity (Bowling, 2009, McDowell, 2006). The choice of instruments for a study must be justified and the

concepts and domains they intend to assess described. In the case of existing instruments, published articles should be accessed and their psychometric properties reported (Bowling, 2009).

5.3 Determining the outcomes for evaluating the effectiveness of EBP educational interventions

Best evidence should be used to determine which outcomes will be measured. The best evidence available at the time of planning this research took the form of two documents developed by international working groups in response to issues arising at an international conference for Evidence-based Health Care Teachers and Developers in Sicily in 2003. The first was a consensus statement developed in consultation with conference delegates that defined EBP, described the skills required to practise it and outlined a curriculum for training health professionals (Dawes *et al.*, 2005). The document recommended that effective methods be used to evaluate EBP courses and that all five steps of the EBP process be covered (Dawes *et al.*, 2005).

The second document presented a framework for conducting comprehensive evaluations of EBHC training (Nabulsi *et al.*, 2007). This evaluation framework provides a comprehensive guide for selecting relevant outcomes to be measured in EBP educational intervention studies. The authors stipulate that as learning involves knowledge (cognitive domain), skills (behavioural domain) and attitudes (affective domain), effective evaluation should incorporate at least one outcome measure for each domain. Although outcomes may pertain to learners, patients or systems (Nabulsi *et al.*, 2007), as the focus of the planned study was on occupational therapists, the outcome of interest was the learner. Table 30 shows a classification of learner outcomes developed by Nabulsi *et al* (2007) outlining the three domains with examples of outcomes that could be measured for each.

Table 30: Classification of learner outcomes (Nabulsi *et al.*, 2007)

<i>Domain</i>	<i>Outcome</i>
Affective	Satisfaction with training Attitudes to EBP Intentions to use EBP
Cognitive	Knowledge Skills
Behavioural	Application of evidence to practice

Once the outcomes to be measured have been determined, the attributes of the instruments must be established to ensure they meet the required standards. An evidence-based approach involves evaluating and interpreting the instrument's validity and reliability to determine its appropriateness for the context under study (Jerosch-Herold, 2005).

5.4 Psychometric properties of outcome measures

Measurement instruments may be classified as discriminative, evaluative or predictive based on their purpose (Kirshner and Guyatt, 1985). Discriminative instruments are able to distinguish between individuals or groups on a specific variable in the absence of a 'gold standard' while predictive instruments are used to identify which individuals or groups are more likely to require a specific intervention or develop a specific outcome (Kirshner and Guyatt, 1985). Evaluative instruments can measure change in an underlying variable and are therefore used to measure the outcome of an intervention (Kirshner and Guyatt, 1985, McDowell, 2006). Evaluative instruments need to be valid, reliable and responsive to detecting clinically important changes (Corr and Siddons, 2005, Horner and Larmer, 2006, Jerosch-Herold, 2005, Kirshner and Guyatt, 1985, Law, 1987, McDowell, 2006). In addition, the practicalities, or clinical utility, of using an instrument, such as cost, ease of use and acceptability, must be taken into consideration (Corr and Siddons, 2005, Jerosch-Herold, 2005, Law, 1987, Law, 2004).

5.4.1 Measurement error

Measurement instruments must be sufficiently accurate to assure researchers that they are obtaining the true result and that the degree of error is minimal (McDowell,

2006). Measurement error results in a lack of precision (Streiner and Norman, 2008) and may occur in the instrument, the rater, the person being measured and the environment (Katzenellenbogen *et al.*, 1999). Measurement errors may be random or systematic (Streiner and Norman, 2008).

5.4.1.1 Random measurement error

Random error arises when different results are obtained when measures are completed on different occasions, with different participants or by different raters (Streiner and Norman, 2008). The amount of random error that occurs is known as reliability (DePoy and Gitlin, 2005, Horner and Larmer, 2006, Streiner and Norman, 2008). As measurement consistency increases, the extent of random error decreases and reliability increases (Horner and Larmer, 2006). A reliable instrument therefore provides confidence that observed changes in the variables being studied are due to actual changes in the underlying construct being measured rather than errors in the way items are understood or measured (Boynton and Greenhalgh, 2004, McDowell, 2006).

5.4.1.2 Systematic measurement error

Validity refers to the extent to which non-random (systematic) error may occur when using a measurement instrument (DePoy and Gitlin, 2005, Horner and Larmer, 2006). The smaller the systematic error, the greater the instrument's validity (DePoy and Gitlin, 2005, Horner and Larmer, 2006). Random error affects both reliability and validity whereas systematic error only affects the instrument's validity (Streiner and Norman, 2008).

5.4.1.3 Reducing measurement error

Validity and reliability are interconnected; an unreliable instrument cannot be valid, and a reliable instrument is not necessarily valid because, although it may produce consistent results, it may not be measuring what is intended (Kielhofner, 2006).

Consequently, an instrument needs to be reliable and valid to generate accurate results (Boynton and Greenhalgh, 2004, Katzenellenbogen *et al.*, 1999, Kielhofner, 2006). All potential sources of error must be addressed to reduce measurement error. Strategies to reduce measurement error include standardising instruments, careful selection and training of raters and conducting regular checks to ensure data quality (Katzenellenbogen *et al.*, 1999). As the properties of an instrument are contextually dependent, validity and reliability need to be tested in the setting in which the study will be conducted (Jerosch-Herold, 2005).

5.4.2 Reliability

Reliability refers to the relative absence of random error in measurement (McDowell, 2006, Streiner and Norman, 2008), or the stability of an instrument over time and across participants or raters (Jerosch-Herold, 2005, McDowell, 2006, Streiner and Norman, 2008). If an instrument is reliable, differences in results are due to true differences in responses rather than inconsistencies in how items are understood or interpreted by different observers (Boynton and Greenhalgh, 2004, Jerosch-Herold, 2005). Reliability is therefore an important attribute of an evaluative instrument (Kirshner and Guyatt, 1985). Statistical tests for reliability focus on the stability, internal consistency and equivalence of the instrument (DePoy and Gitlin, 2005).

5.4.2.1 Test-retest reliability (intra-rater reliability)

Test-retest reliability measures the stability of an instrument over a period of time during which the attribute being measured is not expected to change (Bowling, 2009, DePoy and Gitlin, 2005, Jerosch-Herold, 2005, McDowell, 2006). It is determined by one researcher administering the instrument on more than one occasion to the same person (Bowling, 2009, Jerosch-Herold, 2005, Streiner and Norman, 2008). Repeat measurements are done far enough apart for previous responses to have been forgotten but not so far that changes may have occurred in the attribute being measured (Bland and Altman, 2002, Kielhofner, 2006, McDowell,

2006). The usual retest period is two to 14 days (Streiner and Norman, 2008) depending on the anticipated stability of the underlying construct. If an instrument has good test-retest reliability, it is assumed that there is little random error affecting the differences between the first and the second administration (DePoy and Gitlin, 2005).

5.4.2.2 Inter-rater reliability

Inter-rater reliability (IRR) is a measure of the level of agreement between two or more raters measuring a person at the same point in time (McDowell, 2006, Streiner and Norman, 2008) and is thus a measure of equivalence (DePoy and Gitlin, 2005). To test IRR a test is given to one person to complete and is scored independently by two or more raters (DePoy and Gitlin, 2005). Agreement between the raters is then determined (DePoy and Gitlin, 2005).

5.4.2.3 Assessing test-retest and inter-rater reliability

Reliability is stated as a correlation co-efficient ranging from 0 to 1.0 where 1.0 indicates no error in the instrument. The closer the score is to 1.0, the greater the confidence that the observed score corresponds to the true score (DePoy and Gitlin, 2005, Jerosch-Herold, 2005). Although correlation coefficients are commonly used to report reliability, they do not distinguish between variance due to error and variance due to true differences in score (Jerosch-Herold, 2005). Therefore, intra-class correlation coefficients (ICCs) are more appropriate for continuous data (Streiner and Norman, 2008) as they 'express reliability as the ratio of variance between subjects to total variance in scores' (McDowell, 2006, p 41).

A number of ICCs have been described (McGraw and Wong, 1996). To ensure that the correct analysis is performed, the appropriate model must be selected for the data (McGraw and Wong, 1996). This choice is based on the source/s of variance; a one-way model is selected where there is one source of systematic variance, while a two-way model is appropriate for two sources of variance (McGraw and Wong,

1996). One-way models have only one ICC for each type of data whereas two-way models have two types for each (McGraw and Wong, 1996). The type of ICC is determined by the use of single or average measurements, consistent or absolute agreement between raters and random or fixed effects in the column variable (McGraw and Wong, 1996). Cicchetti and Sparrow (1981) recommended that an ICC of less than 0.40 should be considered poor, 0.41-0.59 fair to moderate, 0.60-0.74 as good and above 0.75 as excellent.

There are differing opinions about analysing categorical scales. For example, Bowling (2009) recommended Cohen's kappa for nominal data and weighted kappa for ordinal data whereas Streiner and Norman (2008) advocated using ICCs for all except basic two-by-two tables where kappa or weighted kappa are more suitable. Although percent agreement is sometimes used, kappa is a more accurate statistic as it corrects for chance agreement (Kielhofner, 2006). According to Landis and Koch (1977), a kappa statistic of >0.81 is almost perfect while 0.61-0.80 is considered substantial, 0.41-0.60 moderate, and 0.21-0.40 fair.

5.4.2.4 Internal consistency

Internal consistency measures the extent to which the items in the instrument are related to one another (Bowling, 2009, Streiner and Norman, 2008). To determine internal consistency, the instrument is administered on one occasion and scores for each item are correlated to scores of all other items. Different methods, for example Cronbach's coefficient alpha (α), the Kuder-Richardson-20 formula or split halves, are used to calculate internal consistency (DePoy and Gitlin, 2005, McDowell, 2006, Streiner and Norman, 2008). Although the Kuder-Richardson formula is often used for dichotomous items and Cronbach's alpha for items with two or more response options, these methods provide similar results (Streiner and Norman, 2008). Alpha ranges from 0.0 to 1.0 as for other correlations (Kielhofner, 2006). Instruments should have an internal consistency of above 0.80 where items are expected to be related (Streiner and Norman, 2008). Factor analysis can be used to determine internal consistency particularly in cases where the construct being measured is

considered to be multi-dimensional (Clark and Watson, 1995). Where factor analysis shows that specific items in an instrument measure the same construct, the scores for these items can be summed to provide a total score for that factor (Clark and Watson, 1995).

5.4.3 Validity

Validating an instrument is particularly important when the construct being measured is not directly observable, for example quality of life (Streiner and Norman, 2008). The traditional idea of a valid instrument is one that measures what it claims to measure (DePoy and Gitlin, 2005, McDowell, 2006). However, McDowell (2006, p 30) pointed out the limitations in this notion advocating 'that validity is no longer simply a property of the measurement, but rather of the interpretation placed on the results'. Streiner and Norman (2008, p 252) concurred with this understanding stating that 'validation is a process of hypothesis testing'. From this perspective, instrument developers test different hypotheses to determine whether these fit with the construct being measured and whether the study results 'allow us to draw the inferences about the people that we wish to make' (Streiner and Norman, 2008, p 252). Based on this understanding, validity is seen as a single construct with different ways of testing it. Therefore, face, content, construct and criterion validation are different types of validity testing (Streiner and Norman, 2008).

5.4.3.1 Face validity

Face validity 'indicates whether, on the face of it, the instrument appears to be assessing the desired qualities' (Streiner and Norman, 2008, p 6). It can only be evaluated subjectively (Bowling, 2009). One method used is cognitive interviews where respondents discuss their interpretations of each question to provide information on how questions are perceived (McDowell, 2006). As face validity is concerned with how the users of the instrument perceive it, it should be evaluated by users rather than experts (Streiner and Norman, 2008).

5.4.3.2 Content validity

Content validity is traditionally understood as a measure of the extent to which the instrument covers all relevant aspects of the phenomenon being measured (McDowell, 2006, Streiner and Norman, 2008). It is usually established by conducting a thorough literature search to ensure all domains of the construct are adequately represented and verifying it using the judgement of an expert panel (DePoy and Gitlin, 2005, McDowell, 2006, Streiner and Norman, 2008). Difficulties in establishing content validity include the lack of consensus by experts on the full range of domains for a concept, and the lack of an agreed and accepted method for doing so (DePoy and Gitlin, 2005). Some state that there is no statistical measure of content validity (DePoy and Gitlin, 2005, Horner and Larmer, 2006), while others advocate factor analysis to statistically demonstrate content validity (Law, 2004). However, the accuracy of the inferences that can be made rely on the extent to which the relevant aspects of the phenomenon being measured have been included in the instrument (Streiner and Norman, 2008). An instrument with higher content validity enables researchers to make more accurate inferences (Streiner and Norman, 2008).

5.4.3.3 Construct validity

Construct validity assesses the extent to which the instrument measures the underlying construct it claims to measure (Bowling, 2009, Streiner and Norman, 2008). According to McDowell (2006, p 38), construct validity 'is a continuing process in which testing often contributes to our understanding of the construct, after which new predictions are made and tested'. Correlational evidence and proof of an instrument's ability to discriminate between different groups are the main ways in which construct validity can be demonstrated (McDowell, 2006). Studies confirming construct validity entail testing hypotheses based on theories underlying the construct and their relationship to other variables (Kielhofner, 2006). Methods used to test construct validity include the convergent and divergent method and factor analysis (Kielhofner, 2006). Convergent validity demonstrates the extent to which

two instruments designed to measure the same aspect are correlated, while divergent validity tests for a lack of correlation between instruments measuring different concepts (Kielhofner, 2006, McDowell, 2006, Streiner and Norman, 2008). Factor analysis identifies whether there are different clusters of items measuring different aspects of the construct (Kielhofner, 2006).

5.4.3.4 Criterion validity

The extent to which an instrument correlates with another measure that is considered to be the gold standard is known as criterion validity (Bowling, 2009, McDowell, 2006, Streiner and Norman, 2008). This type of validity cannot be established in the absence of a gold standard (Bowling, 2009). Where there is no gold standard, validation entails a number of steps whereby ways in which the instrument relates to other constructs is established (Kielhofner, 2006, McDowell, 2006). Criterion validity may be concurrent or predictive (Horner and Larmer, 2006, Kielhofner, 2006). Concurrent validity refers to the ability of the instrument to concur with the findings of another instrument while predictive validity entails determining the extent to which an instrument is able to predict a future criterion (Kielhofner, 2006). Correlation statistics such as the Pearson product-moment or Spearman's rank coefficient are used to calculate criterion validity (Horner and Larmer, 2006).

5.4.4 Responsiveness

Responsiveness is a critical property of an outcome measure and determines whether any changes in a specific attribute have occurred over a period of time (Bowling, 2009, Kirshner and Guyatt, 1985). Responsiveness is often reported as a separate property of an instrument, but several authors have stated it to be an aspect of validity rather than a separate entity (Law, 1987, Streiner and Norman, 2008, Terwee *et al.*, 2003). The ability of an instrument to measure change is related to its reliability (accuracy in detecting change) as well as its validity (its ability to measure the kind of change it is supposed to measure) (Terwee *et al.*, 2002).

Various opinions have been discussed as to how responsiveness should be defined and measured (Husted *et al.*, 2000, Liang, 2000, Terwee *et al.*, 2003).

'Responsiveness' and 'sensitivity' are used interchangeably in the literature but there is a difference between these terms (Streiner and Norman, 2008). Liang (2000) differentiated between 'responsiveness' and 'sensitivity' in stating that '*sensitivity to change*' is any change occurring in the attribute being measured whereas '*responsiveness*' measures change that is clinically important. The use of 'sensitivity' and specificity in the context of diagnostic tests in the field of epidemiology adds further confusion to this debate (Liang, 2000). In that context, responsiveness has been defined as the ability of an instrument to differentiate between clinically important and non-clinically important changes (Beurskens *et al.*, 1996). Husted *et al* (2000) identified two aspects of responsiveness namely 'internal' and 'external' responsiveness. Internal responsiveness was defined as 'the ability of a measure to change over a pre-specified time frame', while external responsiveness was 'the extent to which changes in a measure over a specified time frame relate to corresponding changes in a reference measure ...' (Husted *et al.*, 2000, p 459). For the purposes of this thesis, Liang's definition of responsiveness as clinically important change is used.

Several methods for calculating responsiveness have been described in the literature (Beurskens *et al.*, 1996, Husted *et al.*, 2000, Kazis *et al.*, 1989, Kirshner and Guyatt, 1985, McDowell, 2006, Terwee *et al.*, 2003). Terwee *et al* (2003) identified three different groups and 31 measures of responsiveness including paired t-tests, standard error of measurement (SEM), effect sizes and standardised response means, and responsiveness indices. Commonly used measures of internal responsiveness include the paired t-test and different types of effect size statistics while receiver operating characteristic (ROC) curves, correlations and regression models are recommended for assessing external responsiveness (Husted *et al.*, 2000).

One method of assessing responsiveness is to use the instrument in a clinical trial and study the change scores in participants who improved or deteriorated (Kirshner and Guyatt, 1985). Effect sizes are then calculated to indicate the ability of instruments to detect change (McDowell, 2006). An effect size is 'a standardized indicator of the ability of scores on a measure to distinguish between two groups' (McDowell, 2006, p 712). Effect sizes have been widely recommended because they 'provide direct information on the magnitude of change in the measure, expressed in terms of some measure of variation' (Husted *et al.*, 2000, p 461). The measure of variation most commonly used to calculate some effect sizes is the standard deviation (Husted *et al.*, 2000) but there has been some debate about which standard deviation should be used (Beurskens *et al.*, 1996, McDowell, 2006, Streiner and Norman, 2008). The standardised effect size (SES), or Cohen's effect size, uses the standard deviation of baseline scores, while the standardised response mean (SRM) is calculated using the standard deviation for change scores (Husted *et al.*, 2000, Kazis *et al.*, 1989). An effect size of greater than 0.80 is considered large, 0.50 to 0.80 as moderate and less than 0.50 as small (Cohen, 1992).

Outcome instruments may need to accommodate a wide range of change at the top and bottom ends of a scale, i.e. both improvements and deteriorations in scores (Jerosch-Herold, 2005). A test that is too difficult for the population will yield scores at the lowest value of the scale and is said to show 'floor effects', while one that allows maximum scores so that further improvements cannot be measured, demonstrates 'ceiling effects' (Jerosch-Herold, 2005). For this reason, items with five-, seven- or nine-point scales or visual analogue scales are more responsive than dichotomous scales in indicating change in individual scores over time (Kirshner and Guyatt, 1985).

5.4.5 Clinical utility

Clinical utility considers aspects such as the clarity of instructions, format, cost, time taken to complete and score, training requirements, and applicability to the group being measured (Corr and Siddons, 2005, Jerosch-Herold, 2005, Law, 2004). Once

the psychometric properties of an instrument have been established, it should be used and scored as described by the developers (Corr and Siddons, 2005).

5.5 Questionnaire design

The way in which a questionnaire is designed influences the quality of the data obtained (Boynton and Greenhalgh, 2004). A well designed, clearly presented questionnaire is more likely to produce information that is accurate and complete (Boynton and Greenhalgh, 2004). As respondents may be influenced by the wording, format and order of items, instruments should be designed to minimise these effects (Bowling, 2009). To increase the likelihood of respondents completing the questionnaire, it should start with questions that are general and non-threatening and move towards being more specific, and from easy to more difficult (Bowling, 2009). Questions should be short, to the point (Boynton and Greenhalgh, 2004) and easily understood (Bowling, 2009). To ensure consistent interpretation of items across participants, the choice of wording should be carefully considered (Boynton and Greenhalgh, 2004).

Structured questionnaires are suitable where there is sufficient knowledge about the topic to develop appropriate pre-coded items (Bowling, 2009). Structured questionnaires usually consist of closed questions in the form of fixed items, batteries of questions and/or scales that are presented in the same way to all participants, but open-ended questions may also be included (Bowling, 2009, Boynton and Greenhalgh, 2004). Closed-ended items provide pre-determined responses and may be frustrating if all possible response options have not been considered (Boynton and Greenhalgh, 2004). If there is a possibility of an unknown response, an 'other' category should be added (Bowling, 2009). Open-ended questions use free-text boxes to enable participants to include their comments which add important information to the other data (Boynton and Greenhalgh, 2004). These items are analysed qualitatively using thematic content analysis (Boynton, 2004) in which units of meaning are grouped together into categories and themes which can then be counted and presented quantitatively (Cresswell, 2003).

Items may be presented in a variety of formats such as statements with tick boxes, rating scales, visual analogue scales and symbols (Boynton and Greenhalgh, 2004). Each format has particular uses and advantages, for example statements with tick-boxes are easy to understand and quick to complete while rating scales allow information to be quantified on a five- or seven-point scale⁵⁰ (Boynton and Greenhalgh, 2004). To reduce the likelihood of respondents answering questions in a specific direction and to maintain their interest, questions with different response formats should be included (Bowling, 2009). Self-report questionnaires require caution to be exercised as respondents may try to portray themselves in a positive light and provide overly positive response to questions (McDowell, 2006). The way in which respondents interpret rating scales may also introduce bias, for example, they may prefer to select answers on the end-points of the scale rather than those in the middle (McDowell, 2006).

5.6 Testing a questionnaire

Three phases of testing a questionnaire have been described (Burns *et al.*, 2008) Pre-testing is the first stage and involves checking the clarity (Bowling, 2009, Burns *et al.*, 2008) and coverage of the questions (Bowling, 2009). The latter is usually done by asking experts in the field to examine and comment on the content of the questionnaire (Bowling, 2009). Pilot testing is the second stage and involves a process of testing a questionnaire with a representative sample from the population to determine their response and evaluate whether items are understood in the way they were intended (Bowling, 2009, Boynton, 2004, Burns *et al.*, 2008). In this phase, the layout, order of presentation and wording of the items is examined (Boynton, 2004, Burns *et al.*, 2008). This can be done through group or individual interviews

⁵⁰ A study investigating the optimal number of response options showed that two-, three- and four-point scales performed poorly with regard to validity, reliability and discriminative ability. Scales with more than 10 response options had lower test-retest reliability. Respondents preferred 10-point scales, followed by 7-point and 9-point scales (Preston and Colman, 2000).

with members of the target group (Bowling, 2009, Burns *et al.*, 2008). The time taken for participants to complete the questionnaire should be noted as this informs the feasibility of using the instrument (Boynton, 2004, Burns *et al.*, 2008). Burns *et al.* (2008, p 249) named the third stage of testing 'clinical sensibility testing' and described it as focussing on evaluating 'the comprehensiveness, clarity and face validity of the questionnaire'. Once all revisions have been made to a questionnaire, validity and reliability need to be tested (Burns *et al.*, 2008). Instruments that have been developed or modified (Boynton and Greenhalgh, 2004, Corr and Siddons, 2005), or those that will be used in a different context, or with a different population, must undergo testing of their validity and reliability (Boynton and Greenhalgh, 2004, Streiner and Norman, 2008).

5.7 A systematic review of instruments measuring EBP learner outcomes

A systematic review was conducted to identify the most appropriate and robust instruments for evaluating EBP educational outcomes.

5.7.1 Objectives

The objectives of the review were to:

1. identify instruments currently available to evaluate EBP knowledge, attitudes and behaviour of occupational therapists.
2. provide a summary of the psychometric properties of the identified instruments to enable those with the most robust psychometric properties to be identified.

5.7.2 Methods

5.7.2.1 Criteria for considering studies for this review

a. Types of studies

Systematic reviews, randomised controlled trials and non-experimental studies, such as surveys, were included provided they used instruments that measured EBP knowledge, attitudes and/or behaviour.

b. Types of participants

Studies had to include qualified occupational therapists as participants. Studies of rehabilitation professionals were included if occupational therapists were part of the sample.

c. Types of outcomes

Outcomes related to EBP knowledge, attitudes and behaviour were included. Studies related to using specific interventions in an identified area of practice, such as stroke, were excluded because the planned study aimed to focus on EBP in general rather than EBP for a specific condition.

5.7.2.2 Search methods for identification of studies

Several methods were used for locating suitable instruments. The first step involved examining a systematic review of studies evaluating the effectiveness of educational interventions in EBHC (Nabulsi *et al.*, 2007). Secondly, a search was conducted of eight electronic databases. Africa-wide: NiPAD, CINAHL, ERIC, Health Source: Nursing/academic edition, MEDLINE, PsycARTICLES and PsycINFO were searched simultaneously with EBSCOHost from their inception to December 2007. Pubmed was searched for the same period. Search terms are detailed in Appendix I. To ensure that no instruments had been missed, two occupational therapy researchers who were actively publishing in the field were emailed to identify instruments they knew of, or were using, that may have been suitable for the planned study (A. McCluskey, PhD, email communication, 28 June 2006; M. Law, PhD, email communication, 31 July 2007).

5.7.2.3 Data collection and analysis

Citations for identified articles were imported into *Endnote* and duplicates removed. Article titles and abstracts were screened by the review author and studies that were

obviously not relevant were removed. The full text of the remaining studies was retrieved and the inclusion criteria applied to identify relevant articles. The full text for one article was not available in SA and was excluded from the review. Data was extracted from each article using a summary table.

5.7.3 Results

The systematic review (Nabulsi *et al.*, 2007) included 15 studies five of which had used validated outcome instruments. One of the five studies was conducted with occupational therapists and used the Adapted Fresno Test of Competence in EBP (AFT) to measure the outcomes of the intervention (McCluskey and Lovarini, 2005). Two instruments, the Fresno Test of Competence in Evidence-based Medicine (Ramos *et al.*, 2003) and the Berlin questionnaire (Fritsche *et al.*, 2002), were used in the remaining four studies. As these were developed for medical students and doctors they were excluded. The AFT was thus the only instrument identified from this systematic review. It was also located in the database searches.

A total of 159 citations were identified through database searches. After removing duplicates, 126 articles remained. These were screened for eligibility and 12 fulfilled the inclusion criteria. The flow diagram of the selection process is shown in Figure 7.

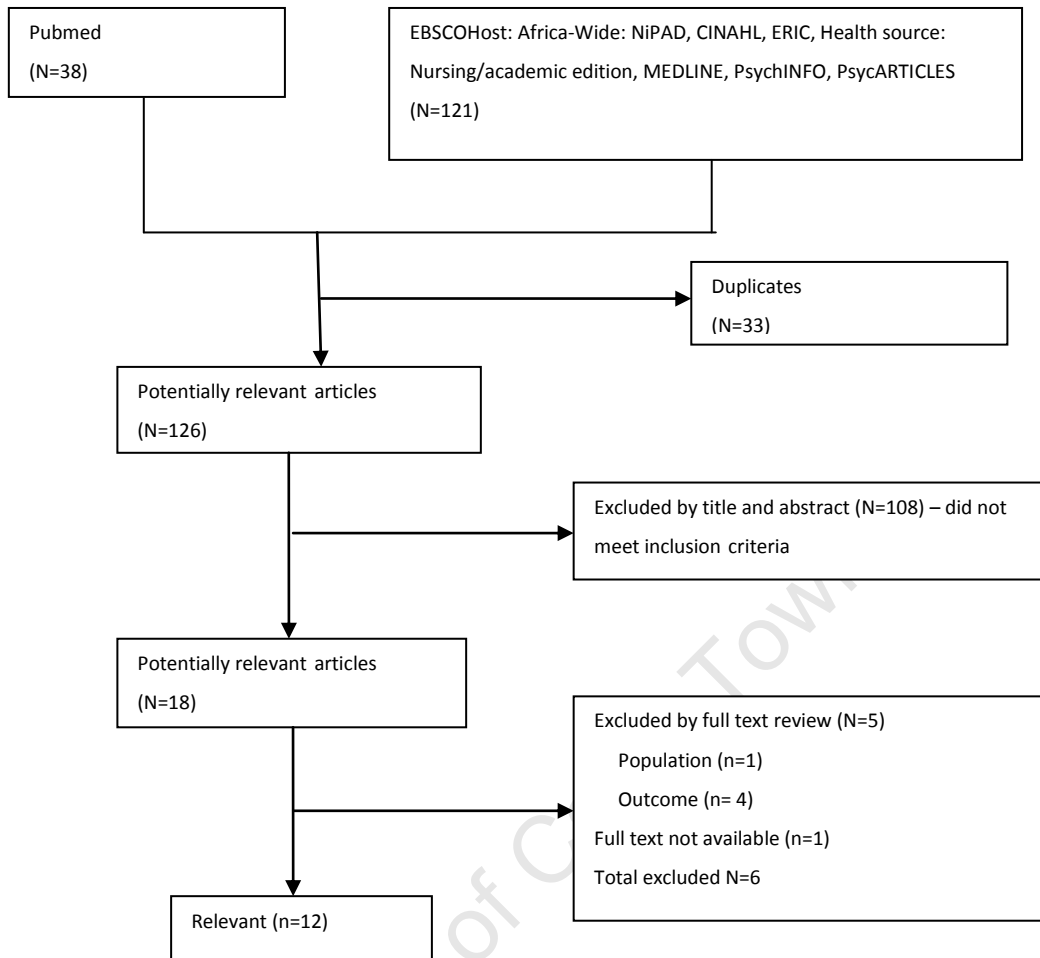


Figure 7: Flow diagram of articles selected from database searches

Checking reference lists of the selected articles revealed a further three articles bringing the total to 15. As some articles had used more than one instrument, and the same instrument may have been used in more than one study, 14 instruments were identified in these 15 articles. Contacting the EBP experts produced another four instruments, one of which had originally been developed for a study of medical students (Johnston *et al.*, 2003) but had been adapted for rehabilitation professionals (MacDermid *et al.*, 2006). This brought the total number of instruments to 18 some of which had modified versions.

5.7.3.1 Description of instruments

Fourteen of the 18 identified instruments were purely self-reports while two, the Knowledge, Attitude, Behaviour Questionnaire (KABQ) (Johnston *et al.*, 2003) and its modification (MacDermid *et al.*, 2006) and the questionnaire by McCluskey and Lovarini (2005), had a mix of objective and self-report items. Two instruments were objective measures: the Adapted Fresno Test of Competence in EBP (AFT) (McCluskey and Lovarini, 2005) measured objective knowledge while chart audit measured the use of outcome measures⁵¹ (MacDermid *et al.*, 2006). Information pertaining to the validity, reliability and clinical utility of the instruments was extracted from each article. Characteristics of included instruments are summarised in Table 31. Studies are reported in chronological order of publication year. Only the outcomes of relevance to this review are included.

5.7.3.2 Location of studies

The highest number of instruments were from Canada (8/18) followed by the UK (6/18), Australia (3/18) and the US (2/18). Three instruments developed in the UK (Humphris *et al.*, 2000, McColl *et al.*, 1998, Upton and Lewis, 1998) were later used in Australia (Bennett *et al.*, 2003b, McCluskey, 2003b) and the US (Cameron *et al.*, 2005). No articles reported using instruments measuring EBP knowledge, attitudes or behaviour with occupational therapists in resource-constrained countries.

5.7.3.3 Types of study design

Most instruments were used in cross-sectional studies as postal surveys (N=15). One cross-sectional study had participants complete the questionnaire before an EBP workshop (McCluskey, 2003b), one was a before-after study (McCluskey and Lovarini, 2005) and one used a mixed methods design constituting a RCT and a qualitative study (MacDermid *et al.*, 2006).

⁵¹ Examination of the form revealed it could easily be modified to measure EBP behavior.

Table 31: Characteristics of included instruments with their psychometric properties

Instrument (Developer)	Studies in which it was used & study design	Place & type of study	Aspects measured	Instrument construction	Validity	Reliability	Utility
Kirk <i>et al</i> (1976) and McKee <i>et al</i> (1987)	Philibert <i>et al</i> (2003) Cross-sectional	US – AOTA members in 5 States	<ul style="list-style-type: none"> • Reading patterns for occupational therapy journals • Sources of knowledge guiding practice • Attitudes towards and use of research in practice 	Self-report questionnaire containing 4 sections. Questions used Likert-type scales with varying response options and 2 open-ended questions	<ul style="list-style-type: none"> • Item-total correlations for attitude items showed all were significantly related to the total score ($r \geq 0.56$, $p < 0.001$) (Kirk <i>et al.</i>, 1976) • Modified based on feedback on content and clarity of questions in a pilot study (Philibert <i>et al.</i>, 2003) 	Internal consistency for attitudes towards and use of research were 0.89 and for 0.78 respectively (Philibert <i>et al.</i> , 2003)	Modified following pilot study requesting suggestions for improvements (Philibert <i>et al.</i> , 2003)
General Use of Research (Varcoe and Hilton, 1995)	Adapted by Pain <i>et al</i> (2004) Cross-sectional	Canada – 2 large urban and 2 rural/ small urban areas in one province	Use of research	10 self-report items rated on a 4-point scale	Established content validity with peer review (Varcoe and Hilton, 1995)	Internal consistency: 0.87 (Pain <i>et al.</i> , 2004)	Not stated
Edmonton Research Orientation Survey (EROS) (Pain <i>et al.</i> , 1996)	Pain <i>et al</i> (2004) Cross-sectional	As above	<ul style="list-style-type: none"> • Self-rated knowledge of research concepts • Participation in research-related activities 	Self-report consisting of 38 items rated using a 5-point Likert scale (Pain <i>et al.</i> , 1996)	<ul style="list-style-type: none"> • Evidence of construct validity (Pain <i>et al.</i>, 1996) • Scores correlated with research involvement and training levels (Pain <i>et al.</i>, 1996) • Principal component analysis identified 4 sub-scales: valuing research, research involvement, being at the leading edge and EBP (Pain <i>et al.</i>, 1996) 	Internal consistency=0.93 (Pain <i>et al.</i> , 1996)	Not stated
McCull <i>et al</i> (1998)	Adapted by Bennett <i>et al</i> (2003b) Cross-sectional	Australia – occupational therapists registered with OT Australia	<ul style="list-style-type: none"> • Attitudes to, and use of EBP • Confidence in EBP skills and barriers to its use • EBP training needs 	Self-report including 4 sections with mostly 5-point Likert scales but also some fixed response categories and an open-ended question	Content and face validity tested (Bennett <i>et al.</i> , 2003b)	Not stated	Feedback on acceptability of questionnaire was obtained in a pilot study (Bennett <i>et al.</i> , 2003b)

Instrument (Developer)	Studies in which it was used & study design	Place	Aspects measured	Instrument construction	Validity	Reliability	Utility	
Upton & Lewis (1998)	Upton (1999a) Cross-sectional	Wales, UK	<ul style="list-style-type: none"> EBP knowledge and attitudes Perceived EBP skills 	Self-report with 5 sections using varying question formats (visual analogue scales, semantic differentials, Likert-type scales and space for comments)	High face validity and good content validity (Upton and Lewis, 1998)	Established by Upton & Lewis (1998): <ul style="list-style-type: none"> Test-retest reliability: 0.80 to 0.92 Internal consistency: 0.74 to 0.88 	<ul style="list-style-type: none"> Feedback received to make it more user-friendly (Upton and Lewis, 1998) Too long (Upton and Lewis, 1998) 	
	Upton (1999c) As above	As above	Use of EBP	As above	As above	As above	As above	
	Adapted by McCluskey (2003b) Cross-sectional ⁵²	Australia – OTs at an EBP workshop	As above	As above	Self-report with response options using tick boxes, 3-point scales and open-ended questions	Feedback on wording of questions, layout and response options in pilot study (McCluskey, 2003b)	Not stated	Feedback in pilot study on layout and response options; took 10 minutes to complete (McCluskey, 2003b)
	Upton & Upton (2006) Cross-sectional	UK	As above	As above	Self-report containing items rated with a visual analogue scale, 7-point scale or 5-point scale	'Adequate' validity – no details given	<ul style="list-style-type: none"> Test-retest reliability for sub-scales from 0.8 to 0.92 Internal consistency from 0.74 to 0.88 	Not stated
Humphris <i>et al</i> (2000)	Humphris <i>et al</i> (2000) Cross-sectional	UK – OTs in 7 Acute NHS Trusts in South Thames region	<ul style="list-style-type: none"> Participation in research Use of research 	Self-report questionnaire with 4 sections. Items used yes/no responses and ranking scales.	Content validity established through professional opinion (Cameron <i>et al.</i> , 2005, Humphris <i>et al.</i> , 2000)	Not stated	Not stated	
	Adapted by Cameron <i>et al</i> (2005) Cross-sectional	US & Puerto Rico – AOTA members (Cameron <i>et al.</i> , 2005)	<ul style="list-style-type: none"> Application of EBP to intervention Attitudes towards EBP 	Self-report questionnaire consisting of 2 sections – demographic information and 9 questions consisting of 5-point scales (Cameron <i>et al.</i> , 2005)	Factor analysis reduced the questionnaire to 9 questions (Cameron <i>et al.</i> , 2005)	Not stated	Not stated	

⁵² Completed by participants attending a workshop before the workshop started.

Instrument (Developer)	Studies in which it was used & study design	Place	Aspects measured	Instrument construction	Validity	Reliability	Utility
Barriers and Attitudes to Research in the Therapies (BART) (Closs and Lewin, 1998, Metcalfe <i>et al.</i> , 2000)	Adapted by Metcalfe <i>et al</i> (2001) Cross-sectional	UK	Attitudes and beliefs about research	Self-report questionnaire containing 2 sections with 7 and 22 questions respectively. Scores for each section ranged from -7 to +7 and -22 to +22 respectively. No further details given on rating scales used.	Factor analysis revealed 2 factors in the perceived importance of research sub-scale and 6 factors in the perceived barriers sub-scale (Metcalfe <i>et al.</i> , 2001)	Good internal consistency for the perceived importance of research scale ($\alpha= 0.63$) and high internal consistency for the perceived barriers scale ($\alpha=0.78$) (Metcalfe <i>et al.</i> , 2001)	Not stated
Curtin <i>et al</i> (2001)	Curtin <i>et al</i> (2001) Cross-sectional	UK - South West & South East, England & Channel Islands	<ul style="list-style-type: none"> Views and perceptions of EBP Self-rated involvement in types of EBP activities 	Self-report containing a mixture of open, closed and Likert scale items	<ul style="list-style-type: none"> Cognitive interviews and a pilot study to check responses to items and questionnaire as a whole Content validity assumed as based on focus group findings No validity testing done 	No reliability testing done	Cognitive interviews used to check thoughts about questionnaire and covering letter
Sweetland and Craik (2001)	Sweetland and Craik (2001) Cross-sectional	UK – OTS registered with NANOT ⁵³	<ul style="list-style-type: none"> Factors influencing knowledge of stroke interventions Frequency of using EBP Factors influencing the use of EBP 	Self-report using closed questions with scaled responses and tick box formats	Questionnaire based on information from literature and interviews with expert OTs. Questionnaire and covering letter piloted and minor modifications were made.	Not stated	Not stated
Dysart & Tomlin (2002)	Dysart & Tomlin (2002) Cross-sectional	US – random sample of AOTA members	<ul style="list-style-type: none"> EBP knowledge and attitudes Supports and barriers for EBP Access to EBP resources and frequency of use Frequency implementing research in treatment plans 	Self-report with 3 sections containing dichotomous items, items with a 4-point scale and items with a 5-point Likert scale	Piloted with 6 OTs and revisions made (Dysart and Tomlin, 2002) Validity unknown (Dysart and Tomlin, 2002)	Reliability unknown (Dysart and Tomlin, 2002)	Not stated

⁵³ National Association of Neurological Occupational Therapists

Instrument (Developer)	Studies in which it was used & study design	Place	Aspects measured	Instrument construction	Validity	Reliability	Utility
Knowledge Acquisition Survey (Pain <i>et al.</i> , 2004)	Pain <i>et al.</i> (2004) Cross-sectional	Canada – 2 large urban areas and 2 rural/small urban areas in one province	Availability and use of information sources	Self-report. No other details stated	Not stated	Not stated	Not stated
	MacDermid <i>et al.</i> (2006) ⁵⁴ Mixed methods (RCT and qualitative)	Canada	As above	Self-report with 3 response options for indicating if sources available at work or home, and 5 response options for frequency of use in last 6 months	<ul style="list-style-type: none"> Construct validity demonstrated - significant correlations between scores for KAQ resource utilisation and positive KABQ items⁵⁵ (r=0.56, p<0.01) Positive correlations between KAQ resource utilisation scores and number of BMJ alerts received (r=0.59, p<0.01), and management support for accessing and utilising EBP (r=0.44, p<0.01). 	<ul style="list-style-type: none"> Test-retest reliability for resource utilisation items was 0.81 (M. Law, email, 31 July 2007). Good test-retest reliability for availability of resources at work (p > 0.16) and resources available at home/through other groups (p > 0.07) (M. Law, email, 31 July 2007). 	Not stated
McCluskey and Lovarini (2005)	McCluskey and Lovarini (2005) Before-after study	Australia – OTs attending an EBP workshop	<ul style="list-style-type: none"> Frequency of relying on different sources of information for decision-making EBP attitudes, knowledge and skill 	Self-report questionnaire consisting of 3 sections. Some knowledge questions were objective while others were self-reports of knowledge, skill and ability	Piloted with 8 OTs and minor changes made to content, format and layout of questionnaire.	Not stated	Takes approximately 20 minutes to complete

⁵⁴ Referred to as the 'Knowledge Acquisition Questionnaire' (KAQ)

⁵⁵ Items for which participants gave a rating on the positive side of the scale

Instrument (Developer)	Studies in which it was used & study design	Place	Aspects measured	Instrument construction	Validity	Reliability	Utility
Adapted Fresno Test of Competence in Evidence-based practice (AFT) (McCluskey and Lovarini, 2005)	McCluskey & Lovarini (2005) Before-after study	As above	EBP knowledge and skills – developing a PICO question, searching for evidence and appraising evidence	Objective assessment in which respondents choose one of two clinical scenarios relevant to occupational therapy and answer 7 questions. Scoring range: 0 to 156.	<ul style="list-style-type: none"> Expert opinion used to determine content validity (Ramos <i>et al.</i>, 2003). Construct validity demonstrated through significant difference between scores of novices and experts (Ramos <i>et al.</i>, 2003). 	<ul style="list-style-type: none"> Internal consistency: 0.72 to 0.84 IRR for total scores: 0.88 pre-workshop and 0.87 post-workshop IRR for individual items: 0.20 to 0.96⁵⁶ 	Took 20 minutes to complete and 20 minutes to score
Modified Knowledge, attitude and behaviour questionnaire (KABQ) (MacDermid <i>et al.</i> , 2006)	MacDermid <i>et al.</i> (2006) Mixed methods (RCT and qualitative)	Canada	Knowledge, attitudes, use and future use of EBP	Self-report and objective items using various formats (mainly 5-point scales, dichotomous scales and numerical items)	<ul style="list-style-type: none"> Concurrent validity demonstrated (Johnston <i>et al.</i>, 2003). Factor analysis revealed four distinct areas of EBP - knowledge (9 items), attitudes (6 items), personal application and use (8 items), and future use (8 items) (Johnston <i>et al.</i>, 2003). Construct validity demonstrated (MacDermid <i>et al.</i>, 2006). 	<ul style="list-style-type: none"> Effect size of 0.33 (p=0.001) for increase in EBP knowledge in 2nd year medical students at 8 months (Johnston <i>et al.</i>, 2003) Internal consistency: from 0.75 to 0.88 for each component (Johnston <i>et al.</i>, 2003). Test-retest reliability of 0.92 for sum of positive items:and 0.53 for sum of negative items⁵⁷ (M. Law, PhD, oral communication, April 2006). 	Not stated

⁵⁶ Three questions for the pre-workshop test and two for the post-workshop test had ICCs below 0.80 indicating that the scoring system needed refining (McCluskey and Lovarini, 2005).

⁵⁷ Items for which participants gave a rating on the positive or negative side of the scale.

Instrument (Developer)	Studies in which it was used & study design	Place	Aspects measured	Instrument construction	Validity	Reliability	Utility
Readiness to change clinical practice scale (RCCPS) (MacDermid <i>et al.</i> , 2006)	MacDermid <i>et al.</i> (2006) As above	Canada	Readiness to use EBP	Self-report consisting of one item with a 5-point scale	Construct validity demonstrated through significant correlations with KABQ scores for positive items ⁵⁸ (r=0.45, p<0.01)	Test-retest reliability: ICC=0.79	Not stated
Familiarity and access to technology questionnaire (FATQ) (MacDermid <i>et al.</i> , 2006)	MacDermid <i>et al.</i> (2006) As above	Canada	<ul style="list-style-type: none"> Perceptions of support received for accessing and using evidence based knowledge Access and experience using computers and the internet 	Self-report with items mainly having dichotomous response options	Convergent validity demonstrated through correlations between management support for accessing and utilising EBP and KAQ resource utilisation scores (r=0.44; p<0.01)	Not stated	Not stated
Chart audit (MacDermid <i>et al.</i> , 2006)	MacDermid <i>et al.</i> (2006) As above	Canada – 3 sites across the country	Use of outcome measures	Objective measure with 6 items and a dichotomous scale	Not stated	Not stated	Not stated
Caldwell <i>et al.</i> (2007)	Caldwell <i>et al.</i> (2007) Cross-sectional	UK – graduates from 3 universities in London	<ul style="list-style-type: none"> Views on EBP Experience of research changing practice Access to and frequency of using databases Training in EBP Demands of EBP Confidence in EBP 	Self-report using closed questions and 5-point Likert scales	Literature used to develop questionnaire	Not stated	Not stated

⁵⁸ Items for which participants gave a rating on the positive side of the scale

5.7.3.4 Outcomes

Definitions for knowledge, skills, attitudes and behaviour in the glossary of terms were used to classify instruments based on the constructs measured. Table 32 shows each instrument with the attribute/s measured indicated in the appropriate column.

Table 32: Identified instruments with specific outcomes for each learner construct

<i>Instrument (author, year)</i>	<i>EBP knowledge &/or skills</i>	<i>Attitudes towards EBP</i>	<i>EBP behaviour</i>
General Use of Research (Varcoe and Hilton, 1995)			Use of research
Edmonton Research Orientation Survey (EROS) (Pain <i>et al.</i> , 1996)	Self-rated knowledge of research concepts		Participation in research-related activities
Upton & Lewis (1998) – used by Upton (1999a), Upton (1999b), McCluskey (2003b) and Upton & Upton (2006)	<ul style="list-style-type: none"> EBP knowledge Perceived EBP skills 	EBP attitudes	EBP behaviour
Barriers and Attitudes to Research in the Therapies (BART) (Closs and Lewin, 1998, Metcalfe <i>et al.</i> , 2000, Metcalfe <i>et al.</i> , 2001)		Attitudes and beliefs about research	
Sweetland and Craik (2001)	Factors influencing knowledge of stroke interventions		<ul style="list-style-type: none"> Frequency of using EBP Factors influencing EBP use
Humphris <i>et al</i> (2000) – used by Humphris <i>et al</i> (2000) and Cameron <i>et al</i> (2005)		Attitudes towards EBP	<ul style="list-style-type: none"> Participation in research Use of research
Curtin & Jaramazovic (2001)		Views and perceptions of EBP	Involvement in EBP activities
Dysart and Tomlin (2002)	EBP knowledge	Attitudes to EBP	<ul style="list-style-type: none"> Frequency of using EBP resources Frequency using research to develop or modify treatment plans
Philibert, Snyder, Judd & Windsor (2003)		Attitudes towards and use of research in practice	<ul style="list-style-type: none"> Reading patterns for occupational therapy journals Sources of knowledge used to guide practice
Bennett, Tooth, McKenna, Rodger, Strong, Ziviani, Mickan & Gibson (2003)	<ul style="list-style-type: none"> Confidence in EBP skills EBP training needs 	Attitudes to EBP	Use of EBP
Knowledge Acquisition Survey (MacDermid <i>et al.</i> , 2006, Pain <i>et al.</i> , 2004)			Availability and use of information sources
McCluskey and Lovarini (2005)	EBP knowledge and skill	EBP attitudes	Frequency of relying on information sources in decision-making
AFT (McCluskey and Lovarini, 2005)	EBP knowledge and skills		
Modified KABQ (MacDermid <i>et al.</i> , 2006)	EBP knowledge	Attitudes to EBP	Use and future use of EBP
RCCPS (MacDermid <i>et al.</i> , 2006)		Readiness to use EBP	
FATQ (MacDermid <i>et al.</i> , 2006)		Perceived support for accessing and using evidence based knowledge	Access and experience using computers and the internet
Chart audit (MacDermid <i>et al.</i> , 2006)			Use of outcome measures
Caldwell, Coleman, Copp, Bell & Ghazi (2006)		<ul style="list-style-type: none"> Views on EBP Demands of EBP Confidence in EBP 	<ul style="list-style-type: none"> Frequency of using databases Experience of research changing practice
Total number of instruments	8	12	15

Most instruments measured some aspect of EBP behaviour (15/18). Twelve measured attitudes and eight measured knowledge. Although most instruments were purely self-reports, two (modified KABQ and the questionnaire by McCluskey and Lovarini) contained some items testing objective EBP knowledge, for example, '*The evidence-based practice process requires the appropriate identification and formulation of clinical questions*' (MacDermid *et al.*, 2006), and '*the p value is a measure of reliability*' (McCluskey and Lovarini, 2005). The AFT (McCluskey and Lovarini, 2005) measures objective knowledge of the steps in the EBP process. The chart audit form contains six items rated with a yes/no scale and measures the documentation of treatment outcomes (professional behaviour) objectively (MacDermid *et al.*, 2006).

5.7.3.5 Psychometric properties of instruments

The psychometric properties of each instrument are shown in Table 33. Articles in which specific properties were not reported are indicated with a X. The number of types of validity and reliability were calculated for each instrument. Three instruments had four types of validity and reliability, namely the questionnaire by Upton and Lewis (1998), the modified KABQ (MacDermid *et al.*, 2006) and the AFT (McCluskey and Lovarini, 2005). All but one instrument (chart audit) reported some type of validity but nine failed to include any information on reliability.

Table 33: Psychometric properties of instruments

Instrument (author, year)	Construct	Validity	Reliability	No. of types of validity & reliability	Utility
General Use of Research (Varcoe and Hilton, 1995)	B	Content	Internal consistency excellent	2	X
Edmonton Research Orientation Survey (EROS) (Pain <i>et al.</i> , 1996)	K, B	Construct	Internal consistency excellent	2	X
Upton & Lewis (1998) – used by Upton (1999a), Upton (1999b), McCluskey (2003b) and Upton & Upton (2006)	K, A, B	Face Content	Test-retest excellent Internal consistency good to excellent	4	Easy to complete but too long (Upton, 1999a) Modified version took 10 minutes to complete (McCluskey, 2003b)
Barriers and Attitudes to Research in the Therapies (BART) (Closs and Lewin, 1998, Metcalfe <i>et al.</i> , 2000, Metcalfe <i>et al.</i> , 2001)	A	Construct	Internal consistency good to excellent	2	X
Sweetland and Craik (2001)	K, B	Content	X	1	X
Humphris, Littlejohns, Victor, O'Halloran & Peacock (2000) – used by Humphris <i>et al</i> (2000) and Cameron <i>et al</i> (2005)	A, B	Content	X	1	X
Curtin & Jaramazovic (2001)	A, B	Face Content assumed ⁵⁹	X	1	Layout and clarity checked
Dysart and Tomlin (2002)	K, A, B	Face	X	1	X
Philibert, Snyder, Judd & Windsor (2003)	A, B	Content Face	Internal consistency excellent	3	Ease of completion
Bennett, Tooth, McKenna, Rodger, Strong, Ziviani, Mickan & Gibson (2003)	K, A, B	Face Content	X	2	Acceptable to participants
Knowledge Acquisition Survey (MacDermid <i>et al.</i> , 2006, Pain <i>et al.</i> , 2004)	B	Construct	Test-retest excellent	2	X
McCluskey and Lovarini (2005)	K, A, B	Face Content	X	2	20 minutes to complete Format checked & modified
AFT (McCluskey and Lovarini, 2005)	K	Content Construct	Internal consistency good to excellent IRR excellent for total scores but poor for some individual items	4	20 minutes to complete & 20 minutes to score
Modified KABQ (MacDermid <i>et al.</i> , 2006)	K, A, B	Construct Concurrent	Internal consistency excellent Test-retest excellent (sum of positive items) and fair (sum of negative items)	4	X
RCCPS (MacDermid <i>et al.</i> , 2006)	A	Construct	Test-retest excellent	2	X
FATQ (MacDermid <i>et al.</i> , 2006)	A, B	Convergent	X	1	X
Chart audit (MacDermid <i>et al.</i> , 2006)	B	X	X	0	X
Caldwell, Coleman, Copp, Bell & Ghazi (2006)	A, B	Content	X	1	X

⁵⁹ K=knowledge, A=attitudes, B=behaviour

⁵⁹ Content of questionnaire was based on data from focus groups (Curtin and Jaramazovic, 2001).

5.7.4 Discussion

Findings of the review are discussed in four sections. The first section evaluates the psychometric properties of the included instruments while the second describes their focus. Thirdly, the context in which the instruments were developed and tested is critiqued. The discussion concludes with the strengths and limitations of the methodology used for the review.

5.7.4.1 Psychometric properties of instruments

In general the psychometric properties of the included instruments had not been sufficiently tested. Eight instruments only reported validity. Five included only one aspect each for validity and reliability. This variability in the quality of instruments is supported by a systematic review that evaluated instruments measuring EBP knowledge and skills in occupational therapists (Glegg and Holsti, 2010). The instruments with the most robust properties were considered as potentially acceptable for this thesis. These were a questionnaire (Upton and Lewis, 1998), the modified KABQ (MacDermid *et al.*, 2006) and the AFT (McCluskey and Lovarini, 2005).

a. Upton and Lewis' questionnaire

This questionnaire (Upton and Lewis, 1998) was reported in four articles (McCluskey, 2003b, Upton, 1999a, Upton, 1999c, Upton and Upton, 2006). Test-retest reliability was excellent demonstrating its stability (DePoy and Gitlin, 2005, Jerosch-Herold, 2005, McDowell, 2006, Streiner and Norman, 2008) and indicating its potential for use in an evaluation study (DePoy and Gitlin, 2005). However, responsiveness was not reported. Responsiveness is a critical property of an outcome measure as it indicates whether any changes have taken place over time (Bowling, 2009, Kirshner and Guyatt, 1985, Streiner and Norman, 2008). The lack of reporting responsiveness is attributed to the questionnaire being used only in cross-sectional studies, indicating that its purpose was descriptive rather than evaluative. For this reason, the questionnaire was discarded as a potential outcome measure for this thesis.

b. Knowledge, attitudes, behaviour questionnaire (KABQ)

The KABQ was developed for use with medical students in Hong Kong (Johnston *et al.*, 2003) and was adapted for a study with Canadian rehabilitation therapists (MacDermid *et al.*, 2006). Minor modifications were made for the latter group by changing medical terminology to suit rehabilitation therapists. The KABQ is a self-report instrument containing subjective questions and some measuring objective knowledge. Factor analysis identified four separate factors related to EBP: knowledge, attitudes, personal application and use, and future use (Johnston *et al.*, 2003). The KABQ measured change in EBP knowledge (effect size=0.33, $p<0.01$) in second year medical students eight months after attending six EBP modules (Johnston *et al.*, 2003). The other three factors failed to show a significant change in scores (Johnston *et al.*, 2003). Adding responsiveness to the other established types of validity and reliability made the KABQ the instrument with the strongest psychometric properties. The value for responsiveness was small however, indicating that the detected change may not have been clinically important (Cohen, 1992).

c. Adapted Fresno Test of Competence in EBP (AFT)

The AFT is an objective measure of knowledge of the steps in the EBP process for which four types of validity and reliability have been reported (McCluskey and Lovarini, 2005). Additional information on its psychometric properties was obtained by contacting the researcher. Revised values for IRR and information on responsiveness were obtained (A. McCluskey, PhD, email communication, 28 June 2006) and have since been published (McCluskey and Bishop, 2009). IRR was excellent for total scores and good to excellent for subtest scores (McCluskey and Bishop, 2009). The AFT was also responsive to change with a mean change score of 20.6 of 156 points being seen as educationally important, and was reported to be 'most useful for demonstrating change in novice learners of EBP' (McCluskey and Bishop, 2009, p 125). This additional information rendered the AFT the most robust instrument for measuring EBP knowledge. In addition, it was the only instrument for which responsiveness was reported as clinically important, making it an appropriate choice for evaluating the outcome of an educational intervention.

d. Chart audit

A systematic review recommending the most appropriate instruments for particular EBP evaluation needs, identified two studies in which records were audited (referred to as chart audit) to evaluate EBP behaviour (Shaneyfelt *et al.*, 2008). The psychometric properties for these instruments indicated that chart audit could be responsive in evaluating EBP behaviour change over time (Shaneyfelt *et al.*, 2008). Chart audit was included in the study of rehabilitation therapists to measure their use of outcome measures (MacDermid *et al.*, 2006). Chart audit thus deserved further investigation as a potential outcome measure for EBP behaviour among occupational therapists.

e. Additional instruments identified in an updated search

An updated search conducted in early March 2011 revealed five new articles involving occupational therapists. One had used the AFT (Novak and McIntyre, 2010), one had designed a questionnaire and three articles, reporting a survey conducted with paediatric occupational therapists in Australia, Taiwan and the UK (Brown *et al.*, 2010a, Brown *et al.*, 2010b, Lyons *et al.*, 2010), used the Knowledge, Attitudes and Practices of Research (KAP) Survey (Van Mullem *et al.*, 1999). These articles were not appraised for this review but the KAP survey deserves consideration for future studies due to its noteworthy psychometric properties.

5.7.4.2 Focus of measurement

As reported by Glegg and Holsti (2010) difficulties in conducting the current review related to the variety of concepts that were included as measures of EBP knowledge, attitudes and behaviour and failure to provide definitions of the constructs measured. The emphasis in EBP research revealed in this review appeared to be on behaviour as demonstrated by the greater number of instruments measuring different aspects of this construct (15/18) as opposed to attitudes (12/18) and knowledge (8/18). A systematic review of instruments evaluating EBP education (Shaneyfelt *et al.*, 2008) identified that the highest proportion of instruments measured skills (39/104, 57%) followed by knowledge and behaviour (39/104, 38% each) with attitudes lowest (27/104, 26%). None of these instruments had been used

with occupational therapists indicating the need to identify valid approaches for evaluating EBP educational interventions for this group. Shaneyfelt *et al* (2008, p 1125) concluded that 'the science of evaluating EBP attitudes and behaviours continues to lag behind the evaluation of knowledge and skills'. This situation seems to be even more severe with respect to occupational therapy evaluation studies.

Of the identified instruments in the current systematic review (N=18), only two were completely objective measures of EBP knowledge or behaviour as opposed to self-reports - the AFT (McCluskey and Lovarini, 2005) and chart audit (MacDermid *et al.*, 2006). Two additional instruments, the modified KABQ (MacDermid *et al.*, 2006) and McCluskey and Lovarini's questionnaire (2005), contained some objective knowledge questions. Although self-reports are useful for determining certain aspects, such as attitudes to EBP, objective measurement is important to obtain a true reflection of the actual situation. In self-reports, respondents may over-estimate their involvement thereby providing inaccurate information. An updated search in early March 2011 identified a systematic review of instruments measuring EBP knowledge and skills used in studies with occupational therapists (Glegg and Holsti, 2010). This review identified one instrument measuring objective knowledge, namely the AFT. The modified KABQ (MacDermid *et al.*, 2006) has not yet been published and information for the current review was obtained through personal communication (M. Law, PhD, oral communication, April 2006).

5.7.4.3 Contexts in which instruments were developed and tested

The instruments included in this review were developed in high-income countries and their psychometric properties were tested in those contexts. No studies were located in resource-constrained contexts. It is therefore unclear whether the findings of reported studies can be generalised to resource-constrained countries. For example, the level of complexity of items included in objective measures of EBP knowledge, skills or behaviour may be too advanced considering the stage of development of EBOT in less resourced contexts.

5.7.4.4 Strengths

The review followed a clearly described process for searching and identifying relevant studies. As multiple databases were searched it is more likely that all published studies were identified. Inclusion of the flow diagram provides detailed information about the number of studies included and excluded at each stage of the selection process. Summary tables provide information that facilitates the examination of the instruments according to their descriptive details (for example, study location and data collection method), the constructs and outcome areas measured, and their psychometric properties.

5.7.4.5 Limitations

As only one reviewer was involved in the process of screening the articles for eligibility, some error may have occurred in the selection process. Ideally a second reviewer should independently screen articles to maximise accuracy in determining which articles should be included in a review (Edwards *et al.*, 2002). As the strategy for locating unpublished instruments was limited to contacting two occupational therapy EBP researchers there may have been other unpublished instruments which were not identified. Only one article had to be excluded because the full-text was not available. However, the title and authors of this article appeared to be linked to a study for which findings had been published in three other journals. A more extensive search using a wider range of terms and databases may have identified other instruments that have been used with occupational therapists. For example, three studies included in the systematic review by Glegg and Holsti (2010) were not identified during the searches for the current review. Failure to identify two of these may have been because they were multi-disciplinary studies and may not have been indexed under 'occupational therapy'. The third study was probably not found because of the number of search terms that were linked with AND. Future searches should include fewer combinations of search terms to ensure all possible articles are identified. Searching only for instruments used with occupational therapists may have failed to identify those used with rehabilitation professionals or health professionals that included occupational therapists but did not disaggregate the data by professional group. However, this was a conscious decision as the volume of information obtained would have been difficult to manage.

5.8 Conclusion

This chapter explained how to select instruments for evaluation research and discussed a framework for deciding on the outcomes that should be measured when evaluating EBP educational interventions. The specific psychometric properties of outcome measures for evaluation studies were identified and the process of testing instruments prior to their use in research was described.

A systematic review of instruments measuring EBP knowledge, skills, attitudes and behaviour identified 18 instruments. Most measured EBP behaviour (15/18) followed by attitudes (12/18) and knowledge (8/18). The majority were subjective self-reports, many of which had not had any testing of their psychometric properties. Appraisal of the instruments revealed that the AFT (McCluskey and Lovarini, 2005), the modified KABQ (MacDermid *et al.*, 2006) and chart audit (MacDermid *et al.*, 2006) had the most robust psychometric properties and were most suitable for evaluating educational interventions. The next chapter describes the process of selecting, modifying and testing the instruments for a RCT to evaluate EBP educational interventions.

Chapter 6: Study 2 - Developing and validating the instruments for the RCT

6.1 About this chapter

This chapter applies the information presented in Chapter 5 by describing the process of selecting, modifying and testing the instruments to evaluate the effectiveness of EBP educational interventions in a RCT (see Chapter 8). An evidence-based approach was followed to select and develop instruments with acceptable psychometric properties (Jerosch-Herold, 2005) to ensure the results of the RCT would be valid and reliable. The procedure of establishing the validity and reliability of the selected instruments is described and the findings discussed. The chapter concludes with a summary of the properties of the instruments.

6.2 Aims

The study aimed to identify and modify existing instruments evaluating EBP knowledge, attitudes and behaviour of occupational therapists, and to establish their psychometric properties, specifically:

- Face validity
- Reliability (inter-rater (IRR) and/or test-retest reliability)
- Internal consistency
- Responsiveness.

6.3 Methods

The process outlined in Table 29 (Chapter 5) was followed to develop the instruments for the RCT (hereafter referred to as the occupational therapy EBP (OTEBP) trial) as described in the following sections.

6.3.1 Identifying the instruments

Three instruments with adequate psychometric properties were identified in the systematic review in Chapter 5. Three additional instruments obtained from a colleague were reported to be sufficiently robust in several Canadian studies (M. Law, PhD, oral communication, April 2006). As these instruments measured different aspects of knowledge, attitudes and behaviour from those identified in the systematic review, a decision was made to examine their suitability for the OTEBP trial. The instruments considered for the trial were:

- The Adapted Fresno Test of Competence in EBP (AFT) (McCluskey and Bishop, 2009, McCluskey and Lovarini, 2005)
- The Knowledge, attitudes, behaviour questionnaire (KABQ) (Johnston *et al.*, 2003, MacDermid *et al.*, 2006)
- Chart audit (MacDermid *et al.*, 2006)
- The Readiness to Change Clinical Practice Scale (RCCPS) (MacDermid *et al.*, 2010, MacDermid *et al.*, 2006)
- The Knowledge Acquisition Questionnaire (KAQ)⁶⁰ (MacDermid *et al.*, 2006)
- The Familiarity and Access to Technology Questionnaire (FATQ) (MacDermid *et al.*, 2006).

Descriptions of each instrument are provided in the next section and their psychometric properties are available in Table 33 (this chapter) and section 5.7.4.1 (Chapter 5).

6.3.1.1 Adapted Fresno Test of Competence in EBP (AFT)

The AFT was adapted for occupational therapists from the Fresno Test of Evidence-Based Medicine (Ramos *et al.*, 2003). It measures changes in EBP knowledge and skills (McCluskey and Bishop, 2009). The 12 questions in the original Fresno Test were reduced to seven by removing questions 'about diagnosis and more complex statistical calculations' (McCluskey and Bishop, 2009, p 120). Four clinical scenarios⁶¹ relevant to occupational therapy practice

⁶⁰ Used in a previous study under the name 'Knowledge Acquisition Survey' (2004).

⁶¹ Two scenarios are included in each version of the test to provide test completers with a choice

were written so that two versions of the test (Versions 1 and 2) are available to evaluate the effectiveness of EBP training. Scoring for each question is based on specific criteria captured in a scoring matrix which indicates responses considered to be 'excellent', 'strong' and 'limited'. The maximum total score is 156.

6.3.1.2 Knowledge, attitudes, behaviour questionnaire (KABQ)

The KABQ was modified for use in Canadian rehabilitation settings by changing the terminology to apply to rehabilitation professionals (MacDermid *et al.*, 2006). It is a self-administered questionnaire containing 43 items, 31 of which have categorical response options (Johnston *et al.*, 2003). The modified KABQ was completed online with a group of 39 rehabilitation clinicians to establish its psychometric properties in the Canadian rehabilitation context (MacDermid *et al.*, 2006).

6.3.1.3 Chart audit

Audit is a tool used in quality improvement programmes in healthcare (Bowling, 2009, Sasaru *et al.*, 2005). Specific criteria are applied to compare current practice against best practice to improve quality of care (Sasaru *et al.*, 2005). It also plays a role in educating health professionals (Bowling, 2009). Changes are often implemented after an audit and practice is re-evaluated at a specified time to determine whether the quality of care has improved (Sasaru *et al.*, 2005). Audits have been used in research to determine practitioners' adherence to guidelines or quality indicators (Shaneyfelt *et al.*, 2008).

A systematic review of instruments for evaluating EBP education identified two studies that used audits to evaluate the behavioural outcomes of EBP training (Shaneyfelt *et al.*, 2008). When audit is used to gather data, whether for research or quality improvement initiatives, specific criteria must be determined; these depend on the focus of the audit and should be based on clearly-defined standards that can be used to measure performance (Sasaru *et al.*, 2005). While audit of patient records, or chart audit, has advantages, it has been shown to have poor validity and reliability for assessing clinical competence due to incomplete documentation and missing data (Salvatori and Ward, 2000). It does, however, provide basic

data related to patient decisions and intervention (Jennett and Affleck, 1998, Jennett *et al.*, 1995).

Chart-stimulated recall (CSR) is a method involving a combination of chart audit and personal interviews to explore the reasoning behind the information included in patient documents (Jennett and Affleck, 1998). This method allows additional information to be collected that may not appear in the original record (Goulet *et al.*, 2002) and has been used to evaluate competence in health professionals (Goulet *et al.*, 2002, Salvatori and Ward, 2000).

6.3.1.4 Knowledge Acquisition Questionnaire (KAQ)

This questionnaire was developed for a Canadian study of rehabilitation professionals to 'describe the availability and use of information sources' (Pain *et al.*, 2004, p 4). It has also been used to evaluate an on-line evidence-based service for rehabilitation professionals (MacDermid *et al.*, 2006) and to compare two interventions to change knowledge and behaviour related to outcome measures in physiotherapists and occupational therapists (MacDermid *et al.*, 2010). The KAQ consists of two parts: part one uses a five-point scale to measure the frequency of using different sources of rehabilitation information (resource utilisation), and part two identifies the availability of different information sources at work, through other groups, or at home (MacDermid *et al.*, 2006).

6.3.1.5 Familiarity and Access to Technology Questionnaire (FATQ)

The FATQ was also developed for the study with Canadian therapists described under the KAQ (MacDermid *et al.*, 2010, MacDermid *et al.*, 2006). It contains demographic and practice information, perceived support for accessing and using evidence-based knowledge, and access and experience using computers and the internet.

6.3.1.6 Readiness to change clinical practice scale (RCCPS)

This scale was developed to measure therapists' intentions and readiness to use outcome measures (MacDermid *et al.*, 2010, MacDermid *et al.*, 2006). The items in the scale represent the five stages of change in the trans-theoretical stages of change model⁶² (Prochaska and DiClemente, 1982). This model suggests that a person's behaviour is influenced by their readiness to change their behaviour at the time that the information about that behaviour is provided (Dalton and Gottlieb, 2003, Prochaska *et al.*, 1992). Behaviour change is viewed both as a series of stages and as a process through which an individual moves to reach a desired end point (DiClemente *et al.*, 1991, Prochaska *et al.*, 1992). The concept of readiness to change has been widely used in approaches to addiction and health behaviour (Forsberg *et al.*, 2003, Prochaska and DiClemente, 1992, Prochaska *et al.*, 1988, Rollnick *et al.*, 1992), but has more recently been proposed as a way of understanding responses to knowledge transfer (Buckley *et al.*, 2003). The RCCPS requires participants to select the option that best describes their feelings about changing their practice.

6.3.2 Selecting the instruments

The AFT, as an objective measure of knowledge, seemed an obvious choice as it had been modified and validated for occupational therapists. As the KABQ contains some objective knowledge items and subjective items measuring attitudes and behaviour, it contributed information not covered by the AFT. The KAQ, RCCPS and FATQ - as subjective measures of different attributes of attitudes and behaviour - similarly provided additional information. Self-reports were thought to be least threatening for participants and the most pragmatic method of collecting data. However, evidence from a systematic review revealed that physicians' self-assessments of their competence were inaccurate compared with external observations (Davis *et al.*, 2006). This finding substantiated the need for an objective measure of EBP behaviour. Chart audit and CSR were considered but difficulties finding

⁶² The stages are pre-contemplation, contemplation, preparation, action and maintenance (DiClemente *et al.*, 1991, Prochaska *et al.*, 1992).

research assistants with dedicated time to conduct interviews, the level of expertise needed to make judgments on ratings over the wide range of practice areas of study participants, and the costs involved, precluded CSR as an option. As the OTEBP trial was concerned with the extent to which participants monitored their practice through documentation, rather than evaluating the quality of their practice, chart audit was a suitable method for collecting data (Goulet *et al.*, 2002). Although incomplete documentation and missing data were of concern, the intention was not to capture participants' reasoning processes but rather to develop a profile of their record-keeping to illustrate how they were monitoring the effectiveness of their patient interventions. The choice of instruments for the study was therefore based on availability, applicability to occupational therapy, evidence of validity and reliability and coverage of the outcomes deemed important.

The framework (Nabulsi *et al.*, 2007) presented in Table 30 (Chapter 5) was applied to ensure that all learner domains and outcomes were covered by the selected instruments so that a comprehensive evaluation of the intervention could be done (refer to Table 34).

Table 34: Domains and measurement instruments for learner outcomes

Domain	Outcomes	Instrument
Affective	Satisfaction with training	<ul style="list-style-type: none"> • Feedback questionnaire after intervention
	Attitudes towards EBP	<ul style="list-style-type: none"> • FATQ (MacDermid <i>et al.</i>, 2006) • KABQ (Johnston <i>et al.</i>, 2003, MacDermid <i>et al.</i>, 2006)
	Intentions to use EBP	<ul style="list-style-type: none"> • KABQ (Johnston <i>et al.</i>, 2003, MacDermid <i>et al.</i>, 2006) • RCCPS (MacDermid <i>et al.</i>, 2006)
Cognitive	Knowledge of EBP	<ul style="list-style-type: none"> • KABQ (Johnston <i>et al.</i>, 2003, MacDermid <i>et al.</i>, 2006) • AFT (McCluskey and Bishop, 2009, McCluskey and Lovarini, 2005)
	EBP skills	<ul style="list-style-type: none"> • AFT (McCluskey and Bishop, 2009, McCluskey and Lovarini, 2005)
Behavioural	EBP use	<ul style="list-style-type: none"> • KABQ (Johnston <i>et al.</i>, 2003, MacDermid <i>et al.</i>, 2006) • KAQ (MacDermid <i>et al.</i>, 2006, Pain <i>et al.</i>, 2004) • Chart audit (MacDermid <i>et al.</i>, 2006)

Table 34 reveals that there was more than one instrument to measure some outcomes but these contributed either subjective or objective information, or measured different attributes of the outcome. Therefore, it was decided to include all instruments, apart from the chart audit form, in a single questionnaire, and to determine whether any modifications were required. As the chart audit form evaluated the use of outcome measures (MacDermid *et al.*, 2006), another audit instrument had to be developed to measure the extent to which participants were monitoring the effectiveness of their patient interventions. An evaluation form would also be required for feedback from participants on the educational

interventions. As the questionnaire was a self-report, while the audit instrument would be used by independent raters, the development and testing of each is described separately.

6.3.3 Development of the OTEBP questionnaire

Instruments were obtained from the developers who gave permission for their use in the OTEBP trial. Items for each instrument were scrutinised and modifications were made where necessary to ensure their applicability to occupational therapy and the SA context. The order of presentation of items and instruments was such that participants would start with easy, non-threatening questions which would become increasingly challenging. The initial baseline questionnaire consisted of the following sections in order of presentation:

- **Demographic and practice information:** this was included to investigate the extent to which participants' practice experience and the characteristics of the service influenced EBP behaviour. Items were selected from the questionnaire in Chapter 4 and those used in previous studies (Bennett *et al.*, 2003b, Law *et al.*, 2007, MacDermid *et al.*, 2006). Information requested included age, highest qualification, years and areas of experience, work hours per week, work location (urban/rural), average number of new referrals per month and main caseload.
- **Factors supporting or hindering EBP:** to determine the possible impact of peer, administrative, and managerial support and access to resources, on EBP use. Ten of the 16 items in section 2 of the KAQ (MacDermid *et al.*, 2006, Pain *et al.*, 2004) and three items from the FATQ (MacDermid *et al.*, 2006) were selected.
- **EBP knowledge, attitudes and behaviour:**
Knowledge Acquisition Questionnaire (KAQ) (MacDermid *et al.*, 2006, Pain *et al.*, 2004): Items about the frequency of using different sources of evidence were selected to replace items in the KABQ as they were similar but were more relevant for occupational therapists. The KABQ rating scale was retained as the time frames seemed easier for

participants to recall and report accurately rather than reporting the number of times used. The category 'never' was changed to 'seldom or never' as the next category was 'every month' which may have made it difficult for participants who were erratic EBP users to complete. An additional item related to undergraduate lecture notes was added because of its frequent use reported in Chapter 4.

Adapted Fresno Test of Competence in EBP (AFT) (McCluskey and Bishop, 2009):

Examination of the AFT (version 2) with a South African EBP expert, confirmed it would be time-consuming and daunting for the target group to complete in its existing form considering the limited EBP knowledge reported in Chapter 4. Three questions were therefore selected and their format changed to make them easier and quicker to complete. The remaining four questions required advanced EBP knowledge and skills, including writing a MEDLINE search strategy, determining the relevance and validity of a study and its magnitude and significance, and were excluded.

The modified version of the AFT was renamed the Shortened AFT (SAFT) and tested aspects of the first three steps of the EBP process. The SAFT contains three items that evaluate knowledge of writing a PICO question based on a clinical scenario, ability to identify the most suitable study design to answer the question, and knowledge of possible sources of information. Answer options with tick boxes were included for two items to simplify completion. The grading rubric developed by McCluskey and Bishop (2009) was adapted to reflect the changes and to ensure the scoring criteria were clear. The rubric was not changed for question 1 (PICO) except that an additional four points were awarded for writing out the complete question. The rubric was simplified for questions 2 and 3 as follows:

Question 2 (sources of information): One point was allocated for each option selected except '*I wouldn't look for information, I would use my clinical experience*' which scored zero points. A maximum of five points was awarded for '*other*' giving a possible score of 11 for this question.

Question 3 (study design): Two points were awarded for '*randomised controlled trial*', one for the other study designs and zero for '*don't know*'. If '*other*' was ticked and systematic review written beside it, a bonus point was allocated. The possible score for this question was three.

Two new scenarios based on the content of the educational intervention in the OTEBP trial were developed for the 12-week questionnaire with a grading rubric. The total possible score for baseline and 12-week versions of the SAFT was 30 points.

Knowledge, attitude and behaviour questionnaire (KABQ) (Johnston *et al.*, 2003, MacDermid *et al.*, 2006):

Six items were deleted because they were not relevant to the SA context (item 16: technology was unavailable to the study population), to qualified health professionals (items 27 and 28 related to student learning), seemed repetitive (item 10) or were too advanced for the study population (items 14 and 15). As previously mentioned, the wording for items 8-17 was changed to that in the KAQ to be more applicable to occupational therapists. Some items (21-29 and 39-72) were modified by changing the terminology to relate to occupational therapy. For example, 'evidence-based medicine' was changed to 'evidence-based practice'. The six-point scale in items 1-7 and 32-43 was changed to a five-point scale because of the difficulty in differentiating between 'moderately agree' and 'agree' or 'moderately disagree' and 'disagree'. The central point on the scale became neutral, for example, 'undecided'. As it was unclear how the continuous scale for items 19iii)-31 would be completed, this was also changed to a five-point scale.

Readiness to Change Clinical Practice Scale (RCCPS) (MacDermid *et al.*, 2006):

The wording of the scale was modified to apply to behaviour about incorporating evidence into practice. Wording of the instructions and scale items was not changed.

6.3.4 Testing the OTEBP questionnaire

The questionnaire was tested to establish its psychometric properties in the study context. Being an evaluative instrument, the most important properties were content and construct validity (Law, 1987), IRR (Law, 1987, Streiner and Norman, 2008), test-retest reliability (Kirshner and Guyatt, 1985) and responsiveness (Bowling, 2009, Kirshner and Guyatt, 1985, Law, 1987). Some properties applied only to certain instruments in the questionnaire, for example, IRR was only required when more than one rater was involved in scoring. In addition, the face validity of each item and the clinical utility of the entire questionnaire was evaluated (Corr and Siddons, 2005, Jerosch-Herold, 2005, Law, 1987). Table 35 shows the psychometric properties to be established for the different instruments in the questionnaire and the reasons for doing so. In the absence of a gold standard instrument against which the questionnaire could be compared, criterion validity could not be established.

Table 35: Psychometric properties required for instruments in the OTEBP questionnaire

<i>Name of instrument</i>	<i>Psychometric properties to be established</i>	<i>Reason</i>
SAFT	Inter-rater reliability Test-retest reliability Responsiveness	To establish consistency in scoring across different raters To determine stability over a specific period of time in which the attribute is not expected to change Ability to measure change over time
KABQ	Test-retest reliability Internal consistency	As for the SAFT To determine the structure of the instrument and identify which items were grouped together (to determine whether scores could be calculated for sub-sections)
FATQ	Test-retest reliability for items 75-77	As for SAFT
RCCPS	Test-retest reliability	As above

The PI completed the draft questionnaire to check completion time, clarity of instructions and ease of answering each question. The questionnaire was also evaluated by an EBP expert and a researcher with experience in instrument development. Changes were made to the layout by increasing the font size, including page numbers, changing the order of presentation of one instrument, and modifying the wording of some items to make them appropriate for the trial population.

The questionnaire was piloted with two groups of participants. In the first pilot, face validity and utility were established and in the second, test-retest reliability was tested. The

methods used, and results for, each pilot study are presented separately for the sake of clarity.

6.3.4.1 Testing validity

Face validity and utility for all instruments in the questionnaire were evaluated using a semi-structured focus group. Five UCT occupational therapy lecturers were purposively selected to represent different areas of occupational therapy practice. This ensured that the questionnaire would be appropriate in all settings in which Western Cape DOH occupational therapists were working.

Participants completed the first draft of the questionnaire and recorded the time taken to complete it prior to attending the focus group. The aim of the focus group was to obtain feedback about the design and layout of the questionnaire and the content of the items. Participants were asked for their general impressions about the length and layout of the questionnaire as a whole and then each item was discussed to identify ambiguities and redundancy, use of jargon and value-laden words, to evaluate the ease of using the rating scales, and to identify additional items for inclusion (Streiner and Norman, 2008). An interview guide was used to guide the discussion (see Appendix VIII).

A spreadsheet was developed in *STATISTICA 8* (StatSoft Inc, 2008) to check the efficiency of the data entry process. Where possible, data were entered prior to the focus group to detect inconsistencies and missing data, and to identify areas requiring discussion. The focus group was audio-recorded and notes made on a blank questionnaire during the discussion. The PI listened to the recording after the focus group and documented the discussion so that all the points raised could be addressed during the questionnaire revision process.

6.3.4.2 Testing reliability

After making changes to the questionnaire based on the focus group discussion, the different types of reliability outlined in Table 35 were assessed. Twenty-six occupational therapists in the Western Cape volunteered to complete the revised questionnaire. They

worked in private practice, non-DOH hospitals (so were not part of the study population) or in DOH facilities but were unable to participate in the OTEBP trial.

Participants completed the questionnaire twice with a one-week interval between completions. This time period was considered suitable in terms of the likelihood of participants' recalling their responses. Questionnaires were collected from participants by a research assistant after each completion. The SAFT (from both completion times) was independently scored by the PI and a trained research assistant using the grading rubric in Appendix IX.

Data were entered into *STATISTICA 8* (StatSoft Inc, 2008) by a research assistant. Participant numbers were used for data entry and names and other identifying features were excluded (Boynton, 2004). Any uncertainties in capturing data were discussed and decisions made about how they should be handled. For inconsistent responses, the most appropriate response was entered. For example, for items 8-17 if a participant circled 'no' under availability and 'yes' under either of the other two columns, the response for availability was entered as 'yes'. If two options were ticked for an item, the highest response level was entered. Once all the data had been entered, the PI double-checked the accuracy of entries against each item on the hard copies of the questionnaire.

Data were analysed with *STATISTICA 8* (StatSoft Inc, 2008). Frequencies for descriptive data were calculated to provide a demographic and practice profile of participants. The Shapiro-Wilk Test was used to determine whether numerical data were normally distributed and appropriate measures of central tendency and dispersion were calculated. To determine the stability of the questionnaire between the two completion times *Statistical Package for the Social Sciences (SPSS), version 18* (SPSS Inc, 2009) was used to calculate ICCs for continuous data and categorical data that were at least ordinal. A two-way random model for absolute agreement for single measures was used to calculate the ICC (ICC type A,1⁶³) (McGraw and Wong, 1996). The test value was set at 0.75 as recommended by Cicchetti and Sparrow

⁶³ The ICC used a two-way model with random effects for single measures and with absolute agreement (McGraw and Wong, 1996).

(1981). To determine the IRR of the SAFT, the same type of ICC (A,1) was calculated for each SAFT item and the total score for both sets of questionnaires. An ICC of less than 0.40 was considered poor, 0.41-0.59 fair to moderate, 0.60-0.74 good and above 0.75 as excellent (Cicchetti and Sparrow, 1981). In line with good practice, 95% confidence intervals (CIs) are cited with ICCs to indicate the range of values within which the true value is estimated to lie (Jerosch-Herold, 2005). Cohen's Kappa for the reliability of dichotomous items was calculated with *Stata* statistical software, release 10 (StataCorp, 2007). The benchmarks employed by Landis and Koch (1977) were used to judge the strength of agreement between raters (kappa \geq 0.81 = almost perfect; 0.61-0.80 = substantial ; 0.41-0.60 = moderate; 0.21-0.40 = fair; $<$ 0.21 = slight or poor). To determine internal consistency, item analysis was conducted on all KABQ baseline measurements (38 ordinal items) using Cronbach's alpha and factor analysis with principal axis factoring as the extraction method.

6.3.4.3 Determining responsiveness

The responsiveness of the SAFT was calculated using baseline and 12-week data from the OTEBP trial described in Chapter 8. Data was captured in *Excel 2003* and imported into *STATISTICA* (StatSoft Inc, 2008) for analysis.

As pre-post workshop SAFT scores were not normally distributed, the Wilcoxon signed rank test was conducted to examine whether there was a significant difference in pre- and post-workshop scores. Mean total scores and standard deviations were calculated for pre- and post-workshop data. Mean change scores were determined with their standard deviations and 95% CIs. Effect sizes were calculated using the mean change score and dividing it by its standard deviation (Beurskens *et al.*, 1996, Husted *et al.*, 2000). An effect size of greater than 0.80 was considered large, 0.50 to 0.80 as moderate and less than 0.50 as small (Cohen, 1992). Based on the study by McCluskey and Bishop (2009), a 10% improvement in the mean total SAFT score post workshop was considered educationally important. Therefore an improvement of at least 3.0 points on the 30 point scale would be regarded as educationally important.

6.3.5 Development of the audit checklist

The audit checklist was based on a CSR evaluation form for assessing competence in occupational therapists (Salvatori and Ward, 2000), a chart audit form (MacDermid *et al.*, 2006) and an audit tool developed for evaluating the quality of occupational therapy records in one province in SA (Foote *et al.*, 2006). Items were selected by asking 'What would one expect the patient notes of an evidence-based practitioner to look like?' If the item did not contribute towards answering this question, it was deleted. The initial checklist used a dichotomous scale (yes/no) and contained six items documenting:

- Use of recognised, standardised measures of outcome at baseline and the end of intervention;
- Clear recording of baseline assessments to facilitate monitoring of changes;
- Changes in client status (progress or deterioration) between appointments;
- Interventions provided;
- Reference to research to verify intervention; and
- Goals for intervention plan.

The checklist was sent for comment, and review of its face and content validity and clinical utility, by an expert panel consisting of two international colleagues with audit experience and two local experts. Comments from this panel led to the inclusion of the ICF checklist (World Health Organization, 2001) as a framework to differentiate between assessment, intervention and re-assessment at impairment, activity and participation levels, in order to gauge the focus of interventions provided to clients. The rating scale was expanded to a four-point scale ('completely', 'somewhat', 'not at all' and 'not applicable'). These changes resulted in a 15 item checklist.

Properties that needed to be tested prior to using this instrument in the OTEBP trial were IRR and responsiveness.

6.3.5.1 Pre-testing of the audit checklist

The checklist was tested prior to the initial training session with the raters (see 6.3.5.2). The PI rated 10 records obtained from an institution from which participants would be recruited for the OTEBP trial. This enabled the PI to clarify what was expected for each item and informed the content of the training session. The following were noted:

- If more than one therapist was seeing a client, a specific therapist may not have been required to document some aspects of the intervention, for example a baseline assessment or progress may have been recorded by another therapist. Therefore, a 'not applicable' response option was required.
- A baseline assessment could be any assessment that measured an outcome considered important to the therapist.
- Assessments should be recorded in a way that was measurable. If a description rather than measurements had been recorded, a score of 'somewhat' rather than 'completely' would be awarded.
- Although goals may have been identified, they were not always documented. Considering the importance of goals in directing intervention and measuring outcomes, this item was retained.
- None of the records contained any indication that the assessment or intervention was evidence-based. It was acknowledged that therapists would probably only document their use of specific evidence in records that would be used for medico-legal purposes or when deviating from a 'usual' protocol or applied 'new' interventions. The checklist did, however, document whether therapists monitored the effectiveness of their interventions. While another instrument may have been useful in identifying whether and how therapists were using evidence to make decisions about client care, this was beyond the scope of the OTEBP trial.
- If a client was seen for the first time in the week preceding the audit, there may have been no opportunity to record progress. In this situation, this item would be rated 'not applicable'.

6.3.5.2 Recruitment and training of raters

Two occupational therapists were employed to conduct the audits for the OTEBP trial to reduce the risk of detection bias (Sibbald and Roland, 1998). Training of raters and use of consistent raters were strategies adopted to minimise disagreement and increase the reliability of the study findings.

In the first training session, each item on the audit checklist was explained and terms were defined using the ICF checklist (World Health Organization, 2001). Scoring using the rating scales was also discussed. Training included practice using the checklist on records obtained from therapists at two institutions who had agreed to participate in the OTEBP trial.

Therapists were asked to draw records of patients who had been discharged between 1 February and 31 March 2008. A total of 15 records were collected, four of which were used for training. One record was jointly audited by the PI and both raters by discussing its content and determining the most appropriate ratings for each item. Three records were subsequently rated with increasing levels of independence. Item scores were discussed and reasons for differences identified. This exercise led to the following decisions:

- ICF checklist definitions would be used to differentiate between 'impairment', 'activity' and 'participation'.
- Records containing *any mention* of the attribute measured by an item would receive a score of one.
- Where there was doubt about the rating, the lower score would be awarded.
- Assessments had to include measurable outcomes to score two points.
- To score a point for item 6 there had to be some mention of an attempt to look for evidence for the intervention, for example research, expert opinion or reference to an evidence source.
- For work assessment records, items 10-15 would be marked 'not applicable'.

6.3.5.3 Establishing IRR

Four pilot studies were conducted to test and refine the 15 item checklist. In each pilot, a set of 10 records was independently audited by two raters who were not permitted to discuss the content of the record or checklist, or their ratings. In keeping with Hosking's (1995) recommendation, a grading rubric was developed, with descriptors for each item to guide scoring allocation, and training in the use of the rubric was provided. Results for each pilot study were discussed with raters and reasons for differences in scores were identified. Based on these discussions, refinements were made to the items and grading rubric descriptors after each pilot.

Item ratings for each audit checklist were entered into *Excel* by a research assistant. The researcher checked each data entry for accuracy against hard copies of audit checklists. For pilots 1-6, *SPSS* (SPSS Inc, 2009) was used to calculate ICCs as described in section 6.3.4.2. When the rating scale was changed to a dichotomous scale after pilot 6, Cohen's kappa was computed (refer to 6.3.4.2).

6.3.5.4 Determining responsiveness

Baseline and 12-week audit scores for the total sample in the OTEBP trial were used to calculate responsiveness as described in 6.3.4.3.

6.4 Results

Results for the OTEBP questionnaire are presented first followed with those for the audit.

6.4.1 OTEBP questionnaire

6.4.1.1 Face validity and utility

The focus group was attended by all five participants. Four of the five recorded the time taken to complete the questionnaire. The median completion time was 23.5 (IQR=21.0-27.5, range= 20.0-30.0) minutes. Participants commented on the layout and order of presentation; language/wording of instructions and items; method of completion; response options; and, construction of rating scales. Missing responses were noted for 82 of the 127

items and varied from 0 to 8 per item. The highest number of missing responses occurred in items 10-19. On checking the completion of these items it was noted that many participants did not circle an answer for every item, particularly the sections indicating whether the resource was available at work or outside work. Participants attributed this to be due to unclear instructions and confusing layout. Three additional items were suggested where gaps in information were noted. Changes were made to the questionnaire based on consensus between participants (refer to Appendix X for details). The revised questionnaire is available in Appendix XI.

6.4.1.2 Reliability and responsiveness

Twenty-one of 26 participants completed the questionnaire on two occasions. Four completed the questionnaire once as they were on leave for one of the completion times, and one participant was going on leave so completed the second questionnaire after 3 days. These five questionnaires were excluded from the analysis. As 17 of 21 participants recorded dates on their questionnaires, the time interval between completions was calculated only on this data. Data was not normally distributed for duration between completion times ($W=0.606$, $p<=0.001$), age ($W=0.791$; $p<0.001$), years experience ($W=0.82$; $p=0.001$) and number of clients seen per month ($W=0.840$; $p<0.001$).

The median duration between completion times was 7.0 (IQR= 7.0-15.0, range= 7.0-49.0) days. The median for age and years of experience was 29.0 (IQR=26.0–35.0, range=23.0-57.0) and seven (IQR=5.0–12.0, range=1.0–29.0) years respectively. All participants were female and worked in urban areas. Most had a bachelors' degree in occupational therapy (19/21, 90.5%). Two had postgraduate occupational therapy qualifications and three had qualifications in other areas either at bachelors/diploma level or postgraduate diploma/certificate level. Most participants worked in tertiary settings (14/21, 66.7%). The median number of clients per month was 47.5 (N=18, IQR=30.0-150.0, range=18.0–200.0). Participants' areas of practice are shown in Table 36.

Table 36: Participants' practice areas

<i>Area of practice</i>	<i>No.</i>	<i>%</i>
Physical ¹	11	52.4
Psychiatry ²	4	19.0
Physical and psychiatry ³	2	9.5
Psychiatry and work ⁴	2	9.5
Physical and work ⁵	2	9.5
Total	21	100

¹ Paediatrics (excluding child psychiatry), stroke, amputation, hand conditions, burns, arthritis, chronic diseases of lifestyle

² Child psychiatry, psychoses, anxiety, intellectual disability, substance use disorder, bipolar affective disorder

³ Combination of one or more conditions listed in above two areas

⁴ Combination of one or more conditions listed in 'psychiatry' and work practice

⁵ Combination of one or more conditions listed in 'physical' and work practice

a. SAFT

Table 37 shows that IRR was excellent for individual SAFT items and total scores for both completion times.

Table 37: Inter-rater reliability for the SAFT at times 1 and 2

<i>Time completed</i>	<i>PICO score ICC (95% CI)</i>	<i>Study design score ICC (95% CI)</i>	<i>Source score ICC (95% CI)</i>	<i>Total score ICC (95% CI)</i>	<i>Strength of agreement</i>
Time 1	0.99 (0.98-1.00)	1.00	1.00	1.00	Excellent
Time 2	0.99 (0.97-1.00)	1.00	0.89 (0.76-0.96)	0.99 (0.97-1.00)	Excellent

Test-retest reliability was excellent for two of the items and total SAFT scores (refer to Table 38).

Table 38: Test-retest reliability for the SAFT

<i>Item no.</i>	<i>Item (possible score)</i>	<i>ICC (95% CI)</i>	<i>Strength of agreement</i>
20	PICO score (16)	0.96 (0.895-0.985)	Excellent
21	Study design score (3)	0.90 (0.77-0.96)	Excellent
22	Source score (11)	0.71 (0.40-0.88)	Good
	Total score (30)	0.95 (0.88-0.98)	Excellent

Differences in pre-post workshop scores for the total OTEBP trial sample were significant (T=30.5, Z=5.1, p<0.001). The overall mean improvement in knowledge on the SAFT was 6.2 points on the 30 point scale (SD=6.3, 95% CI: 5.2-7.9). Table 39 shows the effect sizes and their interpretations (Cohen, 1992).

Table 39: Responsiveness of the SAFT for the total sample (N=46)

Question (score)	Pre-workshop mean (SD)	Post-workshop mean (SD)	Mean change (SD)	95% CI for mean change	Effect size*	Interpretation
PICO (16)	8.4 (6.1)	13.8 (3.5)	5.4 (5.9)	4.9-7.5	0.93	Large
Study design (3)	0.8 (0.9)	1.3 (0.7)	0.6 (0.9)	0.7-1.1	0.67	Moderate
Sources of information (11)	4.1 (1.2)	4.4 (1.7)	0.3 (1.6)	1.3-2.0	0.19	Small
Total score (30)	13.3 (6.7)	19.6 (4.3)	6.2 (6.3)	5.2-7.9	1.00	Large

*Calculated using mean change scores divided by the standard deviation of the mean change score.

b. Modified KABQ

The factor structure of the modified KABQ showed that knowledge items were grouped together but the remaining items were split. The resultant structure did not conform to the theoretical structure reported by Johnston *et al* (2003) apart from the items measuring knowledge. Therefore theoretical factors were used and the factorability of the items and reliability were checked. Factor analysis suggested that knowledge stayed intact as one factor which explained 47.5% of the variance and had a Cronbach alpha of 0.801. 'Source' was split into three factors with one having a much greater eigenvalue than the other two and explaining 44.0% of the variance. Therefore, this factor was retained by forcing one factor only resulting in a Cronbach's alpha of 0.826. Factor analysis on the set of items measuring the theoretical factor of EBP behaviour identified one poorly-performing item (item 47 'How much confidence do you have in your occupational therapy decision-making?'; $MSA^{64}=0.213$). This item was therefore dropped and factor analysis repeated. The repeated factor analysis produced only one factor with a Cronbach alpha of 0.805. The same procedure was followed for the items measuring attitudes. Items were dropped in the following order: item 59 ($MSA=0.443$), item 65 ($MSA=0.547$), item 57 ($MSA=0.524$) and item 58 ($MSA=0.276$). As item 60 measured only one factor it was dropped and the factor analysis repeated. This revealed a three-factor structure with Cronbach's alpha varying between 0.753 and 0.809. The same factor structure was used for 12-week measurements. Values for Cronbach's alpha for baseline and 12-week data are shown in Table 40.

⁶⁴ measures of sampling adequacy

Table 40: Cronbach's alpha for factors at baseline and 12 weeks

<i>Factor</i>	<i>Item no's (baseline questionnaire)</i>	<i>Cronbach α for baseline data</i>	<i>Cronbach α for 12 week data</i>
Knowledge	23-29	0.801	0.762
Behaviour - Sources of information used	32-40	0.826	0.714
Behaviour - Impact of EBP on practice	44-46, 48-50	0.805	0.840
Attitude 1 - Negative attitudes to EBP	54-56, 61-62	0.753	0.622
Attitude 2 - Positive attitudes to EBP	51-53	0.809	0.807
Attitude 3 - EBP as useful and an important part of CPD	63-64	0.802	0.840

Cronbach's alpha values indicated high internal consistency for all factors except attitude factor 1 at baseline, and EBP behaviour and attitude factors 2 and 3 at 12 weeks. However, all factors had an alpha of at least 0.60 suggesting sufficient internal consistency for baseline and 12-week values. Consequently items within each factor could be added to provide a total score to determine differences between baseline and 12-week scores for the OTEBP trial.

Kappa values for dichotomous items showed at least fair test-retest reliability ($\kappa > 0.21$) as depicted in Table 41.

Table 41: Test-retest reliability for dichotomous items in KABQ

<i>Item no.</i>	<i>Item</i>	<i>Kappa</i>	<i>P value</i>	<i>Strength of agreement</i>
43 ii)	Did you find evidence?	0.23	0.175	Fair
67	Do you consider yourself an evidence-based practitioner currently?	0.89	<0.001	Almost perfect
68	I don't use evidence-based practice because my consultants /supervisors /managers don't.	0.82	<0.001	Almost perfect
69	I don't use evidence-based practice because I don't know how.	0.62	<0.001	Substantial
70	I don't use evidence-based practice because I don't believe in it.	0.64	0.002	Substantial
71	I don't use evidence-based practice because my colleagues don't	0.59	0.001	Moderate
72	I don't use evidence-based practice because I don't have time.	0.59	0.0001	Moderate
73	I don't use evidence-based practice because of personal procrastination in changing old habits.	0.82	0.000	Almost perfect

Results for test-retest reliability of continuous and ordinal items are shown in Table 42. Two factors (negative and positive attitudes to EBP) performed poorly.

Table 42: Test-retest reliability of modified KABQ items

Item no.	Construct	Item (possible score)	ICC (95% CI)	Strength of agreement
<i>Continuous items</i>				
23-29*	EBP knowledge	Total knowledge (35)	0.67 (0.35-0.85)	Good
54-56, 61-62*	Attitudes to EBP	Negative attitudes to EBP (25)	0.24 (-0.21-0.60)	Poor
51-53*		Positive attitudes to EBP (15)	0.33 (-0.12-0.67)	Poor
63-64*		EBP as useful and an important part of CPD (10)	0.42 (0.02-0.71)	Fair
32-40*	EBP behaviour	Sources of information used (45)	0.88 (0.72-0.95)	Excellent
44-50*		Impact of EBP on practice (35)	0.54 (0.15-0.78)	Moderate
<i>Ordinal items</i>				
43i)	EBP behaviour	Time spent looking up evidence for most recent client	0.83 (0.60-0.93)	Excellent
43iv)		Extent to which evidence contributed to understanding	0.59 (0.19-0.82)	Moderate
43v)		Extent to which evidence related to client-oriented outcomes	0.46 (0.00-0.75)	Fair

*Scores for these items were summed based on the outcome of the factor analysis

c. FATQ

Two items demonstrated substantial and one moderate test-retest reliability (see Table 43).

Table 43: Test-retest reliability of FATQ items

Item no.	Item	Kappa	p-value	Strength of agreement
75	Do you feel you have the support of your peers in accessing and utilising evidence based knowledge?	0.66	0.001	Substantial
76	Do you feel you have the support of your management in accessing and utilising evidence based knowledge?	0.51	0.013	Moderate
77	Do you feel that your practice settings are supportive in your accessing and utilising evidence based knowledge?	0.69	0.001	Substantial

d. RCCPS

The ICC was 0.93 (95% CI: 0.83-0.97) indicating strong test-retest reliability.

6.4.1.3 Changes required based on results for reliability tests

Results for reliability tests indicated the changes required to improve reliability (refer to Table 44).

Table 44: Changes to the questionnaire after reliability studies

Item no.	Change made
5	Added 'not applicable' category
8	Added 'more than 1 level' as a category
22	Added the following words (words in italics): I would consult experts in the field <i>not at my workplace</i> I would look on the internet, <i>e.g. Google</i>
23-29	Changed the descriptor on midpoint of scale from 'don't know' to 'undecided'
30	Added '... occupational therapy practice <i>in the Western Cape</i> currently ...'
41	Removed 'week' and left only 'times per month'
42	Removed 'hours' and left 'mins'
43	Added new item which was inserted after i): Approximately how long ago did this event take place?
44-53	Changed format back to the original so the scale was in line with each item to reduce the amount of space taken by these items Changed descriptor for midpoint on the scale from 'not sure' or 'don't know' to 'moderately', 'sometimes', 'some' or 'mixed' depending on the question
54-65	Changed descriptor for midpoint on the scale from 'don't know' to 'indifferent'
67	Changed instruction after 'no' tick box from 'Continue with the following questions' to 'Continue with 68'

6.4.2 Audit checklist

The first pilot revealed poor inter-rater agreement for eight items (1, 5-9, 11 and 15). This decreased to six items in pilot 2 (poor agreement for items 1-3, 5, 7-8), and five in pilots 3 (poor agreement for items 1, 9-12) and 4 (poor agreement for items 2, 7, 9, 13, 15). Results for these four pilots are available in Appendix XIII. As satisfactory agreement was not achieved after pilot 4 and results for each pilot varied in terms of which items achieved satisfactory agreement, the categories of 'not at all' and 'somewhat' were combined to make the scale dichotomous to determine whether this would improve reliability. Data were re-analysed using these collapsed categories, but the kappa statistic revealed that reliability did not improve. Similarly, combining 'somewhat' and 'completely' was unsuccessful in improving IRR. Studying the scores for each item across the four audits showed that disagreements occurred between items referring to 'activity' and 'participation'. Therefore, these two levels were combined. In addition, it became clear that item 4 was redundant as recording of baseline assessment had already been scored in items 1-3. Implementing these changes resulted in a 10 item checklist with a four-point rating scale.

Two further pilots were done with subsequent revisions of the grading rubric and checklist. Appendix XIV provides details of the problems identified and adjustments made after pilots 1-6. In pilots 5 and 6, four rating categories were used, but the IRR deteriorated further to 6 and 7 items respectively with less than satisfactory values. At this point, two international colleagues with experience in audits were contacted for advice. Based on their feedback,

the rating scale was decreased to two options (yes/no) (A. McCluskey, PhD, email communication, 31 July 2008), and items were made more specific by including only one criterion (M. Law, PhD, email communication, 25 August 2008). For example, to score a 'yes', a goal had to be documented but did not have to be measurable. The final checklist contained 10 items rated on a two-point scale with a 'not applicable' option to ensure total scores were calculated fairly.

6.4.2.1 Inter-rater reliability

IRR values for the 10-item audit checklist are depicted in Table 45 with unsatisfactory values indicated in bold italics. A three-point rating scale was used for pilots 5 and 6 and a dichotomous scale for pilots 7 and 8. Reducing the rating scale to two options improved the IRR to at least 0.60 for all items except item 5 which remained unacceptably low (kappa=-0.15, p=0.701).

Table 45: Inter-rater reliability for the 10-item audit checklist

Item no	Item	3-point rating scale		2-point rating scale		Strength of agreement for pilot 8
		Pilot 5	Pilot 6	Pilot 7	Pilot 8	
		ICC (95% CI)	ICC (95% CI)	Kappa (p)	Kappa (p)	
1	Baseline assessment at impairment-level	0.00 (-0.70-0.62)	0.54 (-0.01-0.86)	0.41 (0.054)	0.60 (0.029)	Moderate
2	Baseline assessment at activity- and participation-level	0.51 (-0.05-0.84)	0.90 (0.67-0.97)	too few rating categories	1.00 (0.001)	Perfect
3	Goals	0.46 (-0.10-0.82)	1.00	0.52 (0.049)	0.60 (0.019)	Moderate
4	Evidence-base for intervention plan	1.00	0.00 (-0.60-0.60)	too few rating categories	1.00 (0.001)	Perfect
5	Recording of intervention at impairment-level	0.36 (-0.39-0.80)	0.14 (-0.49-0.69)	0.00 (0.500)	-0.15 (0.701)	Poor
6	Recording of intervention at activity- and participation-level	0.55 (-0.13-0.87)	0.06 (-0.63-0.65)	0.74 (0.008)	1.00 (0.001)	Perfect
7	Monitoring changes in client's condition at impairment-level	0.61 (0.07-0.88)	0.55 (-0.10-0.87)	0.84 (<0.001)	0.65 (0.002)	Substantial
8	Monitoring changes in client's condition at activity- and participation-level	0.53 (-0.10-0.86)	0.61 (0.02-0.73)	0.84 (<0.001)	0.69 (0.001)	Substantial
9	Re-assessment at impairment-level	0.996 (0.99-0.999)	0.03 (-0.46-0.59)	0.11 (0.637)	0.80 (0.005)	Substantial
10	Re-assessment at activity- and participation-level	0.996 (0.99-0.999)	-0.05 (-0.56-0.54)	0.11 (0.637)	0.80 (0.005)	Substantial

6.4.2.2 Responsiveness

Differences between baseline and 12-week scores for the total OTEBP trial sample were not significant ($T=244.5$, $Z=1.8$, $p=0.07$). The mean total audit change score was 4.6 points ($SD=14.2$, 95% CI: 12.0-18.8) on the nine-point scale (after dropping item 5). The effect size was small ($d=0.3$) for the overall sample (refer to Table 46).

Table 46: Responsiveness of the audit checklist for the total sample (N=40)

Item	Pre-workshop(N=49) Mean (SD)	Post-workshop Mean (SD)	Mean change (SD)	95% CI for SD	Effect size*
Total score	40.2 (12.3)	44.7 (14.2)	4.6 (14.6)	12.0-18.8	0.3

* Calculated using mean change score divided by the standard deviation of the change score

6.5 Discussion

Findings from the reliability and validity studies for the questionnaire and audit checklist are discussed with reference to the literature and the suitability of the instruments for the OTEBP trial is examined.

6.5.1 Psychometric properties of the questionnaire

The completion time of 23.5 minutes was acceptable in terms of the burden placed on participants. The median time period of seven days for test-retest reliability was acceptable for minimising recall (Streiner and Norman, 2008). To ensure that the questionnaire was user-friendly, easy to complete and that missing data was minimised, item formats were revised and consisted of tick boxes or circling of responses. There were also some open-ended questions. The questionnaire design was consistent in its format and appearance (Hosking *et al.*, 1995). To reduce the amount of missing data for items 10-19, a research assistant would check questionnaires for completeness when collecting them from participants. Reliability and validity of each instrument in the questionnaire are reported in the next sections.

6.5.1.1 SAFT

Test-retest reliability for total SAFT scores was excellent with individual items ranging between good and excellent. These results indicate a high level of confidence that changes detected can be attributed to the intervention rather than measurement error (DePoy and Gitlin, 2005, Jerosch-Herold, 2005, McDowell, 2006, Streiner and Norman, 2008). The question on sources of evidence had the lowest test-retest reliability and wide confidence intervals. This may have been due to a problem with the wording; participants were asked to select the sources of evidence they would use rather than all the possible sources they could use to find an answer to the PICO question. This may have caused participants to change their minds at the two completion times or to report only the sources they would actually use.

IRR for total SAFT scores and individual items was excellent indicating little variability between raters. The narrow confidence intervals indicate high precision in scoring between raters (Jerosch-Herold, 2005). These results compare favourably with the total AFT scores obtained by McCluskey and Bishop (2009), although the SAFT is a considerably shorter and simplified test. The SAFT only measures aspects of the first three steps of the EBP process and does not assess appraisal, application of evidence and evaluation of practice. This was done to accommodate the anticipated level of EBP knowledge of occupational therapists in SA revealed in the survey reported in Chapter 4.

The SAFT was responsive to measuring change in knowledge with an overall mean change of 6.2 points on the 30-point scale. The large effect sizes for the total SAFT score and the PICO question indicate their sensitivity in detecting change over time. The other two items had smaller effect sizes. The reason for the small effect size for 'sources of information' is probably related to the phrasing of the question as explained above. This only became evident after the OTEBP trial, so the item was not changed for the trial. It is, however, recommended that it is changed for future studies. Effect sizes for the total SAFT score and PICO question compare favourably with those of the AFT (0.8 respectively) (McCluskey and Bishop, 2009). As the scenarios, wording and scoring of the PICO question were largely unchanged the similarity in scores is not surprising.

Although the SAFT assesses only aspects of the first three steps of the EBP process, it is useful for groups in the early stages of learning about EBP. It may therefore be more applicable in other middle- and low-income countries where EBP is still a relatively new concept. Once a group has received some EBP training the AFT should be used to measure improvements in EBP knowledge and skill.

6.5.1.2 Modified KABQ

Of the six items that were removed, three measured personal application and use of EBP as revealed in the factor analysis conducted by Johnston *et al* (2003). The remaining three items were not included in any of the factors they identified. Factor analysis of the modified KABQ revealed six factors: knowledge (one factor), attitudes (three separate factors) and behaviour (two separate factors). This finding differs from that of Johnston *et al* (2003) who identified four factors (knowledge, attitudes, personal application and use, and future use of EBP). The modified KABQ knowledge sub-scale included all items identified by Johnston *et al* and a further two items (items 23 and 25). Most of the attitude sub-scale items identified by Johnston *et al* were included in the negative attitude sub-scale of the modified KABQ. The sub-scale structure for the remaining two attitude factors and the two behaviour factors differed from those of Johnston *et al*. Despite differences in the factor structure between the original and modified versions of the KABQ, both instruments measure attributes of EBP knowledge, attitudes and behaviour.

Deciding to change the rating scale from a six-point to a five-point scale for 19 items was based on a concern that participants may have experienced difficulties determining the difference between 'agree'/'slightly agree' and 'disagree'/'slightly disagree'. According to Streiner and Norman (2008), words used on adjectival scales may carry different meanings to people and can therefore be a source of measurement error. Reducing the scale to five points was partially motivated by an attempt to improve the accuracy of responses. Another consideration was that an odd number of categories would allow participants to express 'no opinion' whereas the even number of options in the original KABQ forces participants to commit to one side of the scale or the other (Streiner and Norman, 2008). As EBP was a

fairly new topic to many therapists in the study population, it seemed desirable to have a neutral position to distinguish between participants who favoured EBP or not and those who could perhaps be 'won over'.

Of the 44 categorical items in the modified KABQ, most had at least fair-to-moderate test-retest reliability. Only nine items had ICCs of less than 0.41 indicating poor test-retest reliability (Cicchetti and Sparrow, 1981). Confidence intervals for all items were generally wide probably due to the small sample used for the pilot. Of the 11 dichotomous items, seven had almost perfect or substantial test-retest reliability, three had moderate and one had fair reliability (Landis and Koch, 1977). It can therefore be concluded that the modified KABQ had adequate stability. A test-retest pilot study of a modified version of the KABQ for rehabilitation professionals summed responses on the positive and negative sides of the scale and calculated ICCs to determine test-retest reliability (MacDermid *et al.*, 2006). Findings indicated that test-retest reliability for the sum of positive items⁶⁵ was high (ICC=0.92) and reasonable for the sum of negative items⁶⁶ (ICC=0.53).

6.5.1.3 FATQ

Items had at least moderate test-retest reliability indicating adequate ability to detect changes in perceptions related to support for EBP over a period of more than seven days.

6.5.1.4 RCCPS

The strong test-retest reliability (ICC=0.93, 95% CI: 0.83-0.97) (Cicchetti and Sparrow, 1981) was higher than that obtained for the original RCCPS (ICC= 0.79) (MacDermid *et al.*, 2006). Modifications made for the OTEBP trial and the fact that MacDermid *et al* conducted their study online may have influenced the results.

⁶⁵ Items for which participants gave a rating on the positive side of the scale

⁶⁶ Items for which participants gave a rating on the negative side of the scale

6.5.2 Psychometric properties of the audit checklist

6.5.2.1 Inter-rater reliability

Strategies employed to increase IRR included consistent raters who were trained for the purpose, and use of a specially-devised grading rubric for scoring records (Hosking *et al.*, 1995). Difficulties in obtaining satisfactory IRR resulted in reducing the three-point scale to two points. According to Streiner and Norman (2008, p 30) dichotomising response options is a 'common error when using categorical questions' because attitudes and behaviours may lie on a continuum; therefore reducing response options to 'yes' or 'no' may result in a loss of information and lower reliability (Streiner and Norman, 2008). The lack of agreement between the two raters in the pilot studies forced the decision to reduce the response options to two which did lead to improved IRR. According to Landis and Koch's (1977) classification for kappa, seven of the 10 items had substantial to almost perfect reliability while two had moderate reliability. Goulet *et al* (2007) stated that the complexities of conducting chart audits are likely to make achieving IRR of greater than 0.80 impossible and suggested that a coefficient in the vicinity of 0.60 was more reasonable. Using this recommendation, nine of the 10 checklist items achieved an IRR of at least 0.60 indicating reasonable agreement. As item 5 had poor reliability, it was discarded.

6.5.2.2 Responsiveness

The effect size for the audit checklist was small (0.3) which may indicate poor sensitivity in detecting change (Cohen, 1992). This was anticipated considering that a dichotomous scale was used which limited the categories for displaying small changes in participants' record keeping as a result of the intervention. Using a dichotomous scale also predisposes the instrument to displaying ceiling-and- floor effects with the resulting possibility that improvements (or deteriorations) in performance at the top and bottom ends of the scale may not be detected (Jerosch-Herold, 2005). Alternatively, there may have been minimal or no change in performance.

6.5.3 Suitability of the instruments for the OTEBP trial

Details of the constructs, type of assessment and type of scale for each instrument are shown in Table 47. The instruments measured all the attributes required for evaluating learner outcomes for EBP educational interventions (Nabulsi *et al.*, 2007). The questionnaire demonstrated satisfactory reliability and validity while the audit checklist had satisfactory IRR but poor responsiveness. Consequently, the questionnaire was expected to detect change in participants but the audit checklist was anticipated to provide only a crude indication of changes occurring due to the intervention.

Table 47: Constructs measured and types of items for each instrument

Construct	Type of assessment	Assessment name	No. of items	Type of scale
Knowledge	Objective	<ul style="list-style-type: none"> • SAFT • KABQ 	7	Score between 0 and 30
	Subjective	<ul style="list-style-type: none"> • KABQ 	6	Five-point Likert scale
Attitudes	Subjective	<ul style="list-style-type: none"> • KABQ 	1	Continuous scale
		<ul style="list-style-type: none"> • KABQ 	15	Five-point Likert scale
		<ul style="list-style-type: none"> • KABQ 	4	Dichotomous scale
		<ul style="list-style-type: none"> • RCCPS 	1	Five-point adjectival scale
Behaviour	Subjective	<ul style="list-style-type: none"> • KABQ 	18	Five-point Likert scale
		<ul style="list-style-type: none"> • KABQ 	5	Continuous scale
		<ul style="list-style-type: none"> • KAQ 	8	Dichotomous scale
		<ul style="list-style-type: none"> • KABQ 		
		<ul style="list-style-type: none"> • FATQ 		
	<ul style="list-style-type: none"> • KABQ 	2	Tick boxes (select all that apply)	
	Objective	<ul style="list-style-type: none"> • Audit checklist 	9	Dichotomous scale

Drawing on participants for pilot studies who are relatively similar to the intended study participants is essential for ensuring that data collection instruments work and that problems are identified before they are used (Boynton, 2004). Validity and reliability of instruments should be tested with a representative sample to enable generalisations to be made about the instruments for the target population (Hosking *et al.*, 1995, Jerosch-Herold, 2005). Participants in the second pilot study for the questionnaire appeared to be similar in demographic and practice characteristics to the national sample reported in chapter 3. The audit checklist was tested on records of participants who would be recruited for the OTEBP trial, although from a different time period, to ensure that samples of records were similar to those to be audited in the trial. The samples used for the pilot studies were sufficiently similar to those for the OTEBP trial and the results can therefore be generalised.

6.5.4 Final instruments

6.5.4.1 Baseline and 12-week questionnaires

The baseline questionnaire (available in Appendix XI) contained three sections:

- Demographic information
- Factors supporting or hindering the implementation of EBP
- Evidence-based practice knowledge, attitudes and behaviour: consisting of modifications of the KABQ (Johnston *et al.*, 2003), KAQ (MacDermid *et al.*, 2010, MacDermid *et al.*, 2006), AFT (McCluskey and Bishop, 2009) and RCCPS (MacDermid *et al.*, 2010, MacDermid *et al.*, 2006).

Details of the format and construction of the baseline questionnaire are shown in Table 48.

Table 48: Format and construction of the final baseline questionnaire

<i>Section of questionnaire</i>	<i>Name of instrument</i>	<i>Attributes measured</i>	<i>Level of measurement</i>
Demographic and practice characteristics	SA EBP questionnaire (chapter 3) FATQ (MacDermid <i>et al.</i> , 2006) Questionnaire developed by Bennett <i>et al.</i> (2003b)	Individual descriptive and practice characteristics	Binary, nominal and continuous
Factors supporting or hindering the use EBP	FATQ (MacDermid <i>et al.</i> , 2006) KAQ (Law <i>et al.</i> , 2007, MacDermid <i>et al.</i> , 2006, Pain <i>et al.</i> , 2004)	Access to technology Use of sources for finding evidence	Binary
EBP knowledge, attitudes and behaviour	Modified KABQ (Johnston <i>et al.</i> , 2003, MacDermid <i>et al.</i> , 2006)	Knowledge, attitudes and behaviour	Binary, nominal, ordinal & continuous
	Shortened AFT (McCluskey and Bishop, 2009, McCluskey and Lovarini, 2005)	Knowledge and skill in writing a PICO question, identifying sources of evidence, and determining the most suitable study design to answer a PICO question	Continuous
	RCCPS (MacDermid <i>et al.</i> , 2006)	Readiness to implement EBP	Ordinal

For the 12-week questionnaire items containing demographic and practice information and availability of different resources for EBP (items 1-19) were removed from the baseline questionnaire. The remaining items were retained and two new scenarios, based on the content of the intervention described in chapter 8, were included in the SAFT. Two questions about potential barriers to EBP were added. The 12-week questionnaire is available in Appendix XV. A grading rubric was developed for the two new scenarios (see Appendix XVII).

Table 49 shows the constructs measured in the baseline and 12-week questionnaires with their item numbers and original sources.

Table 49: Constructs measured in the questionnaire

<i>Construct</i>	<i>Item no. in baseline questionnaire</i>	<i>Item no. in 12-week questionnaire</i>	<i>Original source of item</i>
<u>Knowledge</u>			
Objective	20-22	1-3	AFT (McCluskey and Bishop, 2009, McCluskey and Lovarini, 2005)
	24-29	5-10	KABQ (Johnston <i>et al.</i> , 2003)
Subjective	23	4	"
<u>Attitudes</u>	30, 51-65, 67	11, 32-46, 48-49	KABQ (Johnston <i>et al.</i> , 2003)
	75-77	50-52	FATQ (MacDermid <i>et al.</i> , 2006)
	78	55	RCCPS (MacDermid <i>et al.</i> , 2006)
<u>Behaviour</u>			
Sources of information used	32-40	13-21	KAQ (MacDermid <i>et al.</i> , 2006, Pain <i>et al.</i> , 2004)
Self-reported behaviour	31, 41-50	12, 22-31	KABQ (Johnston <i>et al.</i> , 2003)
Preferred future format	66	47	"
Reasons for not using EBP	68-74	49	"
Barriers and strategies to overcome them	-	53-54	McCluskey (2003b)

6.5.4.2 Audit checklist

The final nine-item audit checklist and grading rubric are available in Appendix XVI and XVIII.

6.6 Conclusion

Instruments measuring the three learner domains described by Nabulsi *et al* (2007) were selected based on their applicability to the study participants, availability and ease of use, and good psychometric properties. They tested attitudes towards EBP, intentions to use it and EBP knowledge, skills and behaviour. The psychometric properties of the instruments were tested prior to their use in the OTEBP trial.

The questionnaire was a self-report consisting of descriptive items and five existing instruments measuring different aspects of EBP learner outcomes. The median completion time was 23.5 minutes. Revisions were made based on focus group findings to improve face validity and clinical utility. The SAFT demonstrated excellent test-retest reliability and good to excellent IRR. The overall mean change on total SAFT scores was 6.2 points on the 30-point scale. The effect size for the SAFT total score was large showing its ability to detect clinically important change over time. Factor analysis of the KABQ revealed that knowledge was a separate factor, attitudes were split into three factors and behaviour consisted of two

factors. Test-retest reliability for the KABQ was at least fair apart from items measuring two attitude factors (positive and negative attitudes to EBP). Test-retest reliability was moderate to substantial for the FATQ and excellent for the RCCPS.

The audit checklist was based on several audit instruments used in previous studies. Achieving an acceptable IRR for the audit checklist was challenging but after eight pilots, and reducing the rating categories to two, IRR ranged from substantial to perfect for 9 of the 10 items. Item 5 was excluded due to poor IRR ($\kappa = -0.154$, $p = 0.701$). Responsiveness for the nine-item audit checklist was small at 0.3. This could indicate that the intervention did not result in any change or alternatively that the change was not clinically significant.

Overall, the instruments measured all necessary learner outcomes for evaluating an EBP educational intervention and were sufficiently robust for measuring the outcomes of the OTEBP trial reported in chapter 8.

Chapter 7: Literature review - Randomised controlled trials

7.1 About this chapter

This chapter identifies the contribution of RCTs to scientific evidence and specifically to occupational therapy practice. Two approaches to RCTs, namely explanatory and pragmatic trials, are outlined and the differences between them explained. The components for conducting a high quality RCT are described and methods for assessing risk of bias are discussed. Lastly, the limitations of RCTs will be highlighted.

7.2 Randomised controlled trials (RCTs)

Randomised controlled trials (RCTs) are considered to be the best design for determining the effectiveness of an intervention, (Juni *et al.*, 2001, Moher *et al.*, 2010, Schulz *et al.*, 2010) because they are more likely to provide accurate information about whether an intervention does more good than harm (Sackett, 1997, Sackett *et al.*, 1996). For this reason, RCTs are ranked top of the hierarchy of evidence being second only to systematic reviews of RCTs (Centre for Evidence-based Medicine, 2011). Hierarchies of evidence 'rank research according to its validity' and 'aid the interpretation and evaluation of research findings' (Evans, 2003, p 78). The content of *The Cochrane Library* bears testimony to the strong reliance on RCTs to demonstrate effectiveness in health care.

In occupational therapy, Lloyd-Smith (1997) advocated that, considering their prestigious status, RCTs should be used more frequently to improve the profile of the profession. Holm (2000) similarly promoted the production of level I evidence, which depends on well-designed RCTs, to demonstrate the efficacy and effectiveness of occupational therapy interventions. To advance EBOT, practitioners must become knowledgeable about RCTs and researchers need to develop expertise in conducting trials so that the necessary evidence can be generated (Nelson and Mathiowetz, 2004). Achieving these goals requires a sound understanding of the specific design features of RCTs. These features reduce the chances that factors other than the intervention may influence the outcomes thereby producing more accurate estimates of the effects of an intervention (Sibbald and Roland, 1998). In

addition to understanding the features of trials, occupational therapists need to be knowledgeable about the different approaches that can be used so they are equipped to draw appropriate conclusions for each.

7.2 Different types of trials: pragmatic versus explanatory

According to Schwartz and Lellouch (1967) there are essentially two approaches to designing trials, explanatory and pragmatic. Explanatory trials aim at understanding and measuring whether an intervention is beneficial in ideal conditions ('efficacy'), while pragmatic trials aim at reaching a decision and measuring the benefits of an intervention in routine, everyday practice ('effectiveness') (Godwin *et al.*, 2003, MacPherson, 2004, Roland and Torgerson, 1998, Schwartz and Lellouch, 1967). The differences between explanatory and pragmatic trials as described by various authors (Godwin *et al.*, 2003, MacPherson, 2004, Roland and Torgerson, 1998, Schwartz and Lellouch, 1967) are captured in Table 50.

Table 50: Key differences informing explanatory and pragmatic attitudes in trials (Godwin *et al.*, 2003, MacPherson, 2004, Roland and Torgerson, 1998, Schwartz and Lellouch, 1967)

Criterion	Explanatory trial	Pragmatic trial
Purpose	Evaluate efficacy	Evaluate effectiveness
Setting	Experimental	Routine
Comparison	Intervention usually compared with a placebo	Intervention usually compared with another intervention, both having similar chances of success
Exclusion criteria	Clear and often detailed	Kept to a minimum
Participants	As homogeneous as possible	Representative of the population to reflect variation as it occurs in real practice
Generalisability	Participants often carefully selected so results are less generalisable to the population	Represent participants in real settings so results are more generalisable
Intervention	Standardised and simple	Routine, complex and flexible
Sample size	Smaller sample sizes may be used	Larger sample sizes due to heterogeneity of participants
Blinding	Blinding of assessors, participants and researcher	Assessor is blinded but blinding of participants and researcher not always possible
Outcomes	Often use intermediate outcomes, e.g. reduced blood pressure	Primary outcome relevant to everyday life to represent the full range of benefits from the intervention, e.g. improved quality of life
Analysis	Analysed in the group to which they were allocated (ITT)	Analysed in the group to which they were allocated (ITT)
Follow-up	Usually short-term follow-up	Often long-term follow-up
Withdrawal rate	Strict selection criteria to reduce the withdrawal rate	Withdrawals are acceptable

Although pragmatic and explanatory trials have different distinguishing features, Zwarenstein *et al* (2008) advocated that they be viewed along a continuum rather than as a dichotomy. Due to fundamental differences in the two approaches, different conclusions may be reached because an intervention that works in an 'ideal' setting where extraneous variables are controlled may not be effective in a real-life setting (Roland and Torgerson,

1998). It is therefore important for health practitioners to understand the two trial approaches so they can judge the relevance of the results to their own practice (Roland and Torgerson, 1998).

An important characteristic of pragmatic trials is that interventions are ‘flexibly defined and “absorb” into themselves the contexts in which they are administered’ (Schwartz and Lellouch, 1967, p 638). This characteristic makes pragmatic trials a suitable design for producing evidence for healthcare services. The purpose of pragmatic trials ‘is to inform decisions about practice’ (Zwarenstein *et al.*, 2008, p 1). In this respect, well-designed pragmatic trials are said to be the best design for determining the overall effectiveness of an intervention (Godwin *et al.*, 2003) and thereby enable practitioners and patients to select the most appropriate intervention option (MacPherson, 2004). The need for both purchasers and providers of healthcare to base decisions about the service delivery on evidence has resulted in an increased focus on pragmatic trials (Roland and Torgerson, 1998). It therefore follows that pragmatic trials enable the most effective use of limited healthcare resources (MacPherson, 2004).

A limitation of pragmatic trials is that it is impossible to determine which component in the intervention may have been beneficial as the total package is evaluated (MacPherson, 2004). More resources may also be required to accommodate the larger sample sizes to allow:

- Inclusion of a broader, more diverse group of participants which may reduce the treatment effects; and
- Longer follow up periods which may lead to higher dropout rates (MacPherson, 2004).

Although the lack of blinding of participants and researchers results in lower internal validity, pragmatic trials are better able to generalise to ‘normal’ settings and therefore have higher external validity (MacPherson, 2004). According to Godwin *et al* (2003), creating a balance between external validity (generalisability) and internal validity (accuracy) is critical. A potential danger in pragmatic trials is compromising internal validity to achieve generalisability (Godwin *et al.*, 2003). Randomisation is critical to maintaining internal

validity (Godwin *et al.*, 2003). As blinding is often not feasible, data collection and analysis, which can usually be blinded, must be blinded wherever possible (Godwin *et al.*, 2003). Strategies to obtain generalisability include keeping exclusion criteria to a minimum and enabling a large degree of freedom to make choices about the provision of the intervention (Godwin *et al.*, 2003).

7.3 Evaluating trial quality

The validity of a trial is central in assessing its quality (Juni *et al.*, 2001). Internal validity refers to the extent to which systematic error (bias) is minimised, while external validity relates to the extent to which the findings of a trial 'provide a correct basis for generalization to other circumstances' (Juni *et al.*, 2001, p 42). Internal validity is threatened by four categories of bias, namely selection bias, performance bias, detection bias and attrition bias (Juni *et al.*, 2001). External validity relies on judging the extent to which the characteristics of participants, the setting, the intervention and the outcomes assessed are similar to those in which the results will be applied (Juni *et al.*, 2001). Any problems in the design and execution of a study will raise questions about the validity of the results (Higgins and Altman, 2008). Accurate appraisal of quality is only possible 'if the design, conduct, and analysis of RCTs are thoroughly and accurately described...' (Moher *et al.*, 2010). The argument supporting this statement is that inadequately reported trials may be given credit when in fact the results are biased (Moher *et al.*, 2010). In response to this concern, the CONSORT statement (Moher *et al.*, 2010, Schulz and Grimes, 2002b) and its extension for pragmatic trials (Zwarenstein *et al.*, 2008) were developed to assist researchers to capture all important details of their trial (Moher *et al.*, 2010). CONSORT provides a framework for writers and reviewers to assess reports of two-group parallel design RCTs and consists of items that are 'deemed absolutely fundamental to reporting a randomised controlled trial' (Schulz *et al.*, 2010, p 340). The CONSORT statement comprises a checklist of 25 items that must be included when reporting a RCT (Moher *et al.*, 2010, Schulz *et al.*, 2010). In addition, RCTs should include a diagram reporting the flow of participants through the trial (Moher *et al.*, 2010, Schulz *et al.*, 2010).

Trials must be conducted rigorously to ensure the results are as close to the truth as possible (Higgins and Altman, 2008). To determine the extent to which a RCT deviates from

the truth, the bias inherent in the study needs to be evaluated (Higgins and Altman, 2008). A variety of tools for evaluating the quality of studies included in systematic reviews have been proposed, most of which are scales with different components that are scored, or checklists (Higgins and Altman, 2008). A review of scales and checklists for assessing trial quality showed that few 'defined what is meant by trial quality...' resulting in a 'risk that a scale purporting to measure trial quality is actually measuring a different construct' (Moher *et al.*, 1995, p 69). As assessments of risk of bias involve some subjectivity, the Cochrane Collaboration advised against using scales with summary scores, favouring instead a tool for assessing the risks of bias (Higgins and Altman, 2008).

All RCTs included in a Cochrane systematic review are evaluated using a risk of bias table (Higgins and Altman, 2008). The Cochrane Collaboration's risk of bias tool is domain-based and involves making a judgement for each domain which is summarised in a risk of bias table (Higgins and Altman, 2008). This table captures the extent to which the characteristic features of the RCT have been upheld. For parallel group RCTs, the features of interest are sequence generation, allocation concealment, blinding, incomplete outcome data and selective outcome reporting, and other potential sources of bias (Higgins and Altman, 2008).

7.3.1 Sequence generation

Randomisation ensures that participants are assigned to an intervention based on chance alone and is the main method of minimising selection bias (Roberts and Torgerson, 1998, Schulz and Grimes, 2002b). Randomisation ensures that the participant characteristics that may influence the outcome are evenly distributed between intervention groups to eliminate systematic differences between them (Sibbald and Roland, 1998). As a result, any differences can be attributed only to the intervention (Roberts and Torgerson, 1998). An important part of the randomisation process is generating an unpredictable allocation sequence (Schulz and Grimes, 2002a) which entails using a method that ensures the groups are comparable (Higgins and Altman, 2008).

The most common types of randomisation are simple, restricted and stratified randomisation (Schulz and Grimes, 2002b). Simple randomisation is the most basic and

unpredictable method of assigning participants and is highly effective in preventing selection bias (Schulz and Grimes, 2002b). Approaches used in simple randomisation include random-number tables, computer-generated random numbers, coin-tossing, dice-throwing and previously shuffled cards (Schulz and Grimes, 2002b). Approaches providing an audit trail are recommended as they reduce the possibility of altering results compared to manual approaches, such as coin-tossing (Schulz and Grimes, 2002b). Greater confidence can be placed in a study when the sequence is unpredictable, and reliable and reproducible approaches, such as random-number tables and computer-generated sequences, are used (Schulz and Grimes, 2002b).

One limitation of simple randomisation is that groups may be imbalanced in size or certain variables due to chance (Hewitt and Torgerson, 2006, Roberts and Torgerson, 1998, Schulz and Grimes, 2002b). If these variables have a weak relationship to the outcome, the differences are unimportant, but if the groups differ on one or more confounding variables, the results may be misleading (Hewitt and Torgerson, 2006). This is particularly problematic in small trials (Hewitt and Torgerson, 2006, Roberts and Torgerson, 1998).

Restricted randomisation is used to prevent sample size imbalances between groups (Schulz and Grimes, 2002b) or imbalances on known confounders between groups (Hewitt and Torgerson, 2006). Methods of restricted randomisation include blocking, stratification and minimisation. Blocking is the most frequently used method of ensuring equal numbers in each group (Roberts and Torgerson, 1998, Schulz and Grimes, 2002b). In this approach, participants are divided into subgroups, or blocks, and randomly assigned within each block (Stat Trek, 2009). However, imbalances on prognostic factors can occur due to chance even with blocking (Roberts and Torgerson, 1998). To prevent imbalances when stratifying, blocking must be used to ensure fairly equal numbers are allocated to each group in each stratum (Schulz and Grimes, 2002b). A disadvantage of stratification is that it adds complexity and introduces the possibility of mistakes (Schulz and Grimes, 2002b). It is however, useful in small trials where imbalances on prognostic factors can occur fairly easily (Schulz and Grimes, 2002b). Small trials should stratify on only one or two variables to ensure there are participants in each cell produced by the stratification, while larger trials

should use simple randomisation or large block designs to reduce the predictability of the randomisation sequence (Hewitt and Torgerson, 2006). Minimisation is effective for achieving similarity between groups on prognostic factors, even in small trials (Hewitt and Torgerson, 2006, Roberts and Torgerson, 1998). In minimisation, a running total is kept of the number of participants assigned to each group. Subsequent participants are assigned according to a weighted randomisation principle that aims to reduce the imbalance between the groups (Roberts and Torgerson, 1998).

7.3.2 Allocation concealment

Allocation concealment, or the extent to which the sequence of allocating participants is kept hidden until participants have been assigned to an intervention group, is the second important aspect in the randomisation process (Schulz and Grimes, 2002a, Schulz and Grimes, 2002b). Lack of allocation concealment in RCTs allows selection bias to be introduced (Schulz and Grimes, 2002a, Torgerson and Roberts, 1999). To reduce the risk of biased groups of participants it is crucial that the trial allocation procedure is not compromised (Schulz and Grimes, 2002a, Torgerson and Roberts, 1999). In fact, without adequate allocation concealment, a randomised allocation sequence makes little difference because, once a trial has started, researchers may want certain participants to benefit from a specific intervention and may alter the allocation of a participant if the sequence can be predicted or tampered with in any way (Schulz and Grimes, 2002a). It is therefore vital that those recruiting participants to trials are unable to guess or foresee the allocation sequence (Higgins and Altman, 2008). To ensure concealment of the allocation sequence, the person generating the random sequence should be different from the person enrolling and assigning participants (Schulz and Grimes, 2002a). Research has demonstrated that the use of distant randomisation procedures that are separate from the people conducting the trial are more rigorous than those generated locally (Torgerson and Roberts, 1999).

7.3.3 Blinding

The blinding⁶⁷ status of all people who may influence the validity of a trial should be reported (Moher *et al.*, 2010). Blinding may include participants, healthcare providers, data collectors, outcome assessors and data analysts (Moher *et al.*, 2010). Lack of blinding of any role players in a trial may introduce bias as a result of having knowledge of the intervention assignments (Moher *et al.*, 2010). Accordingly, all steps taken to prevent participants and study personnel from knowing which intervention was received, as well as the effectiveness thereof, must be reported (Higgins and Altman, 2008). Although lack of blinding of participants may influence the response to the intervention received, it is not always possible (Moher *et al.*, 2010). In such cases, baseline data should be collected prior to randomisation (Godwin *et al.*, 2003). Blinding of participants and providers prevents performance bias while blinding of outcome assessors reduces the risk of detection bias (Sibbald and Roland, 1998). Blinding of the data analyst can also prevent bias as knowledge of intervention assignments may influence the choice of analysis methods thereby influencing the results (Moher *et al.*, 2010). To enable a judgement to be made about the validity of a trial, authors must state who was blinded regardless of whether it was possible or not (Moher *et al.*, 2010).

7.3.4 Incomplete outcome data

The Cochrane Collaboration stipulates that the completeness of outcome data for each main outcome should be reported including attrition and exclusions from the analysis (Higgins and Altman, 2008). In addition, numbers in each intervention group should be stated with the total number randomised and reasons for attrition or exclusions (Higgins and Altman, 2008). This information should be recorded in the CONSORT flow diagram (Moher *et al.*, 2010, Schulz *et al.*, 2010). The advantages of random assignment are maintained if analysis is based on the intervention group to which participants were allocated (intention-to-treat

⁶⁷ While the term 'blinding' is considered to be inappropriate by some, particularly in the field of ophthalmology, its long history and wide international usage support its continued use (Schulz *et al.*, 2007). As it is the predominant term used in CONSORT (Moher *et al.*, 2010, Schulz *et al.*, 2010), the term 'blinding' rather than 'masking' is used in this thesis.

analysis (ITT)), regardless of whether they received the intervention, were compliant or withdrew from the study (Moher *et al.*, 2010, Sibbald and Roland, 1998). The argument for this approach is that participants who failed to comply with the intervention may differ in an important way from those who did (Mahaniah and Rao, 2004) and that by excluding them the effects of the intervention may be over-estimated (Moher *et al.*, 2010). The three principles of ITT are keeping participants in the groups to which they were allocated, obtaining outcome data for all participants and including all participants in the analysis (Higgins *et al.*, 2008). Full application of ITT analysis can only be done when outcome data is complete for all randomised participants (Moher *et al.*, 2010). As a certain number of participants is likely to be lost to follow up, rigorous studies must include a per-protocol analysis in addition to an ITT analysis (Schoenfeld, 2005). A per-protocol analysis includes only participants who completed the trial in the final data analysis and therefore provides the best case scenario⁶⁸ about the effectiveness of an intervention (Moher *et al.*, 2010, Schoenfeld, 2005).

Research reports are more likely to include only the outcomes that were significant (Higgins and Altman, 2008). Reporting only significant outcomes, or selective reporting bias, affects the reliability of the study results (Higgins and Altman, 2008). In order to avoid this type of bias, all important study outcomes must be documented (Higgins and Altman, 2008). By stipulating that the results for each primary and secondary outcome listed in the protocol are reported per group, CONSORT guards against reporting only significant outcomes (Moher *et al.*, 2010, Schulz *et al.*, 2010).

7.3.5 Other potential sources of bias

Strategies to prevent or minimise other potential sources of bias that could affect the validity of a study should be considered when planning a trial (Higgins and Altman, 2008). For example, a strategy for minimising performance bias would be to ensure participants are treated equally apart from the intervention under investigation. This strategy provides assurance that other factors are unlikely to have contributed to the outcome (Juni *et al.*,

⁶⁸ This does not mean it is the most likely to be true, but rather that the analysis is 'kindest' to the intervention.

2001, Sibbald and Roland, 1998). Deviations from the study protocol and/or differences in numbers and reasons for participants being lost to follow-up should be reported to enable evaluation of attrition bias (Juni *et al.*, 2001). A further example is reporting of early stopping. A systematic review of RCTs that were stopped early for benefit found that the relevant information associated with early stopping was often not reported (Montori *et al.*, 2005). The review reported that trials stopped early frequently reported unusually high treatment effects (Montori *et al.*, 2005). Consequently, readers have been cautioned against unquestioningly accepting the findings of such trials (Moher *et al.*, 2010).

7.4 Limitations of RCTs

Although RCTs have particular strengths, several issues related to applying their findings to practice have been raised in occupational therapy literature (Ballinger and Wiles, 2001, Hyde, 2004). Firstly, difficulties interpreting the results can make applying the findings challenging. One problem is that statistically insignificant results may occur if the intervention is ineffective or because the sample size is insufficient (Ballinger and Wiles, 2001). Additional predicaments are that statistically significant results are not necessarily clinically important (Ballinger and Wiles, 2001), and trials producing conflicting evidence (Hyde, 2004) can confuse therapists regarding implementing the intervention.

Secondly, narrow exclusion criteria may eliminate participants with more complex problems who are often the recipients of occupational therapy services (Ballinger and Wiles, 2001). Attempts to achieve homogeneity among participants may result in the findings being less applicable to occupational therapy clients who often have multiple or complex problems (Hyde, 2004) thereby decreasing the external validity of the study findings. In addition, contextual and environmental differences in practice settings makes applying study findings challenging across different contexts (Reagon *et al.*, 2008). One possible solution is to conduct more pragmatic trials, as these are carried out in 'real' settings, test routine, complex and flexible interventions, and have wide eligibility criteria which enable findings to be more generalisable (Godwin *et al.*, 2003, MacPherson, 2004, Roland and Torgerson, 1998, Schwartz and Lellouch, 1967).

Thirdly, insufficient description of interventions makes replication difficult (Ballinger and Wiles, 2001). This concern is not unique to occupational therapy and has been addressed through the CONSORT statement (Moher *et al.*, 2010, Schulz *et al.*, 2010) which stipulates that sufficient detail be given to allow the intervention to be replicated (Moher *et al.*, 2010, Zwarenstein *et al.*, 2008). More than 50% of journals listed in Pubmed, including three occupational therapy journals⁶⁹, endorse CONSORT for reporting RCTs (The CONSORT Group, 2010). This move will make it easier for occupational therapists to replicate the interventions reported in RCTs and to make judgements about the external validity of the findings.

7.5 Summary

This chapter confirms that the best design for demonstrating the effectiveness of interventions is the RCT. Two approaches to trials were discussed and pragmatic trials were shown to be particularly useful for determining the effectiveness of an intervention in routine, real life settings. To produce evidence for interventions, researchers must apply the specific design features of RCTs described in this chapter. These features contribute to the internal validity of a study and reduce the risk of bias. Trials should be reported according to CONSORT so they can be appraised accurately and their findings applied in practice. To assess risk of bias the Cochrane Collaboration risk of bias table is recommended.

⁶⁹ American, Australian and Canadian occupational therapy journals

Chapter 8: Study 3 - A pilot RCT of the effectiveness of an interactive compared to a didactic educational intervention in improving EBP knowledge

8.1 About this chapter

This chapter begins by reviewing interventions for improving EBP knowledge and behaviour. The rationale for the study, research hypothesis, aims and objectives are outlined and a detailed description of the methodology provided. Results are presented and discussed with reference to the literature. The chapter concludes with a summary of the findings and their implications. The trial is reported in accordance with CONSORT 2010 (Moher *et al.*, 2010, Schulz *et al.*, 2010) to make appraisal and interpretation of the findings easier. Appreciating the complexity of pragmatic interventions and the detail required for enabling replication (MacPherson, 2004), the extension for reporting pragmatic trials was used to supplement CONSORT 2010 (Zwarenstein *et al.*, 2008). The CONSORT checklist for the trial is included in Appendix XIX.

8.2 Literature review

8.2.1 Review of interventions for increasing EBP knowledge and practice

Appreciating the importance of evidence from systematic reviews in designing the trial (Clarke *et al.*, 2007), a search was conducted of *The Cochrane Library* to identify systematic reviews on interventions for improving professional practice. Seven potential interventions were identified and are summarised in Table 51. Where possible, the total number of participants for studies included in each review is shown. Where the number of individuals was not included, the number of facilities is reported.

Table 51: Summary of systematic reviews of interventions to improve professional practice

Study	Intervention	No. of studies	Type of study	N	Professional group (no. of studies)	Setting	Country	Results
Parkes <i>et al</i> (2001)	Teaching critical appraisal skills	1	RCT	44	Doctors	Hospital-based	US	Improved knowledge but not known if decision-making or patient outcomes affected. As only one study was identified, generalisability is questioned.
Jamtvedt <i>et al</i> (2006)	Audit and feedback	118	RCT	15,566 individuals and 1,569 facilities ⁷⁰	Physicians (98) Dentists (1) Nurses (3) Pharmacists (2) Mixed providers (14)	Clinic (6) General or community practice (59) Dentistry practice (1) Health/teaching unit (2) Hospitals (30) Nursing facility (1) Pharmacy (2) Private practice (2) Unclear (15)	Australia (9) Belgium (1) Canada (9) Denmark (4) Finland (1) Lao (1) Netherlands (7) Norway (1) Sweden (2) Thailand (2) Uganda (1) UK (18) US (62)	Small to moderate effects in improving professional practice. More likely to be effective if baseline performance is poorly aligned with recommended practice and intensive feedback is provided.
Doumit <i>et al</i> (2007)	Local opinion leaders (LOLs)	12	RCT	Individuals=296 Facilities=196 ⁷¹	Physicians (9) Nurses (2) Physicians, nurse & midwives (1)	Hospitals (8) Out-patient clinics (4)	Canada (2) China (Hong Kong) (1) US (9)	Moderate evidence of effectiveness of opinion leaders in promoting the uptake of evidence. Unclear whether the effects apply in settings other than hospitals, whether formal or informal strategies are more effective and whether LOLs have specific characteristics that make them successful or not.
O'Brien <i>et al</i> (2007)	Educational outreach visits	69	RCT	Individuals=11538 Facilities=1507 ⁷²	Primary care physicians or teams (53) Physicians, nurses, nursing assistants & other professionals (10) Pharmacists & counter attendants (2) Generic health care workers (2) Dentists (1)	Community settings (57) Hospitals (7) Nursing home (4) Pharmacy (2)	Australia (8) Europe (14) Indonesia (2) North America (23) Thailand (1) UK (22)	Consistent but small changes in prescribing behaviour. Effects for other types of professional behaviours varied from small to moderate. Unknown whether changes are maintained or improve/deteriorate over time.

⁷⁰ Number of individuals reported for 88 studies and number of facilities for 26. Numbers not reported for 4 studies.

⁷¹ Number of individuals reported for 2 studies and number of facilities reported for 11. One study reported only the number of communities involved and is therefore not included.

⁷² Number of individuals reported for 35 studies. Thirty-two studies did not report individual numbers and therefore the number of facilities are reported. Two studies did not include either of these.

Study	Intervention	No. of studies	Type of study	N	Professional group (no. of studies)	Setting	Country	Results
Farmer <i>et al</i> (2008)	Printed educational materials (PEMs)	23	RCT (12) CBA ⁷³ (1) ITSA ⁷⁴ (10)	493	General practitioners (GPs) (5) Mental health clinicians (1) Obstetricians (2) Physicians (15)	Family/community-based (14) Hospitals (6) Managed healthcare organisation (1) Specialist practice (2)	Canada (7) Denmark (1) Netherlands (1) UK (7) US (7)	Slight improvement in process outcomes, but not patient outcomes compared to no intervention. Insufficient evidence on extent of improvement compared with other interventions. Little evidence on how to optimise use of PEMs.
Forsetlund <i>et al</i> (2009)	Continuing education meetings and workshops	81	RCT	9435 ⁷⁵	Nurses (2) Physicians (58) Pharmacists or non-physician prescribers(3) Mixed providers (18)	General practice (43) Community-based care (16) Hospital (17) Other (5)	Australia (3) Belgium (1) Brazil (1) Canada (4) Denmark (1) France (2) Indonesia (2) Mali (1) Mexico (1) Netherlands (10) New Zealand (1) Norway (3) Peru (1) South Africa (2) Spain (1) Sri Lanka (1) Sweden (1) Thailand (1) US (28) UK (15) Zambia (1)	Small to moderate improvements in professional practice. Interactive interventions seemed most effective but unlikely to change complex behaviours. No significant differences in multi-faceted interventions compared to educational meetings alone. Inconclusive evidence about the effectiveness of educational meetings compared with other interventions but likely to be similar to interventions such as educational outreach and audit and feedback.
Baker <i>et al</i> (2010)	Tailored interventions	26	RCT	4280 ⁷⁶	GPs or physicians (16) Nurses (2) Pharmacists & counter assistants (1) Prescribers (1) Multi-professional teams (6)	Primary care or community facility (15), Hospital or specialist care (7) Community & hospital facilities (3) Nursing home (1)	Belgium (2) Canada (2) Indonesia (2) Norway (2) Netherlands (2) Portugal (1) UK (4) US (11)	Tailored interventions can change professional practice but insufficient evidence on most effective methods. Cost-effectiveness of tailored interventions unknown compared to other interventions. Reasonable to implement low cost tailored interventions.

⁷³ Controlled before and after study

⁷⁴ Interrupted time series analysis

⁷⁵ Excludes 16 studies which did not include the number of participants. Three studies reported approximate numbers.

⁷⁶ Excludes numbers for 4 studies which were not reported and one study was unclear. Numbers of patients involved included in some studies but not reported here.

Each intervention was considered for guiding a trial of an intervention for improving EBP knowledge, attitudes and behaviour in occupational therapists. Interventions that lacked evidence of effectiveness and relevance to occupational therapists were discarded as reported below:

- Opinion leaders: although there is moderate evidence of the effectiveness of opinion leaders in changing doctors' behaviour, the generalisability of these findings to settings other than hospitals, and to other professionals, is uncertain. It is also unknown whether opinion leaders have specific personality traits, what they do and how they do it (Doumit *et al.*, 2007).
- Tailored interventions: the review focused on interventions to overcome barriers to change. The authors concluded that the effectiveness of this intervention is uncertain and that further research is needed (Baker *et al.*, 2010).
- Teaching critical appraisal skills: the review included one study involving doctors in the US. Although knowledge of critical appraisal skills improved significantly in the intervention group, the evidence was weak and conclusions about generalisability could not be drawn (Parkes *et al.*, 2001). Additionally, as recommended by Dawes *et al.* (2005), the focus of the intervention in the OTEBP trial was not only on critical appraisal and the outcomes of interest were knowledge, attitudes and behaviour rather than knowledge alone.
- Printed educational materials: there were slight improvements in behaviour (such as x-ray requests and prescribing) when compared to no intervention but effectiveness compared to other interventions could not be established (Farmer *et al.*, 2008).
- Audit and feedback: effects on behaviour were variable ranging from small to moderate improvement (Jamtvedt *et al.*, 2006). As occupational therapists in SA have not been exposed to audits, and therefore giving feedback on performance may have been perceived as threatening resulting in low participation in the study. It would have been too labour-intensive, costly and impractical considering the number of sites and the time-frames involved.
- Educational outreach visits (EOVs): used mainly to change prescribing and effects for other behaviours varied from small to moderate (O'Brien *et al.*, 2007). Multi-faceted interventions showed slightly larger effects than EOVs alone but there was no clarity about the contribution of the EOV component to the overall intervention, the number of EOVs required and the long-term effects of EOVs (O'Brien *et al.*, 2007).

The most recent Cochrane review on continuing education sessions concluded that 'educational meetings can result in small to moderate improvements in professional practice' (Forsetlund *et al.*, 2009, p15). Although didactic interventions could change practice, those with at least some interaction seemed to be most effective but it was unlikely that complex practice behaviours would be improved (Forsetlund *et al.*, 2009). There were no significant differences between multi-faceted interventions compared to educational meetings alone. No conclusions could be drawn about the effectiveness of educational meetings compared with other interventions (Forsetlund *et al.*, 2009). The review concluded that educational meetings were likely to be as effective as interventions such as educational outreach and audit and feedback (Forsetlund *et al.*, 2009).

The majority of studies included in the review by Forsetlund *et al.* (2009) included physicians or nurses. There was one study of physiotherapists but none of occupational therapists. Studies were based predominantly in North America or Europe (N=66) with only four conducted in Africa, of which two were in SA (Forsetlund *et al.*, 2009). The review was limited by the inadequate descriptions of the interventions. The reviewers therefore stressed the importance of giving detailed descriptions of interventions including the proportion of the target audience who attended, size of groups, length and number of sessions, teaching techniques, and inclusion of skills practice (Forsetlund *et al.*, 2009). A recommendation for future research was to investigate comparisons between different types of education, such as group sizes, number of sessions and length of follow-up (Forsetlund *et al.*, 2009). Strategies such as using mixed interactive and didactic formats and focusing on outcomes that participants perceived as important were suggested to increase attendance at educational sessions thereby possibly also increase their effectiveness (Forsetlund *et al.*, 2009).

8.2.2 Content of the educational interventions

Studies including educational interventions designed to improve EBP knowledge, attitudes and behaviour were sought to guide the intervention. Few experimental studies of strategies to increase EBP knowledge, attitudes and behaviour have been done in occupational therapy. Of those that have been done, many have focussed on a specific area of practice such as rheumatology (Hammond and Klompenhouwer, 2005). Only one study was identified in which an educational intervention was tested to determine its effects on increasing EBP knowledge,

attitudes and behaviour: a before-after study conducted in Australia (McCluskey and Lovarini, 2005). The intervention was a two-day workshop consisting of lectures, practical sessions and small group discussions. The workshop covered the EBP process, interpreting statistics in RCTs and overcoming barriers to implementation (McCluskey and Lovarini, 2005). Principles of adult learning theory and social cognitive theory were applied and time was allocated at the end of each session for participants to deliberate on how to apply their learning. In the final workshop, information about the process of change was presented and potential barriers to EBP were discussed. Participants were invited to write a critically-appraised topic (CAT) to further develop their EBP skills. Follow-up support was provided through telephone calls, email contact and optional visits. Resources and website information was distributed via an email list and reminders and feedback were given on the CAT. The intervention increased EBP knowledge but not behaviour, and the researchers concluded that greater attention was needed on skills development after the intervention. They particularly emphasised appraisal and helping participants develop routines and strategies to implement EBP.

To further inform the content of the intervention, a curricular outline of minimum standard educational requirements for health professionals was consulted. The outline, developed by a consensus panel, stated:

'It is a minimum requirement that all practitioners understand the principles of EBP, implement evidence-based policies, and have a critical attitude to their own practice and to evidence. Without these skills and attitudes, health care professionals will find it difficult to provide 'best practice'' (Dawes et al., 2005).

The panel emphasised the importance of ensuring that the skills required for each of the five EBP steps were taught (Dawes et al., 2005).

The content of educational interventions should be congruent with the realities of clinical settings in considering real-time implications of practice to address the barriers of limited time and high workloads (Dawes et al., 2005). Strategies to convince participants that EBP is possible in a busy work schedule should be incorporated and greater emphasis placed on using pre-appraised literature, such as systematic reviews and that found in professional evidence databases (Dawes et

al., 2005, Soltani *et al.*, 2004). One such database is OTseeker, which contains randomised controlled trials, that have been pre-appraised and rated, and systematic reviews pertinent to occupational therapy (Bennett *et al.*, 2003a, McKenna *et al.*, 2004). As secondary sources may be absent in some areas of occupational therapy practice, basic appraisal skills also need to be taught, but too much emphasis on statistics early on may cause discouragement (Soltani *et al.*, 2004). Interventions should raise awareness about using higher levels of evidence (Soltani *et al.*, 2004) rather than evidence based on clinical experience or the opinion of colleagues, both of which may be subject to bias. Considering that the majority of studies relevant to occupational therapy emanate from high-income countries, participants need to learn how to evaluate studies and determine their significance for their own context.

Including strategies to overcome barriers and manage change related to EBP is critical in effecting behaviour change (Hammond and Klompenhouwer, 2005, McCluskey and Lovarini, 2005). Hence, the barriers identified in Study 1 in this thesis, such as lack of access to a range of electronic journals/databases, would need to be addressed. Lastly, to encourage participants to start implementing EBP, the intervention should involve developing action plans to start using EBP (Hammond and Klompenhouwer, 2005, McCluskey and Lovarini, 2005).

8.3 Rationale for the study

Although there is some evidence supporting the effectiveness of interactive and didactic educational interventions, it seems that those with an interactive (skills) component are more effective in improving professional behaviour than education alone (DE). As far as the PI was able to identify, no research had been done on the comparative effectiveness of these interventions in resource-constrained countries or with occupational therapists. According to Hutchinson (1999, p 1267), 'interventions that have been shown to be effective in one setting may, quite reasonably, not translate to other settings'. Additionally, Forsetlund *et al* (2009) highlighted aspects that remained unclear and could be addressed in a trial, for example providing detailed descriptions of interventions. It was therefore decided to test the effects of interactive educational interventions (IE) using a didactic intervention (DE) as the control.

8.4 Research hypothesis, aims and objectives

The primary aim of the trial was to test the hypothesis that an IE was more effective than a DE in increasing EBP knowledge at 12 weeks in a group of occupational therapists in the Western Cape, SA. The null hypothesis was that the interventions had equivalent effects on knowledge at 12 weeks. Secondary aims were to determine whether the IE was more effective than the DE in changing attitudes and behaviour at 12 weeks.

The objectives were:

1. In a sample of occupational therapists in the Western Cape to:
 - establish baseline EBP knowledge, skills and behaviour;
 - establish readiness to implement EBP;
 - determine the sources of information available to support EBP; and,
 - establish the extent to which current practice was documented using an evidence-based approach.
2. To establish the impact of the intervention at 12 weeks by determining if there were any significant differences between the groups in:
 - EBP knowledge, attitudes and behaviour;
 - readiness to implement EBP;
 - the extent to which current practice was documented using an evidence-based approach; and,
 - perceived barriers and supports to EBP.
3. To investigate whether there were any significant within-group changes between baseline and 12 weeks in:
 - EBP knowledge, attitudes and behaviour;
 - readiness to implement EBP; and,
 - the extent to which current practice was documented using an evidence-based approach.
4. To determine the feasibility of conducting a high quality RCT in a group of occupational therapists in the public health service of the Western Cape Province, SA.

8.5 Study context

The study took place in the Western Cape, a province in the south western part of SA with a population of over five million (Statistics South Africa, 2010). Cape Town is the capital city of the Western Cape and the province is divided into one metropolitan municipality (the City of Cape Town), and five district municipalities (West Coast, Cape Winelands, Overberg, Eden and Central Karoo) (Provincial Government of the Western Cape). The Western Cape is the third highest contributor to the total GDP of SA. The three main languages spoken are Afrikaans (55.3%), Xhosa (23.7%) and English (19.3%) (Day and Gray, 2008). Occupational therapists employed by the Western Cape DOH provide services at primary, secondary, tertiary and specialised levels in hospitals, rehabilitation/specialised facilities or community health centres/clinics (2006). In 2008 when this trial was conducted, there were 105 occupational therapists working in the Western Cape government health sector (Health Systems Trust, 2010). The number of occupational therapists in each municipality was not available.

8.6 Methods

8.6.1 Trial design

A two-group parallel design RCT with matched-pair stratification by position type (clinician/manager) and knowledge score was employed. The trial was designed to establish the superiority of an IE compared to a DE in improving EBP knowledge (primary outcome), attitudes and behaviour (secondary outcomes) at 12 weeks in a group of occupational therapists in the Western Cape. To ensure that the intervention was effective in the usual settings where occupational therapists are employed in the public health service, a pragmatic approach was used. This approach does not attempt to control differences between participants and practice settings but rather aims to test an intervention in a 'usual' setting and therefore allowed some flexibility in accommodating differences between service sites and participants.

8.6.2 Participants

The population included all occupational therapists employed by the Western Cape DOH at the time of recruitment (November 2007-July 2008). The population was selected due to the relative

similarity of the practice of the therapists and the resources and facilities available to them. The intention was also to establish the feasibility of implementing EBP and conducting a RCT within the public health system.

The list of occupational therapists employed by the DOH was used as a starting point for devising the sampling frame. As the most current version had been compiled in July 2006 and there had subsequently been many staff changes, the research coordinator (who had previously been employed in a DOH occupational therapy management position) contacted occupational therapy managers and facilities to obtain an updated list of potential participants. This occurred between November 2007 and February 2008. Occupational therapists employed by the DOH were recruited from three municipalities in the Western Cape. Table 52 provides details of the number of potential participants in each type of setting, the care priority of the setting and role of the participant (clinician or manager). The sampling frame consisted of a total of 98 potential participants.

Table 52: Description of settings from which study participants were recruited

<i>Type of setting</i>	<i>No. of facilities</i>	<i>Care priority</i>	<i>Clinicians No. (%)</i>	<i>Managers No. (%)</i>	<i>Total possible participants No. (%)</i>
Level 3/Central hospital	3	Acute	31 (31.6)	2 (2.0)	33 (33.7)
Level 2/Regional	3	Acute	5 (5.1)	0 (0.0)	5 (5.1)
District Health Service	60*	Acute	21 (21.4)	1 (1.0)	22 (22.5)
Specialised Health Service	2	Non-acute	12 (12.2)	2 (2.0)	14 (14.3)
	3	Acute and non-acute	20 (20.4)	4 (4.1)	24 (24.5)
<i>Total</i>	71		89 (90.8)	9 (9.2)	98 (100.0)

*54 community health centres/clinics and 6 district hospitals

8.6.2.1 Eligibility criteria

Occupational therapists in the study population working at least 20 hours per week were eligible. Those in management positions were included despite not having a patient load, because their role in putting structures and systems in place to support practitioners in their EBP endeavours (Caldwell *et al.*, 2008) was recognised as crucial. In addition, there is evidence supporting the involvement and support of managers in making progress towards implementing EBP (Dopson and Fitzgerald, 2006).

8.6.2.2 Exclusion criteria

For pragmatic reasons, therapists were not admitted to the study if they worked more than 1½ hours outside Cape Town. Therapists who would be leaving the DOH before December 2008 or taking leave during the time of the intervention were also excluded as this would compromise the collection of outcome data.

8.6.2.3 Sample size

As the primary outcome instrument (SAFT) was modified for the OTEBP trial, there was no data available to calculate the sample size prior to recruitment and data collection. For this reason, the maximum possible number of participants was recruited. A post-hoc sample size calculation was conducted based on a complete randomisation design. A two-means t-test for independent samples was selected in *Statistica (StatSoft Inc, 2008)* with the following parameters:

- Anticipated improvement in mean SAFT score for the DE (null hypothesis): 0
- Actual improvement in mean SAFT score for the IE: 3.4⁷⁷
- Standard deviation for improvement in scores for entire group: 6.3
- Significance level: 0.05
- Power: 80%.

The required sample size was 55 participants per group.

8.6.2.4 Recruitment

Recruitment occurred over a nine-month period (November 2007 to July 2008). The study was initially presented at a meeting of the Metro Occupational Therapy in Health (MOTH)⁷⁸ Forum in November 2007 to get representatives' support and commitment, and to request managers to release their therapists to participate in the study. A separate meeting was held with the manager of one District Health Service in November 2007 to discuss logistical issues related to including

⁷⁷ Data was used from the OTEBP trial. The mean change score of the DE (4.4) was subtracted from that of the IE (7.8).

⁷⁸ MOTH Forum meetings are held monthly and attended by a representative, usually the head of department, from each occupational therapy department or service. The purpose of the Forum is 'to enable and facilitate collaborative efforts, in striving for an occupational therapy service of excellence, within the public sector' (MOTH Forum, 2008).

therapists working in Community Health Centres. Three information sessions were held between April and July 2008 to recruit participants. All potential participants were invited to attend and different locations were used to enable maximal attendance. Those who could not attend were contacted by the research coordinator who explained the purpose and details of the study. Occupational therapy managers were also asked to recruit staff in their departments and acted as liaison persons for the PI and research coordinator.

Information sessions were conducted by the PI who gave a brief presentation of the study, eligibility criteria, participants' expectations and potential benefits of participating. Time was allocated for answering questions and clarifying issues pertaining to the study. As an incentive to participate, CPD points were offered. Potential participants were advised that they would be participating in a study about EBP and would be allocated to one of two interventions. No information was given about the difference between the interventions. Most potential participants worked within reasonable proximity to the venue where the intervention was conducted. To avert possible travel problems for eight participants located 1½ hours outside Cape Town, the PI offered to conduct the intervention at a more central location. The district manager, however, felt that it was feasible for the therapists to travel to the venue in groups.

Information sheets (see Appendix XX) and consent forms (see Appendix XXI) were available at information sessions so that therapists could sign up at the session or take the forms with them if they wanted more time to consider participating. The research coordinator attended the information sessions to collect consent forms and make contact with potential participants so she was familiar to them. After information sessions, potential participants who had not returned consent forms were contacted by the research coordinator to establish whether they wanted to participate or not. Those who agreed either faxed their signed consent form to the PI or it was collected by the research coordinator. The PI and the research coordinator checked that all those who signed consent met the eligibility criteria. Thereafter participants' details were entered into an *Excel* spreadsheet and study numbers were allocated.

8.6.3 Randomisation

Participants were allocated to intervention groups after completing the baseline questionnaire but before the baseline audit was conducted.

8.6.3.1 Sequence generation

Restricted randomisation was used to ensure a balance in knowledge between groups. Participants were stratified into managers and clinicians and matched-pair⁷⁹ allocation was used. Pairs were matched on baseline SAFT scores in each stratum and each participant in a pair was randomly assigned to the IE or the DE using coin-tossing. This strategy was used to minimise the risk of allocation bias in assigning participants with higher scores to the IE.

8.6.3.2 Allocation concealment mechanism

Allocation occurred after all participants had been enrolled in the study. Allocation concealment was not used. To decrease the possibility of the PI changing the allocation and thereby introducing allocation bias, the PI and research coordinator conducted the sequence generation process (coin-tossing) together.

8.6.3.3 Implementation

The procedure for matching the pairs for randomisation occurred as follows:

- SAFT scores were calculated and entered into *Excel 2003* with the participant's name and work place.
- Data were sorted into managers and clinicians and SAFT scores in each stratum were sorted from highest to lowest.
- Clinicians with the same score were paired and randomly assigned to each group based on the outcome of the coin toss. If there were more than two participants with the same score, pairs were matched according to facility. For example, if four participants had the same score, those

⁷⁹ A matched pairs design is a special type of randomised block design. Participants are grouped into pairs based on a blocking variable and then randomly assigned to one of two interventions. This design controls for potential variables, in this case knowledge about EBP (Stat Trek, 2009).

working at the same facility were matched and one was allocated to the IE and the other to the DE. This was done to obtain similar practice profiles for participants in each group. If participants were from different work places, they were matched where possible based on the similarity of the facility.

- Once all clinicians with matched scores had been allocated, those remaining were matched to the participant with the next closest score.
- Managers were paired based on closest scores and then randomly allocated to the IE or DE based on the outcome of the coin toss.

The procedure for random allocation occurred as follows:

- Before the coin was tossed, the PI named the first participant in the matched pair. If the coin landed on 'heads' the named participant was assigned to the IE and the other to the DE. If it landed on 'tails' the named participant was allocated to the DE.
- The coin was tossed by the research coordinator while the PI assigned participants to groups based on the outcome of the coin toss.
- This procedure was followed for every matched pair until all participants had been allocated.
- Once all participants had been assigned to an intervention, the research coordinator informed them of the dates and details for their allocated intervention.

8.6.4 Settings and location where data was collected

Questionnaires were completed by participants in their own time and collected by a research assistant. Audits were conducted at participants' places of work with the exception of those working in different health facilities scattered over a large geographical area. These participants (n=5) provided photocopies of their patient notes but erased any identifying details to maintain confidentiality.

8.6.5 Outcomes

Outcome instruments consisted of a self-report questionnaire measuring EBP knowledge, attitudes and behaviour (Appendix XI) and an audit checklist (Appendix XVI) measuring objective

behaviour. Details of the content and properties of the outcome instruments are available in chapter 6. The instruments were sufficiently robust for measuring the outcomes of the OTEBP trial. Outcome data were collected at baseline and 12 weeks after the intervention.

8.6.5.1 Primary outcome

The primary outcome was increased EBP knowledge at 12 weeks shown by an improved SAFT score. The SAFT demonstrated excellent IRR (ICC: time 1=1.00; time 2=0.989), test-retest reliability (ICC=0.95, 95% CI: 0.88-0.98) and responsiveness ($d=1.0$) as reported in Chapter 6. Responses were scored using grading rubrics (see Appendix IX and XVII). As the PI scored the SAFT for all participants, questionnaires were numbered but not linked to participants' names to minimise the possibility of introducing bias. The grading rubric was adhered to strictly as an added measure of reducing bias.

8.6.5.2 Secondary outcomes

Secondary outcomes were improved EBP knowledge (measured with the modified KABQ (Johnston *et al.*, 2003, MacDermid *et al.*, 2006)), changed attitudes (self-report items on the modified KABQ, FATQ and RCCPS (MacDermid *et al.*, 2006)), and changed behaviour (self-report items on the KAQ (MacDermid *et al.*, 2006, Pain *et al.*, 2004) and KABQ (MacDermid *et al.*, 2006), and objective behaviour measured through the audit checklist developed for the trial)).

Items in the audit checklist were given a score of 0 (not evident in the record), 1 (item evident in the record) or not applicable. Items were deemed 'not applicable' when it was not appropriate to include them. For example, if the client had not yet been discharged, a final assessment would not have been expected. The maximum score was nine, unless items were rated as 'not applicable' in which case the total possible score was calculated by subtracting the number of 'not applicable' items from nine. Audit scores per record were calculated by adding the total number of 'yes' responses and converting them to percentages. Mean scores for the total number of records audited (five for most participants) were calculated for each participant to enable comparisons to be made. As reported in Chapter 6, IRR for the audit checklist was at least moderate for all items ($\kappa \geq 0.60$) but responsiveness was low ($d=0.3$).

8.6.6 Interventions

Recommendations from the systematic review on educational meetings (Forsetlund *et al.*, 2009), CONSORT recommendations for reporting RCTs (Moher *et al.*, 2010) and the extension for pragmatic trials (Zwarenstein *et al.*, 2008) are used to guide the descriptions of the interventions. Both interventions were considered ‘knowledge transfer’ because they focussed on sharing EBP knowledge, known to the PI, so participants could apply it in their practice (Graham *et al.*, 2006). Detailed content for each intervention is available in Appendix XXII and a summary is provided here. Table 53 gives an overview of the components of each intervention.

Table 53: Content of the interventions in the OTEBP study

Activity	IE	DE
4 hour education session (with notes and ‘evidence packs’)	Yes	Yes
2 hour session (1 week later)	Yes	No
Emailed notes from second session	Yes	No
Telephonic/email follow-up (reminders)	Yes	No

8.6.6.1 General information

Sessions for the IE and the DE were conducted on separate days during August and September 2008. The DE and the first session of the IE were held from 11h30-15h30. This time was most suitable because participants could see patients first and it allowed sufficient time after the intervention to return government vehicles used for transport to the venue. Each type of training was repeated to enable as many participants to attend as possible.

Participants could not be blinded. They were advised that there were two different interventions (one session or two sessions) and were aware of their group allocation but were not given any indication of what was included in the interventions or which was likely to be more effective. Participants were advised that they could only attend the intervention to which they had been allocated.

As the PI conducted both interventions blinding was not possible. The PI conducted all aspects of both interventions except for the article appraisal part of the IE which was facilitated by an

experienced EBP teacher from another department at UCT. The interventions were not tested prior to implementing the study as there was no comparable group available, but the PI was well-equipped having conducted several training sessions for undergraduate and postgraduate occupational therapy students and several small groups of therapists.

8.6.6.2 Didactic educational intervention (DE)

The DE was based on a large and recent systematic review and consisted of a presentation providing participants with the information needed to apply EBP (Forsetlund *et al.*, 2009). Questions were permitted and were answered but there were no opportunities to practise skills, apply information or discuss content. The intervention was conducted in a postgraduate teaching venue in the Faculty of Health Sciences at UCT that accommodated 25 people and was equipped with a data projector, whiteboard and flipchart. Participants were seated at small tables set up in a u-shape with the facilitator at the front of the room. A PowerPoint presentation was used to guide the input. The session lasted four hours with a 30-minute tea-break halfway through. Training was held in August 2008.

8.6.6.3 Interactive educational intervention (IE)

In accordance with the definition of Forsetlund *et al.* (2009), the IE consisted of presentations, tasks requiring small group discussion, and practice of particular skills such as searching online databases. It was multi-faceted as it included education sessions, emailed notes and telephonic or email reminders (Forsetlund *et al.*, 2009). There were two sessions, lasting four hours and two hours respectively. The first group received the intervention in August 2008 with six days between the two sessions, while the second group attended training in September 2008 with seven days between sessions. Training for the second group occurred on Fridays as this was most suitable for participants from one municipality.

8.6.6.3.1 Session 1

The session focused on the five steps of the EBP process. Participants were given information about EBP and opportunities to practice some of the skills. Practical exercises included formulating

a PICO question and doing an online search for evidence. Discussions covered how to do appraisals, doing an efficient search, applying evidence and documenting evidence.

The first half of the first session was held in a computer laboratory in the Health Sciences Faculty at UCT. A PowerPoint presentation was used to teach participants the first two steps of the EBP process and tasks were given to practice these steps (see Appendix XXII, Box 1). On-line searches were demonstrated after which participants were given time to search for information themselves.

For the second half of the session, participants moved to a postgraduate teaching venue that accommodated 25 people and had a data projector, whiteboard and flipchart available. There was a 30-minute break prior to the start of this session. The Graphic Appraisal Tool for Epidemiological studies (GATE) frame (Jackson *et al.*, 2006) was used to appraise an article that had been emailed to participants between two and seven days before the session. The appraisal discussion was facilitated by an experienced EBP lecturer from another department in the faculty and was followed by a discussion on applying evidence to practice. At the end of the session, participants were asked to read the articles in their evidence packages before the second session.

8.6.6.3.2 Session 2

Participants were asked to write questions, areas needing clarification or requests for additional input on pieces of paper which were given to the facilitator. All items were dealt with in the first part of the session. In the second part, small groups were formed to discuss evidence-based documentation, barriers and facilitators to EBP, strategies to overcome barriers, and finally, steps participants could take to strengthen their knowledge and use of EBP. Small groups gave feedback on each discussion item to the rest of the group and responses were recorded on flip charts.

8.6.6.3.3 Follow up

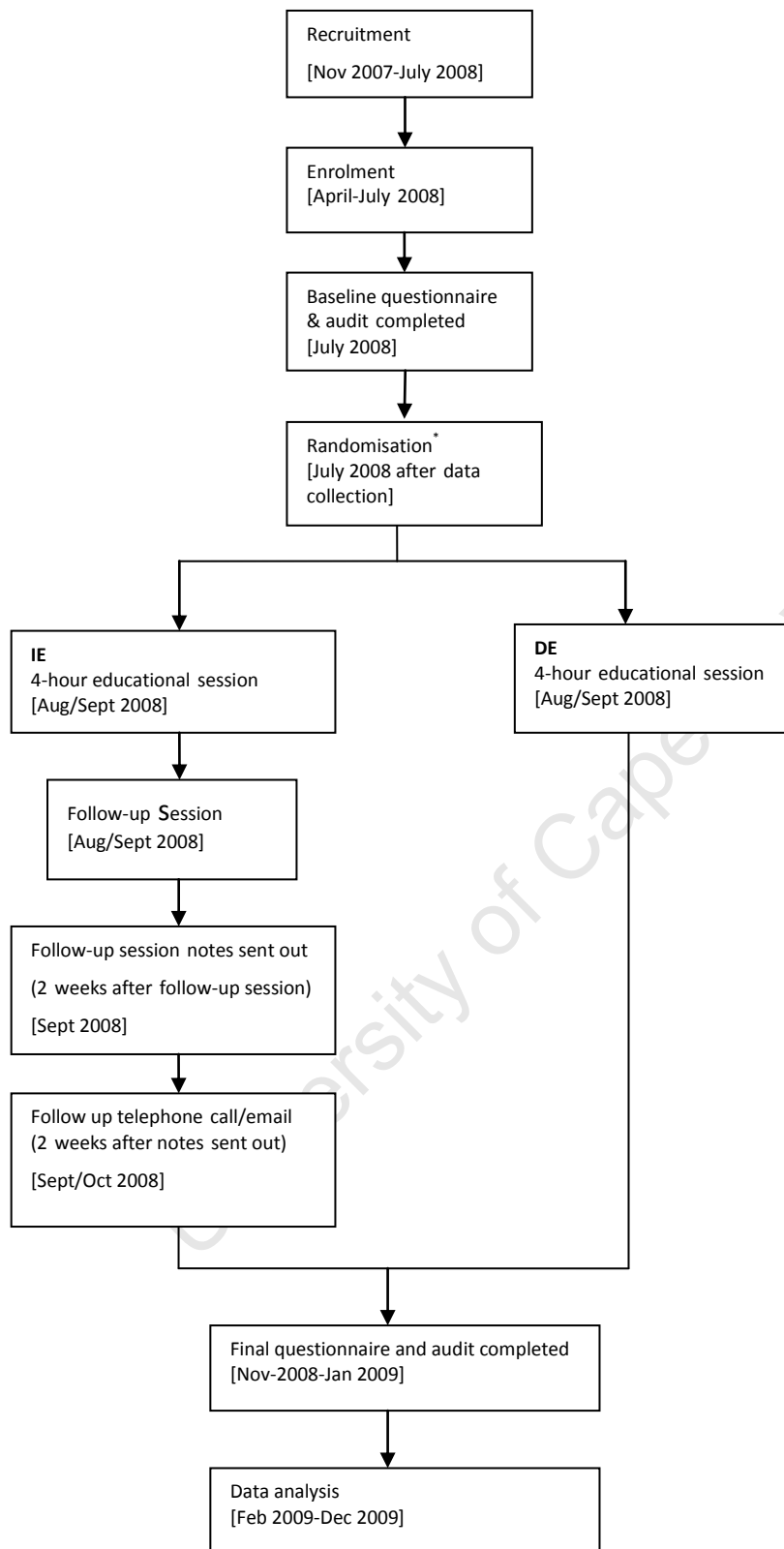
Notes from session 2 discussions were transcribed by the research coordinator and emailed two weeks later to participants who had attended the session. After a further two weeks, a follow-up telephone call was made to find out how they were managing in applying EBP and to gauge

whether additional assistance or information was required. If participants were unavailable, a message was left for them to contact the research coordinator. If contact was not made within a few days, a follow-up email was sent.

8.6.7 Procedure

The procedure for the trial with time frames for each step is shown in Figure 8.

University of Cape Town



* Matching was done before randomisation

Figure 8: Flow diagram of the trial procedure

The baseline questionnaire was completed prior to randomisation. Questionnaires (baseline and 12 weeks) were numbered with a personal study number and delivered to participants' work places with a request to complete them within a stipulated time frame. In facilities employing several participants, occupational therapy managers collected the questionnaires of participating staff. Questionnaires were either collected by a research assistant or the research coordinator. Questionnaires for the eight participants located outside Cape Town were faxed to the PI. The PI scored the SAFT (primary outcome) using a grading rubric devised for the study. To minimise bias, scoring was done using only numbered questionnaires and without referring to the list linking study numbers to participant names.

Five records per participant were audited at baseline and 12 weeks. Managers were excluded as they did not carry a patient load. To select the records for audit, participants emailed or faxed the list of patients seen during the specified week. Five patients were randomly selected from each participant's list using the ROUND RAND command in *Microsoft Office Excel 2003* to generate random numbers. Participants were contacted by email or telephone to inform them which records would be audited. A total of 10 records per participant was audited – five each at baseline and 12 weeks. If five or fewer patients had been seen, all records on the list were audited.

Arrangements were made to visit each facility and participants were requested to have the selected records available. On arrival at the audit venue, the PI met with the head of the occupational therapy department or a contact person who ensured that all records selected for audit were available. The PI checked that the correct records were included. In some cases, patient lists were not received before the audit and random selection had to be done using a laptop on arrival at the audit venue. The therapist was then advised of the records that were needed. Records were usually audited at participants' work places in the Occupational Therapy Department, but at two of the larger institutions, audits were conducted at central medical records where the patient folders were stored. In one municipality, participants worked in different clinics spanning a large geographic area. These participants photocopied their records, removed any identifying features and either left them with the occupational therapy manager for the area (in which case they were collected by the PI and audited elsewhere), or faxed them to the

PI. In some instances, records were unavailable on the day of the audit and had to be photocopied by the participant and faxed to the PI later. To ensure confidentiality, all identifying information was deleted from faxed records and only initials were used to enable the PI to identify the record based on the randomised selection list.

Records were audited by one of two research assistants who were trained by the PI during the piloting phase. Audits were conducted after randomisation but raters were blinded to allocation. The grading rubric developed during the piloting phase (see Appendix XVIII) was used to guide raters in allocating scores. The PI was present at all audits, not to rate the records, but to verify that raters adhered to the criteria and scoring specified in the grading rubric. Discrepancies in scores between the rater and PI were discussed and consensus reached about the final rating. The same raters conducted baseline and 12-week audits and were kept consistent for each participant where possible. Methods used to enhance the quality of measurements included training of raters, development of a grading rubric to guide raters, achievement of adequate IRR during training, checking of audit ratings by the PI and blinding of raters to allocation.

On arrival at the training session, participants signed the CPD register and received a folder containing EBP training materials and an evidence 'package'. The content of the evidence 'package' was determined from an item on the consent form where participants indicated their area/s of practice. Practice areas were extracted from consent forms and common areas of practice identified such that each participant received an evidence 'package' in at least one of their practice areas. Eight practice areas were identified, namely: burns, depression, hands and arthritis, management, paediatrics, stroke, substance abuse and work practice.

An observer was present at each training session to document how the session was conducted to ensure that each intervention was delivered as planned. The observer completed a checklist and recorded observations for each session (see Appendix XXIII). To address possible variations in recording the proceedings for each intervention, a consistent observer was used for all sessions.

8.6.8 Data management

Study numbers were used for entering and analysing data to ensure confidentiality. Questionnaire data were captured in *STATISTICA 8* (StatSoft Inc, 2008) while audit data were captured in *Excel*. Wherever possible, data were captured as they were collected. Questionnaires were checked for missing data and participants requested to complete this information when they arrived for the intervention (prior to its start). Some participants were contacted telephonically before the intervention to obtain missing data. Once entered, questionnaires were filed and kept separate from allocation lists. After audit checklists were completed by a research assistant and checked by the PI, they were filed according to participants' study numbers so that checks could be done to ensure all records had been audited. Data were stored in a secure place throughout the study.

8.6.9 Data analysis

Data were analysed using *STATISTICA 8* (StatSoft Inc, 2008), *EpiCalc 2000* (Gilman and Myatt, 1998) and *Statistical Package for the Social Sciences (SPSS)* (SPSS Inc, 2009). An intention-to-treat analysis and per-protocol analysis were performed. Analyses were conducted to determine whether:

- the groups (IE and DE) were similar in demographic and practice characteristics at baseline;
- the groups were different at the conclusion of the study (12 weeks).

As no significant differences between the groups were detected at 12 weeks, a within-group analysis was conducted to identify whether any changes had occurred between baseline and 12 weeks.

The Shapiro-Wilk Test was used to check numerical variables for normality. As most of the data were not normally distributed, medians and ranges are reported for numerical variables (Schulz and Grimes, 2002a). Non-parametric tests were conducted throughout. In cases where the data were normally distributed, parametric tests were performed to determine whether the loss of power made any difference to the final result. As this did not reveal any additional significant results, only non-parametric tests are reported. Two-sided significance tests were used throughout.

For categorical items, categories were collapsed if there were cells with few responses. For example, availability of sources of evidence was collapsed into 'yes' and 'no' by re-classifying 'don't know' to 'no'. Proportions were calculated and the chi-square test was used to test for significance provided cells had a minimum of five expected counts. For items with expected cell counts less than five, Fisher's exact test was used. Relative risks and 95% CIs were calculated.

To determine baseline comparability so that judgements about generalisability are possible, measures of central tendency and variability are reported for baseline numerical variables, and numbers and proportions for categorical variables (Schulz *et al.*, 2010, Schulz and Grimes, 2002a). Schulz and Grimes (2002a) argued that as randomisation ensures that participant allocation is not biased, any differences in baseline variables are due to chance. As a result, they recommended reporting important prognostic baseline variables and excluding 95% CIs and hypothesis tests which they regard as superfluous (Schulz and Grimes, 2002a). This position is supported by the CONSORT guidelines (Schulz *et al.*, 2010). Although differences in baseline variables may have occurred by chance in the OTEBP trial, it was important to determine whether these could have acted as confounders. For this reason, hypothesis tests are reported for all baseline variables.

The Mann-Whitney U test was conducted for numerical items and the chi-square or Fisher's exact test, for categorical variables to determine whether there were any significant differences between the groups at baseline and 12 weeks. Where multiple analyses were done, the Bonferroni correction was employed to ensure that the probability of making a type-I error remained less than 0.05.

To analyse within-group changes, differences in baseline and 12 week scores for the SAFT and modified KABQ were calculated for participants who completed the final questionnaire. To establish whether there were any significant within-group differences, Wilcoxon matched-pairs (numerical data) tests were conducted. The test of marginal homogeneity, which is used to analyse differences in before-after data when an item consists of more than two categories (Mehta and Patel, 2010), was used to detect within-group differences for one item.

8.6.10 Ethical and legal considerations

Ethical approval was obtained from the Health Sciences Faculty Human Research Ethics Committee, UCT (REC REF: 259/2006) (Appendix XXIV). Approval to conduct the study was also obtained from the Western Cape Provincial Department of Health (Ref. 19/18/RP37/2008) (Appendix XXV). Letters were sent to medical superintendents or senior managers at all facilities in which occupational therapists agreed to participate to inform them about the study and obtain their support (Appendix XXVI). The trial was registered with the South African National Clinical Trial Register (DOH-27-1009-3067).

Information sessions were used to inform potential participants about the study and to provide opportunities to ask questions and obtain clarification. Informed consent was obtained from all participants prior to the start of the study in a written letter requesting their participation. The letter provided a detailed explanation about the purpose of the study and what was expected of participants (Appendix XX). Participants provided signed consent (Appendix XXI) indicating their willingness to participate. This entailed providing permission for their patient records to be audited, completing pre- and post-intervention questionnaires, and attending the intervention (one four-hour session for the DE and two sessions of four- and two-hours respectively for the IE).

As existing records were used for the audit, patient care was not compromised. The findings will be published in peer-reviewed journals and as part of the PhD dissertation but no identifying information related to patients or therapists will be reported and thus it was not anticipated that there would be any harm to either group. Patients whose records were audited did not benefit from the study, but it is anticipated that future patients may benefit by raising therapists' awareness about their practice.

Patient privacy was protected by using numbers rather than names on audit checklists. Audit checklists were numbered prior to data collection to ensure patient anonymity. Although the research assistants conducting the audit would not usually have had access to patient records, the use of numbers rather than names ensured that confidentiality was maintained as far as possible. The audit should not, therefore, have exposed patients to additional harm. To minimise disruption to occupational therapy services, interventions were repeated to enable as many participants to

attend as possible and at the most convenient time. This ensured that all therapists at one site who agreed to participate would not have to attend the intervention at the same time. In addition, interventions lasted a maximum of four hours so that participants could see patients in the morning before attending. Suitable dates and times for audit visits were arranged with the participants concerned to ensure minimal disruption to services.

Questionnaires (baseline and 12-week) were coded with a personal identification number. Responses were treated confidentially and only the PI had access to the codes and the linked names. There was low risk to participants as the questions were not of a personal nature. Data was treated confidentially at all times to avert potential harm to participants. To further reduce this risk, all data was maintained in a secure setting at the Department of Health and Rehabilitation Sciences, UCT.

Acknowledging that exposing a potential lack of knowledge among this group of practitioners could potentially cause harm or inconvenience when publication occurs, reporting has been done with due sensitivity and a clear explanation of possible confounding factors. Possible benefits of participating for both groups included receiving training in EBP with the associated expectation of improved knowledge in EBP. Overall, the anticipated benefits of the study outweighed the risks to individuals or communities and these risks were negligible.

8.7 Results

Of the 98 potential participants, 12 did not meet the inclusion criteria and 28 declined to participate. Fifty-eight of a possible 86 participants (67.4%) agreed to participate and signed consent. As there was an odd number in each stratum (managers and clinicians) during the process of randomisation, the last participant in each stratum was allocated individually. There were 30 participants in the IE and 28 in the DE. Two participants withdrew from the study after randomisation due to illness and re-prioritising time for postgraduate studies. The CONSORT flow diagram is shown in Figure 9.

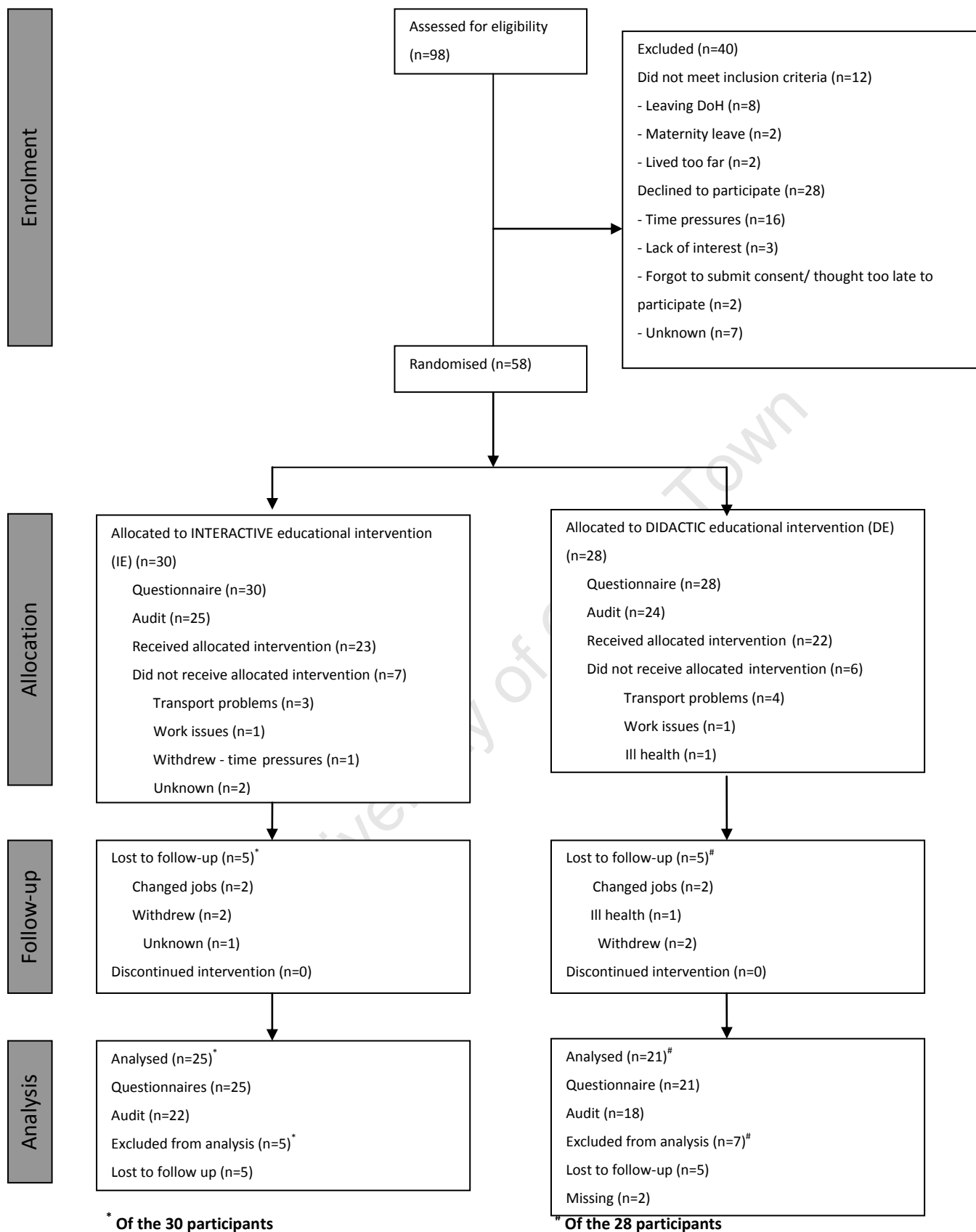


Figure 9: CONSORT flow diagram for the OTEBP trial

Twenty-two of 28 in the DE (78.6%) attended the intervention while 23 of 30 in the IE (76.7%) attended at least one of the sessions. Table 54 shows the number of participants attending each intervention.

Table 54: Participant attendance at educational sessions

<i>IE (N=30)</i>		<i>DE (N=28)</i>	
Group 1	No. (%)	Group 1	No. (%)
Session 1	18 (60.0)		14 (50.0)
Session 2	13 (43.3)		
Group 2		Group 2	8 (28.6)
Session 1	3 (10.0)		
Session 2	8 (26.7)		
<i>Total</i>	<i>23 (76.7)</i>	<i>Total</i>	<i>22 (78.6)</i>

8.7.1 Baseline measurements

All participants completed the baseline questionnaire. Twenty-five of 30 participants in the IE (25.0%) and 24 of 28 in the DE (85.7%) had their records audited at baseline. A total of 258 records were audited. For most participants (46/49, 93.9%) five records were audited; two had three records audited and one had four - either because they had not seen five different patients in the selected week or the record was unavailable⁸⁰ at the time of the audit. A total of 15 sites were visited for the audits. While participants could have made changes to their records prior to the audit, there was no evidence of this.

Baseline demographic and practice characteristics and EBP knowledge, attitudes and behaviour for the two groups were compared to detect any differences between them.

8.7.1.1 Demographic and practice characteristics

Baseline demographic and practice characteristics are shown in Table 55. The majority was female, had undergraduate qualifications and worked in tertiary facilities in urban areas. Although there were differences between the groups in age, years of experience and number of clients per month, these were not significant.

⁸⁰ Records were in the doctor's office or being used by other members of the multi-disciplinary team at the time of the audit

Table 55: Baseline demographic and practice characteristics of participants

Variable	IE (N=30)	DE (N=28)	Total (N=58)	Mann-Whitney U test	p-value
	Median (range)	Median (range)			
Age (years)	28.0 (22.0-50.0)	33.0 (22.0-56.0)		360.5	0.357
Years experience	5.5 (0.5-31.0)	8.5 (0.5-34.0)		414.0	0.932
No. clients seen per month*	60.0 (0.0-220.0)	35.0 (0.0-220.0)		361.0	0.480
	No. (%)	No. (%)	No. (%)		Fisher's exact p, two-tailed
Gender					1.000
Male	2 (6.7)	1 (3.6)	3 (5.2)		
Female	28 (93.3)	27 (96.4)	55 (94.8)		
Total	30 (100.0)	28 (100.0)	58 (100.0)		
Qualification					1.000
Undergraduate	26 (86.7)	24 (85.7)	50 (86.2)		
Postgraduate	4 (13.3)	4 (14.3)	8 (13.8)		
Total	30 (100.0)	28 (100.0)	58 (100.0)		
Level of care					0.723
Primary	6 (20.0)	4 (14.3)	10 (17.2)		
Secondary	9 (30.0)	6 (21.4)	15 (25.9)		
Tertiary	10 (33.3)	13 (46.4)	23 (39.7)		
> 1 level	5 (16.7)	5 (17.9)	10 (17.2)		
Total	30 (100.0)	28 (100.0)	58 (100.0)		
Place					0.584
Urban	25 (83.3)	25 (89.3)	50 (86.2)		
Rural	4 (13.3)	3 (10.7)	7 (12.1)		
Both	1 (3.3)	0 (0.0)	1 (1.7)		
Total	30 (99.9)	28 (100.0)	58 (100.0)		

* Missing data for one participant in the IE

Frequencies for areas of practice are shown in Table 56. Nine participants were managers and did not usually carry a case load. The majority worked with stroke patients or in paediatrics. There were similar numbers of participants working in each area in both groups.

Table 56: Areas of practice for each group

Area	IE (N=30) No. (%)	DE (N=28) No. (%)	Total No. (%)	Chi-square	df	p-value
Stroke	14 (46.7)	12 (42.9)	26 (44.8)	0.08	1	0.771
Paediatrics	13 (43.3)	12 (42.9)	25 (43.1)	0.00	1	0.971
Hand conditions	9 (30.0)	10 (35.7)	19 (32.8)	0.21	1	0.643
Work practice	7 (23.3)	7 (25.0)	14 (24.1)	0.02	1	0.882
Burns	7 (23.3)	6 (21.4)	13 (22.4)	0.03	1	0.862
Arthritis	5 (16.7)	7 (25.0)	12 (20.7)	0.61	1	0.525*
Depression	4 (13.3)	6 (21.4)	10 (17.2)	0.67	1	0.500*
Psychoses	4 (13.3)	2 (7.1)	6 (10.3)	0.60	1	0.671*
Substance use	2 (6.7)	2 (7.1)	4 (6.9)	0.01	1	1.000*

* Fisher exact test

Table 57 shows the distribution of participants across facilities and proportions of clinicians and managers for each group. Groups were similar in all respects except that the IE serviced a higher number of district health facilities.

Table 57: Description of facilities, clinicians and managers in each group

Type of facility	IE (N=30)				DE (N=28)			
	No. of facilities	Clinicians No. (%)	Managers No. (%)	Total No. (%)	No. of facilities	Clinicians No. (%)	Managers No. (%)	Total No. (%)
Level 3/central hospital	3	10 (33.3)	1 (3.3)	11 (36.7)	3	12 (42.9)	1 (3.6)	13 (46.4)
Level 2/regional hospital	3	3 (10.0)	0 (0.0)	3 (10.0)	2	2 (7.1)	0 (0.0)	2 (7.1)
District health services	34	5 (16.7)	0 (0.0)	5 (16.7)	18	3 (10.7)	1 (3.6)*	4 (14.3)
Specialised	4	7 (23.3)	4 (13.3)	11 (36.7)	4	7 (25.0)	2 (7.1)#	9 (32.1)
Total	44	25 (83.3)	5 (16.7)	30 (100.0)	27	24 (85.7)	4 (14.3)	28 (100.0)

* One clinician was a manager by the end of the study

One clinician had been appointed as a manager in a specialised facility and was allocated as a manager

8.7.1.2 Access to sources of evidence

Table 58 shows access to different sources of information. Most participants could access all forms of information. Chi-square tests revealed the two groups to be similar at baseline in access to different sources of evidence.

Table 58: Comparison of access to sources of information

Item no.	Source of evidence-based information	IE (N=30)		DE (N=28)		Total No. (%)	Chi-square	df	p-value
		Yes No. (%)	No No. (%)	Yes No. (%)	No No. (%)				
10.	Lectures/presentations: Intervention	26 (86.7)	4 (13.3)	27 (100.0)	0 (0.0)	53 (92.9)			0.114*
11.	Lectures/presentations: Research	26 (89.7)	3 (10.3)	24 (92.3)	2 (7.7)	50 (90.9)			1.000*
12.	Text and reference books	28 (93.3)	2 (6.7)	26 (92.8)	2 (7.1)	54 (93.1)			1.000*
13.	Journals	25 (83.3)	5 (16.7)	24 (85.7)	4 (14.3)	49 (84.5)			1.000*
14.	Access to academic library	24 (80.0)	6 (20.0)	21 (75.0)	7 (25.0)	45 (77.6)	0.21	1	0.757
15.	Search facilities	24 (80.0)	6 (20.0)	23 (82.1)	5 (17.9)	47 (81.0)	0.04	1	1.000
16.	Connections to world wide web/internet	28 (93.3)	2 (6.7)	26 (92.9)	2 (7.1)	54 (93.1)			1.000*
17.	Colleagues working with similar clients	29 (96.7)	1 (3.3)	28 (100.0)	0 (0.0)	57 (98.3)			1.000*
18.	Colleagues with expertise	27 (90.0)	3 (10.0)	25 (89.3)	3 (10.7)	52 (89.7)			1.000*
19.	Journal club or interest group	25 (83.3)	5 (16.7)	24 (85.7)	4 (14.3)	49 (84.5)			1.000*

* Fisher exact p two-tailed

Participants indicated whether they could access information sources at work or outside work. Table 59 shows that journals, libraries, search facilities and the internet were least available at work. There were no significant differences between groups in access to information at or outside work. Further details are available in Appendix XII.

Table 59: Access to information sources at work or outside

Source of information	IE (N=30)		DE (N=28)		Chi-square	df	p-value*
	Yes No. (%)	No No. (%)	Yes No. (%)	No No. (%)			
Lectures/presentations: Intervention							
At work	26 (86.7)	4 (13.3)	23 (82.1)	5 (17.9)			0.726*
Outside work	22 (73.3)	8 (26.7)	22 (78.6)	6 (21.3)	0.22	1	0.641
Lectures/presentations: research							
At work	19 (63.3)	11 (36.7)	17 (60.7)	11 (39.3)	0.04	1	0.837
Outside work	22 (73.3)	8 (26.7)	20 (71.4)	8 (28.6)	0.03	1	0.871
Text and reference books							
At work	20 (66.7)	10 (33.3)	20 (71.4)	8 (28.6)	0.15	1	0.695
Outside work	24 (80.0)	6 (20.0)	24 (85.7)	4 (14.3)			0.732†
Journals							
At work	14 (46.7)	16 (53.3)	12 (44.4)	15 (55.6)	0.03	1	0.866
Outside work	21 (70.0)	9 (30.0)	21 (75.0)	7 (25.0)	0.18	1	0.670
Access to academic library							
At work	13 (43.3)	17 (56.7)	14 (50.0)	14 (50.0)	0.26	1	0.611
Outside work	20 (66.7)	10 (33.3)	13 (48.2)	14 (51.9)	2.00	1	0.157
Search facilities							
At work	15 (50.0)	15 (50.0)	14 (50.0)	14 (50.0)	0.00	1	1.000
Outside work	20 (66.7)	10 (33.3)	20 (71.4)	8 (28.6)	0.15	1	0.695
World wide web/internet							
At work	19 (63.3)	11 (36.7)	16 (57.1)	12 (42.9)	0.23	1	0.630
Outside work	26 (86.7)	4 (13.3)	24 (85.7)	4 (14.3)			1.000
Colleagues working with similar clients							
At work	28 (93.3)	2 (6.7)	26 (92.9)	2 (7.1)			1.000
Outside work	22 (73.3)	8 (26.7)	19 (67.9)	9 (32.1)	0.21	1	0.647
Colleagues with expertise							
At work	22 (73.3)	8 (26.7)	19 (67.9)	9 (32.1)	0.21	1	0.647
Outside work	19 (56.7)	13 (43.3)	18 (64.3)	10 (35.7)	0.15	1	0.696
Journal club or interest group							
At work	18 (60.0)	12 (40.0)	18 (64.3)	10 (35.7)	0.11	1	0.737
Outside work	12 (40.0)	18 (60.0)	12 (44.4)	15 (55.6)	0.12	1	0.734

* Fisher's exact p, two-tailed

** Missing data for one participant

8.7.1.3 Knowledge

Baseline SAFT (primary outcome) and modified KABQ knowledge scores are compared in Table 60. Fourteen of 30 in the IE (46.7%) and 14 of 28 in the DE (50.0%) obtained a SAFT score of at least fifty percent. There were no significant differences between the groups for baseline knowledge.

Table 60: Baseline knowledge scores for each group

Item no.	Item (possible score)	IE (N=30)	DE (N=28)	Mann-Whitney U test	p-value*
		Median (range)	Median (range)		
	Total SAFT score (30)	14.0 (2.0-23.0)	14.0 (1.0-23.0)	416.0	0.957
20	PICO (16)	8.0 (0.0-16.0)	9.0 (0.0-16.0)	415.0	0.945
21	Study design (3)	0.0 (0.0-2.0)	0.0 (0.0-2.0)	413.5	0.920
22	Sources of information (11)	4.0 (1.0-6.0)	4.0 (1.0-6.0)	417.5	0.969
23-29	Modified KABQ knowledge score (35)	27.0 (21.0-33.0)	28.0 (23.0-34.0)	298.5	0.058

* Two-tailed

8.7.1.4 Attitudes to EBP

There were no significant differences between groups for the numerical item (item 30: *In your opinion, how much of occupational therapy practice in the Western Cape currently, on average, is grounded in scientific evidence that looks at client outcomes?*) (U=341.0; p=0.699). Descriptive statistics for modified KABQ attitude sub-scales are presented in Table 61. There were no significant differences in attitudes between groups.

Table 61: Baseline attitude scores for each group

Item no.	Item (possible score)	IE (N=30)	DE (N=28)	Mann-Whitney U test	p-value*
		Median (range)	Median (range)		
54-56, 61-62	Negative attitudes to EBP (25)	12.0 (9.0-18.00)	15.0 (10.0-28.0)	339.0	0.212
51-53	Positive attitudes to EBP in general (15)	12.5 (9.0-15.0)	13.0 (9.0-15.0)	419.0	0.994
63-64	Usefulness and importance of EBP (10)	8.0 (6.0-10.0)	8.0 (2.0-10.0)	294.5	0.050

* Fisher's exact p, two-tailed

Frequencies for '*feelings about incorporating evidence into practice*' are shown in Table 62. There were no significant differences between the groups (Fisher's exact p=0.536).

Table 62: Baseline readiness to use EBP

Readiness for EBP	IE (N=30)	DE (N=27)*	Total (N=57)
	No. (%)	No. (%)	No. (%)
I routinely use evidence in my practice	0 (0.0)	0 (0.0)	0 (0.0)
Begun using now and then	13 (43.3)	13 (48.2)	26 (45.6)
Started making plans	5 (16.7)	2 (7.4)	7 (12.3)
Thinking about it	11 (36.7)	12 (44.4)	23 (40.4)
Not thinking about it	1 (3.3)	0 (0.0)	1 (1.8)
Total	30 (100.0)	27 (100.0)	57 (100.1)

* Missing data for one participant

Six of 30 participants in the IE (20.0%) considered themselves evidence-based practitioners compared with 12 of 27 (44.4%) in the DE. This difference was significant (chi-square=3.93, df=1, p=0.047). Perceptions of support for accessing and using EBP are shown in Table 63.

Table 63: Perceived support for accessing and using EBP

Item no.	Item	IE (N=30)	DE (N=28)	Chi Square	df	p-value	RR (95% CI)
		No. (%)	No. (%)				
75	Peer support	21 (70.0)	19 (67.9)	0.03	1	0.860	1.0 (0.7-1.5)
76	Support from management	16 (53.3)	14 (50.0)	0.06	1	0.800	1.1 (0.7-1.8)
77	Practice setting supportive	13 (46.4)	10 (35.7)	0.35	1	0.553	1.2 (0.6-2.3)

8.7.1.5 EBP behaviour

Descriptive statistics for subjective and objective behaviour scores are shown in Table 64.

Table 64: Baseline behaviour scores for the modified KABQ and audit checklist

Item no.	Instrument & sub-scale (possible score)	IE (N=30)	DE (N=28)	Mann-Whitney U test	p-value*
		Median (range)	Median (range)		
32-40	Modified KABQ: Sources of information used (45)	15.5 (11.0-31.0)	15.0 (10.0-28.0)	380.0	0.542
44-50	Modified KABQ: Impact of EBP on practice (35)	19.0 (12.0-29.0)	20.0 (13.0-26.0)	411.0	0.896
		IE (N=25)	DE (N=24)		
	Audit (%)	42.9 (13.7-60.0)	38.6 (22.7-76.0)	292.0	0.882

Values for numerical items for self-reported EBP behaviour are provided in Table 65.

Table 65: Baseline EBP behaviour on the modified KABQ (numerical items)

Item no	Item	IE			DE			Mann-Whitney U test	p-value*
		N	Median	Range	N	Median	Range		
31	Frequency needing evidence (times per month)	26**	5.0	0.0-31.0	26**	5.0	0.0-50.0	334.0	0.949
41	Frequency looking up evidence (per month)	28**	2.0	0.0-10.0	25**	3.0	0.0-10.0	290.0	0.292
42	Average time spent looking for evidence (minutes)	28**	35.0	0.0-120.0	27**	30.0	0.0-120.0	332.5	0.447
43 i)	Time spent looking for evidence for most recent client (minutes)	27**	30.0	0.0-120.0	26**	30.0	5.0-180.0	288.5	0.269
43 ii)	Time since looking for evidence for above-mentioned client (weeks)	26**	3.0	0.0-52.0	25**	4.0	0.4-28.0	259.0	0.219

*Two-sided

Most participants reported finding evidence for a recent client (IE: 23/27, 85.2%; DE: 20/26, 76.9%). The difference between the groups was not significant (chi-square=0.59, df=1, p=0.501). Evidence was most commonly found on the internet or in textbooks and few had used research articles, *The Cochrane Library* or OTseeker. A relatively high percentage reported that the evidence had assisted them in understanding their client. There were no significant differences between the groups for any items measuring self-reported EBP behaviour as depicted in Table 66.

Table 66: Baseline self-rated EBP behaviour (binary items)

Item no.	Item	IE (N=23) [#]	DE (N=21) [#]	Chi square	df	p-value	RR (95% CI)
		Yes No. (%)	Yes No. (%)				
43iv)	Sources where evidence was found						
	Internet	13 (56.5) [#]	12 (60.0) [#]	0.05	1	0.818	0.9 (0.6-1.6)
	Textbook	11 (47.8) [#]	11 (55.0) [#]	0.22	1	0.639	0.9 (0.5-1.6)
	Original research papers	3 (13.0) [#]	1 (5.0) [#]	0.82	1	0.610*	2.6 (0.3-23.1)
	Cochrane database or OTseeker	2 (8.7) [#]	3 (15.0) [#]	0.41	1	0.650*	0.6 (0.1-3.1)
	Other	7 (30.4) [#]	7 (35.0) [#]	0.10	1	0.750	0.9 (0.4-2.1)
43v)	Evidence contributed to understanding of client	17 (73.9) [#]	15 (71.4)	4.97	4	0.291	1.0 (0.7-1.5)
43vi)	Evidence related to client-oriented outcomes	11 (47.8) [#]	12 (57.1)	0.47	4	0.977	0.8 (0.5-1.5)

[#] Missing data for one participant; not applicable response for remaining outstanding data.

* Fisher's exact p, two-tailed

Figure 10 shows the percentage of participants in each group who had accessed different evidence sources at least monthly in the preceding six months.

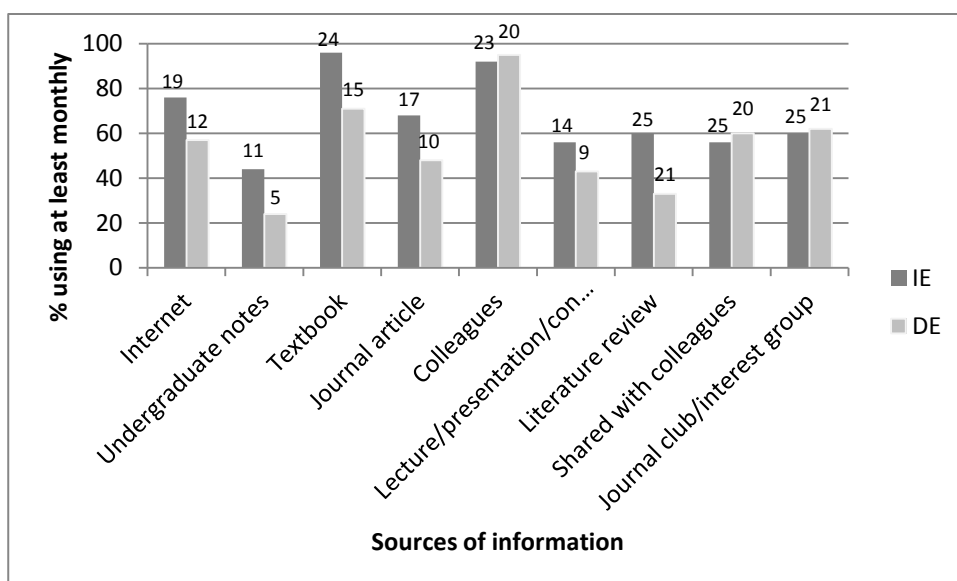


Figure 10: Proportion in each group accessing sources of information at least monthly

Reasons given for not using EBP are shown in Table 67. There were no significant differences between the groups.

Table 67: Baseline reasons for not using EBP

Item no.	Item	IE (N=24) [#]	DE (N=16) [#]	Chi square	df	p-value	RR (95% CI)
		Yes No. (%)	Yes No. (%)				
68	Consultants/supervisors/managers don't	2 (8.3)	4 (25.0)	2.09	1	0.195*	0.3 (0.1-1.6)
69	Don't know how	17 (70.8)	9 (60.0)**	0.49	1	0.485	1.2 (0.7-1.9)
70	Don't believe in it	2 (8.3)	0 (0.0)	0.20 [#]	1	0.508 [#]	-
71	Colleagues don't	1 (4.2)	2 (12.5)	0.14 [#]	1	0.553 [#]	0.3 (0.0-3.4)
72	Don't have time	19 (63.3)	12 (75.0)	0.01 [#]	1	1.000 [#]	1.1 (0.7-1.5)
73	Procrastination in changing old habits	4 (13.3)	4 (25.0)	0.06 [#]	1	0.690 [#]	0.7 (0.2-2.3)

[#] Not applicable if the response to item 67 (Do you consider yourself an evidence-based practitioner?) was 'yes'

** Missing data for one participant

* Fisher's exact p, two-tailed

Other reasons for not using EBP included lack of access to information sources at work, limited or absent evidence on specific topics, difficulty applying research from populations and settings different to those in SA, limited resources for implementing evidence-based interventions, lack of confidence and assistance in using EBP, absence of role models using EBP, and preference for practice-based experience.

Preferences for receiving evidence are shown in Table 68.

Table 68: Preferences for receiving evidence

Item	IE (N=30)	DE (N=28)	Chi square	df	p-value	RR (95% CI)
	Yes No. (%)	Yes No. (%)				
Computer at home	14 (46.7)	10 (35.7)	0.72	1	0.397	1.3 (0.7-2.5)
Computer at work	24 (80.0)	24 (85.7)			0.710*	0.9 (0.7-1.2)
Hard copy	21 (70.0)	15 (53.6)	1.66	1	0.198	1.3 (0.9-2.0)

*Fisher's exact p, two-tailed

8.7.1.6 Summary

Participants in the IE and DE were well matched for demographic and practice variables and access to evidence sources. There was a trend for participants in the DE to be older and more experienced and to perceive themselves as evidence-based practitioners but these differences were not significant. Most had access to all sources of evidence either at home or at work but relatively few could access journals or academic libraries at work. Baseline objective knowledge was low in both groups while self-rated knowledge was high. There were no significant differences in knowledge between the groups. Attitudes to EBP were similar in both groups except that a significantly higher number in the DE considered themselves as evidence-based practitioners. There were no differences between the groups for perceived support for EBP from people at work, but few felt their practice settings were supportive of EBP. Self-rated behaviour was generally low with no significant differences between the groups. Although objective behaviour (audit scores) was slightly higher in the IE, this difference was not significant. The most commonly used sources of evidence were colleagues and textbooks with few having used research articles or evidence databases such as *The Cochrane Library* or OTseeker. The most common reasons for not using EBP were lack of time and knowledge. Participants indicated their preferred methods for receiving evidence were their work computers or hard copies.

8.7.2 12 week measurements

The two groups were compared at 12 weeks to detect differences in the dependent variables after the intervention. Forty-six participants completed the questionnaire. The median time period between attending the intervention and completing the questionnaire was 13.0 (range=10.0-22.0) weeks for the IE and 14.0 (range=12.0-17.0) weeks for the DE. Of the original 49 participants

whose records were audited, nine either withdrew or did not complete the study; therefore 40 participants were included in the final audit. Audits were conducted on records written 12 weeks after attending the intervention. Where possible, raters were kept consistent for each participant for both audits but this was not feasible for 14 of the 40 participants due to other commitments of the raters on the audit dates.

8.7.2.1 Knowledge

Descriptive statistics for 12-week SAFT and modified KABQ scores are depicted in Table 69. Although the IE had a higher median SAFT score this difference was not significant. Differences in median modified KABQ scores were also not significant.

Table 69: 12-week knowledge scores for each group

Item no.	Item (possible score)	IE (N=25)	DE (N=21)	Mann-Whitney U test	p-value
		Median (range)	Median (range)		
	Total SAFT score (30)	21.0 (2.0-25.0)	19.0 (9.0-24.0)	182.5	0.078
20	PICO (16)	16.0 (0.0-16.0)	14.0 (3.0-16.0)	171.5	0.044
21	Study design (3)	1.0 (0.0-2.0)	2.0 (0.0-2.0)	188.5	0.103
22	Sources of information (11)	5.0 (2.0-8.0)	4.0 (1.0-7.0)	199.5	0.166
23-29	Modified KABQ knowledge sub-scale (35)	29.0 (20.0-35.0)	28.0 (24.0-35.0)	222.0	0.381

*Two-tailed

8.7.2.2 Attitudes to EBP

The difference between the groups for 'percentage of occupational therapy practice grounded in scientific evidence looking at patient outcomes' was not significant at 12 weeks (U=190.5, p=0.632). Descriptive statistics for 12-week modified KABQ attitude scores are shown in Table 70. Median scores for all attitude sub-scales were relatively high in both groups. There were no significant differences indicating that the groups were comparable in their attitudes to EBP at 12 weeks.

Table 70: 12-week attitude scores for each group

Item no.	Sub-scale (possible score)	IE (N=25)	DE (N=21)	Mann-Whitney U test	p-value
		Median (range)	Median (range)		
35-37, 42-43	Negative attitudes to EBP (25)	12.0 (9.0-18.0)	11.0 (9.0-16.0)	339.0	0.212
32-34	Positive attitudes to EBP in general (15)	13.0 (7.0-15.0)	13.0 (9.0-15.0)	419.0	0.994
44-45	EBP useful and important for CPD (10)	8.0 (4.0-10.0)	8.0 (6.0-10.0)	294.5	0.050

Frequencies for 'feelings about incorporating evidence into practice' at 12 weeks are shown in Table 71. Differences between the groups were not significant (chi-square=0.10, df=3, p=0.992).

Table 71: 12-week readiness to use EBP

Readiness for EBP	IE (N=25)	DE (N=21)	Total (N=46)
	No. (%)	No. (%)	No. (%)
I routinely use evidence in my practice	0 (0.0)	0 (0.0)	0 (0.0)
Begun using now and then	10 (40.0)	9 (42.9)	19 (41.3)
Started making plans	5 (20.0)	4 (19.1)	9 (19.6)
Thinking about it	8 (32.0)	6 (28.6)	14 (30.4)
Not thinking about it	2 (8.0)	2 (9.5)	4 (8.7)
Total	25 (100.0)	21 (100.1)	46 (100.0)

Twelve of 25 participants in the IE (48.0%) considered themselves as evidence-based practitioners compared to eight of 21 in the DE (38.1%). These differences were however not significant (chi-square=0.46, df=1, p=0.500, RR=0.8, 95% CI: 0.5-1.4).

Perceived support for EBP in participants' work environments is shown in Table 72. Most felt they had peer support but few felt their practice settings supported EBP. There were no significant differences between the groups in perceived support for EBP.

Table 72: Perceived support for EBP at 12 weeks

Item no.	Item	IE (N=30)	DE (N=28)	Chi Square	df	p-value	RR (95% CI)
		Yes No. (%)	Yes No. (%)				
50	Peer support	21 (84.0)	14 (66.7)			0.298*	0.5 (0.2-1.4)
51	Support from management	17 (68.0)	10 (47.6)	1.95	1	0.162	0.6 (0.3-1.2)
52	Practice setting supportive	11 (44.0)	7 (33.3)	0.55	1	0.460	0.8 (0.5-1.3)

* Fisher's exact test

8.7.2.3 EBP behaviour

Table 73 contains descriptive statistics for EBP behaviour. Although median audit scores were higher in the IE than the DE the difference was not significant.

Table 73: 12-week behaviour scores for the modified KABQ and audit checklist

Item no.	Instrument & sub-scale (possible score)	IE (N=25)	DE (N=21)	Mann-Whitney U test	p-value*
		Median (Range)	Median (Range)		
13-21	KABQ: Sources of information used (45)	17.0 (11.0-24.0)	15.0 (10.0-21.0)	186.0	0.094
25-31	KABQ: Impact of EBP on practice (35)	22.0 (14.0-30.0)	21.0 (13.0-25.0)	196.0	0.147
	Audit (%)	44.7 (20.0-76.0)	39.9 (23.0-68.0)	159.0	0.299

* Two-tailed

Table 74 shows the descriptive statistics for numerical items measuring self-reported EBP behaviour.

Table 74: 12-week EBP behaviour on the modified KABQ (numerical items)

Item no.	Item	IE (N=25)		DE (N=21)		Mann-Whitney U test	p-value (two-tailed)
		Median	Range	Median	Range		
12	Frequency of needing evidence (times per month)	3.0 [#]	1.0-15.0	4.0 [#]	1.0-15.0	176.0	0.136
22	Frequency of looking up evidence (per month)	2.0	0.0-7.0	1.0 [*]	0.0-6.0	199.5	0.372
23	Time spent finding/ looking for evidence (minutes)	30.0	5.0-240.0	45.0 [#]	10.0-120.0	214.5	0.421
24 i)	Time looking for evidence for client (minutes)	25.0 [#]	5.0-120.0	35.0 [#]	5.0-120.0	192.5	0.266
24 ii)	Time since looking for evidence (weeks)	3.0 [#]	1.0-16.0	4.0 [#]	1.0-32.0	181.0	0.170

[#] Missing data for one participant

^{*} Missing data for two participants

Responses to questions in item 24 on the most recent client for whom evidence was needed are shown in Table 75. Twenty of 24 (83.3%) in the IE and 15 of 20 (75.0%) in the DE had found evidence. The difference between groups was not significant (chi square=0.47, df=1, p=0.495, RR=1.1, 95% CI: 0.8-1.5). Participants who did not find evidence were not required to complete items 24iv-vi. This was the case for four participants in the IE and five in the DE. As hypothesis testing was repeated for five items measuring the same construct, the Bonferroni correction was used to adjust the critical value to 0.01. Examination of the p-values showed none of them to be significant at this level.

Table 75: Frequencies for items for the most recent client for whom evidence was required

Item no.	Item	IE (N=21)		DE (N=16)		Chi square	df	p-value	RR (95% CI)
		Yes n/N (%)	Yes n/N (%)	Yes n/N (%)	Yes n/N (%)				
24 iv)	Sources where evidence was found					4.26	1	1.000 [*]	0.95 (0.6-1.4)
	Internet	15/21 (71.4)	12/16 (75.0)						
	Textbook	15/21 (71.4) [*]	6/16 (37.5)						
	Original research papers	2/21 (9.5)	2/16 (12.5)						
	Cochrane database /OTseeker	5/21 (23.8)	3/16 (18.8)						
	Other	3/20 (15.0) [*]	2/16 (12.5)					1.000 [*]	1.2 (0.2-6.3)
24 v)	Contribution of evidence to understanding of client	15/21 (71.4)	11/16 (68.8)					1.000 [*]	1.04 (0.7-1.6)
24 vi)	Evidence related to client-oriented outcomes	12 (57.1)	8 (50.0)					0.746 [*]	1.1 (0.6-2.1)

[#] Missing data for one participant

^{**} Missing data for two participants

^{##} Missing data for three participants

Although 12 of 25 participants in the IE (48.0%) considered themselves to be evidence-based practitioners compared to eight of 21 in the DE (38.1%), this difference was not significant (chi-square=0.456, df=1, p=0.500, RR=0.8, 95% CI: 0.5-1.4). Participants who did not consider

themselves evidence-based practitioners were asked to give reasons for not using EBP. As shown in Table 76 differences between the groups were not significant.

Table 76: Reasons for not using EBP at 12 weeks

Reason	IE (N=13)		DE (N=13)		Chi square	df	p-value	RR (95% CI)
	No.	(%)	No.	(%)				
Don't have time	10	(40.09)	10	(47.6)	0.46	2	0.796	1.0 (0.7-1.5)
Procrastination in changing old habits	4	(16.0)	6	(30.0)	1.26	2	0.533	0.6 (0.2-1.7)
Consultants/supervisors/managers don't	0	(0.0)	4	(20.0)	5.50	2	0.064	0.0 (-)
Don't know how	0	(0.0)	4	(19.1)	5.22	2	0.074	0.0 (-)
Don't believe in it	0	(0.0)	0	(0.0)	-	-	-	-
Colleagues don't	0	(0.0)	0	(0.0)	-	-	-	-

Fisher's exact p, two-tailed

Four participants in the IE and six in the DE identified other reasons for not using EBP. The main reason was lack of or limited access to resources at work (7/10). Five specifically mentioned lack of internet access at work and one stated that journals at work were outdated. One participant said there was no evidence in her field of practice and another wrote that searching was 'difficult, time-consuming and slow'.

8.7.2.4 Barriers to EBP

Barriers to EBP at 12 weeks are presented in Figure 11 and Table 77.

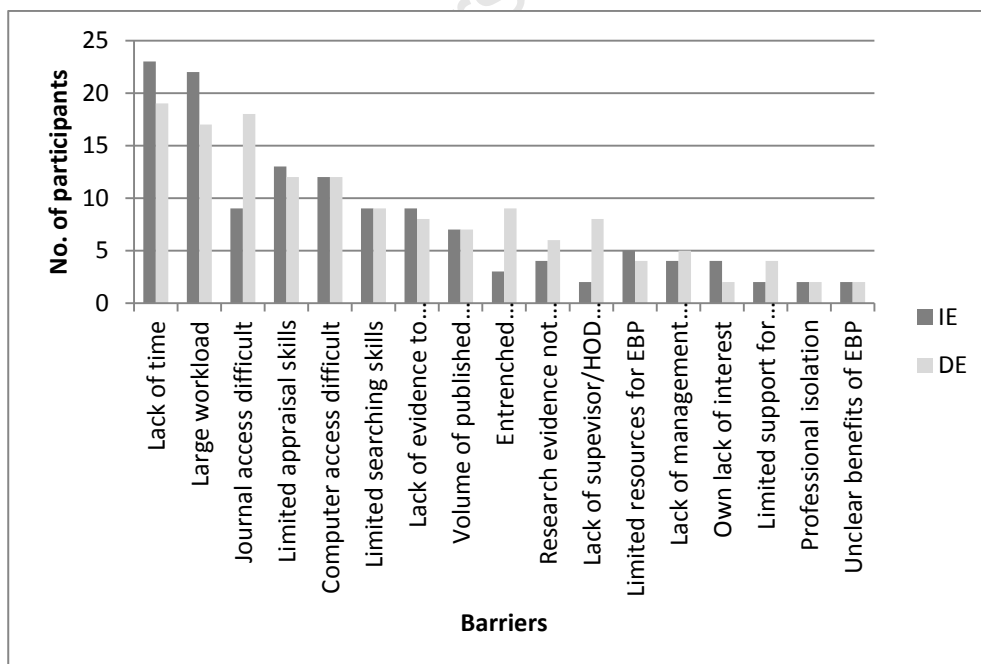


Figure 11: Barriers to EBP for each group

Due to conducting multiple analyses, the Bonferroni correction was used to adjust the critical value to 0.003. One barrier was rated significantly higher for the DE (difficulty accessing journals).

Table 77: Barriers to EBP for each group

Barrier	IE (N=25)**	DE (N=21)**	Chi square	df	p-value	RR (95% CI)
	No. (%)	No. (%)				
Lack of time	23 (92.0)	19 (90.5)			1.000 [*]	1.0 (0.9-1.2)
Large work/caseload	22 (88.0)	17 (81.0)			0.686 [*]	1.1 (0.8-1.4)
Lack of interest and support from supervisor/HoD	2 (8.0)	8 (38.1)			0.028 [*]	0.2 (0.1-0.9)
Lack of interest/support from management	4 (16.0)	5 (23.8)			0.711 [*]	0.7 (0.2-2.2)
Own lack of interest and enthusiasm	4 (16.0)	2 (9.5)			0.673 [*]	1.7 (0.3-8.3)
Professional isolation	2 (8.0)	2 (9.5)			1.000 [*]	0.8 (0.1-5.5)
Entrenched behaviours and habits at work	3 (12.0)	9 (42.9)			0.023 [*]	0.3 (0.1-0.9)
Difficulty accessing a computer	12 (48.0)	12 (57.1)	0.38	1	0.536	0.8 (0.5-1.5)
Difficulty accessing journals	9 (36.0)	18 (85.7)			0.001[*]	0.4 (0.2-0.7)
Limited searching skills	9 (36.0)	9 (42.9)	0.23	1	0.635	0.8 (0.4-1.7)
Limited critical appraisal skills	13 (52.0)	12 (57.1)	0.12	1	0.727	0.9 (0.5-1.5)
Use of research evidence not a priority at workplace	4 (16.0)	6 (28.6)			0.475 [*]	0.6 (0.2-1.7)
Lack of evidence to support what we do in OT	9 (36.0)	8 (38.1)	0.02	1	0.883	0.95 (0.4-2.0)
Limited support for continuing education at work	2 (8.0)	4 (19.1)			0.390 [*]	0.4 (0.1-2.1)
Large volume of published research	7 (28.0)	7 (33.3)	0.15	1	0.695	0.8 (0.4-2.0)
Limited resources and funding to support EBP	5 (20.0)	4 (19.1)			1.000 [*]	1.1 (0.3-3.4)
Benefits and advantages of adopting EBP unclear	2 (8.0)	2 (9.5)	0.03	1	0.855	0.8 (0.1-5.5)

** No missing data

* Fisher's exact p, two-tailed

Similar proportions of participants from each group (IE: 17/24, 70.8%; DE: 15/21, 71.4%) had tried to overcome barriers. This difference was not significant (chi-square=0.00, df=1, p=0.965, RR=0.99, 95% CI: 0.7-1.4). Strategies participants used to overcome barriers included making use of university electronic databases or accessing a university library (9/46, 19.6%), making time at work or at home to conduct searches and read journal articles (15/46, 32.6%), starting or participating in an evidence-based journal club or study group (4/46, 8.7%), practicing appraisal skills (1/46, 2.2%), further training (3/46, 6.5%), requesting computers and internet access (5/46, 10.9%) and asking an experienced therapist for guidance (1/46, 2.2%). One participant wrote: *'we assigned an internet hour per month to the OTs to use internet at home/internet café for better access. We will then share our findings in the department'*.

Table 78 shows preferences for receiving evidence. The first choice for both groups was their work computer and the second was receiving a hard copy. There were no significant differences between the groups.

Table 78: Preference for receiving evidence at 12 weeks

Preference	IE (N=25)	DE (N=21)	Chi square	df	p-value	RR (95% CI)
	No. (%)	No. (%)				
Computer at home	12 (48.0)	5 (23.8)	2.87	1	0.090	2.0 (0.9-4.8)
Computer at work	21 (84.0)	19 (90.5)			0.673*	0.9 (0.7-1.2)
Hard copy	17 (68.0)	14 (66.7)	0.01	1	0.923	1.0 (0.7-1.5)
Other	3 (12.0)	0 (0.0)			0.239*	-

*Fisher's exact p, two-tailed

8.7.2.5 Summary

Analysis revealed a significantly higher PICO score for the IE at 12 weeks but no other significant differences in knowledge. Attitudes to EBP were generally positive in both groups with no significant differences. Most participants felt supported by peers but few felt their practice settings were supportive of EBP. Approximately 40% in each group had started using EBP now and then. There were no significant differences between the groups with regard to accessing evidence or sources of evidence used. Although the IE scored higher than the DE on the 12-week audit, this difference was not significant. The most frequently reported reasons for not using EBP were lack of time and procrastination in changing habits. This was confirmed by the high percentage indicating that the greatest barriers to EBP were lack of time and high caseloads. A significantly higher number of participants in the DE reported difficulty accessing journals as a barrier to EBP. A high proportion of the entire group reported various strategies to overcome barriers but there were no differences between the groups in trying to overcome barriers. The preferred choice for receiving evidence was on work computers followed by a hard copy.

8.7.3 Within-group changes between baseline and 12 weeks

As there were few variables for which significant differences were detected at 12 weeks, a per-protocol analysis was conducted to examine within-group changes to gauge the effects of each intervention. Baseline and 12-week data were compared using the Wilcoxon matched-pairs test.

8.7.3.1 Knowledge

Figure 12 provides a graphical presentation of descriptive statistics for baseline and 12-week total SAFT scores for each group.

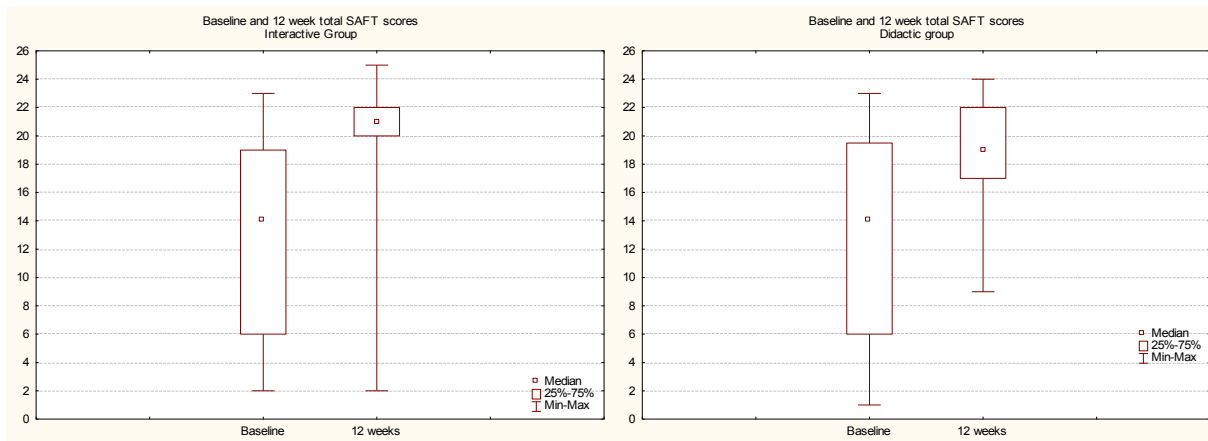


Figure 12: Box-and-whisker plots for baseline and 12-week total SAFT scores

Table 79 shows the results of the analysis of within-group changes in knowledge. SAFT scores increased significantly in both groups, while modified KABQ scores increased significantly in the IE but not the DE.

Table 79: Within-group comparison of knowledge scores

Instrument (possible score)	IE (N=25)					DE (N=21)				
	Baseline	12 weeks	Wilcoxon matched pairs			Baseline	12 weeks	Wilcoxon matched pairs		
	Median (range)	Median (range)	Valid N	T (Z)	p-value	Median (range)	Median (range)	Valid N	T (Z)	p-value
Total score (30)	14.0 (2.0-23.0)	21.0 (2.0-25.0)	23	4.0 (4.08)	<0.001	14.0 (1.0-23.0)	19.0 (9.0-24.0)	17	12.0 (3.05)	0.002
PICO (16)	8.0 (0.0-16.0)	16.0 (0.0-16.0)	22	0.0 (4.12)	<0.001	9.0 (0.0-16.0)	14.0 (3.0-16.0)	19	29.5 (2.64)	0.008
Study design (3)	0.0 (0.0-2.0)	1.0 (0.0-2.0)	12	10.0 (2.27)	0.023	0.0 (0.0-2.0)	2.0 (0.0-2.0)	12	4.0 (2.75)	0.006
Sources of information (11)	4.0 (1.0-6.0)	5.0 (2.0-8.0)	17	42.0 (1.63)	0.102	4.0 (1.0-6.0)	4.0 (1.0-7.0)	13	40.5 (0.35)	0.727
KABQ knowledge score (35)	27.0 (21.0-33.0)	29.0 (20.0-35.0)	23	70.5 (2.05)	0.040	28.0 (23.0-34.0)	28.0 (24.0-35.0)	14	28.0 (1.54)	0.124

Two-tailed p-value

8.7.3.2 Attitudes to EBP

Opinions on the percentage of occupational therapy practice based on evidence related to client outcomes increased significantly between baseline and 12 weeks in the IE but not in the DE (see Table 80).

Table 80: Percentage of occupational therapy practice grounded in evidence

IE (N=25)						DE (N=21)							
Baseline		12 weeks		Wilcoxon matched pairs		Baseline		12 weeks		Wilcoxon matched pairs			
N	Median (range)	N	Median (range)	N	T (Z)	p-level	N	Median (range)	N	Median (range)	N	T (Z)	p-level
23*	40.0 (2.0-75.0)	22*	50.0 (10.0-70.0)	15	23.5 (2.1)	0.038	20#	42.5 (5.0-80.0)	19#	40.0 (10.0-75.0)	13	28.0 (1.2)	0.221

* Missing data for two participants at baseline and three at 12 weeks

Missing data for one participant at baseline and two at 12 weeks

Negative attitudes to EBP decreased significantly in the IE but not the DE (see Table 81).

Table 81: Within-group comparison of modified KABQ attitude scores

Item (possible score)	IE (N=25)					DE (N=21)				
	Baseline	12 weeks	Wilcoxon matched pairs			Baseline	12 weeks	Wilcoxon matched pairs		
	Median (range)	Median (range)	N	T (Z)	p-value	Median (range)	Median (range)	N	T (Z)	p-value
Negative attitudes to EBP (25)	12.0 (9.0-18.0)	11.0 (9.0-18.0)	17	33.0 (2.06)	0.039	11.0 (9.0-16.0)	12.0 (5.0-16.0)	16	66.0 (0.10)	0.917
Positive attitudes to EBP in general (15)	12.5 (9.0-15.0)	13.0 (7.0-15.0)	15	53.0 (0.40)	0.691	13.0 (9.0-15.0)	13.0 (9.0-15.0)	14	26.5 (1.63)	0.103
Usefulness and importance of EBP (10)	8.0 (6.0-10.0)	8.0 (4.0-10.0)	14	48.0 (0.28)	0.778	8.0 (2.0-10.0)	8.0 (6.0-10.0)	8	15.0 (0.42)	0.674

Table 82 compares feelings about incorporating evidence into practice at baseline and 12 weeks.

Table 82: Within-group comparison of readiness to use EBP

Stage of change	IE (N=25)		DE (N=21)	
	Baseline	12 weeks	Baseline	12 weeks
	No. (%)	No. (%)	No. (%)	No. (%)
Routinely use evidence in practice	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Begun using	11 (44.0)	10 (40.0)	9 (45.0)	9 (42.9)
Made plans	4 (16.0)	5 (20.0)	2 (10.0)	4 (19.1)
Thinking about it	9 (36.0)	8 (32.0)	9 (45.0)	6 (28.6)
Not thinking about it	1 (4.0)	2 (8.0)	0 (0.0)	2 (9.5)
Total	25 (100.0)	25 (100.0)	20 (100.0)	21 (100.1)

* Missing data for one participant

The test of marginal homogeneity revealed that the distribution of different values at baseline and 12 weeks were equally likely (MH statistic=64.0, SE=3.5, p=0.886).

Table 83 tracks the movement (or lack thereof) of participants across the stages of readiness to use EBP. Figures on the diagonal in bold italics indicate participants who remained at the same stage (n=23), while those above the diagonal progressed in their readiness to use EBP (n=10) and those below it regressed (n=12).

Table 83: Changes in readiness to use EBP

Readiness to use EBP at baseline	Readiness to use EBP at 12 weeks				Total
	Not thinking about using EBP	Thinking about using EBP	Started making plans to use EBP	Begun using EBP now and then	
Not thinking about using EBP	1	0	0	0	1
Thinking about using EBP	2	8	3	5	18
Started making plans to use EBP	0	2	2	2	6
Begun using EBP now and then	0	4	4	12	20
Total	3	14	9	19	45

8.7.3.3 EBP behaviour

Changes in behaviour scores are shown in Table 84. The within-group change in audit score was significant for the IE but not the DE.

Table 84: Within-group comparison of EBP behaviour scores

Instrument & sub-scale (possible score)	IE (N=25)					DE (N=21)				
	Baseline	12 weeks	Wilcoxon matched pairs			Baseline	12 weeks	Wilcoxon matched pairs		
	Median (range)	Median (range)	N	T (Z)	p-value	Median (range)	Median (range)	N	T (Z)	p-value
KABQ: Sources of information used (45)	15.5 (11.0-31.0)	17.0 (11.0-24.0)	23	124.0 (0.43)	0.670	15.0 (10.0-28.0)	15.0 (10.0-21.0)	16	58.0 (0.52)	0.605
KABQ: Impact of EBP on practice (35)	19.0 (12.0-29.0)	22.0 (14.0-30.0)	23	80.5 (1.75)	0.080	20.0 (13.0-26.0)	21.0 (13.0-25.0)	17	64.5 (0.57)	0.570
	IE (N=22)					DE (N=18)				
Audit	41.4 (13.7-60.0)	44.7 (20.0-76.0)	22	64.5 (2.01)	0.044	35.0 (22.7-76.0)	39.9 (23.0-68.0)	18	73.5 (0.52)	0.601

Figure 13 presents box-and-whisker plots of the descriptive characteristics of baseline and 12 week audit scores for each group.

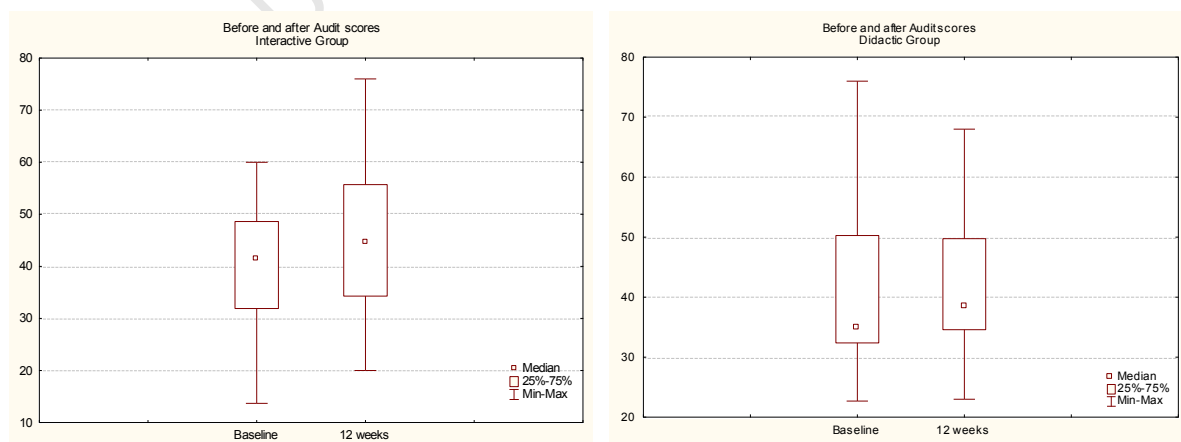


Figure 13: Box-and-whisker plots for baseline and 12 week audit scores

A comparison of descriptive data for numerical modified KABQ behaviour items is shown in Table 85. The median time spent looking for evidence for the most recent client improved by five minutes in the IE but deteriorated by five minutes in the DE. The perceived frequency of needing evidence decreased in both groups. Median scores for the remaining items remained consistent in the IE but deteriorated in two of the four items in the DE.

Table 85: Within-group comparison of modified KABQ behaviour items

Item	IE				DE			
	Baseline		12 weeks		Baseline		12 weeks	
	N	Median (range)	N	Median (range)	N	Median (range)	N	Median (range)
Frequency of needing evidence (times per month)	22	5.5 (1.0-31.0)	24	3.0 (1.0-15.0)	19	5.0 (0.0-50.0)	20	4.0 (1.0-15.0)
Average frequency looking up evidence (monthly)	24	2.0 (1.0-10.0)	25	2.0 (0.0-7.0)	19	2.0 (0.0-5.0)	19	1.0 (0.0-6.0)
Average time spent looking for evidence (minutes)	23	30.0 (5.0-120.0)	25	30.0 (5.0-240.0)	20	30.0 (0.0-50.0)	20	45.0 (10.0-120.0)
Time spent looking for evidence for most recent client (minutes)	23	30.0 (5.0-120.0)	24	25.0 (5.0-120.0)	19	30.0 (5.0-180.0)	20	35.0 (5.0-120.0)
Time since looking for evidence for above-mentioned client (weeks)	22	3.0 (0.6-52.0)	24	3.0 (1.0-16.0)	18	4.0 (1.0-28.0)	20	4.0 (1.0-32.0)

The Wilcoxon matched-pairs test revealed no significant within-group differences (see Table 86).

Table 86: Within-group changes in numerical modified KABQ behaviour items

Item	IE				DE			
	N	T	Z	p-level	N	T	Z	p-level
Frequency of needing evidence (times per month)	18	45.5	1.74	0.082	16	44.5	1.22	0.224
Frequency of looking up evidence (times per month)	15	42.0	1.02	0.307	14	39.0	0.85	0.397
Time spent finding/ looking for evidence (minutes)	17	71.5	0.24	0.813	12	14.5	1.92	0.055
Time looking for evidence for client (minutes)	15	49.5	0.60	0.551	15	55.5	0.26	0.798
Time since looking for evidence (weeks)	18	70.0	0.68	0.500	13	42.0	0.24	0.807

8.7.3.4 Summary

Knowledge, attitude and behaviour scores for each group were not significantly different at baseline or 12 weeks. Within-group differences were examined to evaluate whether there were any indications of one intervention being more effective than the other. Within-group improvements in knowledge on the SAFT were significant for both groups. In addition, the IE showed a significant increase in modified KABQ knowledge scores, the attitude item 'percentage

of occupational therapy practice grounded on evidence', the negative attitude sub-scale (reduction in negative attitudes to EBP) and audit scores.

8.7.4 Assessment of the OT EBP trial

The quality of the OTEBP trial was evaluated using a risk of bias table (Higgins and Altman, 2008) which is shown in Table 87.

Table 87: Risk of bias table for OTEBP study

Entry	Judgement	Description
Adequate sequence generation?	Yes	Detailed description of procedure used for coin tossing. Matched pairs were used to ensure equal allocations to each group. To reduce the likelihood of allocations being changed, the PI and research assistant conducted the coin tossing procedure together.
Allocation concealment?	No	Coin tossing used, therefore no concealment was applied. Involved a second person in generating the allocation sequence to reduce the risk of allocation bias.
Blinding? (participant reported outcomes)	Yes	Outcome assessors for the audit were blinded. The SAFT was scored independently by the PI and a research assistant. The research assistant grading the SAFT was blinded to allocation. Questionnaires were numbered so participants names could not be linked to their responses. The PI ensured the list that linked names and numbers was not referred to when she graded the SAFT. Participants were not blinded but were not given any information about which intervention was considered more effective. The provider of both interventions was the PI who could not be blinded. To prevent too much variation between repeats of sessions and to ensure that the IE and DE were conducted as planned, an observer attended every session and rated the provider using a checklist. Observations on each session were also recorded. The PI conducted the analysis and therefore blinding was not possible.
Incomplete outcome data addressed?	Yes	At 12 weeks, 5/30 missing from IE (5 lost to follow up – reasons reported on CONSORT flow diagram) and 7/28 missing from DE (5 lost to follow-up – reasons reported on CONSORT flow diagram, and 2 missing questionnaires).
Free of selective reporting	Yes	CONSORT 2010 adhered to in reporting. All outcomes reported. Non-significant findings included.
Free of other bias?	Yes	Analysis showed that groups were similar in all characteristics at baseline. The study ended at 12 weeks as planned.

The risk of bias was low. Although lack of allocation concealment could potentially have introduced bias, the analysis showed that the groups were similar at baseline in all respects. The likelihood of allocation bias is therefore low indicating that any changes that occurred in either group can reasonably be attributed to the intervention.

8.8 Discussion

The OTEBP trial compared the effectiveness of an IE and DE in improving EBP knowledge, attitudes and behaviour in occupational therapists at 12 weeks. This study is, to the PIs knowledge, the first RCT investigating the effectiveness of educational interventions with occupational therapists. It is also the first trial of this nature to be conducted with occupational therapists in a resource-

constrained context. In this regard, the study provides valuable information for the occupational therapy profession.

The trial results are discussed in five sections. The first section provides a summary of the main findings and the second outlines the profile of the study participants. Section three discusses the effectiveness of the educational interventions in improving EBP knowledge, attitudes and behaviour by presenting the differences between the groups at the end of the trial and examining the within-group changes that occurred. Section four discusses the generalisability of the findings and section five focuses on the strengths and limitations of the trial.

8.8.1 Main findings of the trial

The lack of significant differences between the IE and DE at 12 weeks was disappointing and suggests equivalence of the two interventions. This concurs with a systematic review (Forsetlund *et al.*, 2009) which identified one study that compared didactic and interactive educational interventions and found no significant differences between them. Possible reasons for this finding are discussed in section 8.8.3. To determine any trends towards one intervention being more effective, within-group changes were examined. These revealed significant improvements in total SAFT scores (knowledge) in both groups. The IE also improved significantly in the modified KABQ knowledge sub-scale, an attitude item and sub-scale, and audit (objective behaviour) scores suggesting it may have potential to be more effective than the DE. This deduction supports the conclusion of the systematic review that interventions with some interaction are more effective (Forsetlund *et al.*, 2009), but this needs to be tested in a larger trial. The findings are discussed in more detail in section 8.8.3.

8.8.2 Profile of participants and sample size

Demographic and practice profiles for participants were well matched in each group at baseline as shown by the lack of significant differences for these variables. Missing data for participants lost to follow up at 12 weeks were not imputed and therefore participants with missing outcomes were excluded in the 12-week analysis. In so doing, however, the power of the trial was reduced further as the original sample size was already smaller than required. At the end of the trial, complete

outcome data were available for 25 participants in the IE and 21 in the DE for the primary outcome, and all secondary outcomes apart from audit data for which there were 22 in the IE and 18 in the DE. These numbers are substantially lower than the calculated sample size of 55 for each group and may have prevented some of the analyses from reaching statistical significance. This was difficult to avoid due to the lack of information about the primary outcome measure to calculate the sample size prior to recruitment. Although the maximum possible number of participants was recruited, this was insufficient. One way of overcoming this problem would be to include occupational therapists working in other sectors such as education or private practice. However, this would have increased the complexity of conducting the trial.

8.8.3 Effectiveness of the IE and DE in increasing EBP knowledge, attitudes and behaviour

8.8.3.1 EBP knowledge

The low level of knowledge at baseline was expected considering the few occupational therapists who had received EBP training and the limited opportunities available reported in Chapter 4. This finding is consistent with several other studies of occupational therapists (Bennett *et al.*, 2003b, McCluskey, 2003b, Sweetland and Craik, 2001, Upton, 1999a, Upton and Upton, 2006) and is not unique to SA. The wide confidence intervals in baseline SAFT scores (refer to Figure 12) were probably due to the small sample size. As the SAFT was modified from the AFT (McCluskey and Bishop, 2009, McCluskey and Lovarini, 2005), direct comparisons with the AFT cannot be made although trends can be determined. A before-after study of Australian occupational therapists reported low baseline AFT scores with only 19% of the sample (N=114) obtaining a score of 50% (McCluskey and Lovarini, 2005). Of the total OTEBP trial sample, 48% scored at least 50% on the SAFT. As the SAFT was simplified because of the anticipated low EBP knowledge, it was reasonable to expect SAFT scores to be higher than AFT scores.

Although median SAFT scores improved substantially between baseline and 12 weeks in both groups, these changes were not significant when 12-week scores were compared. Two of the 81 studies included in a systematic review of educational interventions (Forsetlund *et al.*, 2009) compared interactive and didactic educational interventions. One of the two studies had low or moderate risk of bias, and found larger improvements in the interactive group but reported that

these were not significant. This finding is supported by the OTEBP trial. Examination of within-group changes in the OTEBP trial revealed that both interventions significantly improved SAFT scores, but the IE also showed a significant improvement in modified KABQ knowledge scores. Forsetlund *et al* (2009) concluded that overall, educational interventions are more effective when an interactive component is included. Within-group changes in the OTEBP trial suggest that the IE may have been more effective, and that had a larger sample size been used, significant improvements in knowledge may have been detected at 12 weeks. Improvement in DE SAFT scores probably occurred because baseline knowledge was low and therefore any mode of education was likely to make a difference. A before-after study of occupational therapists in Australia similarly reported a significant improvement in knowledge (improved AFT scores) immediately after an interactive EBP workshop and eight months later (McCluskey and Lovarini, 2005).

8.8.3.2 Attitudes to EBP

Participants had positive attitudes towards EBP as shown by the high percentage supporting its principles, being willing to use it, and agreeing it was the future standard of care. However, few found it easy to find evidence and many felt it took too much time. This finding concurs with studies in Australia, Canada, the UK and the US which identified time as the greatest barrier to implementing EBOT (Bennett *et al.*, 2003b, Curtin and Jaramazovic, 2001, Dubouloz *et al.*, 1999, Dysart and Tomlin, 2002, Humphris *et al.*, 2000, McCluskey, 2003b, Salls *et al.*, 2009, Upton, 1999b).

The lack of significant differences between the groups in attitude scores at 12 weeks shows that neither intervention had any effect on attitudes. Some significant changes in attitudes were identified in the IE for the within-group analysis suggesting that the IE may have been more effective in shifting attitudes than the DE. There were no significant differences in the number of participants at each stage of implementing EBP. Unlike the study by McCluskey and Lovarini (2005) where most participants moved from the stage of contemplation to the stage of action, there was very limited movement across the stages of implementing EBP in the current trial. According to Smith *et al* (2004) changing behaviour at the individual level requires the individual to identify the need for change as well as the motivation to move from the stage of contemplation to action.

They concluded that not everyone involved in a programme aimed at changing practice will actually implement the changes recommended (Smith *et al.*, 2004). The greater emphasis on knowledge and skills in the two interventions in the OTEBP trial and the limited time available, precluded time being spent on specific strategies to change attitudes positively.

More participants in the IE felt supported by peers and management in accessing and using evidence but these differences were not significant. This finding concurs with that of Stevenson *et al.* (2004) who found that a greater number of physiotherapists receiving an evidence-based education intervention compared to a standard in-service training programme felt they had support from managers at three and six months.

8.8.3.3 EBP behaviour

At 12 weeks, more than 70% in each group reported success finding evidence but most had found it on the internet or in a textbook. Few had referred to research articles but there was an increase in the number who had accessed articles in the Cochrane database/OTseeker. Although many reported that the evidence had increased their understanding of the client, it did not seem to affect their client management or outcomes. Additionally, EBP was not discussed or raised by many in ward rounds, team meetings or clinics. Almost all participants reported difficulty using EBP in the previous month and few considered it a routine part of their work, but the majority felt confident in their decision-making suggesting strong reliance on clinical experience. A study of occupational therapists (McCluskey and Lovarini, 2005) and one of public health physicians (Forsetlund *et al.*, 2003) similarly found little difference in EBP behaviour after an educational intervention, even with a follow-up period of 1.5 years. Forsetlund *et al.* (2003) concluded that despite the lack of behaviour change, changes in knowledge and attitudes may precede changes in behaviour. This view was supported by McCluskey and Lovarini (2005) who emphasised that application of EBP requires 'a major change in values and priorities, habits and routines' at both individual and organisational levels.

In support of the survey findings (chapter 4), most participants had access to all sources of information but some only had access outside work. Unsurprisingly, the least accessible sources were journals, libraries, search facilities and the internet, and the most-used sources were

textbooks and colleagues. This is similar to studies of occupational therapists elsewhere (Bennett *et al.*, 2003b, Curtin and Jaramazovic, 2001, McCluskey, 2003b, Salls *et al.*, 2009). Although there were no significant changes in EBP use or sources of information used in the IE or DE, at 12 weeks, there was an increase in the proportion using textbooks in the IE. Reliance on textbooks has been reported in studies of other health professionals. For example, a study involving doctors in five developing countries showed the most common source of information to guide practice in treating pneumonia was textbooks with computer searches hardly being used (Page *et al.*, 2000). Although the IE indicated a greater need for evidence at 12 weeks, their frequency of looking for evidence remained unchanged, while the frequency of needing and looking for evidence decreased in the DE. These differences were however, not significant. This finding compares to McCluskey and Lovarini's (2005) findings of a significant reduction in the proportion of occupational therapists searching for evidence after an EBP workshop. They concluded that the intervention had not been successful in changing behaviour in research use. By contrast, a multifaceted EBM intervention with 47 doctors in a department of medicine in the UK, was effective in improving practice (Straus *et al.*, 2005). Interestingly, none of the doctors involved in this study had prior EBM training and yet, after seven hours of training, significantly more of their patients received interventions shown to be beneficial in RCTs (Straus *et al.*, 2005).

The greatest barrier to EBP in both groups in the OTEBP trial was time which has been reported as a major barrier to EBP in previous studies (Bennett *et al.*, 2003b, Curtin and Jaramazovic, 2001, Humphris *et al.*, 2000, McCluskey, 2003b, Metcalfe *et al.*, 2001, Upton, 1999c). Interestingly, educational interventions have not been effective in addressing time as a barrier to EBP as evidenced in a before-after study where a significantly higher number of occupational therapists reported time as a barrier after attending an EBP workshop. This concern had not diminished at follow-up eight months later (McCluskey and Lovarini, 2005). The second highest barrier in the OTEBP trial was a large work/caseload which would result in less time for other activities, such as EBP, and is therefore likely to be closely associated with lack of time. Workload pressures and large caseloads have previously been identified as barriers to EBOT (Humphris *et al.*, 2000, McCluskey, 2003b). As an item on barriers was not included in the baseline questionnaire, changes could not be identified.

Confirming the findings of McCluskey and Lovarini (2005), more participants reported limited appraisal skills compared to search skills. This is not surprising as it is likely that more time is spent searching for information than appraising it due to the greater amount of time and effort required for critical appraisal. Most participants in McCluskey and Lovarini's (2005) study, recognised that confidence in appraising research requires practicing appraisal skills which demands more time in an already busy work schedule. Lack of EBP knowledge, and or skills, is not unique to occupational therapists in SA and has been reported in studies of occupational therapists in Canada, Australia, the UK and the US (Bennett *et al.*, 2003b, Dubouloz *et al.*, 1999, Dysart and Tomlin, 2002, McCluskey, 2003b, Pain *et al.*, 2004). Lack of confidence in search and appraisal skills can be overcome as shown in a study of physiotherapists where confidence levels increased significantly six months after attending an EBP educational intervention compared with those who received a standard in-service training programme (Stevenson *et al.*, 2004).

Lack of access to information sources was identified as a barrier for over 50% of participants in the OTEBP trial. Lack of access to a computer and journals at work were of particular concern to participants. Lack of appropriate resources (Curtin and Jaramazovic, 2001, Salls *et al.*, 2009) and lack of convenient access to resources (Dysart and Tomlin, 2002, McCluskey, 2003b) have been acknowledged as barriers to EBP. Unlike previous studies (Dubouloz *et al.*, 1999, Salls *et al.*, 2009), lack of support was not considered a barrier by many participants. Lack of evidence to support occupational therapy practice was perceived to be a barrier by 37% in the OTEBP trial, and concurs with previous occupational therapy studies (Bennett *et al.*, 2003b, McCluskey, 2003b, Pain *et al.*, 2004).

As pointed out by Dans *et al* (2004), while most barriers to EBP may appear daunting, creative ways of overcoming them should be devised so that patients receive the best possible care. For example, in response to limited access to electronic databases, Philippine doctors embarked on an active process of convincing administrative heads that access to such databases would help them in their practice. Although this process took a long time, it culminated in the provision of access to the databases they required (Dans *et al.*, 2004). The high number of participants who had tried to overcome barriers to EBP was encouraging. They reported a variety of strategies such as accessing university libraries or electronic databases; making time to search for and read articles; requesting

computers and internet access; starting or participating in evidence-based journal clubs or study groups; getting further training; and, practicing skills. Participants tried to be pro-active in overcoming barriers rather than allowing these to deter them from trying to use EBP. Similar strategies have been identified in previous studies. Humphris *et al* (2000) and Upton (1999c) identified time at work for research activities as enablers of EBP. Other enablers include education sessions on using research findings (Curtin and Jaramazovic, 2001, Humphris *et al.*, 2000, Salls *et al.*, 2009), commitment from management (Upton, 1999c), access to relevant resources (Curtin and Jaramazovic, 2001, Upton, 1999c) and more effective dissemination of evidence (Upton, 1999c). Five participants in the OTEBP study requested computers and internet access, but some were unsuccessful. Lack of access to the internet and electronic databases to locate evidence at work when such information is needed is an important barrier to EBP and should be addressed by the DOH.

A significantly higher number in the DE group reported difficulty accessing journals as a barrier to EBP. It could be that the DE was less effective in addressing strategies to overcome this barrier. The IE included a small group activity in which participants identified the barriers they encountered in their workplace and suggested strategies they could implement to overcome them, whereas the DE was given a list of possible ways in which they could start using EBP. The DE did not require participants to examine perceived barriers or consider ways in which these could be addressed. Although barriers were not measured at baseline, another possibility is that the DE differed from the IE in this respect. This finding concurs with the assertion of Stevenson *et al* (2004) that a lack of skills rather than attitudes is the main barrier to implementing EBP. Strategies to target practical needs should therefore be developed and included in educational interventions.

The low median audit scores at baseline and 12-weeks show that participants were not documenting their practice sufficiently to enable them to use their documents as evidence. Incomplete documentation was similarly identified in an audit of occupational therapy stroke records at an academic hospital in SA (Mlambo *et al.*, 2004). The researchers concluded that appropriate documentation 'cannot be over-emphasised, especially in this era of evidence-based practice' (Mlambo *et al.*, 2004, p 13). It was disappointing that there were no significant improvements in audit scores at 12 weeks particularly considering that the second session of IE

contained a discussion session on evidence-based record-keeping. The significant within-group improvement in audit scores in the IE suggests that this intervention was more successful in changing behaviour in documentation. A post-hoc power calculation revealed that the study was underpowered and therefore significant changes may have occurred but were not detected because the sample size was too small (type II error). Had the sample size been larger, significant changes may have been identified.

It is acknowledged that a 12-week period is too short to expect a noticeable change in practice. A RCT of public health physicians in Norway found no change in application of evidence 18 months after an intervention even though EBP knowledge improved (Forsetlund *et al.*, 2003). They commented that this time period may have been too short to detect the use of evidence in practice. McCluskey and Lovarini (2005) measured outcomes immediately after an educational workshop and eight months later and similarly found that while knowledge and skills had improved, there was no change in practice. A cluster RCT conducted in Mexico City found that improved knowledge and skills in using the WHO Reproductive Health Library (RHL) resulted in greater access to and use of the RHL but did not lead to any substantial changes in practice within four to six months (Gulmezoglu *et al.*, 2006). On the other hand, a SA study established that a focused programme was effective in changing some aspects of obstetric practice but the researchers emphasised the importance of individual, social and organisational factors in effecting behaviour change (Smith *et al.*, 2004). Considering the rapid staff turnover, the state of flux in the SA health system, and the timing of the training in this study, it was not feasible to measure the outcomes beyond three months due to the likelihood of a high loss of participants to follow-up. It was therefore encouraging that a significant within-group improvement in knowledge was identified in the IE. Had the sample size been larger, a significant difference in 12-week knowledge scores between the groups may have been detected. The significant within-group increase in mean audit score in the IE was not anticipated, but is again encouraging in light of the short period of follow-up and the limited intervention. This finding runs counter to the assertion of Smith *et al.* (2004, p 119) that 'change is an unpredictable process that requires time and sustained effort' and that trials aimed at changing practice should therefore not have short follow-up periods. The results support the role of limited interventions in resource-constrained healthcare contexts in the short term. The sustainability of these effects over a longer period of time needs to be established.

8.8.4 Generalisability

The context for the OTEBP trial is described in 8.5 and the Methods and Results sections so that researchers and clinicians can determine the similarity of their populations to that of the current study. Baseline comparisons on identified prognostic indicators (refer to Table 55) are also useful in this regard. Findings may be generalised to occupational therapists working in the public health sector in the Western Cape and other urban areas in SA. As the intervention was not context-specific, there is no reason to expect that findings cannot be generalised to occupational therapists employed in the public health sector in rural areas excepting that resources may be even more limited. The extent to which the findings are applicable to occupational therapists working in other sectors, such as private practice, or other government departments, such as the Department of Education, is uncertain. Study findings may apply to other resource-constrained contexts in which occupational therapists work.

The fact that participants were self-selected due to the ethical requirement of obtaining informed consent means that the effects of the intervention may have been biased towards a more positive result as these participants may have been more motivated to learn about and apply EBP than those who declined. Findings may therefore not be generalisable to all occupational therapists but rather to those who are at least interested in learning more about EBP.

8.8.5 Strengths and limitations

Strengths of the trial include careful reporting by adhering to CONSORT 2010 (Moher *et al.*, 2010, Schulz *et al.*, 2010) and its extension for pragmatic trials (Zwarenstein *et al.*, 2008), and the use of an ITT analysis. According to Moher *et al.* (2010) an ITT analysis should include two conditions. Firstly all participants must be included in the analysis and secondly, all participants must be analysed in their allocated groups. Care was taken to ensure that participants were analysed in their allocated groups. Attrition bias was dealt with by reporting the number of participants lost to follow-up and their reasons for not completing the trial. All participants were accounted for at the end of trial and the CONSORT flow diagram included numbers of participants at each stage of the trial.

Five participants were lost to follow-up in each group and, at the end of the trial two 12-week questionnaires were missing for the DE. Data from the missing questionnaires could not be collected again as it was past the 12-week outcome measurement period. Analysis of change between baseline and 12 weeks therefore only included participants who had completed baseline and 12-week questionnaires and audits (per-protocol analysis). While methods for imputing⁸¹ missing data may allow an ITT analysis to be conducted in its absolute form, these were not used in the OTEBP study as they rely on making assumptions about the missing data which introduces uncertainty and the possibility of bias (Hollis and Campbell, 1999, Moher *et al.*, 2010). Conversely, excluding participants with missing outcome data from the analysis may have introduced bias if participants were lost to follow-up due to the intervention (Moher *et al.*, 2010). This is problematic if the number of participants lost to follow-up, or reasons for dropping out, differs between groups (Moher *et al.*, 2010). In trials where the data for all participants is not included in the analysis, the number excluded must be reported and the possibility of attrition bias discussed (Juni *et al.*, 2001). In the OTEBP trial, the numbers lost to follow-up in each group and the reasons for non-completion were similar. It is therefore unlikely that participants left the study because of the interventions.

A third strength of the study was the comparison of an IE with a DE, rather than against no intervention. This allowed the PI to determine whether a shorter intervention (DE) could be equally effective in a resource-constrained setting where cost-effectiveness is paramount. This decision was based on a systematic review that concluded that interactive educational interventions were more likely to be effective than didactic ones but that the latter could have an effect on practice (Forsetlund *et al.*, 2009). The OTEBP study enables comparison of a more intensive (IE) and a less intensive (DE) intervention by providing details of the interventions such as group size, number and length of sessions, and follow-up period as outlined in the implications for research in the aforementioned systematic review (Forsetlund *et al.*, 2009).

⁸¹ Information for the missing outcomes is estimated based on other information collected.

A fourth strength of the study was the inclusion of both subjective and objective measurements of knowledge and behaviour as in the study by Gülmezoglu *et al* (2006). A number of previous educational evaluation studies have relied on self-reports which can over-estimate the actual practice situation (Gulmezoglu *et al.*, 2006). Having an objective measure of behaviour provided a more accurate idea of the extent to which EBP was being implemented. Pilot testing of the instruments revealed sufficient validity and reliability for measuring the trial outcomes. The primary outcome instrument (SAFT) had good to excellent reliability and a large effect size, and was therefore able to detect clinically important change over time (Jerosch-Herold, 2005, Kirshner and Guyatt, 1985). Secondary outcome measures had at least fair test-retest reliability thereby providing adequate confidence that changes occurring between baseline and 12 weeks could be attributed to the intervention. Although the audit checklist had reasonable IRR, this was further improved by the PI checking that audit ratings were applied consistently for each record. The effect size for the audit checklist was small which could indicate that the intervention did not result in any change or alternatively that the change was not clinically significant. However, a significant within-group change occurred in the IE. It is therefore reasonable to assume that the audit checklist was responsive but that the change that occurred was not clinically significant.

To reduce the risk of detection bias in the OTEBP trial, outcome assessors for the audit were blinded. Although the PI scored the SAFT (primary outcome) the questionnaires were numbered and the list linking participant names and numbers was not referred to during scoring. As this could raise questions about bias being introduced, the study would have been improved by having a blinded assessor scoring the SAFT. Blinding of the provider and data analyst was not possible as both functions were performed by the PI. To reduce the risk of bias resulting from the PI also being the provider, an observer attended all intervention sessions and checked that the planned format was adhered to by checking items against a standard checklist. Analysis was checked several times for accuracy by the PI and discussed with an external statistician.

Although participants were not blinded to allocation, no information was given as to which intervention was thought to be more effective, thereby decreasing the risk of performance bias. To decrease the possibility of other variables influencing the study outcomes, the 'teacher' and 'classroom' were kept consistent for the IE and the DE, apart from the first half of session 1 for the

IE, which was conducted in a computer laboratory. The PI conducted the educational interventions for the IE and the DE except for the appraisal session for session 1 of the IE. The main difference between the groups was in the participants (learners).

The failure of the trial to detect significant changes in knowledge, attitudes or behaviour between the IE and DE, was probably due to the small sample size. This resulted in the trial being under-powered⁸² thereby increasing the likelihood of committing a type II error. As there were no data available for the primary outcome measure which was modified for the study, the sample size required in each group was unknown at the start of the trial. Enrolling sufficient numbers to obtain statistically significant results has been acknowledged as a challenge in educational studies (Hutchinson, 1999). Contamination was difficult if not impossible to prevent. For example, it was possible that in larger occupational therapy departments, participants who were allocated to different groups may have discussed the training they received. In addition, due to the fact that the profession is quite small and the trial was conducted in a relatively small geographic area, there is a high chance that participants could have had contact with each other either socially or at other work- or profession-related activities. For instance, participants may have belonged to an interest group in their area of practice, or those working alone at a site may have established regular contact with other participants. Appreciating that cross-contamination between intervention and control groups is difficult to avoid (Hutchinson, 1999), no attempt was made to prevent exchange of information between participants as this would be expected to occur in 'usual' practice which is acceptable in pragmatic trials (MacPherson, 2004, Roland and Torgerson, 1998, Zwarenstein *et al.*, 2008). This may have resulted in knowledge improving in both groups.

Selection bias was addressed using coin-tossing to generate the random allocation sequence. Although coin-tossing is considered a reasonable approach for generating a randomisation sequence, it is possible to change the results of a toss (Schulz and Grimes, 2002b). In addition, as coin-tossing is a manual method, there is no way of checking that the allocation was unbiased. Ideally, to ensure that an allocation sequence is concealed, the person generating the sequence should be different from the person enrolling and assigning participants (Schulz and Grimes, 2002a, Torgerson and Roberts, 1999). Distant randomisation procedures that are separate from

⁸² A power calculation revealed the trial was powered at 43%.

the people conducting a trial are considered more rigorous than those generated locally (Schulz and Grimes, 2002a). As coin tossing is not a distant randomisation process, doubt could be cast on the rigour of the process of allocation. This lack of allocation concealment could have resulted in selection bias had the PI and research coordinator tampered with the allocation which would have influenced the study results (Roberts and Torgerson, 1998). At the time of deciding on the method of generating the randomisation sequence, using a computer seemed complex considering that matched-pair sampling was used. In retrospect, allocation concealment could have been implemented using computer-generated numbers to allocate individuals in a matched-pair, or sealed opaque envelopes arranged in pairs, with 'heads' or tails' inside each envelope could have been opened by a person external to the trial. The main purpose of randomisation is to ensure that participant characteristics that may influence outcomes are distributed randomly between groups. In so doing, bias is avoided and any differences in the trial outcomes can be attributed to the intervention rather than other variables (Boynton and Greenhalgh, 2004). Participants in each group were similar at baseline on all prognostic variables. Therefore, any changes that occurred can be attributed to the intervention rather than any imbalances in prognostic variables in each group.

One of the biggest challenges in the OTEBP trial was that, being conducted towards a higher degree, the PI took on a number of roles including recruiting and enrolling participants, managing the trial process, developing the instruments, designing and conducting interventions, and managing, entering and analysing data. The success of a trial is often dependent on practical aspects, such as marketing, communication, systems and procedures, as well as a skilled and enthusiastic team to ensure the steps in the trial process are conducted systematically, (Farrell, 1998). The size and composition of a trial team varies, but usually consists of a PI, a trial coordinator or manager, trial programmer, data manager, statistician and secretary (World Health Organization, 2003). In the OTEBP trial, there was a research coordinator who assisted in marketing, communication, enrolment, random allocation, delivery and collection of questionnaires and arranging the interventions. The PI was both investigator and trial manager and also managed, captured and analysed the data. Two research assistants were appointed to conduct the audits, one of whom also assisted in delivery and collection of baseline questionnaires. As the PI had had no previous experience in conducting a trial, she attended a

clinical trials course prior to starting the OTEBP trial which provided opportunities to plan the trial details in consultation with two trial experts.

An additional limitation is that participants were contacted to advise them which records had been selected for audit. This was done to ensure that these records would be available on the day of audit as in some facilities the records were kept in the patient's hospital folder which had to be booked a few days in advance. This may have led to bias if the records were altered in any way, but there was no evidence thereof.

8.9 Conclusion

The trial findings showed that while both interventions had some effect, within-group changes suggested that the IE may have potential to be more effective than the DE but this would need to be tested in a larger trial. This supports the inclusion of an interactive component to maximise the effectiveness of educational interventions. It also suggests that interactive training is worthwhile for occupational therapists in SA. The IE resulted in improved within-group EBP knowledge, attitudes and behaviour, but failed to show a significant difference compared to the DE at 12 weeks. This may have been due to the small sample size. As the control group also received an intervention, improvements in knowledge may have been larger than had no intervention been provided. The results suggest that brief EBP training of six hours is useful in resource-constrained contexts but a larger trial is required to detect whether changes in other variables may occur and the significance of these changes.

The study additionally demonstrates that high-quality pragmatic RCTs can be conducted in a resource-constrained context within the public health sector. Further trials should be performed in resource-constrained countries so that evidence can be generated in these contexts and incorporated into existing systematic reviews in the future. This move will make a substantial contribution towards occupational therapy becoming an evidence-based profession globally.

Chapter 9: Summary, recommendations and conclusion

9.1 About this chapter

This chapter forms the conclusion to the thesis. Findings from the three studies constituting the thesis are discussed and recommendations emerging from each study are presented in terms of their implications for practice, education and research. Finally, the overall conclusions are presented.

9.2 Summary of the results of each study

The main findings of the three studies included in the thesis are presented in consecutive order.

9.2.1 Study 1: EBP perceptions, skills and behaviour among occupational therapists in SA

The survey found that occupational therapists in SA have positive perceptions about EBP but lack confidence in the skills required to implement it. This lack of confidence related to their limited EBP knowledge and skills. Particular gaps respondents identified were knowledge about EBP internet resources, appraisal skills and *The Cochrane Library*. Few were able to find articles in their areas of practice and even fewer could apply study findings to their practice. The regression analysis suggested that those over 30 years of age or with more than five years' experience were more able to apply evidence. Most respondents had not received EBP training. The positivity towards EBP does not reflect the ambiguity towards EBP evident in the literature and provides support for further training activities to facilitate the implementation of EBP.

Despite having access to almost all sources of information, respondents relied more on their own clinical experience than research evidence. The majority had internet and journal access but only slightly more than half had access to an academic library. Few were regularly using research articles or the internet. Convenience of internet access and its availability at work was not included in the questionnaire; it is therefore possible that respondents did not have access in their immediate work setting. As the survey response rate was low, it is likely that the results may not accurately represent the population of occupational therapists in SA. For example, those with

more knowledge about EBP, or those who were more positive about participating in the research, may have been more likely to respond. If this was the case, the survey findings represent the 'best case scenario', and the true picture is less optimistic than what is reported here.

The findings support previous occupational therapy studies suggesting that South African occupational therapists experience similar constraints in implementing EBP. The main barriers were time, convenient access to the internet and literature, knowledge and skills in EBP and support from employers. Respondents had mainly heard about EBP at conferences or through colleagues and less than half through journals or newsletters. Most felt EBP was an important priority for the future and felt workshops, short in-service training sessions and brief summaries of evidence were most appropriate for future EBP training. The preferred method for moving from opinion-based to evidence-based practice was evidence-based summaries of occupational therapy interventions. Few indicated a desire to learn the skills required to search for and appraise research. These findings formed the impetus for examining effective methods of educating occupational therapists about EBP.

9.2.2 Study 2: Developing and validating the instruments for the OTEBP trial

The instruments selected to evaluate the outcomes of the OTEBP trial measured all the learner-outcome domains recommended by Nabulsi *et al* (2007). Although a number of instruments were identified, few had been developed or tested with occupational therapists and none had been used in resource-constrained contexts.

A simplified version of the Adapted Fresno Test of Competence in EBP (AFT) (McCluskey and Bishop, 2009, McCluskey and Lovarini, 2005) was used as the primary outcome measure and was re-named the Shortened AFT (SAFT). The SAFT contains three questions covering aspects of the first three steps in the EBP process and demonstrated strong reliability and responsiveness to change. It is an objective measure of EBP knowledge and is useful in contexts where EBP is a relatively new concept because it is quicker and less intimidating to complete. In addition, two new scenarios with grading rubrics were developed and could be used as an additional version of the AFT in future research.

Factor analysis of the modified Knowledge, attitudes, behaviour questionnaire (KABQ) (Johnston *et al.*, 2003) identified the items that contributed to the measurement of knowledge (single factor), attitudes (three factors) and behaviour (two factors). These differed to the factor structure documented by Johnston *et al.* (2003) but all factors demonstrated sufficient internal consistency and adequate test-retest reliability. The modified KABQ is a self-report questionnaire that is easy to complete. As it measures knowledge, attitudes and behaviour, it is a useful outcome measure for evaluating educational interventions.

The modified version of the Readiness to Change Clinical Practice Scale (RCCPS) (MacDermid *et al.*, 2006) showed excellent test-retest reliability and is useful for monitoring progress towards implementing EBP. The Familiarity and Access to Technology Questionnaire (FATQ) (MacDermid *et al.*, 2006) measures perceived support in the workplace and showed moderate to substantial test-retest reliability. It is a worthwhile measure for monitoring perceptions about support for EBP in work settings and to identify possible barriers to EBP.

The audit checklist demonstrated substantial to perfect IRR but responsiveness was small. As a significant within-group improvement was identified for the IE, it is likely that the small effect size indicates that the change detected in the OTEBP trial was not clinically important. Had the sample size been sufficient, a larger effect size may have been detected. Overall, the instruments measured all the outcomes required for evaluating EBP educational interventions and were sufficiently robust for measuring the outcomes of the OTEBP trial.

9.2.3 Study 3: A pilot RCT of the effectiveness of an interactive compared to a didactic educational intervention in improving evidence-based practice knowledge

The OTEBP trial demonstrated some changes but not all outcomes were affected. There were no significant differences between the IE and DE for any of the outcomes at 12 weeks. Within-group changes revealed that knowledge improved significantly for both groups and the IE group also showed a significant increase in behaviour (audit score). Some significant within-group changes in attitudes were identified in the IE but these were small. Failure to identify significant differences between the IE and DE at 12 weeks may have been due to the insufficient sample size. This was unavoidable due to the lack of data available for calculating the sample size prior to recruitment as

the primary outcome instrument had been modified for the trial. Although the maximum possible number of participants was recruited (IE: N=30, DE: N=28), this was less than the number required in each group (N=55). A power calculation revealed that the trial was only powered at 43% and therefore a type II error may have occurred.

The findings suggest that while both interventions were successful in improving knowledge, the IE appeared to be more effective as some aspects of attitudes and behaviour also changed. This finding differs to that of a systematic review which concluded that 'educational meetings alone are not likely to be effective for changing complex behaviours' (Forsetlund *et al.*, 2009). The OTEBP trial therefore seems to add strength to the existing evidence that interactive educational interventions are more effective than didactic interventions. A range of barriers threatening the ability of occupational therapists to implement EBP were identified, the most important being time and high workloads, difficulty accessing journals and limited appraisal skills. These clearly need addressing to make EBOT a reality in SA.

Barriers threatening the implementation of EBP by occupational therapists in the public health service in SA are similar to those identified in other countries. Firstly, the high workload leaves little time for anything other than patient interventions. Lack of knowledge and skills in research methods suggests the need for continuing professional development activities aimed at increasing confidence in understanding and reading research. Lack of access to information sources where evidence may be found is a major obstacle to implementing EBOT in SA. Despite the roll-out plan for providing health facilities with access to computers, only those in senior positions have internet access in their offices. Not only should practitioners have access to the internet, but this should also be convenient (Bennett *et al.*, 2003b, McCluskey, 2003b) to enable therapists to look up information when required. Therapists working in health facilities that are not attached to an academic hospital have no access to academic libraries or electronic journals. This must be addressed by the DOH if the goal of providing quality health services to the population is to be achieved.

It was encouraging that a RCT was feasible in the SA public health service context, and that the trial was of high quality as shown by the low risk of bias. To the PIs knowledge, this is the first RCT

that has been conducted in occupational therapy in SA. While it is feasible to conduct high-quality trials, capacity development is needed to equip occupational therapists with the skills to conduct trials which could add to the occupational therapy evidence-base in SA. This would contribute much needed information to fill the research gaps identified by participants in the OTEBP trial.

9.3 Recommendations

The results of the studies indicate that if EBOT is to be successfully implemented in SA, changes in occupational therapy practice, research and education are needed.

9.3.1 Recommendations for practice

As cautioned by Smith *et al* (2004, p 119) achieving behaviour change 'requires time and sustained effort'. Therefore initiatives need to be directed at a number of levels to get evidence into practice. Awareness-raising campaigns are needed to alert occupational therapists to EBP. A possible forum could be through short articles published in each edition of *Focus*, the official newsletter of the OTASA. Articles should cover topics such as what is EBP, why is it needed, the steps of EBP, evidence databases, free sources of evidence and suggestions for making EBP possible. In addition, research-related articles could be published in the SAJOT to raise the profile of EBP.

The main barriers to making the implementation of EBP possible in the context of the public health service in SA need to be addressed urgently. Access to information by those requiring it, must receive priority attention as it is one of the strongest barriers to implementing EBOT in SA. Providing effective care that is based on research findings is an ethical obligation and an integral part of providing quality care. It is imperative that all occupational therapists have convenient access to recent research, no matter where they work, to enable them to be evidence-based. The national DOH needs to be approached in this regard and persuaded that providing their employees with current, relevant and up-to-date research is one of its responsibilities. This includes convenient access to the internet and evidence databases such as *The Cochrane Library*, CINAHL, Pubmed, PsycINFO and PsycARTICLES. Ensuring all occupational therapists in SA can access research will require lobbying with all sectors within which occupational therapist are

employed. The OTASA could also be involved by providing its members with access to some evidence databases. With the growing trend towards providing open-access to information, international occupational therapy associations could be approached to negotiate access to their EBOT resources for OTASA members. In addition, occupational therapists in SA need to be informed about free-access evidence databases, such as OTseeker and PEDro, and open-source journals. This could be done by creating an EBOT section on the OTASA website and by writing short sections for publication in *Focus*.

It is acknowledged that providing access to research, while essential, will not necessarily lead to changes in practice (Gulmezoglu *et al.*, 2006). Providing access to research must therefore be accompanied by strategies such as practice-based small-group learning (Macvicar *et al.*, 2006) or collaborative learning groups (Welch and Dawson, 2006). Occupational therapists employed by the DOH could form small groups focussed on a particular diagnosis to identify and interpret current, relevant research to inform their practice. International experts in particular fields of occupational therapy could be approached to recommend articles containing high-quality evidence that could be reviewed in these groups. The information and knowledge generated could be used to develop practice guidelines relevant to SA.

Activities to promote the development of the knowledge and skills needed to implement EBOT could be promoted through, for example, journal clubs, summaries of research in occupational therapy journals, providing links to full text articles and holding annual research days. The Education and Research committee of the OTASA can play an important role in fostering positive attitudes towards EBP and developing mechanisms to encourage EBOT, for example, by providing support structures to occupational therapists attempting to employ EBP, and developing and disseminating easy-to-read summaries of high quality evidence for specific conditions.

Considering the lack of research to inform some areas of practice in SA, the quality and content of occupational therapy record-keeping should be addressed as they are a potential source of research data. Additionally, keeping accurate records is actually an ethical obligation. To this end, therapists should receive training in evidence-based record-keeping and practical formats for record-keeping should be devised.

9.3.2 Recommendations for research

The thesis identified the need for a larger trial to determine whether interactive educational interventions are in fact the most effective educational strategy for increasing the implementation of EBP across different service sectors, provinces and urban/rural areas. The outcome instruments used in the OTEBP trial had sufficiently robust psychometric properties and should be used in future studies. In particular, the SAFT has strong psychometric properties and is more user-friendly and less intimidating than the AFT. It is therefore a useful instrument for contexts where EBP is in the early stages of implementation. As the SAFT only measures aspects of steps one to three of the EBP process, it is worth exploring whether questions to test the remaining two steps could be included. The audit checklist provides an instrument for monitoring record-keeping so that patient records are of a sufficient standard to contribute to the production of evidence. The audit checklist had sufficient IRR but low responsiveness. A larger trial may determine whether a greater effect size can be shown.

This thesis was limited to an interpretation of EBOT within a biomedical paradigm with an intervention focus. There are, however, many other questions that occupational therapists need to ask and answer (Crouch, 2001, Du Toit and Wilkinson, 2009) which may require a wider range of research designs than RCTs and systematic reviews of RCTs (Bennett and Bennett, 2000, Humphris, 2005, Tickle-Degnen and Bedell, 2003). In addition, the way in which EBP is interpreted and understood needs to be explored in areas of practice that do not have a biomedical-orientation. This is particularly important in light of the focus on service delivery based on the primary health care approach. Research is needed to explore appropriate ways of applying EBP in different contexts such as community settings. Considering the barriers within the health system that could deter occupational therapists from implementing EBP, studies using methods of inquiry such as action research, should be undertaken to explore how EBP can realistically be applied within the public health service in SA where large caseloads and limited time are the norm. This will also be helpful for other resource-constrained countries wishing to find feasible ways of implementing EBOT.

To facilitate EBP, it is recognised that the amount of research undertaken and published needs to increase and that the type of research undertaken has to be 'realistic and relevant' to the SA context. To address the gaps in research identified in the survey, a list of research priorities should be developed. This could be done through the Education and Research committee of the OTASA. Once research areas have been identified, a coordinated plan to produce the research required to inform occupational therapy practice in SA could be developed.

9.3.3 Recommendations for education

There is an urgent need to provide EBP training for all occupational therapists in SA. This could be part of the CPD programme offered by OTASA which will convey to its members the importance of learning about EBP (Cusick and McCluskey, 2000). Educational interventions should include interactive components to be maximally effective. Based on the survey findings, workshops, short in-service training sessions and evidence-based summaries relevant to the SA context will make a substantial contribution to providing occupational therapists with the knowledge, skills and evidence needed for their practice. Ideally, training should be provided at incremental levels so that the needs of therapists at different stages of adopting EBP are accommodated. Based on the difficulties reported in the survey, training should incorporate where to find evidence, how to search for it, and how to apply research findings to practice. It must also be carefully targeted to be meaningful and realistic, bearing in mind the barriers to EBP identified in the survey and the RCT. Due to the difficulties experienced by participants in attending even a brief intervention because of time constraints, it may be more feasible to hold a series of short (four-hour) workshops offering training at varying levels. These could focus on the different steps of the EBP process and provide ongoing opportunities for therapists to build their knowledge, skills and application of EBP. Although the OTEBP trial was conducted in one province in SA, training opportunities are likely to be similarly in demand in other provinces and should form part of the CPD programme provided by the OTASA.

While training needs to target qualified occupational therapists, future graduates must also be equipped for EBP. A report outlining the findings from this thesis will be sent to the Education and Research committee of the OTASA to recommend the inclusion of EBP in occupational therapy education programmes. This may require providing 'train the trainer workshops' and sharing

teaching resources to equip academics with the knowledge and skills to teach EBOT. The OTASA Education and Research committee could be involved in developing an interactive educational module in EBOT that is available to occupational therapy educators, and working with universities to assist them in incorporating EBP training into their curricula. The fact that the spread of EBOT has been reliant on the efforts of very few people is problematic. More occupational therapists need to be recruited and trained to run workshops on EBOT across the country.

9.4 Conclusion

While EBOT in SA has undergone some development there is a long way to go before we can claim to be an evidence-based profession. Resource-constrained countries are lagging behind developed countries in implementing EBP. Absence of evidence to support occupational therapy practice in SA, and failure to use existing evidence, may result in the profession being unable to demonstrate its effectiveness. This thesis indicates that the time is opportune to introduce initiatives to promote EBOT in SA. The thesis findings have shown that, given the commitment and time, high quality research can be conducted in resource-constrained countries. In addition, the findings of the OTEBP trial show that educational interventions may make a difference even if this is small. The following quote provides an apt conclusion to this thesis:

'It will take time for us to be providing truly evidence-based care, but we need to remain focused and persistent' (Walker, 2003, p 341).

References

- (2006) *Rehabilitation services*. [Online]. Available: <http://www.capegateway.gov.za.eng/yourgovernment/gsc/305/service> [2010, 7 September]
- AAS, R. (2008) Workplace intervention reduced the duration of sick leave in recently injured workers with subacute low-back pain, but graded activity did not. *Australian Occupational Therapy Journal*, 55, 143.
- AFRICAN NATIONAL CONGRESS (1994) *A national health plan for South Africa*, Johannesburg, African National Congress.
- AMERICAN OCCUPATIONAL THERAPY ASSOCIATION (2007) AOTA centennial vision and executive summary. *American Journal of Occupational Therapy*, 61, 613-614.
- AMERICAN OCCUPATIONAL THERAPY ASSOCIATION (2008) Occupational therapy practice framework: domain and process, 2nd ed. *American Journal of Occupational Therapy*, 62, 625-683.
- ARAVIND, M. & CHUNG, K. (2010) Evidence-based medicine and hospital reform: tracing origins back to Florence Nightingale. *Plastic & Reconstructive Surgery*, 125, 403-409.
- BAKER, R., CAMOSSO-STEFINOVIC, J., GILLIES, C., SHAW, E., CHEATER, F., FLOTTORP, S. & ROBERTSON, N. (2010) Tailored interventions to overcome identified barriers to change: effects on professional practice and health care outcomes. *Cochrane Database of Systematic Reviews*.
- BALLINGER, C. & WILES, R. (2001) A critical look at evidence-based practice. *British Journal of Occupational Therapy*, 64, 253-255.
- BANNIGAN, K. (2004) Occupational therapy is not a leisure pursuit. *British Journal of Occupational Therapy*, 67, 147.
- BARROWCLOUGH, C., HADDOCK, G., TARRIER, N., LEWIS, S., MORING, J., O'BRIEN, R., SCHOFIELD, N. & MCGOVERN, J. (2001) Randomized controlled trial of motivational interviewing, cognitive behavior therapy, and family intervention for patients with comorbid schizophrenia and substance use disorders. *American Journal of Psychiatry*, 158, 1706-1713.
- BENNETT, S. (2003) Individual placement and support increased the likelihood of employment of people with severe mental illness. *Australian Occupational Therapy Journal*, 50, 180-181.
- BENNETT, S. & BENNETT, J. (2000) The process of evidence-based practice in occupational therapy: informing clinical decisions. *Australian Occupational Therapy Journal*, 47, 171-180.
- BENNETT, S., HOFFMANN, T., MCCLUSKEY, A., MCKENNA, K., STRONG, J. & TOOTH, L. (2003a) Introducing OTseeker (Occupational Therapy Systematic Evaluation of Evidence): a new evidence database for occupational therapists. *Australian Occupational Therapy Journal*, 57, 635-638.
- BENNETT, S., MCKENNA, K., MCCLUSKEY, A., TOOTH, L., HOFFMANN, T. & STRONG, J. (2007) Evidence for occupational therapy interventions: effectiveness research indexed in the OTseeker database. *British Journal of Occupational Therapy*, 70, 426-430.
- BENNETT, S., TOOTH, L., MCKENNA, K., RODGER, S., STRONG, J., ZIVIANI, J., MICKAN, S. & GIBSON, L. (2003b) Perceptions of evidence-based practice: a survey of Australian occupational therapists. *Australian Occupational Therapy Journal*, 50, 13-22.

- BENNETT, S., TOWNSEND, E., MANCINI, M. & TAYLOR, C. (2006) Evidence-based practice in occupational therapy: international initiatives. *WFOT Bulletin*, 53, 6-12.
- BEURSKENS, A., DE VET, H. & KOKE, A. (1996) Responsiveness of functional status in low back pain: a comparison of different instruments. *Pain*, 65, 71-76.
- BLAIR, S. & ROBERTSON, L. (2005) Hard complexities - soft complexities: an exploration of philosophical positions related to evidence in occupational therapy. *British Journal of Occupational Therapy*, 68, 269-276.
- BLAND, J. & ALTMAN, D. (2002) Validating scales and indexes. *British Medical Journal*, 324.
- BLAUW-HOSPERS, C. & HADDERS-ALGRA, M. (2005) A systematic review of the effects of early intervention on motor development. *Developmental Medicine & Child Neurology*, 47, 421-432.
- BLUHM, R. (2005) From hierarchy to network: a richer view of evidence for evidence-based medicine. *Perspectives in Biology and Medicine*, 48, 535-547.
- BOTHA, C. (2008) Introduction. IN HSRC POLICY ANALYSIS UNIT (Ed.) *Financing South Africa's national health system through national health insurance. Possibilities and challenges*. Cape Town, HSRC Press.
- BOWLING, A. (2009) *Research methods in health. Investigating health and health services*, Berkshire, Open University Press.
- BOYNTON, P. (2004) Administering, analysing, and reporting your questionnaire. *British Medical Journal*, 328, 1372-1375.
- BOYNTON, P. & GREENHALGH, T. (2004) Selecting, designing, and developing your questionnaire. *British Medical Journal*, 328, 1312-1315.
- BRADSHAW, D. (2009) Determinants of health and their trends. *SA Health Review 2008*. Health Systems Trust.
- BRADSHAW, D. & NANNAN, N. (2004) Health status. IN IJUMBA, P., DAY, C. & NTULI, A. (Eds.) *South African Health Review 2003/04*. Durban, Health Systems Trust.
- BROODRYK, J. (2002) *Ubuntu. Life lessons from Africa*, Pretoria, Ubuntu School of Philosophy.
- BROWN, T., TSENG, M., CASEY, J., MCDONALD, R. & LYONS, C. (2010a) Predictors of research utilization among pediatric occupational therapists. *Occupational Therapy Journal of Research: Occupation, Participation and Health*, 30, 172-183.
- BROWN, T., TSENG, M., CASEY, J., MCDONALD, R. & LYONS, C. (2010b) Research knowledge, attitudes, and practices of pediatric occupational therapists in Australia, the United Kingdom, and Taiwan. *Journal of Allied Health*, 39, 88-94.
- BUCKLEY, L., GOERING, P., PARIKH, S., BUTTERHILL, D. & FOO, E. (2003) Applying a 'stages of change' model to enhance a traditional evaluation of a research transfer course. *Journal of Evaluation in Clinical Practice*, 9, 385-390.
- BURNS, K., DUFFETT, M., KHO, M., MEADE, M., ADHIKARI, N., SINUFF, T. & COOK, D. (2008) A guide for the design and conduct of self-administered surveys of clinicians. *Canadian Medical Association Journal*, 179, 245-252.
- CALDWELL, E., WHITEHEAD, M., FLEMING, J. & MOES, L. (2008) Evidence-based practice in everyday clinical practice: strategies for change in a tertiary occupational therapy department. *Australian Occupational Therapy Journal*, 55, 79-84.
- CALDWELL, K., COLEMAN, K., COPP, G., BELL, L. & GHAZI, F. (2007) Preparing for professional practice: how well does professional training equip health and social care practitioners to engage in evidence-based practice? *Nurse Education Today*, 27, 518-528.
- CAMERON, K. (2009) Using evidence-based practice in context. *International Journal of Therapy & Rehabilitation*, 16, 54-55.

- CAMERON, K., BALLANTYNE, S., KULBITSKY, A., MARGOLIS-GAL, M., DAUGHERTY, T. & LUDWIG, F. (2005) Utilization of evidence-based practice by registered occupational therapists. *Occupational Therapy International*, 12, 123-136.
- CANADIAN ASSOCIATION OF OCCUPATIONAL THERAPISTS, ASSOCIATION OF CANADIAN OCCUPATIONAL THERAPY UNIVERSITY PROGRAMS, ASSOCIATION OF CANADIAN OCCUPATIONAL THERAPY REGULATORY ORGANIZATIONS & PRESIDENTS' ADVISORY COMMITTEE (2009) *Joint position statement on evidence-based occupational therapy (1999 reviewed for currency 2009)*. [Online]. Available: <http://www.caot.ca/default.asp?pageid=156> [2010, 10 August]
- CANADIAN ASSOCIATION OF OCCUPATIONAL THERAPISTS (CAOT), ASSOCIATION OF CANADIAN OCCUPATIONAL THERAPY UNIVERSITY PROGRAMS (ACOTUP), ASSOCIATION OF CANADIAN OCCUPATIONAL THERAPY REGULATORY ORGANIZATIONS (ACOTRO) & (PAC), P. A. C. (1999) *Joint position statement on evidence-based occupational therapy (1999 reviewed for currency 2009)*. [Online]. Available: <http://www.caot.ca/default.asp?pageid=156> [2010, 10 August]
- CANADIAN ASSOCIATION OF OCCUPATIONAL THERAPISTS (CAOT), ASSOCIATION OF CANADIAN OCCUPATIONAL THERAPY UNIVERSITY PROGRAMS (ACOTUP), ASSOCIATION OF CANADIAN OCCUPATIONAL THERAPY REGULATORY ORGANIZATIONS (ACOTRO) & (PAC), P. A. C. (2009) *Joint position statement on evidence-based occupational therapy (1999 reviewed for currency 2009)*. [Online]. Available: <http://www.caot.ca/default.asp?pageid=156> [2010, 10 August]
- CANADIAN INSTITUTES OF HEALTH RESEARCH (2010) *Innovation in action. Knowledge translation strategy 2004-2009*. [Online]. Available: <http://www.cihr-irsc.gc.ca/e/39033.html> [2010, 29 July]
- CENTRE FOR EVIDENCE-BASED MEDICINE (2011) *Levels of evidence*. [Online]. Available: <http://www.cebm.net/index.aspx?o=1025> [2011, 12 March]
- CHAN, A. & ALTMAN, D. (2005) Epidemiology and reporting of randomised trials published in PubMed journals. *Lancet*, 365, 1159-1162.
- CHINNOCK, P., SIEGFRIED, N. & CLARKE, M. (2005) Is evidence-based medicine relevant to the developing world? *PLoS Medicine*, 2, 367-369.
- CICCHETTI, D. & SPARROW, S. (1981) Developing criteria for establishing interrater reliability of specific items: applications to assessment of adaptive behavior. *American Journal of Mental Deficiency*, 86, 127-137.
- CLARIDGE, J. & FABIAN, T. (2005) History and development of evidence-based medicine. *World Journal of Surgery*, 29, 547-553.
- CLARK, L. & WATSON, D (1995) Constructing validity: basic issues in objective scale development. *Psychological Assessment*, 7, 309-319.
- CLARKE, M., HOPEWELL, S. & CHALMERS, I. (2007) Reports of clinical trials should begin and end with up-to-date systematic reviews of other relevant evidence: a status report. *Journal of the Royal Society of Medicine*, 100, 187-190.
- CLOSS, S. & LEWIN, R. (1998) Perceived barriers to research utilisation: a survey of four therapies. *British Journal of Therapy and Rehabilitation*, 5, 151-155.
- COHEN, J. (1992) A power primer. *Psychological Bulletin*, 112, 155-159.
- COOKE, J., BACIGALUPO, R., HALLADAY, L. & NORWOOD, H. (2008) Research use and support needs, and research activity in social care: a cross-sectional survey in two councils with social services responsibilities in the UK. *Health and Social Care in the Community*, 16, 538-547.

- COPLEY, J. & ALLEN, S. (2009) Using all the available evidence: perceptions of paediatric occupational therapists about how to increase evidence-based practice. *International Journal of Evidence-Based Healthcare*, 7, 193-200.
- CORR, S. & SIDDON, L. (2005) An introduction to the selection of outcome measures. *British Journal of Occupational Therapy*, 68, 202-206.
- COSTER, W. (2005) International conference on evidence-based practice: a collaborative effort of the American Occupational Therapy Association, the American Occupational Therapy Foundation, and the Agency for Healthcare Research and Quality. *American Journal of Occupational Therapy*, 59, 356-358.
- CRESSWELL, J. (2003) *Research design. Qualitative, quantitative and mixed methods approaches*, Thousand Oaks, SAGE Publications.
- CROUCH, R. (2001) Education and research in Africa: identifying and meeting needs. *Occupational Therapy International*, 8, 139-144.
- CUJIPERS, P., VAN STRATEN, A. & WARMERDAM, L. (2007) Behavioral activation treatments of depression: A meta-analysis. *Clinical Psychology Review*, 27, 318-326.
- CURTIN, M. & JARAMAZOVIC, E. (2001) Occupational therapists' views and perceptions of evidence-based practice. *British Journal of Occupational Therapy* 64, 214-222.
- CURTIS, E. & REDMOND, R. (2009) Survey postal questionnaire: optimising response and dealing with non-response. *Nurse Researcher*, 16, 76-88.
- CUSICK, A. (2001) OZ OT EBP 21C: Australian occupational therapy, evidence-based practice and the 21st century. *Australian Occupational Therapy Journal*, 48, 102-117.
- CUSICK, A. & MCCLUSKEY, A. (2000) Becoming an evidence-based practitioner through professional development. *Australian Journal of Occupational Therapy*, 47, 159-170.
- DALTON, C. & GOTTLIEB, L. (2003) The concept of readiness to change. *Journal of Advanced Nursing*, 42, 108-117.
- DALY, J., WILLIS, K., SMALL, R., GREEN, J., WELCH, N., KEALY, M. & HUGHES, E. (2007) A hierarchy of evidence for assessing qualitative health research. *Journal of Clinical Epidemiology*, 60, 43-49.
- DANS, A. & DANS, L. (2000a) The need and means for evidence-based medicine in developing countries. *ACP Journal Club*, 133, A11-A12.
- DANS, A. & DANS, L. (2000b) The need and means for evidence-based medicine in developing countries. *Evidence-Based Medicine*, 5, 100-101.
- DANS, A., DANS, L., PUNZALAN, F., TUMANAN, B., VILLARRUZ, M. & JADLOC, S. (2004) *Evidence-based medicine in developing countries*. [Online]. Available: <http://www.cebm.utoronto.ca/syllabi/devl/print/intro.htm> 2006, 31 July]
- DAVIS, D., MAZMANIAN, P., FORDIS, M., VAN HARRISON, R., THORPE, K. & PERRIER, L. (2006) Accuracy of physician self-assessment compared with observed measures of competence. *Journal of the American Medical Association*, 296, 1094-1102.
- DAWES, M., SUMMERSKILL, W., GLASZIOU, P., CARTABELLOTTA, A., MARTIN, J., HOPAYIAN, K., PORZSOLT, F., BURLS, A. & OSBORNE, J. (2005) Sicily statement on evidence-based practice. *BMC Medical Education*.
- DAY, C. & GRAY, A. (2008) Health and related indicators. IN BARRON, P. & ROMA-REARDON, J. (Eds.) *South African Health Review 2008*. Durban, Health Systems Trust.
- DAY, C. & GRAY, A. (2009) Health and related indicators. IN TRUST, H. S. (Ed.) *SA Health Review 2008*. Health Systems Trust.
- DAYA, S. (2000) Evidence-based medicine in developing countries. *Evidence-based obstetrics and gynaecology*, 2, 59.

- DE LATEUR, B., MAGYAR-RUSSELL, G., BRESNICK, M., BERNIER, F., OBER, M., KRABAK, B., WARE, L., HAYES, M. & FAUERBACH, J. (2007) Augmented exercise in the treatment of deconditioning from major burn injury. *Archives of Physical Medicine and Rehabilitation*, 88, S18-S23.
- DEPARTMENT OF HEALTH (1997) White paper for the transformation of the health system in South Africa. IN MINISTRY OF HEALTH (Ed.), Department of Health.
- DEPARTMENT OF HEALTH (2008) Annual national health plan 2008. Department of Health, Republic of South Africa.
- DEPARTMENT OF HEALTH (ENGLAND) AND THE DEVOLVED ADMINISTRATIONS (2007) Drug misuse and dependence: UK guidelines on clinical management. London: Department of Health (England), the Scottish Government, Welsh Assembly Government and Northern Ireland Executive.
- DEPOY, E. & GITLIN, L. (2005) *Introduction to research. Understanding and applying multiple strategies*, St Louis, Elsevier Mosby.
- DICLEMENTE, C., PROCHASKA, J., FAIRHURST, S., VELICER, W., VELASQUEZ, M. & ROSSI, J. (1991) The process of smoking cessation: an analysis of precontemplation, contemplation, and preparation stages of change. *Journal of Consulting and Clinical Psychology*, 59, 295-304.
- DIRETTE, D., ROZICH, A. & VIAU, S. (2009) Is there enough evidence for evidence-based practice in occupational therapy? *American Journal of Occupational Therapy*, 63, 782-786.
- DOPSON, S. & FITZGERALD, L. (2006) The role of the middle manager in the implementation of evidence-based health care. *Journal of Nursing Management*, 14, 43-51.
- DOUMIT, G., GATTELLARI, M., GRIMSHAW, J. & O'BRIEN, M. (2007) Local opinion leaders: effects on professional practice and health care outcomes. *Cochrane Database of Systematic Reviews*.
- DRAKE, R., MUESER, K., BRUNETTE, M. & MCHUGO, G. (2004) A review of treatments for people with severe mental illnesses and co-occurring substance use disorders. *Psychiatric Rehabilitation Journal*, 27, 360-374.
- DU TOIT, S. & WILKINSON, A. (2009) Publish or perish: a practical solution for research and publication challenges of occupational therapists in South Africa. *South African Journal of Occupational Therapy*, 39, 2-7.
- DUBOULOZ, C., EGAN, M., VALLERAND, J. & VON ZWECK, C. (1999) Occupational therapists' perceptions of evidence-based practice. *American Journal of Occupational Therapy*, 53, 445-453.
- DUCRET, M. & MAREDA, T. (2007) Emergence de la pratique basee sur l-evidence en ergotherapie. Considerations epistemologiques et reflexion critique, effets collateraux du concept. *WFOT Bulletin*, 55, 12-20.
- DUNCAN, M. & ALSOP, A. (2006) Practice and service learning in context. IN LORENZO, T., DUNCAN, M., BUCHANAN, H. & ALSOP, A. (Eds.) *Practice and service learning in occupational therapy. Enhancing potential in context*. Chichester, Wiley.
- DUNCAN, M., BUCHANAN, H. & LORENZO, T. (2005) Politics in occupational therapy. A South African perspective. IN KRONENBERG, F., SIMO ALGADO, S. & POLLARD, N. (Eds.) *Occupational therapy without borders. Learning from the spirit of survivors*. Edinburgh, Elsevier.
- DYSART, A. & TOMLIN, G. (2002) Factors related to evidence-based practice among US occupational therapy clinicians. *American Journal of Occupational Therapy*, 56, 275-284.
- EBSCO PUBLISHING. PROVIDER OF EBSCOHOST [Online]. Available: <http://www.ebscohost.com/> [2011, 01 July]

- EDWARDS, P., CLARKE, M., DIGUISEPPI, C., PRATAP, S., ROBERTS, I. & WENTZ, R. (2002) Identification of randomized controlled trials in systematic reviews: accuracy and reliability of screening records. *Statistics in Medicine*, 21, 1635-1640.
- EDWARDS, P., ROBERTS, I., CLARKE, M., DIGUISEPPI, C., WENTZ, R., KWAN, I., COOPER, R., FELIX, L. & PRATAP, S. (2003) Methods to increase response to postal and electronic questionnaires. *Cochrane Database of Systematic Reviews*.
- EGAN, M., DUBOULOZ, C., VON ZWECK, C. & VALLERAND, J. (1998) The client-centred evidence-based practice of occupational therapy. *Canadian Journal of Occupational Therapy*, 65, 136-143.
- ELLER, L., KLEBER, E. & WANG, S. (2003) Research knowledge, attitudes and practices of health professionals. *Nursing Outlook*, 51, 165-170.
- ELSENBERG, J. (2002) Globalize the evidence, localize the decision: evidence-based medicine and international diversity. *Health Affairs*, 21, 166-168.
- ELSTEIN, A. (2004) On the origins and development of evidence-based medicine and medical decision-making. *Inflammation Research*, 53, S184-S189.
- ESSELMAN, P. (2007) Burn rehabilitation: An overview. *Archives of Physical Medicine and Rehabilitation*, 88, S3-S6.
- ESSELMAN, P., WIECHMAN ASKAY, S., CARROUGHER, G., LEZOTTE, D., HOLAVANAHALLI, R., MAGYAR-RUSSELL, G., FAUERBACH, J. & ENGRAV, L. (2007) Barriers to return to work after burn injuries. *Archives of Physical Medicine and Rehabilitation*, 88, S50-S56.
- ESTABROOKS, C., THOMPSON, D., LOVELY, J. & HOFMEYER, A. (2006) A guide to knowledge translation theory. *Journal of Continuing Education in the Health Professions*, 26, 25-36.
- EVA, G. & PALEY, J. (2004) Numbers in evidence. *British Journal of Occupational Therapy*, 67, 47-49.
- EVANS, D. (2003) Hierarchy of evidence: a framework for ranking evidence evaluating healthcare interventions. *Journal of Clinical Nursing*, 12, 77-84.
- FARMER, A., LEGARE, F., TURCOT, L., GRIMSHAW, J., HARVEY, E., MCGOWAN, J. & WOLF, F. (2008) Printed educational materials: effects on professional practice and health care outcomes. *Cochrane Database of Systematic Reviews*.
- FARRELL, B. (1998) Efficient management of randomised controlled trials: nature or nurture. *British Medical Journal*, 317, 1236-1239.
- FOOTE, H., LAMONT, S., BURGER, E. & LEISHMAN, A. (2006) The introduction of a quality assurance programme in Gauteng Health hospital occupational therapy services. *South African Journal of Occupational Therapy*, 36, 6-10.
- FORMAN, L., PILLAY, Y. & SAIT, L. (2004) Health legislation 1994-2003. IN IJUMBA, P., DAY, C. & NTULI, A. (Eds.) *South African health review 2003/04*. Durban, Health Systems Trust.
- FORSBERG, L., HALLDIN, J. & WENNERBERG, P. (2003) Psychometric properties and factor structure of the readiness to change questionnaire. *Alcohol and Alcoholism*, 38, 276-280.
- FORSETLUND, L., BJORN DAL, A., RASHIDIAN, A., JAMTVEDT, G., O'BRIEN, M., WOLF, F., DAVIS, D., ODGAARD-JENSEN, J. & OXMAN, A. (2009) Continuing education meetings and workshops: effects on professional practice and health care outcomes. *Cochrane Database of Systematic Reviews*.
- FORSETLUND, L., BRADLEY, P., FORSEN, L., NORDHEIM, L., JAMTVEDT, G. & BJORN DAL, A. (2003) Randomised controlled trial of a theoretically grounded tailored intervention to diffuse evidence-based public health practice. *BMC Medical Education*.
- FOURIE, A. (2004) Measuring clinical effectiveness - evidence-based practice. *INSTOPP Amalgamated*, 3, 8-10.

- FOURIE, M. (2001) Letter to the editor. *South African Journal of Occupational Therapy*, 31, 3.
- FRITSCHÉ, L., GREENHALGH, T., FALCK-YTTER, Y., NEUMAYER, H. & KUNZ, R. (2002) Do short courses in evidence based medicine improve knowledge and skills? Validation of Berlin questionnaire and before after study of courses in evidence based medicine. *British Medical Journal*, 325, 1338-1341.
- GALVAAN, R. (2006) Role-emerging settings, service learning and social change. IN LORENZO, T., DUNCAN, M., BUCHANAN, H. & ALSOP, A. (Eds.) *Practice and service learning in occupational therapy. Enhancing potential in context*. Chichester, Wiley.
- GARNER, P., KALE, R., DICKSON, R., DANS, T. & SALINAS, R. (1998) Implementing research findings in developing countries. *British Medical Journal*, 317, 531-535.
- GARNER, P., MEREMIKWU, M., VOLMINK, J., XU, Q. & SMITH, H. (2006) Putting evidence into practice: how middle and low income countries "get it together". *British Medical Journal*.
- GILMAN, J. & MYATT, M. (1998) *EpiCalc 2000, version 1.02*. [Online]. Available: [2010, 20 July]
- GLEGG, S. & HOLSTI, L. (2010) Measures of knowledge and skills for evidence-based practice: a systematic review. *Canadian Journal of Occupational Therapy*, 77, 219-232.
- GODWIN, M., RUHLAND, L., CASSON, I., MACDONALD, S., DELVA, D., BIRTWHISTLE, R., LAM, M. & SEGUIN, R. (2003) Pragmatic controlled clinical trials in primary care: the struggle between external and internal validity. *BMC Medical Research Methodology*.
- GORE-FELTON, C., KOOPMAN, C., BRIDGES, E., THORESEN, C. & SPIEGEL, D. (2002) An example of maximizing survey return rates: methodological issues for health professionals. *Evaluation and the Health Professions*, 25, 152-168.
- GOULET, F., JACQUES, A., GAGNON, R., BOURBEAU, D., LABERGE, D., MELANSON, J., MÉNARD, C., RACETTE, P. & RIVEST, R. (2002) Performance assessment. Family physicians in Montreal meet the mark! *Canadian Journal of Family Physicians*, 48, 1337-1344.
- GOULET, F., JACQUES, A., GAGNON, R., RACETTE, P. & SIEBER, W. (2007) Assessment of family physicians' performance using patient charts: interrater reliability and concordance with chart-stimulated recall interview. *Evaluation and the Health Professions*, 30, 376-392.
- GRAHAM, I., LOGAN, J., HARRISON, M., STRAUS, S., TETROE, J., CASWELL, W. & ROBINSON, N. (2006) Lost in knowledge translation: time for a map? *Journal of Continuing Education in the Health Professions*, 26, 13-24.
- GROSS, D., BATTIE, M. & ASANTE, A. (2007) Evaluation of a short-form functional capacity evaluation: less may be best. *Journal of Occupational Rehabilitation*, 17, 422-435.
- GULMEZOGLU, A., LANGER, A., PIAGGIO, G., LUMBIGANON, P., VILLAR, J. & GRIMSHAW, J. (2006) Cluster randomised trial of an active, multifaceted educational intervention based on the WHO Reproductive Health Library to improve obstetric practices. *British Journal of Obstetrics and Gynaecology*, 114, 16-23.
- GUSTAFSSON, L. & YATES, K. (2008) Are we applying interventions with research evidence when targeting secondary complications of the stroke-affected upper limb. *Australian Occupational Therapy Journal*, 56, 428-435.
- GUYATT, G. (1991) Evidence-based medicine. *ACP Journal Club*, A-16, 114.
- HADDOCK, G., BARROWCLOUGH, C., TARRIER, N., MORING, J., O'BRIEN, R., SCHOFIELD, N., QUINN, J., PALMER, S., DAVIES, L., LOWENS, I., MCGOVERN, J. & LEWIS, S. (2003) Cognitive behavioural therapy and motivational intervention for schizophrenia and substance misuse. 18-month outcomes of a randomised controlled trial. *British Journal of Psychiatry*, 183, 418-426.
- HAINES, A., KURUVILLA, S. & BORCHERT, M. (2004) Bridging the implementation gap between knowledge and action for health. *Bulletin of the World Health Organization*, 82, 724-A.

- HAMMELL, K. (2001) Using qualitative research to inform the client-centred evidence-based practice of occupational therapy. *British Journal of Occupational Therapy*, 64, 228-234.
- HAMMOND, A. & KLOMPENHOUWER, P. (2005) Getting evidence into practice: implementing a behavioural joint protection education programme for people with rheumatoid arthritis. *British Journal of Occupational Therapy*, 68, 25-33.
- HARRISON, D. (2009) *An Overview of Health and Health care in South Africa 1994 – 2010: Priorities, Progress and Prospects for New Gains*. [Online]. Available: <http://www.hst.org.za/uploads/files/overview1994-2010.pdf> [2011, 10 March]
- HAYES, R. (2000) Evidence-based occupational therapy needs strategically-targeted quality research now. *Australian Occupational Therapy Journal*, 47, 186-190.
- HAYES, R. & MCGRATH, J. (1998) Evidence-based practice: The Cochrane Collaboration and occupational therapy. *Canadian Journal of Occupational Therapy*, 65, 144-151.
- HEALTH PROFESSIONS COUNCIL OF SOUTH AFRICA *Protecting the public and guiding the professions*. [Online]. Available: <http://www.hpcsa.co.za> 2006, September 6]
- HEALTH PROFESSIONS COUNCIL OF SOUTH AFRICA (n.d.) *Protecting the public and guiding the professions*. [Online]. Available: <http://www.hpcsa.co.za> 2006, September 6]
- HEALTH PROFESSIONS COUNCIL OF SOUTH AFRICA (undated) *Guidelines for Continuing Professional Development*, Pretoria, Health Professions Council of South Africa.
- HEALTH SYSTEMS TRUST (2010) *Health statistics*. [Online]. Available: <http://www.hst.org.za/healthstats/95/data/geo> [2010, 7 September]
- HERBERT, R., JAMTVEDT, G., MEAD, J. & HAGEN, K. (2005) *Practical evidence-based physiotherapy*, Edinburgh, Elsevier.
- HEWITT, C. & TORGERSON, D. (2006) Is restricted randomisation necessary? *British Medical Journal*, 332, 1506-1508.
- HIGGINS, J. & ALTMAN, D. (2008) Chapter 8: Assessing risk of bias in included studies. IN HIGGINS, J. & GREEN, S. (Eds.) *Cochrane handbook for systematic reviews of interventions. Version 5.0.1*. The Cochrane Collaboration.
- HIGGINS, J., DEEKS, J. & ALTMAN, D. (2008) Chapter 16: Special topics in statistics. IN HIGGINS, J. & GREEN, S. (Eds.) *Cochrane handbook for systematic reviews of interventions. Version 5.0.1*. The Cochrane Collaboration.
- HIGGS, P. & SMITH, J. (2006) *Rethinking truth*, Cape Town, Juta and Company Ltd.
- HOCKING, C. & NESS, N. (2002) Revised minimum standards for the education of occupational therapists. Perth, World Federation of Occupational Therapists.
- HOFFMANN, T. (2005) The use of strategy training for people with a left hemisphere stroke and apraxia improved ADL functioning at 8 weeks but not after 5 months, and had no effect on apraxia or motor function. *Australian Occupational Therapy Journal*, 368-369.
- HOFFMANN, T., BENNETT, S. & DEL MAR, C. (2010) Introduction to evidence-based practice. IN HOFFMANN, T., BENNETT, S. & DEL MAR, C. (Eds.) *Evidence-based practice across the health professions*. Sydney, Elsevier.
- HOFMEYR, G. (2003) Teaching and practising evidence-based medicine in South Africa: problems and prospects. *Continuing Medical Education*, 21, 535-536.
- HOJ, L. (2005) Just do like us ... about the dispersion of 'evidence' from high-income countries to settings with limited resources. *Acta Obstetrica et Gynecologica Scandinavica*, 84, 927-928.
- HOLLIS, S. & CAMPBELL, F. (1999) What is meant by intention to treat analysis? Survey of published randomised controlled trials. *British Medical Journal*, 319, 670-674.

- HOLM, M. (2000) Our mandate for the new millennium: evidence-based practice. *American Journal of Occupational Therapy*, 54, 575-585.
- HORNER, D. & LARMER, P. (2006) Health outcome measures. *New Zealand Journal of Physiotherapy*, 34, 17-24.
- HORTON, R. (2003) Medical journals: evidence of bias against the diseases of poverty. *Lancet*, 361, 712-713.
- HOSKING, J., NEWHOUSE, M., BAGNIEWSKA, A. & HAWKINS, B. (1995) Data collection and transcription. *Controlled Clinical Trials*, 16, 66S-103S.
- HUMPHRIS, D. (2005) Types of evidence. IN HAMER, S. & COLLINSON, G. (Eds.) *Achieving evidence-based practice. A handbook for practitioners*. Edinburgh, Bailliere Tindall.
- HUMPHRIS, D., LITTLEJOHNS, P., VICTOR, C., O'HALLORAN, P. & PEACOCK, J. (2000) Implementing evidence-based practice: Factors that influence the use of research evidence by occupational therapists. *British Journal of Occupational Therapy*, 63, 516-522.
- HUSTED, J., COOK, R., FAREWELL, V. & GLADMAN, D. (2000) Methods for assessing responsiveness: a critical review and recommendations. *Journal of Clinical Epidemiology*, 53, 459-468.
- HUTCHINSON, L. (1999) Evaluating and researching the effectiveness of educational interventions. *British Medical Journal*, 318, 1267-1269.
- HYDE, P. (2004) Fool's gold: examining the use of gold standards in the production of research evidence. *British Journal of Occupational Therapy*, 67, 89-94.
- ILLOTT, I. (2003) Challenging the rhetoric and the reality: only an individual and systemic approach will work for evidence-based occupational therapy. *American Journal of Occupational Therapy*, 57, 351-354.
- ILLOTT, I. (2004) Challenges and strategic solutions for a research emergent profession. *American Journal of Occupational Therapy*, 58, 347-352.
- ILLOTT, I., TAYLOR, M. & BOLANOS, C. (2006) Evidence-based occupational therapy: it's time to take a global approach. *British Journal of Occupational Therapy*, 69, 38-41.
- INTERNATIONAL CONFERENCE ON PRIMARY HEALTH CARE (1978) *Declaration of Alma-Ata*. [Online]. Available: http://www.who.int/hpr/NPH/docs/declaration_almaata.pdf [2011, 14 March]
- JACKSON, R., AMERATUNGA, S., BROAD, J., CONNOR, J., LETHABY, A., ROBB, G., WELLS, S., GLASZIOU, P. & HENEGHAN, C. (2006) The GATE frame: critical appraisal with pictures. *Evidence Based Medicine*, 11, 35-38.
- JAMTVEDT, G., YOUNG, J., KRISTOFFERSEN, D., O'BRIEN, M. & OXMAN, A. (2006) Audit and feedback: effects on professional practice and health care outcomes. *Cochrane Database of Systematic Reviews*.
- JENNETT, P. & AFFLECK, L. (1998) Chart audit and chart-stimulated recall as methods of needs assessment in continuing professional health education [Abstract]. *Journal of Continuing Education in the Health Professions*, 18, 163-171.
- JENNETT, P., SCOTT, S., ATKINSON, M., CRUTCHER, R., HOGAN, D., ELFORD, R., MACCANNELL, K. & BAUMBER, J. (1995) Patient charts and physician office management decisions: chart audit and chart stimulated recall [Abstract]. *Journal of Continuing Education in the Health Professions*, 15, 31-39.
- JEROSCH-HEROLD, C. (2005) An evidence-based approach to choosing outcome measures: a checklist for the critical appraisal of validity, reliability and responsiveness studies. *British Journal of Occupational Therapy*, 68, 347-353.

- JETTE, D., BACON, K., BATT, C., CARLSON, M., FERLAND, A. & HEMINGWAY, R. (2003) Evidence-based practice: beliefs, attitudes, knowledge, and behaviors of physical therapists. *Physical Therapy*, 83, 786-802.
- JOHNSTON, J., LEUNG, G., FIELDING, R., TIN, K. & HO, L. (2003) The development and validation of a knowledge, attitude and behaviour questionnaire to assess undergraduate evidence-based practice teaching and learning. *Medical Education*, 37, 992-1000.
- JOUBERT, R. (2003) Are we coming of age or being born again? How does this impact on the education and assessment of competence of occupational therapy students in South Africa? *South African Journal of Occupational Therapy*, 33, 2-4.
- JOUBERT, R. (2004) Evidence-based Practice: Does it work for the South African Context? *30th National Congress of the Occupational Therapy Association of South Africa*. Cape Town.
- JOUBERT, R. (2005) Evidence-based practice: a critique based on occupational therapy within the SA context. *South African Journal of Occupational Therapy*, 35, 8-13.
- JUNI, P., ALTMAN, D. & EGGER, M. (2001) Systematic reviews in health care: assessing the quality of controlled clinical trials. *British Medical Journal*, 323, 42-46.
- KATZENELLENBOGEN, J., JOUBERT, G. & ABDOL KARIM, S. (1999) *Epidemiology. A manual for South Africa*, Cape Town, Oxford University Press.
- KAZIS, L., ANDERSON, J. & MEENAN, R. (1989) Effect sizes for interpreting changes in health status. *Medical Care*, 27, S178-189.
- KIELHOFNER, G. (2006) Developing and evaluating quantitative data collection instruments. IN KIELHOFNER, G. (Ed.) *Research in occupational therapy. Methods of inquiry for enhancing practice*. Philadelphia, F.A. Davis Company.
- KINSELLA, E. & WHITEFORD, G. (2009) Knowledge generation and utilisation in occupational therapy: towards epistemic reflexivity. *Australian Occupational Therapy Journal*, 56, 249-258.
- KIRK, S., OSMALOV, M. & FISCHER, J. (1976) Social workers' involvement in research. *Social Work*, 21, 121-124.
- KIRSHNER, B. & GUYATT, G. (1985) A methodological framework for assessing health indices. *Journal of Chronic Diseases*, 38, 27-36.
- KRAUSE, N., DASINGER, L. & NEUHAUSER, F. (1998) Modified work and return to work: a review of the literature. *Journal of Occupational Rehabilitation*, 8, 113-139.
- LANDIS, J. & KOCH, G. (1977) The measurement of observer agreement for categorical data. *Biometrics*, 33, 159-174.
- LANGER, A., DIAZ-OLAVARRIETA, C., BERDICHEVSKY, K. & VILLAR, J. (2004) Why is research from developing countries underrepresented in international health literature, and what can be done about it? *Bulletin of the World Health Organization*, 82, 802-803.
- LAW, M. (1987) Measurement in occupational therapy: scientific criteria for evaluation. *Canadian Journal of Occupational Therapy*, 54, 133-138.
- LAW, M. (Ed.) (2002) *Evidence-based rehabilitation: A guide to practice*, Thorofare, NJ, Slack Incorporated.
- LAW, M. (2004) *Outcome measures rating form guidelines*. [Online]. Available: <http://www.canchild.ca/en/canchildresources/resources/measguid.pdf> [2010, 29 March]
- LAW, M. & BAUM, C. (1998) Evidence-based occupational therapy. *Canadian Journal of Occupational Therapy*, 65, 131-135.
- LAW, M. & BENNETT, S. (2011) *Evidence-based Occupational Therapy*. [Online]. Available: <http://www.otevidence.info/> [2011, 14 March]

- LAW, M., MACDERMID, J., HAYNES, B., ROCKWELL, G. & VRKLIJAN, B. (2007) MacPlus research proposal.
- LEE, C. & MILLER, L. (2003) The process of evidence-based clinical decision-making in occupational therapy. *American Journal of Occupational Therapy*, 57, 473-477.
- LEGG, L., DRUMMOND, A., LEONARDI-BEE, J., GLADMAN, J., CORR, S., DONKERVOORT, M., EDMANS, J., GILBERTSON, L., JONGBLOED, L., LOGAN, P., SACKLEY, C., WALKER, M. & LANGHORNE, P. (2007) Occupational therapy for patients with problems in personal activities of daily living after stroke: systematic review of randomised trials. *British Medical Journal*.
- LEHRMAN, U. (2008) Strengthening human resources for primary health care. IN BARRON, P. & ROMA-REARDON, J. (Eds.) *South African Health Review 2008*. Durban, Health Systems Trust.
- LEKSKULCHAI, R. & COLE, J. (2001) Effect of a developmental program on motor performance in infants born preterm. *Australian Journal of Physiotherapy*, 47, 169-176.
- LIANG, M. (2000) Longitudinal Construct Validity. Establishment of Clinical Meaning in Patient Evaluative Instruments. *Medical Care* 38, Supplement II, II-84-II-90.
- LIEBERMAN, D., SCHEER, J. & ERBY, K. (2003) AOTA offers evidence-based reviews. *OT Practice*, Feb 10, 19-21.
- LLOYD-SMITH, W. (1997) Evidence-based practice and occupational therapy. *British Journal of Occupational Therapy*, 60, 474-478.
- LOGAN, P., GLADMAN, J., AVERY, A., WALKER, M., DYAS, J. & GROOM, L. (2004) Randomised controlled trial of an occupational therapy intervention to increase outdoor mobility after stroke. *British Medical Journal*.
- LOPEZ, A., VANNER, E., COWAN, A., SAMUEL, A. & SHEPHERD, D. (2008) Intervention planning facets - four facets of occupational therapy intervention planning: economics, ethics, professional judgment, and evidence-based practice. *American Journal of Occupational Therapy*, 62, 87-96.
- LOWE, M. (2000) Evidence-based medicine - the view from Fiji. *Lancet*, 356, 1-3.
- LUND, C., KLEINTJES, S., KAKUMA, R. & FLISHER, A. (2010) Public sector mental health systems in South Africa: inter-provincial comparisons and policy implications. *Social Psychiatry and Epidemiology*, 45, 393-404.
- LUTGE, E., FRIEDMAN, I. & MBATHA, T. (2008) A review of health research in South Africa from 1994 to 2007. IN BARRON, P. & ROMA-REARDON, J. (Eds.) *South African Health Review 2008*. Durban, Health Systems Trust.
- LYONS, C., CASEY, J., BROWN, T., TSENG, M. & MCDONALD, R. (2010) Research knowledge, attitudes, practices and barriers among paediatric occupational therapists in the United Kingdom. *British Journal of Occupational Therapy*, 73, 200-209.
- MA, S. & TEASDALE, J. (2004) Mindfulness-based cognitive therapy for depression: replication and exploration of differential relapse prevention effects. *Journal of Consulting and Clinical Psychology*, 72, 31-40.
- MACDERMID, J., LAW, M., STRATFORD, P. & SOLOMON, P. (2010) Evaluation of two knowledge transfer strategies to improve knowledge and use of outcome measures. *15th International Congress of the World Federation of Occupational Therapists*. Santiago, Chile, World Federation of Occupational Therapists.
- MACDERMID, J., SOLOMON, P., LAW, M., RUSSELL, D. & STRATFORD, P. (2006) Defining the effect and mediators of two knowledge translation strategies designed to alter knowledge, intent

and clinical utilization of rehabilitation outcome measures: a study protocol.
Implementation Science.

- MACDONALD, S., NEWBURN-COOK, C., SCHOPFLOCHER, D. & RICHTER, S. (2009) Addressing non-response bias in postal surveys. *Public Health Nursing*, 26, 95-105.
- MACPHERSON, H. (2004) Pragmatic clinical trials. *Complementary Therapies in Medicine*, 12, 136-140.
- MACVICAR, R., DCUNNINGHAM, D., CASSIDY, J., MCCALISTER, P., O'ROURKE, J. & KELLY, D. (2006) Applying evidence in practice through small group learning: a Scottish pilot of a Canadian programme. *Education for Primary Care*, 17, 465-472.
- MAHANIAH, K. & RAO, G. (2004) Intention-to-treat analysis: protecting the integrity of randomization. *Journal of Family Practice*, 53, 644.
- MCCLUSKEY, A. (2003a) *Introduction*. [Online]. Available: <http://www.otcats.com/intro.html> [2011, 11 March]
- MCCLUSKEY, A. (2003b) Occupational therapists report on low level of knowledge, skill and involvement in evidence-based practice. *Australian Occupational Therapy Journal*, 50, 3-12.
- MCCLUSKEY, A. (2004) Increasing the use of research evidence by occupational therapists [Final report]. Penrith South, NSW, University of Western Sydney.
- MCCLUSKEY, A. & BISHOP, B. (2009) The adapted Fresno test of competence in evidence-based practice. *Journal of Continuing Education in the Health Professions*, 29, 119-126.
- MCCLUSKEY, A. & LOVARINI, M. (2005) Providing education on evidence-based practice improved knowledge but did not change behaviour: a before and after study. *BMC Medical Education*.
- MCCOLL, A., SMITH, H., WHITE, P. & FIELD, J. (1998) General practitioners' perceptions of the route to evidence-based medicine: a questionnaire survey. *British Medical Journal*, 316, 361-365.
- MCDOWELL, I. (2006) *Measuring health. A guide to rating scales and questionnaires*, New York, Oxford University Press.
- MCFARLANE, E., OLMSTED, M., MURPHY, J. & HILL, C. (2007) Nonresponse bias in a mail survey of physicians. *Evaluation and the Health Professions*, 30, 170-185.
- MCGILLICUDDY, N., RYCHTARIK, R., DUQUETTE, J. & MORSHEIMER, E. (2001) Development of a skill training program for parents of substance-abusing adolescents. *Journal of Substance Abuse Treatment*, 20, 59-68.
- MCGRAW, K. & WONG, S. (1996) Forming inferences about some intraclass correlation coefficients. *Psychological Methods*, 1, 30-46.
- MCKEE, W., WITT, J., ELLIOT, S., PARDUE, M. & JUDYCKI, A. (1987) Practice informing research: a survey of research dissemination and knowledge utilization. *School of Psychology Review*, 16, 338-347.
- MCKENNA, K., BENNETT, S., HOFFMANN, T., MCCLUSKEY, A., STRONG, J. & TOOTH, L. (2004) OTseeker: facilitating evidence-based practice in occupational therapy. *Australian Occupational Therapy Journal*, 51, 102-105.
- MCMASTER UNIVERSITY SCHOOL OF REHABILITATION SCIENCE (2008) *Occupational Therapy Evidence-based Practice Research Group*. [Online]. Available: <http://www.srs-mcmaster.ca/Default.aspx?tabid=630> [2011, 14 March]
- MCMICHAEL, C., WATERS, E. & VOLMINK, J. (2005) Evidence-based public health: what does it offer developing countries? *Journal of Public Health*, 27, 215-221.
- MEHTA, C. & PATEL, N. (2010) IBM SPSS exact tests. SPSS Inc.

- MELGAARD, B. (2004) From research to action - a bridge to be crossed. *Bulletin of the World Health Organization*, 82, 723.
- MENON, A., KORNER-BITENSKY, N., KASTNER, M., MCKIBBON, K. & STRAUS, S. (2009) Strategies for rehabilitation professionals to move evidence-based knowledge into practice: a systematic review. *Journal of Rehabilitation Medicine*, 41, 1024-1032.
- METCALFE, C., LEWIN, R., CLOSS, J., HUGHES, C., PERRY, S. & WRIGHT, J. (2000) Perceived barriers to conducting research in the NHS: a survey of four therapies. *British Journal of Therapy and Rehabilitation*, 7, 168-175.
- METCALFE, C., LEWIN, R., WISHER, S., PERRY, S., BANNIGAN, K. & MOFFETT, J. (2001) Barriers to implementing the evidence base in four NHS therapies: dietitians, occupational therapists, physiotherapists, speech and language therapists. *Physiotherapy*, 87, 433-441.
- MEYER, A. (1977) The philosophy of occupation therapy. *American Journal of Occupational Therapy*, 31, 639-642.
- MLAMBO, T., AMOSUN, S. & CONCHA, M. (2004) Assessing the quality of occupational therapy records on stroke patients at one academic hospital in South Africa. *South African Journal of Occupational Therapy*, 34, 10-13.
- MOHER, D., HOPEWELL, S., SCHULZ, K., MONTORI, V., GOTSZCHE, P., DEVEREUX, P., ELBOURNE, D., EGGER, M. & ALTMAN, D. (2010) CONSORT 2010 explanation and elaboration: updated guidelines for reporting parallel group randomised trials. *British Medical Journal*.
- MOHER, D., JADAD, A., G, N., PENMAN, M., TUGWELL, P. & WALSH, S. (1995) Assessing the quality of randomized controlled trials: an annotated bibliography of scales and checklists. *Controlled Clinical Trials*, 16, 62-73.
- MOHER, D., LIBERATI, A., TETZLAFF, J., ALTMAN, D. & THE PRISMA GROUP (2009) Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *PLoS Medicine*.
- MONTORI, V., DEVEREUX, P., ADHIKARI, N., BURNS, K., EGGERT, C., BRIEL, M., LACCHETTI, C., LEUNG, T., DARLING, E., BRYANT, D., BUCHER, H., SCHUNEMANN, H., O'MEADE, M., COOK, D., ERWIN, P., SOOD, A., SOOD, R., LO, B., THOMPSON, C., ZHOU, Q., MILLS, E. & GUYATT, G. (2005) Randomized trials stopped early for benefit. A systematic review. *Journal of the American Medical Association*, 294, 2203-2209.
- MOTH FORUM (2008) Draft Constitution. Metro Occupational Therapy in Health Forum, Cape Town.
- NABULSI, M., HARRIS, J., LETELIER, L., RAMOS, K., HOPAYIAN, K., PARKIN, C., PORZSOLT, F., SESTINI, P., SLAVIN, M. & SUMMERSKILL, W. (2007) Effectiveness of education in evidence-based healthcare: the current state of outcome assessments and a framework for future evaluations. *International Evidence Based Healthcare*, 5, 468-476.
- NATIONAL ASSOCIATION OF NEUROLOGICAL OCCUPATIONAL THERAPISTS (NANOT) (2004) Occupational therapy concise guide for stroke, 2nd ed. College of Occupational Therapists.
- NATIONAL INSTITUTE FOR HEALTH AND CLINICAL EXCELLENCE (NICE) (2007) Quick reference guide (amended). Depression: management of depression in primary and secondary care. National Institute for Health and Clinical Excellence: London.
- NCHINDA, T. (2002) Research capacity strengthening in the South. *Social Science & Medicine*, 54, 1699-1711.
- NELSON, D. & MATHIOWETZ, V. (2004) Randomized controlled trials to investigate occupational therapy research questions. *American Journal of Occupational Therapy*, 58, 24-34.

- NICHOLSON, E. (2006) Getting the evidence into occupational therapy practice: a review of the process and progress in encouraging evidence based practice in New Zealand. *WFOT Bulletin*, 53, 13-19.
- NOVAK, I. & MCINTYRE, S. (2010) The effect of education with workplace supports on practitioners' evidence-based practice knowledge and implementation behaviours. *Australian Occupational Therapy Journal*, 57, 386-393.
- NTULI, A. & DAY, C. (2004) Ten years on - have we got what we ordered? IN IJUMBA, P., DAY, C. & NTULI, A. (Eds.) *South African Health Review 2003/4*. Durban, Health Systems Trust.
- NURSING AND ALLIED HEALTH LITERATURE CINAHL VIA EBSCOHOST [Online]. Available: http://www.ebscohost.com/uploads/general/CINAHL_pre-sale_flyer_1010pdf.pdf [2011, 01 July]
- NUYENS, Y. & LANSANG, M. (2006) Knowledge translation: linking the past to the future. *Bulletin of the World Health Organization*, 84, 590-A.
- O'BRIEN, M., OXMAN, A., DAVIS, D., HAYNES, R., FREEMANTLE, N. & HARVEY, E. (1997) Educational outreach visits: effects on professional practice and health care outcomes (Review). *Cochrane Database of Systematic Reviews*.
- O'BRIEN, M., ROGERS, S., JAMTVEDT, G., OXMAN, A., ODGAARD-JENSEN, J., KRISTOFFERSEN, D., FORSETLUND, L., BAINBRIDGE, D., FREEMANTLE, N., DAVIS, D., HAYNES, R. & HARVEY, E. (2007) Educational outreach visits: effects on professional practice and health care outcomes (Review). *Cochrane Database of Systematic Reviews*.
- O'BRIEN, A., JONES, P., MULLIS, R., MULHERIN, D. & DZIEDZIC, K. (2006) Conservative hand therapy treatments in rheumatoid arthritis-a randomized controlled trial. *Rheumatology*, 45, 577-583.
- O'BRIEN, L. & PANDIT, A. (2006) Silicon gel sheeting for preventing and treating hypertrophic and keloid scars. *Cochrane Database of Systematic Reviews*.
- OCCUPATIONAL THERAPY ASSOCIATION OF SOUTH AFRICA [Online]. Available: <http://www.otasa.org.za/> [2011, 30 June]
- OCCUPATIONAL THERAPY ASSOCIATION OF SOUTH AFRICA (2005) *Code of ethics and professional conduct (revised July 2005)*. [Online]. Available: http://www.otasa.org.za/documents/code_of_ethics_2005.pdf [2010, 01 October]
- OTTENBACHER, K., TICKLE-DEGNEN, L. & HASSELKUS, B. (2002) Therapists awake! The challenge of evidence-based occupational therapy. *American Journal of Occupational Therapy*, 56, 247-249.
- OXFORD ENGLISH DICTIONARY (2011a) "perception, n." Oxford University Press.
- OXFORD ENGLISH DICTIONARY (2011b) "practice, n." Oxford University Press.
- PAGE, J., HELLER, R., KINLAY, S., LIM, L., QIAN, W., SUPING, Z., KONGPATANAKUL, S., AKHTAR, M., KHEDR, S. & MACHARIA, W. (2000) Where do developing world clinicians obtain evidence for practice: a case study on pneumonia. *Journal of Clinical Epidemiology*, 53, 669-675.
- PAIN, K., HAGLER, P. & WARREN, S. (1996) Development of an instrument to evaluate the research orientation of clinical professionals. *Canadian Journal of Rehabilitation*, 9, 93-100.
- PAIN, K., MAGILL-EVANS, J., DARRAH, J., HAGLER, P. & WARREN, S. (2004) Effects of professions and facility type on research utilization by rehabilitation professionals. *Journal of Allied Health*, 33, 3-9.
- PAKENHAM-WALSH, N. & MAYOSI, B. (2001) Where to practice evidence-based medicine. *Lancet*, 357, 723-724.
- PALMER, J. & BRICE, A. (2005) Information sourcing. IN HAMER, S. & COLLINSON, G. (Eds.) *Achieving evidence-based practice. A handbook for practitioners*. Edinburgh, Elsevier.

- PARKES, J., HYDE, C., DEEKS, J. & MILNE, R. (2001) Teaching critical appraisal skills in health care settings. *Cochrane Database of Systematic Reviews*.
- PERNEGER, T., CHAMOT, E. & BOVIER, P. (2005) Nonresponse bias in a survey of patient perceptions of hospital care. *Medical Care*, 43, 374-380.
- PHILIBERT, D., SNYDER, P., JUDD, D. & WINDSOR, M. (2003) Practitioners' reading patterns, attitudes, and use of research reported in occupational therapy journals. *American Journal of Occupational Therapy*, 57, 450-458.
- PICK, W. M., NEVHUTALU, K., CORNWALL, J. T. & MASUKU, M. (2000) Human resources for health. A draft national strategy. Department of Health.
- PITOUT, S. (2010) Research orientation of South African Occupational Therapists. *Health Care Sciences*. Polokwane, University of Limpopo.
- PITYANA, N. (1999) The renewal of African moral values. IN MAKGOBA, M. (Ed.) *African renaissance*. Cape Town, Mafube Publishing.
- POLLOCK, N. (1998) The Cochrane Collaboration. *Canadian Journal of Occupational Therapy*, 65, 168-170.
- PRESTON, C. & COLMAN, A. (2000) Optimal number of response categories in rating scales: reliability, validity, discriminating power, and respondents preferences [Abstract]. *Acta Psychologica*, 104, 1-15.
- PROCHASKA, J. & DICLEMENTE, C. (1982) Transtheoretical therapy: toward a more integrative model of change. *Psychotherapy Theory, Research and Practice*, 20, 161-173.
- PROCHASKA, J. & DICLEMENTE, C. (Eds.) (1992) *Stages of change in the modification of problem behaviours*, Sycamore Press.
- PROCHASKA, J., DICLEMENTE, C. & NORCROSS, J. (1992) In search of how people change. Applications to addictive behaviors. *American Psychologist*, 47, 1102-1114.
- PROCHASKA, J., VELICER, W., DICLEMENTE, C. & FAVA, J. (1988) Measuring processes of change: applications to the cessation of smoking. *Journal of Consulting and Clinical Psychology*, 56, 520-528.
- PROFESSIONAL BOARD FOR OCCUPATIONAL THERAPY AND MEDICAL ORTHOTICS/PROSTHETICS (2004) *Standards of practice for occupational therapists*. [Online]. Available: <http://www.hpcsa.co.za> [2006, 2006, June 6]
- PROVINCIAL GOVERNMENT OF THE WESTERN CAPE *Department of Health: overview*. [Online]. Available: <http://www.capegateway.gov.za/eng/yourgovernment/gsc/305> [2011, 08 February]
- PUBMED HOME [Online]. Available: <http://www.ncbi.nlm.nih.gov/pubmed/> [2011, 01 July]
- RAMOS, K., SCHAFFER, S., TRACZ, S. & WORKPLAN (2003) Validation of the Fresno Test of Competence in Evidence-based Medicine. *British Medical Journal*, 326, 319-321.
- RANDALL, L. (2000) Editorial. *South African Journal of Occupational Therapy*, 30, 2.
- RAPPOLT, S. (2003) The role of professional expertise in evidence-based occupational therapy. *American Journal of Occupational Therapy*, 57, 589-593.
- REAGON, C., BELLIN, W. & BONIFACE, G. (2008) Reconfiguring evidence-based practice for occupational therapists. *International Journal of Therapy & Rehabilitation*, 15, 428-436.
- REID, S. (2003) Community service for health professionals. IN IJUMBA, P. (Ed.) *South African Health Review 2002*. Durban, Health Systems Trust.
- ROBERTS, C. & TORGERSON, C. (1998) Randomisation methods in controlled trials. *British Medical Journal*, 317, 1301.
- ROGERS, E. (2003) *Diffusion of innovations*, New York, Free Press.

- ROLAND, M. & TORGERSON, D. (1998) Understanding controlled trials: what are pragmatic trials? *British Medical Journal*.
- ROLLNICK, S., HEATHER, N., GOLD, R. & HALL, W. (1992) Development of a short 'readiness to change' questionnaire for use in brief, opportunistic interventions among excessive drinkers. *British Journal of Addiction*, 87, 743-754.
- ROWE, A., DE SAVIGNY, D., LANATA, C. & VICTORA, C. (2005) How can we achieve and maintain high-quality performance of health workers in low-resource settings? *Lancet*, 366, 1026-1035.
- ROYAL AUSTRALIAN AND NEW ZEALAND COLLEGE OF PSYCHIATRISTS CLINICAL PRACTICE GUIDELINES TEAM FOR DEPRESSION (2004) Australian and New Zealand clinical practice guidelines for the treatment of depression. *Australian and New Zealand Journal of Psychiatry*, 38, 389-407.
- RUTLEDGE, K. (2000) *Social learning theory*. [Online]. Available: 2005, 18 October]
- SACKETT, D. (1997) Evidence-based medicine. *Seminars in Perinatology*, 21, 3-5.
- SACKETT, D., ROSENBERG, W., GRAY, J., HAYNES, R. & RICHARDSON, W. (1996) Evidence-based medicine: what it is and what it isn't. *British Medical Journal*, 312, 71-72.
- SACKETT, D., STRAUSS, S. & RICHARDSON, W. (2000) *Evidence-based medicine: how to practice and teach EBM*, Edinburgh, Churchill Livingstone.
- SALLS, J., DOLHI, C., SILVERMAN, L. & HANSEN, M. (2009) The use of evidence-based practice by occupational therapists. *Occupational Therapy in Health Care*, 23, 134-145.
- SALVATORI, P. & WARD, M. (2000) Development of a tool to measure clinical competence in occupational therapy: a pilot study. *Canadian Journal of Occupational Therapy*, 67, 51-60.
- SANDERS, D. & CHOPRA, M. (2006) Key challenges to achieving health for all in an inequitable society: the case of South Africa. *American Journal of Public Health*, 96, 73-78.
- SANTESSO, N. & TUGWELL, P. (2006) Knowledge translation in developing countries. *Journal of Continuing Education in the Health Professions*, 26, 87-96.
- SASARU, S., SHEWARD, Y. & SASARU, S. (2005) Audit in allied health professional practice. IN CLOUSTON, T. & WESTCOTT, L. (Eds.) *Working in health and social care. An introduction for allied health professionals*. Edinburgh, Elsevier Churchill Livingstone.
- SCHNEIDER, M. (2001) The setting of health research priorities in South Africa. Burden of Disease Unit, Medical Research Council.
- SCHOENFELD, P. (2005) Evidence-based medicine on practice: applying intention-to-treat analysis and perprotocol analysis. *American Journal of Gastroenterology*, 100, 3-4.
- SCHONSTEIN, E., KENNY, D., KEATING, J. & KOES, B. (2003) Work conditioning, work hardening and functional restoration for workers with back and neck pain. *Cochrane Database of Systematic Reviews*.
- SCHULZ, K., ALTMAN, D. & MOHER, D. (2007) Masking or Blinding? Blinding is better than masking. *British Medical Journal*, 334, 918.
- SCHULZ, K., ALTMAN, D. & MOHER, D. (2010) CONSORT 2010 statement: updated guidelines for reporting parallel group randomised controlled trials. *British Medical Journal*.
- SCHULZ, K. & GRIMES, D. (2002a) Allocation concealment in randomised trials: defending against deciphering. *Lancet*, 359, 614-618.
- SCHULZ, K. & GRIMES, D. (2002b) Generation of allocation sequences in randomised trials: chance, not choice. *Lancet*, 359, 515-519.
- SCHWARTZ, D. & LELLOUCH, J. (1967) Explanatory and pragmatic attitudes in therapeutic trials. *Journal of Chronic Diseases*, 20, 637-648.

- SHANEYFELT, T., BAUM, K., BELL, D., FELDSTEIN, D., HOUSTON, T., KAATZ, S., WHELAN, C. & GREEN, M. (2008) Instruments for evaluating education in evidence-based practice. A systematic review. *Journal of the American Medical Association*, 296, 1116-1127.
- SHISANA, O. (2008) A national health system: opportunities and challenges for South Africa. IN UNIT, H. P. A. (Ed.) *Financing South Africa's national health system through national health insurance* Cape Town, HSRC Press,.
- SIBBALD, B. & ROLAND, M. (1998) Understanding controlled trials: why are randomised controlled trials important? *British Medical Journal*.
- SIDDIQI, K. & NEWELL, J. (2005) Putting evidence into practice in low-resource settings. *Bulletin of the World Health Organization*.
- SIDDIQI, K., NEWELL, J. & ROBINSON, M. (2005) Getting evidence into practice: what works in developing countries? *Quality in Health Care*, 17, 447-453.
- SIDDIQI, K. & ROBINSON, M. (2006) Getting evidence into practice in developing countries. *Evidence-based Cardiovascular Medicine*, 10, 5-7.
- SIEGFRIED, N., SWINGLER, G., SEEDAT, S., MULLER, M., CHURCHILL, R. & STEIN, D. (2003) What do South African psychiatrists and GPs think, feel and know about evidence-based mental health care? *South African Medical Journal*, 93, 114-117.
- SIEGFRIED, N. & VOLMINK, J. (2003) The South African Cochrane Centre - helping practitioners to identify and apply best evidence in practice. *Continuing Medical Education*, 21, 536-539.
- SINGH, J. (2004) Health research and human rights in South Africa. *Lancet*, 363, 1393.
- SMITH, H., BROWN, H., HOFMEYER, G. & GARNER, P. (2004) Evidence-based obstetric care in South Africa - influencing practice through the 'better births initiative'. *South African Medical Journal*, 94, 117-120.
- SO, K., UMRAW, N., SCOTT, J., CAMPBELL, K., MUSGRAVE, M. & CARTOTTO, R. (2003) Effects of enhanced patient education on compliance with Silicone gel sheeting and burn scar outcome: a randomized prospective study. *Journal of Burn Care and Rehabilitation*, 24, 411-417.
- SOLTANI, A., MOAYYERI, A. & RAZA, M. (2004) Impediments to implementing evidence-based mental health in developing countries. *Evidence Based Mental Health*, 7, 64-66.
- SOUTH AFRICAN POST OFFICE *National bulk mail service guide. Sorting criteria*. [Online]. Available: <http://www.sapo.co.za/BulkMailGuide/pages/dls/sorting.htm> [2009, 18 September]
- SPITTLE, A., ORTON, J., DOYLE, L. & BOYD, R. (2007) Early developmental intervention programs post hospital discharge to prevent motor and cognitive impairments in preterm infants. *Cochrane Database of Systematic Reviews*.
- SPSS INC (2009) *PASW Statistics 18*. [Online]. Available: <http://www.spss.com/>
- STAT TREK (2009) *AP statistics tutorial: experimental design*. [Online]. Available: <http://www.statrek.com/AP-Statistics-2/Experimental-Design.aspx?Tutorial=AP> [2009, 14 October]
- STACORP (2007) *Stata Statistical Software: Release 10*. College Station, Texas, Statcorp.
- STATISTICS SOUTH AFRICA (2005) *Census 2001. Achieving a better life for all. Progress between Census '96 and Census 2001*.
- STATISTICS SOUTH AFRICA (2010) *Mid-year population estimates 2010*. [Online]. Available: <http://www.statssa.gov.za/publications/P0302/P03022010.pdf> [2011, 08 February]
- STATSOFT INC (2008) *STATISTICA 8* (data analysis software system). version 8 ed.
- STEVENSON, K., LEWIS, M. & HAY, E. (2004) Do physiotherapists' attitudes towards evidence-based practice change as a result of an evidence-based educational programme? *Journal of Evaluation in Clinical Practice*, 10, 207-217.

- STRAUS, S., BALL, C., BALCOMBE, N., SHELDON, J. & MCALISTER, F. (2005) Teaching evidence-based medicine skills can change practice in a community hospital. *Journal of General Internal Medicine*, 20, 340-343.
- STREINER, D. & NORMAN, G. (2008) *Health measurement scales. A practical guide to their development and use*, Oxford, Oxford University Press.
- SWEETLAND, J. & CRAIK, C. (2001) The use of evidence-based practice by occupational therapists who treat adult stroke patients. *British Journal of Occupational Therapy*, 64, 256-260.
- TAYLOR, M. (1997) What is evidence-based practice? *British Journal of Occupational Therapy*, 60, 470-473.
- TAYLOR, M. (2007) *Evidence-based practice for occupational therapists*, Oxford, Blackwell Publishing
- TAYLOR, M. & SAVIN-BADEN, M. (2001) Whose 'evidence' are we applying? *British Journal of Occupational Therapy*, 64, 213.
- TERWEE, C., DEKKER, F. & BOSSUYT, P. (2002) A taxonomy for responsiveness? *Journal of Clinical Epidemiology*, 55, 1156.
- TERWEE, C., DEKKER, F., WIERSINGA, W., PRUMMEL, M. & BOSSUYT, P. (2003) On assessing responsiveness of health-related quality of life instruments: Guidelines for instrument evaluation. *Quality of Life Research*, 12, 349-362.
- THE CONSORT GROUP (2010) *CONSORT endorsers - Journals*. [Online]. Available: <http://www.consort-statement.org/about-consort/supporters/consort-endorsers---journals/> [2011, 01 February]
- THE WORLD BANK GROUP (2010a) *Country classifications*. [Online]. Available: <http://data.worldbank.org/about/country-classifications/a-short-history> [2010, 10 August]
- THE WORLD BANK GROUP (2010b) *Health expenditure, total (% GDP)*. [Online]. Available: <http://data.worldbank.org/indicator/SH.XPD.TOTL.ZS> [2010, 04 October]
- THE WORLD BANK GROUP (2010c) *Millennium Development Goals*. [Online]. Available: <http://data.worldbank.org/about/millennium-development-goals> [2010, 10 August]
- TICKLE-DEGNEN, L. (1999) Organizing, evaluating and using evidence in occupational therapy practice. *American Journal of Occupational Therapy*, 53, 537-539.
- TICKLE-DEGNEN, L. & BEDELL, G. (2003) Heterarchy and hierarchy: a critical appraisal of the "levels of evidence" as a tool for clinical decision-making. *American Journal of Occupational Therapy*, 57, 234-237.
- TORGERSON, C. & ROBERTS, C. (1999) Randomisation methods: concealed allocation. *British Medical Journal*, 319, 375-376.
- UPTON, D. (1999a) Clinical effectiveness and EBP 2: Attitudes of health-care professionals. *British Journal of Therapy and Rehabilitation*, 6, 26-30.
- UPTON, D. (1999b) Clinical effectiveness and EBP 2: Attitudes of health-care professionals. *British Journal of Therapy and Rehabilitation*, 6, 26-30.
- UPTON, D. (1999c) Clinical effectiveness and EBP 3: application by health-care professionals. *British Journal of Therapy and Rehabilitation*, 6, 86-90.
- UPTON, D. & LEWIS, B. (1998) Clinical effectiveness and EBP 1: design of a questionnaire. *British Journal of Therapy and Rehabilitation*, 5, 647-650.
- UPTON, D. & UPTON, P. (2006) Knowledge and use of evidence-based practice by allied health and health science professionals in the United Kingdom. *Journal of Allied Health*, 35, 127-133.
- UYS, K. (2004) Evidence-based therapy: why do we need it? *Focus*, October, 10.

- VAN MULLEM, C., BURKE, L., DOHMEYER, K., FARRELL, M., HARVEY, S., JOHN, L., KRALY, C., ROWLEY, F., SEBERN, M., TWITE, K. & ZAPP, R. (1999) Strategic planning for research use in nursing practice. *Journal of Nursing Administration*, 29, 38-45.
- VARCOE, C. & HILTON, A. (1995) Factors affecting acute-care nurses' use of research findings. *Canadian Journal of Nursing Research*, 27, 51-71.
- VOLMINK, J., SWINGLER, G. & SIEGFRIED, N. (2001) Where to practice evidence-based medicine. *Lancet*, 357, 724.
- VON ZWECK, C. (2004) Understanding our context for occupational therapy practice: a key to strategies for success. *Canadian Journal of Occupational Therapy*, 71, 133-137.
- WAJON, A. & ADA, L. (2005) No difference between two splint and exercise regimens for people with osteoarthritis of the thumb: a randomised controlled trial. *Australian Journal of Physiotherapy*, 51, 245-249.
- WALKER, M. (2003) Past conditional, present indicative, future indefinite. *British Journal of Occupational Therapy*, 66, 338-344.
- WALKER, S., CHANG, S., POWELL, C. & GRANTHAM-MCGREGOR, S. (2004) Psychosocial intervention improves the development of term low-birth-weight infants. *Journal of Nutrition*, 134, 1417-1423.
- WALLEN, M. (2005a) A preventative occupational therapy program for people with early rheumatoid arthritis increased the use of some self management strategies but did not improve pain or perceived health status over 2 years. *Australian Occupational Therapy Journal*, 52, 261.
- WALLEN, M. (2005b) There is evidence that joint protection education and comprehensive occupational therapy enhances functional outcomes in adults with rheumatoid arthritis. *Australian Occupational Therapy Journal*, 52, 264-265.
- WALLEN, M. (2007a) Kinaesthetic training was no more effective than handwriting practice or no treatment in improving kinaesthesia or handwriting speed and legibility in grade-one students. 240-241.
- WALLEN, M. (2007b) Therapeutic practice resulted in moderate improvement in handwriting ability for children with poor handwriting when compared with sensorimotor intervention, but not when compared with a control group. *Australian Occupational Therapy Journal*, 54.
- WATSON, R. (2004) New horizons in occupational therapy. IN WATSON, R. & SWARTZ, L. (Eds.) *Transformation through occupation*. London, Whurr Publishers.
- WATSON, R. & BUCHANAN, H. (2005) Making our practice evidence-based. *South African Journal of Occupational Therapy* 35, 14-19.
- WATSON, R. & FOURIE, M. (2004a) International and African influences on occupational therapy. IN WATSON, R. & SWARTZ, L. (Eds.) *Transformation through occupation*. London, Whurr.
- WATSON, R. & FOURIE, M. (2004b) Occupation and occupational therapy. IN WATSON, R. & SWARTZ, L. (Eds.) *Transformation through occupation*. London, Whurr Publishers.
- WEISS, S., LASTAYO, P., MILLS, A. & BRAMLET, D. (2004) Splinting the Degenerative Basal Joint: Custom-made or Prefabricated Neoprene? *Journal of Hand Therapy*, 17, 401-406.
- WELCH, A. & DAWSON, P. (2006) Closing the gap: collaborative learning as a strategy to embed evidence within occupational therapy practice. *Journal of Evaluation in Clinical Practice*, 12, 227-238.
- WEST, W. (1968) Occupational therapy philosophy and perspective. *American Journal of Nursing*, 68, 1708-1711.

- WHITEFORD, G. (2005) Knowledge, power, evidence: a critical analysis of key issue in evidence based practice. IN WHITEFORD, G. & WRIGHT-ST CLAIR, V. (Eds.) *Occupation & practice in context*. Sydney, Elsevier.
- WHITEFORD, G. & WRIGHT-ST CLAIR, V. (2005) *Occupation and practice in context*, Sydney, Elsevier.
- WOJTCZAK, A. (2002) Glossary of medical terms: Part 3. *Medical Teacher*, 24, 450-453.
- WORLD FEDERATION OF OCCUPATIONAL THERAPISTS [Online]. Available: <http://www.wfot.org/> [2011, 30 June]
- WORLD FEDERATION OF OCCUPATIONAL THERAPISTS (2004) World Federation of Occupational Therapists (WFOT) Code of Ethics. World Federation of Occupational Therapists.
- WORLD FEDERATION OF OCCUPATIONAL THERAPISTS (2010) *Occupational therapy human resources project (results listed in numerical order)*. [Online]. Available: http://www.wfot.org/office_files/WFOT%20Human%20Resources%20Project%202010%20Numerical%281%29.pdf [2011, 01 August]
- WORLD HEALTH ORGANIZATION (2001) *ICF checklist, version 2.1a, clinician form for International Classification of Functioning, Disability and Health*. [Online]. Available: <http://e-bility.gr/eutexnos/Includes/icf-checklist.pdf> [2008, 29 June]
- WORLD HEALTH ORGANIZATION (2003) *World health report 2003: shaping the future*, Geneva, World Health Organization.
- WORLD HEALTH ORGANIZATION (2009) *Global health observatory*. [Online]. Available: <http://apps.who.int/ghodata/?vid=18400> [2010, 04 October]
- WYER, P. & SILVA, S. (2009) Where is the wisdom? I - A conceptual history of evidence-based medicine. *Journal of Evaluation in Clinical Practice*, 15, 891-898.
- ZWARENSTEIN, M., TREWEEK, S., GAGNIER, J., ALTMAN, D., TUNIS, S., HAYNES, B., OXMAN, A. & MOHER, D. (2008) Improving the reporting of pragmatic trials: an extension of the CONSORT statement. *British Medical Journal*, 337, 1-8.

Appendix I: Details of searches conducted

Chapter 2:

Search 1: The origins and development of EBP

As “evidence-based practice” was only introduced as a MeSH term in 2009 the other entry terms listed in Pubmed were also used. The search terms (“evidence-based practice” OR “evidence based practice” OR “evidence-based health care” OR “evidence based health care” OR “evidence-based medicine” OR “evidence based medicine”) were combined with (development OR origin* OR history) using AND. All terms were searched in the title only. The same strategy was used in CINAHL.

Search 2: Evidence-based practice in occupational therapy

Terms used to search Pubmed in the title were: “occupational therapy” AND (“evidence-based practice” OR “evidence based practice” OR “evidence-based health care” OR “evidence based health care” OR “evidence-based medicine” OR “evidence based medicine”). The same string was used to search CINAHL excepting that “occupational therapy” was searched in the title and abstract in Pubmed and the Abstract in CINAHL while the remaining terms were searched in the title only.

Search 3: Philosophy of occupational therapy

The following search string was used to search the title: “occupational therapy” AND (“philosophy OR foundation*”) in Pubmed and CINAHL.

Chapter 3:

Search terms for databases selected in EBSCOHost were (“occupational therapy” OR “occupational therapists”) AND (“evidence-based” OR “evidence based”) AND (knowledge OR skills OR attitudes OR views OR perceptions OR practice OR “use of research” OR “research use” OR “research utilisation” OR “research utilization”). As 1167 articles were found, many of which were not

relevant, the search was narrowed by selecting 'human' under the subject heading and 'occupational therapy' and 'occupational therapists' under the major heading. No limits for language were set.

In Pubmed the MeSH terms "Occupational Therapy" AND "Evidence-Based Practice" AND "Health Knowledge, Attitudes, Practice" were used. In addition, search terms used in EBSCOHost were used to search in the title and abstract.

Chapter 5:

Search terms for EBSCOHost databases were ("occupational therapy" OR "occupational therapy practice" OR OT) AND (tool OR survey OR instrument OR test OR measure OR scale OR questionnaire) AND ("evidence-based practice" OR "evidence based practice" OR EBP OR "evidence-based-medicine" OR evidence-based) AND (knowledge OR awareness OR skills OR attitudes OR perceptions OR behaviour OR practice OR ability OR uptake OR implementation OR "research use" OR "research utilisation" OR "research utilization"). For Pubmed each of the aforementioned sets of terms was first searched individually and then the four sets of results were combined. The terms were used as MeSH and as text. No limits were set and no attempt was made to identify unpublished materials.

Appendix II: Sources of questionnaire items and modifications made

Item no.	Source	Modifications
1-5	Bennett <i>et al</i> (2003b) – items 2, 3, 4, 6 & 7	Slight wording change to item 5 to fit SA context
6	Bennett <i>et al</i> (2003) – item 25	Provided tick boxes. Removed 'other'. Changed wording of d) slightly for SA context.
7	Siegfried <i>et al</i> (2003b) – item 2	None
8	Bennett <i>et al</i> (2003) – item 26	Provided tick boxes. Changed response categories to 2 – 'SA university' and 'elsewhere'
9	Siegfried <i>et al</i> (2003b) – item 7	Changed 'mental health care' to 'occupational therapy'. Added 'clinical' so item read 'clinical experience'.
11	Bennett <i>et al</i> (2003) - item 27	Provided tick boxes. Changed 'metropolitan region' to 'urban area' and 'remote region' to 'rural area' as used in item 5 of Siegfried <i>et al</i> 's (2003b) questionnaire. Removed qualifiers. Changed 'regional/rural region' to peri-urban area'. Removed 'other' as an option.
12	Bennett <i>et al</i> (2003) - item 28	Provided tick boxes. Slight wording change for SA context and added list of provinces in SA.
13	Siegfried <i>et al</i> (2003b) – item 4	Removed options 3 and 4.
16	Bennett <i>et al</i> (2003b) – item 30	Provided tick boxes. Added 5 more response options in keeping with OT practice in SA.
17	Bennett <i>et al</i> (2003b) – item 8	Slight wording changes to a-c, e & g. Added extra item for 'internet'.
22-24	Bennett <i>et al</i> (2003b) – items 14-16	Removed 'other' option for item 23 and 24. Changed method of marking responses to a X.
26	Bennett <i>et al</i> (2003b) – item 13	None
29	Bennett <i>et al</i> (2003b) – item 20	Added tick boxes and space to include year of training
30	Bennett <i>et al</i> (2003b) – item 18	Likert scale changed to 4 points (not useful, slightly useful, very useful, extremely useful). Minor wording changes made to a)-c). Response options removed for 'other' and provided space to record information instead.
31	Bennett <i>et al</i> (MacDermid <i>et al.</i> , 2006) – item 23	Added 'in South Africa'

Appendix III: Occupational Therapists' Perceptions of Evidence Based Practice: A Survey

Instructions:
 Please answer the following questions by entering an X in the appropriate box. There are no 'correct' answers.

Section 1: Evidence based practice: concepts & perceptions

Evidence-based practice has been defined as *'the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individuals'* (Sackett et al, 1996: 71).

	Strongly disagree	Disagree	Agree	Strongly agree
1. Evidence-based practice is important to occupational therapy.	1	2	3	4
2. Evidence-based practice improves client care.	1	2	3	3
3. Evidence-based practice is of limited value in occupational therapy because there is not enough research evidence.	1	2	3	4
4. The adoption of evidence-based practice, however worthwhile as an ideal, places too many demands on my workload.	1	2	3	4

5. How have you heard about evidence based practice? (please mark all that apply)

- Colleagues
- National or provincial newsletters
- Journals
- Conferences/workshops
- I have not heard about it until this questionnaire
- Other (please describe) _____

Section 2: Demographics

6. What is your **highest occupational therapy** qualification?
- Diploma
 - Bachelors degree
 - Postgraduate coursework (Certificate/Diploma)
 - Postgraduate degree
7. What is your age?
- 30 years or less
 - 31 - 40 years old
 - 41 - 50 years old
 - 50 years old
8. Where did you obtain your highest occupational therapy qualification?
- A South African university
 - Elsewhere
9. How many years of clinical experience in occupational therapy do you have?
- Less than 2 years
 - 2 - 5 years
 - 5 - 10 years
 - More than 10 years
10. Do you currently have any clinical contact with clients?

YES	NO
-----	----

If 'no' go to question 23. If 'yes' continue with question 11.

11. Where do you mainly practice? (please mark all that apply)
- Urban area
 - Peri-urban area
 - Rural area
12. In which Province are you currently working?
- Eastern Cape
 - Free State
 - Gauteng
 - Kwazulu Natal
 - Limpopo
 - Mpumalanga
 - Northern Cape
 - Northern Province

- Western Cape

13. Are you currently employed in the

- Public service, including Universities (**proceed to question 14**)
- Private sector (**proceed to question 15**)

14. If you are currently working in Public service, where do you do **most** of your work?

- Teaching hospital
- Other hospital
- Community health centre and/or the community
- School
- University
- Combination of the above, or other

Proceed to question 16.

15. If you are employed in the private sector, do you work in

- A private O.T. practice
- A non-governmental organisation
- An insurance company
- Other (please specify) _____

16. What is your **main** caseload/responsibility?

- Paediatrics
 - Adult physical
 - Mental health /psychosocial
 - Geriatric
 - Intellectual impairment
 - Community development
 - Client assessment
 - Management
 - Education
 - Training
 - Mix (please specify) _____
 - Other _____
-

Section 3: The use of evidence based practice in clinical decision making

17. How often have you relied on each of the following when making treatment decisions during the last **TWO months**?

	Not at all	Rarely	Often	Very often
a) Undergraduate training	1	2	3	4
b) Opinion of colleagues	1	2	3	4
c) Research literature (hard copy)	1	2	3	4
d) The internet	1	2	3	4
e) Information from continuing education programmes/seminars	1	2	3	4
f) Textbooks	1	2	3	4
g) Your own clinical experience	1	2	3	4
h) Other (please specify): _____ _____	1	2	3	4

18. Have you been successful in finding evidence relevant to clinical problems seen in your practice?

YES	NO
-----	----

If not, why not? _____

If you answered 'no' proceed to question 22. If 'yes' continue with question 19.

19. Which of the following have you been using? (You may mark more than one if necessary).

- Systematic reviews and meta-analyses of randomised controlled trials
- Randomised controlled trials
- Non-randomised experimental studies

20. Have you been able to extract the information you needed from your sources?

YES	NO
-----	----

If not, why not? _____

21. Have you been able to apply the evidence in the South African context?

YES	NO
-----	----

If not, why not? _____

Moving from 'opinion based' practice towards evidence-based practice can be done in 3 ways:

- A. Learning the skills of evidence based practice, e.g. to search for and appraise the primary literature oneself.**
- B. Seeking and applying brief evidence-based summaries of current occupational therapy clinical research, developed by others, which gives clear answers to clinical questions**
- C. Using evidence based occupational therapy practice guidelines or protocols developed by colleagues.**

Considering the above options, please place an X in the appropriate column/s for the following questions.

	A	B	C	None	Other:
22. Which of the methods listed above are you currently using? (you may mark one or more columns)					
23. Which of the above methods (A, B or C) would you be interested in using in the future ? (you may mark one or more columns)					
24. Which ONE of these methods do you think should be the main priority in the near future for occupational therapy in South Africa? (Please place an X in ONE column only)					

25. Which of the following do you have access to? (please mark all that apply)

	YES	NO
a) A computer		
b) The internet		
c) A professional library		
d) Journals		
e) Colleagues – other OTs		
f) Colleagues – other health professionals		

26. Please indicate your level of confidence in the following skills by marking the appropriate column.

	Not at all confident	A little sure	Quite confident	Very confident
a) Literature searching	1	2	3	4
b) Determining what the design of a study is	1	2	3	4
c) Evaluating the validity of a study	1	2	3	4
d) Determining the clinical significance of a study's results	1	2	3	4
e) Using the Cochrane Library's electronic data bases	1	2	3	4

If you have marked the first column in response to any of the questions, please give a few reasons why you do not feel confident.

27. If you use a search engine/s, which is/are your favourite?

28. If you use a professional website/s, which do you use most often?

Section 4: Training in evidence based practice

29. Have you had any training in evidence based practice or attended any workshops?

YES	NO
-----	----

If yes, please give year:.....

30. If continuing education opportunities become available in the future, how useful would you find the following formats for accessing research summaries?

	Not useful	Slightly useful	Very useful	Extremely useful
a) Brief summaries (one page or less)	1	2	3	4
b) Summaries on databases (web based or CD ROM)	1	2	3	4
c) Short in service training sessions	1	2	3	4
d) Workshops	1	2	3	4
e) Other (please describe):				

31. Do you have any suggestions or comments for the development of evidence-based occupational therapy practice in South Africa?

(attach extra pages if necessary)

If you wish to be informed of any developments that may occur, please provide us with your details:

Name:

Email address:

Postal address:

.....

.....

Telephone no.: Code Number:

Many thanks for your time.

Please return this in the envelope provided by 28th May 2004.

Appendix IV: Covering letter

[University of Cape Town letterhead]

10 May 2004

Dear Colleague

South African Evidence-based practice survey

An unexpected and exciting invitation has come our way to participate in an International Conference on Evidence-based Occupational Therapy. The three-day conference will be held in Washington DC in July 2004. The American Occupational Therapy Association has asked OTs currently engaged in evidence-based practice (EBP) to join in establishing a network to promote support for this professional development internationally.

In preparation for the conference we invite you to participate in a survey to identify the knowledge and use of EBP amongst OTs in South Africa. The survey results will help us to plan for participation at the Conference. There are no published surveys of occupational therapy EBP conducted in developing countries to date, so the results of the attached questionnaire will make an important contribution to OT literature internationally when they are published.

You will have heard about EBP in recent years, but what does it really mean for you in your daily practice? We would like to know your thoughts about EBP, including any experiences you have had in implementing it in practice. Attached is a questionnaire. Please would you complete it and return to us? It should take you no more than 20 minutes and a pre-paid envelope is provided for your convenience.

We obtained your address from the register of the Health Professions Council of South Africa. To ensure a good return rate, it is necessary to keep track of individual questionnaires but your personal response will be treated as confidential at all times and only one researcher will have

access to information which links your name and response. Please note that if you complete this questionnaire you agree to our using the content.

If you have any questions about the survey please contact Helen Buchanan (tel: 021-406 6383; email: hbuchan@uctgsh1.uct.ac.za). Approval by the Ethics Committee of the Faculty of Health Sciences at the University of Cape Town has been obtained.

Thank you for your time - we look forward to your response.

Yours sincerely

Helen Buchanan

Lecturer

Division of Occupational Therapy

Ruth Watson

Emeritus Professor

Division of Occupational Therapy

PS The publishers Slack Inc. have donated a copy of the Mary Law book **Evidence-based Rehabilitation: A guide to practice** for one lucky person who returns the questionnaire by the due date.

Appendix V: Ethics approval letter for Study 1

UNIVERSITY OF CAPE TOWN



Research Ethics Committee
Faculty of Health Sciences
OMB E53 Room 44.1, GSH
Queries : Xolile Fula
Tel : (021) 406-6492 Fax: 406-6411
E-mail : Xfula@curie.uct.ac.za

19 March 2004

REC REF: 011/2004

Ms H Buchanan
Health Rehabilitation Sciences

Dear Ms Buchanan

SURVEY OF THE KNOWLEDGE AND USE OF EVIDENCE-BASED PRACTICE AMONGST
OCCUPATIONAL THERAPISTS IN SOUTH AFRICA

Thank you for your letter to the Research Ethics Committee dated 3 March 2004.

It is a pleasure to inform you that the Ethics Committee has formally approved the above-mentioned study on the 18th March 2004.

The Ethics Committee thanks you for your response to the queries raised.

Please quote the Reference number in all correspondence.

Yours sincerely

PROF T. ZABOW
CHAIRPERSON

Appendix VI: Missing data for Study 1

Item no.	Construct	Focus of item	Missing data*	
			No.	%
1	Perceptions	EBP is important to OT	6	4.8
2		Improved client care	8	6.5
3		Limited value in OT	11	8.9
4		EBP places too many demands on my workload	13	10.5
6	Demographics	Highest qualification	0	0
7		Age	0	0
8		Country of study	0	0
9	Practice profile	Years of work experience	0	0
10		Client contact	0	0
11		Location of work	5	4.0
12		Province	1	0.8
13		Sector	5	4.0
14		Public-place of work (N=47)	2	4.0
15		Private - place of work (N=64)	1	1.6
16		Main caseload/responsibility	9	7.3
17(a)	Utilisation	Undergraduate education	22	17.7
17(b)		Opinion of colleagues	24	19.4
17(c)		Research literature	22	17.7
17(d)		Internet	18	14.5
17(e)		Continuing education programmes	19	15.3
17(f)		Textbooks	17	13.7
17(g)		Own clinical experience	13	10.5
18		Successful in finding evidence	12	9.7
19(a)		Systematic reviews	74	59.7
19(b)		RCTs	74	59.7
19(c)		Non-randomised experimental studies	74	59.7
20		Able to extract information	70	56.5
21		Able to apply	68	54.8
22A		Methods currently using: Searching for and appraising primary literature	14	11.3
22B		Methods currently using: Seeking and applying evidence-based summaries	14	11.3
22C		Methods currently using: evidence-based guidelines/protocols	15	12.1
22	Methods currently using: <i>None</i>	14	11.3	

Item no.	Construct	Focus of item	Missing data*	
			No.	%
25(a)	Resources	Computer	1	0.8
25(b)		Internet	6	4.8
25(c)		Professional library	28	22.6
25(d)		Journals	17	13.7
25(e)		Colleagues - OTs	5	4.0
25(f)		Colleagues - other	7	5.6
26(a)	Skills	Literature searching	2	1.6
26(b)		Determining the design of a study	4	3.2
26(c)		Evaluating the validity of a study	3	2.4
26(d)		Determining the clinical significance of the study results	3	2.4
26(e)		Using the Cochrane Library	3	2.4
5	Training	How have you heard about EBP	1	0.8
23		Methods for use in the future	7	5.6
24		Main priority for future	8	6.5
29		Training in EBP	1	0.8
30(a)		Useful formats for continuing education events: <i>Brief summaries</i>	7	5.6
30(b)		Useful formats for continuing education events: <i>Summaries on databases</i>	11	8.9
30(c)		Useful formats for continuing education events: <i>Short in-service training sessions</i>	7	5.6
30(d)		Useful formats for continuing education events: <i>Workshops</i>	4	3.2

*N=124 unless otherwise stated

Appendix VII: Associations between perceptions and demographic characteristics

Variable	Yes n/N (%)	Yes n/N (%)	Yes n/N (%)	Yes n/N (%)	Yes n/N (%)	Yes n/N (%)	Yes n/N (%)	Yes n/N (%)	Yes n/N (%)	Chi-square	df	P-value
<i>Qualification</i>	Undergrad.	Postgrad.										
EBP is important to OT	79/80 (98.8)	38/38 (100.0)										1.000*
EBP improves client care	78/79 (98.7)	37/37 (100.0)										1.000*
EBP is of limited value in OT because there is not enough research evidence	31/77 (68.1)	16/36 (44.4)								0.18	1	0.674
EBP places too many demands on my workload	32 (76 (42.1)	17 (48.6)								0.41	1	0.524
<i>Age</i>	<30 years	31-40 years	41-50 years	> 50 years								
EBP is important to OT	41/41 (100.0)	47/48 (97.9)	17/17 (100.0)	12/12 (100.0)						1.47	3	0.689
EBP improves client care	40/40 (100.0)	47/48 (97.9)	17/17 (100.0)	11/11 (100.0)						1.43	3	0.699
EBP is of limited value in OT because there is not enough research evidence	17/40 (42.5)	18/47 (38.3)	7/15 (46/7)	11/11 (100.0)						0.45	3	0.930
EBP places too many demands on my workload	18/40 (45/0)	16/45 (35.6)	9/15 (60.0)	6/11 (54.6)						3.37	3	0.338
<i>Years experience</i>	> 5 years	≤ 5 years										
EBP is important to OT	87/88 (98.9)	30/30 (100.0)										1.000*
EBP improves client care	86/87 (98.9)	29/29 (100.0)										1.000*
EBP is of limited value in OT because there is not enough research evidence	36/84 (42.9)	11/29 (37.9)								0.22	1	0.643
EBP places too many demands on my workload	34/82 (41.5)	15/29 (51.7)								0.91	1	0.339

Variable	Yes n/N (%)	Yes n/N (%)	Yes n/N (%)	Yes n/N (%)	Yes n/N (%)	Yes n/N (%)	Yes n/N (%)	Yes n/N (%)	Yes n/N (%)	Chi-square	df	P-value
Province	E. Province	Free State	Gauteng	KZN	Mpumalan ga	N. Cape	N. West	W. Cape	Combinatio n			
EBP is important to OT	2/2 (100.0)	10/10 (100.0)	45/45 (100.0)	14/15 (93.3)	7/7 (100.0)	1/1 (100.0)	4/4 (100.0)	31/31 (100.0)	2/2 (100.0)	6.86	8	0.552
EBP improves client care	2/2 (100.0)	10/10 (100.0)	44/44 (100.0)	13/14 (92.9)	7/7 (100.0)	1/1 (100.0)	4/4 (100.0)	31/31 (100.0)	2/2 (100.0)	7.28	8	0.507
EBP is of limited value in OT because there is not enough research evidence	2/2 (100.0)	6/10 (60.0)	17/42 (40.5)	4/15 (26.7)	2/6 (33.3)	0/1 (0.0)	2/4 (50.0)	13/30 (43.3)	1/2 (50.0)	6.67	8	0.573
EBP places too many demands on my workload	1/1 (100.0)	2/10 (20.0)	22/42 (52.4)	4/14 (28.6)	3/7 (42.9)	0/1 (0.0)	3/4 (75.0)	13/29 (44.8)	1/2 (50.0)	8.51	8	0.385
	Urban/	Rural	Combinatio n									
EBP is important to OT	96/97 (99.0)	13/13 (100.0)	4/4 (100.0)							0.18	2	0.915
EBP improves client care	95/96 (99.0)	12/12 (100.0)	4/4 (100.0)							0.17	2	0.919
EBP is of limited value in OT because there is not enough research evidence	38/94 (40.4)	5/11 (45/5)	3/4 (75.0)							1.93	2	0.380
EBP places too many demands on my workload	43/93 (46.2)	3/12 (25.0)	2/3 (66.7)							2.56	2	0.278

Fisher's exact p, two-tailed

Appendix VIII: Interview guide for face validity and utility pilot study

Introduction

Thank participants for making time to complete questionnaire and participate in focus group

Explain purpose of focus group:

Obtain feedback on their experience of completing the questionnaire and their impressions of the format and content of the questionnaire

Important to have questionnaire that is user friendly to ensure maximum response rate is obtained

Structure of focus group: First obtain overall impressions and then go through each item to get item-specific feedback.

Questions

What were your overall impressions of the questionnaire in terms of:

Layout

Length

Content

Ease of completion

Go through each item and ask participants to give feedback on:

clarity of wording

scoring

ambiguities

redundancy

unclear instructions

Once all items have been discussed, thank participants for their time.

Appendix IX: Grading rubric for baseline SAFT

Shortened Adapted Fresno Test of Competence in EBP: Grading Rubric for Baseline Questionnaire items 20-22

General instruction to raters: If in doubt, mark down, not up.

Question 20

Instruction to raters:

This question is worth a total of 16 points as follows:

- a maximum of 3 points for the P, I, C and O parts of the question (see rubric below for mark allocations), and
- a maximum of 4 points for the question as a whole. If all four parts are present in the question, give an additional 4 marks. Deduct one mark for each missing component.

Each answer is to be placed into a designated marking category. Use the marking grid to record your scores. **If in doubt, consider whether what is written will contribute to an optimally specific search of the literature. Intervention of interest can be interchanged with comparison, but only score a response in one column.**

Please read the 2 scenarios below, and try to answer all of the following questions to the best of your ability. Do not worry if you are unfamiliar with the diagnoses mentioned; this should not affect your answers. You will find most of the following questions quite challenging, and will need to think carefully when answering them. If you are unsure of an answer, please say so.

Scenario 1

You have received a referral for a 32-year old female client with painful wrists and tingling in her hands. She currently works as a word-processor. Her pain has been getting progressively worse over the past 6 months. She has been diagnosed with occupational overuse syndrome. She has been doing wrist and finger stretches intermittently at work, but not consistently, and finds the stretches of little benefit. Her supervisor has suggested that this woman take 2-3 weeks off work and rest, advice which you don't agree with.

Scenario 2

The 14-year old son of a close friend has been diagnosed with depression. He is studying for school exams. Their GP has prescribed anti-depressants, but no other form of intervention. You are looking for information to give to your friend about other interventions. You have heard that exercise and cognitive behavioural therapy (CBT) may help. As this teenager has limited time due to exams, you want to find out whether there is any evidence to support the use of exercise and CBT, and if one is more effective than the other.

Write a focused question (PICO) for ONE of the above scenarios, which will help you to organise a search of the literature. [Population] [Intervention] [Comparative intervention] [Outcome]

P: _____

I: _____

C: _____

O: _____

Question: _____

	<u>Population</u>	<u>Intervention</u>	<u>Comparison</u>	<u>Outcome</u>
Excellent (3 pts)	Multiple relevant descriptors of population AND diagnosis/condition e.g. "adolescents/ teenagers with depression", OR "adults/ clients/ someone with OOS", "injured word process workers with OOS" OR "school aged people with depression"	Includes <u>specific intervention</u> of interest e.g. "regular stretching/pause break exercises", OR "anti-depressant medication" OR "cognitive behavioural therapy" OR "Work breaks" OR "time off work" OR "pause breaks" OR "CBT" N.B. It is permissible to interchange comparison/intervention in Columns 2 and 3 but only score responses once	Identifies specific <u>alternative</u> of interest e.g. "rest[because supervisor wants to use rest as the intervention]";OR "compared to/vs cognitive behavioural therapy" OR "exercise alone" OR compared with 'rest alone" OR 'CBT and exercise" OR 'no pause exercise breaks" OR 'visits alone" N.B. Response must imply comparison/ alternative; it is permissible to interchange comparison/ Intervention in columns 2 and 3 but only score responses once	Outcome that is objective and meaningful to the client e.g. "decrease in BECK depression score", OR "reduction in depression" OR 'reduction in social isolation' OR "decreased /reduction in pain levels" OR "reduced wrist pain" OR "improved pain tolerance" OR 'improves work skills" OR 'Improves function"OR "reduce wrist tingling"

	Population	Intervention	Comparison	Outcome
Strong (2 pts)	One appropriate descriptor of condition OR population as above e.g. "adults" OR "employees" OR "school aged" OR 'OOS' OR 'depression' OR 'anxiety' OR 'stress'	Mentions type of intervention, non-specific e.g. "stretches", "medication", "mental therapy", "breaks", "activity"	Mentions a non-specific comparison group e.g. "mental therapy", "breaks", "activity", "stretches", "medication"	Non-specific/ less accurate outcome e.g. 'pain' OR 'remember information more readily' OR 'school life' OR 'improve prognosis'
Limited (1 pt)	A single general descriptor unlikely to contribute to search e.g. "client" or "pain"	Mentions intervention but unlikely to contribute to search e.g. "therapy" or "compensation" or "rehabilitation"	Mentions comparison but unlikely to contribute to search e.g. "compared to other methods" 'no intervention'	Reference to outcome , but so general as to be unlikely to contribute to search e.g. "effects" OR "outcome" OR "efficacy"
Not Evident (0 pts)	None of the above present or irrelevant/inappropriate descriptor e.g. "at school"	None of the above present or irrelevant/inappropriate intervention	None of the above present (nothing about comparison written) or irrelevant/inappropriate comparison	None of the above present or irrelevant/inappropriate outcome e.g. "evidence", "benefits", "appropriate"

Question 21

What type of study (design) would best answer your question (refer to question 20)? *Please ✓ one box.*

Instruction to raters: Total number of points = 3. Points allocated as follows:

Best design (2 pts)	randomised controlled trial
Less desirable design (1 pt)	case control, cohort, controlled trial, cross-sectional
0 points	don't know
bonus pt	other: systematic review

Question 20

Where would you look for information to answer these and other similar clinical questions? *Please ✓ all boxes that apply.*

Instructions to raters: One point for each option ticked. Additional points for specific examples given under 'Other'. Total points = 11.

0 pts	I wouldn't look for information, I would use my clinical experience
1 pt	I would talk to colleagues
1 pt	I would consult experts in the field
1 pt	I would look on the Internet
1 pt	I would look for an article in Pubmed
1 pt	I would use a database such as Cochrane or OTSeeker
1 pt	I would use a text book
1 pt for each of these categories	Other (please specify): <ul style="list-style-type: none">• Other databases, e.g. Cinahl, PEDRo• Clinical guidelines• Professional organisations, e.g. SA Society of Hand Therapists• Conference proceedings• Continuing education courses

Raters: Now add up total score and record beside items on questionnaire (Maximum total possible = 30).

Appendix X: Changes made to KABQ in baseline questionnaire

KABQ item no.	Item no. in study questionnaire	KABQ item	Changes made
1-7, 32-43	21-27, 52-63	6-point scale	5-point scale
1, 4, 6, definition, 20, 29, 30, 32-34, 36-39, 42-44	21, 24, 26, definition, 42, 49, 50, 52-54, 56-59, 62-64	evidence-based medicine	evidence-based practice
2, 5, 8, definition, 24, 41, 47-52	22, 25, 28, definition, 46, 61, 66-71	practice/practising evidence-based medicine treatment	use/using evidence-based practice intervention
7, 17, 19 iv), 20, 40	27, 41 iv), 42, 60	patient	client
8	28	medical practice i.e. morbidity and mortality	occupational therapy practice deleted
9	29	medical evidence learning or patient care-related times per day times per week	research evidence client-related times per month
9, 17, 18, 29-31	29, 39, 40, 49-51	compared to one year ago	deleted
Definition	Definition	individual patients disease- and condition-specific	clients condition/problem-specific
10, 14-16, 27-28, 45			items deleted
11-13	30, 32-33		added: In the last 6 months changed wording – used KAQ items (MacDermid <i>et al.</i> , 2006) removed category 'other'; added 'seldom' to 'never' to read 'seldom or never'
	31, 34-38		included items from KAQ (2003b)
17	41	Compared to one year ago content materials the patient's condition During or after clerking each patient on the ward or in the clinic times per patient admission (inpatient) times per patient visit (outpatient)	deleted deleted a client deleted times per month
18	42	Compared to one year ago content materials every day	deleted deleted deleted
19 i)	43 i)	For the most recent patient you clerked illness	For the most recent client for whom you needed to look up information condition/problem/ need
19 ii)	41 ii)	excluding MEDLINE and Cochrane Reviews secondary sources from InfoRetriever on iPAQ	deleted Added OTSeeker and deleted POEMs deleted
19 iii) & iv)	41 iii) & iv)	continuous 5-point rating scale	changed to tick boxes – same categories
19 iii)	41 iii)	disease/condition	client's condition, problem or need
19 iv)	41 iv)	morbidity or mortality	deleted added 'improved function'
20-31	42-51	continuous 6-point rating scale	changed to tick boxes – 5 points used
20	42	clerked	treated
21	43	teaching rounds or bedside teaching clinical problem	ward/social rounds, team meetings or clinics problem/need
22	44	rounds/sessions	rounds/clinics/ meetings/clinics
23	45	clinical	occupational therapy
24, 41	46, 61	as a medical student	deleted
25, 26, 31	47, 48, 51	practice of evidence-based medicine	use of evidence-based practice
25, 26	47, 48	learning/learn	work
30, 37, 39	50, 57, 59	doctor/s	occupational therapist/s
31	51	as a doctor in the future	deleted

<i>KABQ item no.</i>	<i>Item no. in study questionnaire</i>	<i>KABQ item</i>	<i>Changes made</i>
34, 38, 39	54, 58, 59	clinical medicine/medicine	occupational therapy
35	55	evidence-based medicine	evidence-based occupational therapy
36	56	medical students	occupational therapists
39	59	and patients	deleted
40	60	treatment	intervention
41	61	you	I
42	62	undergraduate medical curriculum	continuing professional development programmes
43	63	your	my
		being practiced currently in Hong Kong	currently being used in South Africa
44	64		added: You may <input checked="" type="checkbox"/> more than one box
		via the library; via a mobile hand-held computer	deleted
		in the patient care environment	in my workplace
			added: hard copy; other – please specify
46	65	practitioner of evidence-based medicine	evidence-based practitioner
47	66	consultants and professors	consultants/supervisors/managers
53	72		added: I don't use evidence-based practice for other reasons(s)

University of Cape Town

Appendix XI: Baseline Questionnaire

Participant Number:

--	--

WESTERN CAPE OCCUPATIONAL THERAPY EVIDENCE-BASED PRACTICE STUDY

This questionnaire is designed to get your ideas about various aspects of evidence-based practice. Please tell me what YOU really believe.

All responses will be treated in strict confidence. Individual identities will be masked and the analysis of the data will be blinded. Only the aggregate results will be published.

Please complete all the questions.

Thank you for your participation!

Where options are given, please ✓ the relevant box:

1. **How old are you currently?** _____ years
2. **Gender**
 - Male
 - Female
3. **How many years have you been practicing as an occupational therapist?** _____ years
4. **What is the highest degree level you have achieved in occupational therapy?**
 - Diploma/Bachelors
 - Post-grad. diploma/certificate
 - Masters
 - PhD
5. **What is the highest degree level you have achieved in another discipline?**
 - Not applicable
 - Diploma/Bachelors (please specify) _____
 - Post-grad. diploma/certificate (please specify) _____
 - Masters (please specify) _____
 - PhD (please specify) _____

6. What is/are your main area/s of practice currently? Please ✓ all boxes that apply.

- paediatrics (please specify) _____
- stroke
- amputation
- hand conditions
- burns
- arthritis (please specify) _____
- depression
- psychoses (please specify) _____
- chronic diseases of lifestyle (please specify) _____
- anxiety
- intellectual disability (please specify: adults, adolescents or children) _____
- substance use disorder
- bipolar affective disorder
- work practice
- other (please specify) _____

7. Do you work in a rural or an urban setting?

- urban
- rural
- both

8. At which level of care do you work?

- primary
- secondary
- tertiary
- more than 1 level

9. Approximately how many clients do you see per month? _____

Please indicate which resources you have available and whether you have access through your workplace or outside your workplace, e.g. home, professional groups, etc. Use Don't Know (DK) when you are uncertain whether the resource is available.

	Availability			Available at work		Available outside work	
	Yes	No	DK	Yes	No	Yes	No
10. Lectures / presentations that make recommendations about intervention							
11. Lectures / presentations that report on research findings							
12. Texts and reference books							
13. Professional journals							
14. Services to obtain copies of journal articles from a library or other source, or access to a library with professional journals							
15. Services to carry out a computerised literature search on a particular topic							

	Availability			Available at work		Available outside work	
	Yes	No	DK	Yes	No	Yes	No
16. Connection to the World Wide Web/Internet	Yes	No	DK	Yes	No	Yes	No
17. Colleagues working with similar client groups or needs	Yes	No	DK	Yes	No	Yes	No
18. Colleagues with high levels of expertise in particular areas	Yes	No	DK	Yes	No	Yes	No
19. Journal club or similar interest group	Yes	No	DK	Yes	No	Yes	No

For the purposes of the rest of this questionnaire, we define Evidence-Based Practice as follows:

Using evidence-based practice means the conscientious, explicit and judicious use of current best evidence in making decisions about the management of clients. That is, looking up, appraising and applying both basic, factual information as well as condition/problem-specific evidence.

Please read the 2 scenarios below, and try to answer all of the following questions to the best of your ability. Do not worry if you are unfamiliar with the diagnoses mentioned; this should not affect your answers. You will find most of the following questions quite challenging, and will need to think carefully when answering them. If you are unsure of an answer, please say so.

Scenario 1

You have received a referral for a 32-year old female client with painful wrists and tingling in her hands. She currently works as a word-processor. Her pain has been getting progressively worse over the past 6 months. She has been diagnosed with occupational overuse syndrome. She has been doing wrist and finger stretches intermittently at work, but not consistently, and finds the stretches of little benefit. Her supervisor has suggested that this woman take 2-3 weeks off work and rest, advice which you don't agree with.

Scenario 2

The 14-year old son of a close friend has been diagnosed with depression. He is studying for school exams. Their GP has prescribed anti-depressants, but no other form of intervention. You are looking for information to give to your friend about other interventions. You have heard that exercise and cognitive behavioural therapy (CBT) may help. As this teenager has limited time due to exams, you want to find out whether there is any evidence to support the use of exercise and CBT, and if one is more effective than the other.

20. Write a focused question (PICO) for ONE of the above scenarios, which will help you to organise a search of the literature. [Population] [Intervention] [Comparative intervention] [Outcome]

P: _____

I: _____

C: _____

O: _____

Question: _____

21. What type of study (design) would best answer your question (refer to question 20)? Please *✓* one box.

- Case control
- Cohort
- Controlled trial
- Cross-sectional
- Randomised controlled trial
- Don't know
- Other (please specify) _____

22. Where would you look for information to answer these and other similar clinical questions? Please *✓* all boxes that apply.

- I wouldn't look for information, I would use my clinical experience
- I would talk to colleagues at my workplace
- I would consult experts in the field not at my workplace
- I would look on the Internet, e.g. Google
- I would look for an article in Pubmed
- I would use a database such as Cochrane or OTSeeker
- I would use a text book
- Other (please specify) _____

Please indicate how much you agree/disagree with the following statements by circling the most appropriate response.

		Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
23.	I have a clear understanding of what evidence-based practice is.	5	4	3	2	1
24.	Using evidence-based practice increases the certainty that the proposed intervention is effective.	5	4	3	2	1
25.	Research using clinical trials is generally more reliable than research using the observational method.	5	4	3	2	1
26.	The evidence-based practice process requires the appropriate identification and formulation of clinical questions.	5	4	3	2	1

27. Effective searching skills/easy access to bibliographic databases and evidence sources are essential to using evidence-based practice.	5	4	3	2	1
Evidence-based practice requires the use of critical appraisal skills to ensure the quality of all the research papers retrieved.	5	4	3	2	1
28. Critically appraised evidence should be appropriately applied to the client using clinical judgement and experience.	5	4	3	2	1
29. In your opinion, how much of occupational therapy practice in the Western Cape currently, on average, is grounded in scientific evidence that looks specifically at client outcomes? _____%					
30. How frequently do you need , as opposed to actually use , research evidence for client-related purposes? _____ times per month (on average)					

Please circle the most appropriate response.

In the last 6 months, I have generally:	Every day	Every other day	Every week	Every month	Seldom or never
31. Looked up information relevant to occupational therapy on the internet	5	4	3	2	1
32. Looked up information in my undergraduate lecture notes	5	4	3	2	1
33. Looked up information relevant to occupational therapy in a textbook or reference book	5	4	3	2	1
34. Obtained a copy of a journal article from a library or other source (e.g. downloaded an article from the internet)	5	4	3	2	1
35. Asked a colleague for information about intervention methods / conditions	5	4	3	2	1
36. Attended a lecture/presentation/conference/training programme that included research findings related to intervention	5	4	3	2	1
37. Done a review of the literature or read a number of articles about a particular topic	5	4	3	2	1
38. Shared information regarding new intervention methods with my colleagues.	5	4	3	2	1
39. Participated in a journal club or similar interest group relevant to my area of work	5	4	3	2	1
40. On average, how often do you look up evidence (i.e. information relating to a client)? _____ times per month					
41. On average, when you look up evidence, how much time do you spend finding or looking it up? [This does NOT include your study time - ONLY the time it takes you to retrieve the material] _____ mins					

42. **This is a 4-part question.**

FOR THE MOST RECENT CLIENT FOR WHOM YOU NEEDED TO LOOK UP INFORMATION:

- i) How much time did you spend looking up the evidence relating to his/her condition/problem/need? [This does NOT include your reading or appraisal time - ONLY the time it took you to retrieve the material]
_____ mins
- ii) Approximately how long ago did this event take place?

- iii) Did you find evidence?
 Yes (go to question iv)
 No (go to question 44)
- iv) Where (what specific sources) did you find this evidence? **You may ✓ more than one option.**
 On the internet
 From a textbook
 From original research papers
 From the Cochrane database or OTSeeker
 Other (please specify) _____
- v) How much did the evidence contribute to your understanding of the client's condition, problem or need?
 Completely
 A lot
 Not sure
 A little
 Not at all
- vi) How much did the evidence relate to client-oriented outcomes (e.g. improved quality of life, improved function)?
 Completely
 A lot
 Not sure
 A little
 Not at all

Please circle the appropriate response.

5 4 3 2 1

- | | | | | | |
|---|-------------------|--------------|-------------------|-----------------|-------------------|
| 43. In your opinion and judgement, how much has the use of evidence-based practice, on average, affected the management or outcome of the clients you have treated? | Completely | A lot | Moderately | A little | Not at all |
| 44. During meetings, ward/social rounds or clinics, how frequently is current best evidence about the particular problem/need at hand discussed? | Completely | A lot | Moderately | A little | Not at all |

45. How frequently have you raised the role of current best evidence at these meetings rounds/clinics?	All the time	Often	Sometimes	Rarely	Never
46. How much confidence do you have in your occupational therapy decision-making?	A lot	A moderate amount	Some	A little	None at all
47. How easy or difficult has it been for you to use evidence-based practice in the last month?	Very easy	Easy	Mixed	Difficult	Very difficult
48. How much do you consider the use of evidence-based practice a routine part of your work?	Completely	A lot	Moderately	A little	Not at all
49. How much has the use of evidence-based practice changed the way you work?	Completely	A lot	Moderately	A little	Not at all
50. How much do you support the principles of evidence-based practice?	Completely	A lot	Moderately	A little	Not at all
51. How useful do you believe evidence-based practice will be in your future practice as an occupational therapist?	Very useful	Useful	Mixed	Not useful	Completely useless
52. How willing are you to use evidence-based practice in the future?	Very willing	Willing	Mixed	Unwilling	Very unwilling

Please indicate how much you agree/disagree with the following statements by circling the relevant response.

	Strongly Agree	Agree	Indifferent	Disagree	Strongly Disagree
53. Evidence-based practice is a “cook-book” approach that disregards clinical experience.	5	4	3	2	1
54. There is no reason for me personally to adopt evidence-based practice because it is just a “fad” (or “fashion”) that	5	4	3	2	1
55. Evidence-based practice is the future of occupational therapy and will become the standard of care.	5	4	3	2	1
56. It is easy to find the evidence in order to practice evidence-based occupational therapy.	5	4	3	2	1
57. Evidence-based practice takes too much time for busy therapists.	5	4	3	2	1
58. If evidence-based practice is valid, then anyone can see clients and do what occupational therapists do.	5	4	3	2	1
59. Evidence-based practice ignores the “art” of occupational therapy.	5	4	3	2	1
60. Occupational therapists, in general, should not use evidence-based practice because occupational therapy is about people and not statistics.	5	4	3	2	1
61. Previous work experience is more important than research findings in choosing the best intervention available for a client.	5	4	3	2	1

62.	I personally appreciate the advantages of using evidence-based practice.	5	4	3	2	1
63.	Evidence-based practice should be an integral part of continuing professional development programmes.	5	4	3	2	1
64.	From my personal observation and experience, evidence-based practice is currently being used in South Africa.	5	4	3	2	1
65.	If you were to use evidence-based practice, how would you prefer to be given the evidence? You may v more than one box.					
	<input type="checkbox"/> Via a desktop computer at home <input type="checkbox"/> Via a desktop computer in my workplace <input type="checkbox"/> Hard copy <input type="checkbox"/> Other (please specify) _____					

66. **Do you consider yourself an evidence-based practitioner currently?**
 Yes (*Go to question 75*)
 No (*Continue with 68*)

Please circle the relevant response.

	Yes	No
67. I don't use evidence-based practice because my consultants/supervisors/managers don't.	1	2
68. I don't use evidence-based practice because I don't know how.	1	2
69. I don't use evidence-based practice because I don't believe in it.	1	2
70. I don't use evidence-based practice because my colleagues don't	1	2
71. I don't use evidence-based practice because I don't have time.	1	2
72. I don't use evidence-based practice because of personal procrastination in changing old habits.	1	2
73. I don't use evidence-based practice for other reason(s) Please specify _____	1	2

Please circle the relevant response.

	Yes	No
74. Do you feel you have the support of your peers in accessing and utilising evidence based knowledge?	1	2
75. Do you feel you have the support of your management in accessing and utilising evidence based knowledge?	1	2
76. Do you feel that your practice settings are supportive in your accessing and utilising evidence based knowledge?	1	2

77. How do you feel about incorporating evidence into your occupational therapy practice at the moment? *There is no right or wrong answer – just ✓ the box that most sounds like how you feel right now. Choose one box only*

- I am not really thinking about using evidence in my practice at the moment
- I am thinking about using evidence in my practice, but I have not made any specific plans yet
- I have started making plans about using evidence in my practice
- I have begun using evidence in my practice now and then
- I routinely use evidence in my practice. If you ticked this last box, please tell me how it is going.

Any other comments you would like to make?

Thank you for taking the time to complete this questionnaire.

Please contact Helen Buchanan (email: Helen.buchanan@uct.ac.za; tel: 021 406 6383) if you have any queries about this questionnaire.

Sources of items in the questionnaire:

Items 2 and 4 from Bennett *et al* (2003b)

Items 1, 3, 4, 7, 9 and 75-77 from Familiarity and Access to Technology Questionnaire (FATQ) (MacDermid *et al.*, 2006)

Items 10-19, 32, 34-40 from Knowledge Acquisition Questionnaire(KAQ) (MacDermid *et al.*, 2006)

Items 20-22 from the Adapted Fresno Test of Evidence-based Practice (AFT), Version 2 (McCluskey, 2004, McCluskey and Bishop, 2009)

Items 23-32 and 34-74 from the Knowledge, Attitude and Behaviour Questionnaire (KABQ) (Johnston *et al.*, 2003)

Item 78 from Readiness to Change Clinical Practice Scale (RCCPS) (MacDermid *et al.*, 2006)

Items were adapted to apply to occupational therapy and the South African context. Permission to use these instruments has been obtained from the authors.

Appendix XII: Frequencies for Access to sources of evidence

<i>Type of resource</i>	<i>Category</i>	<i>Available No. (%)</i>	<i>At work No. (%)</i>	<i>Outside work No. (%)</i>
Lectures/presentation that make recommendations about interventions	Yes	19 (90.5)	13 (61.9)	17 (81.0)
	No	1 (4.8)	4 (19.1)	1 (4.8)
	Don't know	1 (4.8)	1 (4.8)	1 (4.8)
	Missing data	0 (0)	3 (14.3)	2 (9.5)
	TOTAL	21 (100.1)	21 (100.1)	21 (100.2)
Lectures/presentations that report on research findings	Yes	18 (85.7)	8 (38.1)	15 (71.4)
	No	1 (4.8)	6 (28.6)	0 (0)
	Don't know	2 (9.5)	2 (9.5)	2 (9.5)
	Missing data	0 (0)	5 (23.8)	4 (19.1)
	TOTAL	21 (100)	21 (100.1)	21 (100)
Text/reference books	Yes	21 (100.0)	18 (85.7)	16 (76.2)
	No	0 (0)	2 (9.5)	0 (0)
	Missing data	0 (0)	1 (4.8)	5 (23.8)
	TOTAL	21 (100)	21 (100)	21 (100)
Professional journals	Yes	16 (76.2)	7 (33.3)	14 (66.7)
	No	2 (9.5)	6 (28.6)	3 (14.3)
	Don't know	2 (9.5)	2 (9.5)	2 (9.5)
	Missing data	1(4.8)	6 (28.6)	2 (9.5)
	TOTAL	21 (100)	21 (100)	21 (100)
Library access or access to library copies of articles	Yes	17 (81.0)	5 (23.8)	12 (57.1)
	No	2 (9.5)	6 (28.6)	4 (19.0)
	Don't know	2 (9.5)	2 (9.5)	2 (9.5)
	Missing data	0 (0)	8 (38.1)	3 (14.3)
	TOTAL	21 (100.0)	21 (100.0)	21 (100.0)
Services to conduct a computerised literature search	Yes	16 (76.2)	7 (33.3)	14 (66.7)
	No	3 (14.3)	8 (38.1)	4 (19.0)
	Don't know	1 (4.8)	1 (4.8)	1 (4.8)
	Missing data	1 (4.8)	5 (23.8)	2 (9.5)
	TOTAL	21 (100)	21 (100)	21 (100)
Connection to world wide web	Yes	18 (85.7)	7 (33.3)	17 (81.0)
	No	2 (9.5)	9 (42.9)	2 (9.5)
	Don't know	0 (0)	0 (0)	0 (0)
	Missing data	1 (4.8)	5 (23.8)	2 (9.5)
	TOTAL	21 (100)	21 (100)	21 (100)
Colleagues working with similar clients	Yes	20 (95.2)	16 (76.2)	14 (66.7)
	No	1 (4.8)	1 (4.8)	2 (9.5)
	Don't know	0 (0)	0 (0)	0 (0)
	Missing data	0 (0)	4 (19.1)	5 (23.8)
	TOTAL	21 (100.0)	21 (100.1)	21 (100.0)
Colleagues with expertise in particular areas	Yes	19 (90.5)	17 (81.0)	15 (71.4)
	No	1 (4.8)	1 (4.8)	1 (4.8)
	Don't know	0 (0)	0 (0)	0 (0)
	Missing data	1 (4.8)	3 (14.3)	5 (23.8)
	TOTAL	21 (100)	21 (100)	21 (100.0)
Journal club or similar interest group	Yes	18 (85.7)	10 (47.6)	12 (57.1)
	No	2 (9.5)	4 (19.1)	5 (23.8)
	Don't know	0 (0)	0 (0)	0 (0)
	Missing data	1 (4.8)	7 (33.3)	4 (19.1)
	TOTAL	21 (100)	21 (100)	21 (100.0)

Appendix XIII: Inter-rater reliability for 15-item audit checklist

Item	Pilot 1		Pilot 2		Pilot 3		Pilot 4	
	ICC (95% CI)	p	ICC (95% CI)	p	ICC (95% CI)	p	ICC (95% CI)	p
1. Baseline assessment at impairment-level	0.57 (0.02-0.87)	0.742	0.47 (-0.08-0.83)	0.859	0.37 (-0.34-0.80)	0.911	1.00	-
2. Baseline assessment at activity-level	0.86 (0.56-0.96)	0.098	0.53 (-0.04-0.85)	0.801	0.87 (0.58-0.97)	0.083	0.42 (-0.11-0.80)	0.897
3. Baseline assessment at participation-level	0.67(0.15-0.91)	0.557	0.40 (-0.13-0.80)	0.905	0.93 (0.76-0.98)	0.011	0.83 (0.48-0.96)	0.160
4. Recording of baseline assessments	0.80 (0.41-0.95)	0.241	1.00	-	0.93 (0.76-0.98)	0.011	0.64 (0.09-0.90)	0.624
5. Goals	0.13(-0.33-0.64)	0.987	0.53 (-0.04-0.85)	0.801	0.80 (0.35-0.95)	0.266	0.71 (0.06-0.93)	0.513
6. Evidence-base for the intervention plan	0.00 (-0.60-0.60)	0.992	1.00	-	-	-	0.88 (0.62-0.97)	0.060
7. Intervention for impairment-level needs	0.23 (-0.49-0.74)	0.961	0.00 (-0.60-0.60)	0.992	0.62 (-0.02-0.89)	0.662	0.07 (-0.59-0.65)	0.986
8. Intervention for activity-level needs	0.29 (-0.34-0.75)	0.952	0.18 (-0.23-0.65)	0.982	0.69 (0.18-0.91)	0.519	0.71 (0.13-0.92)	0.510
9. Intervention for participation-level needs	0.40 (-0.23-0.80)	0.904	0.70 (0.19-0.92)	0.499	0.00 (-0.44-0.55)	0.995	0.27 (-0.14-0.71)	0.961
10. Documentation of revised plans/changes in intervention OR re-evaluation of intervention plan at impairment-level	0.99 (0.96-1.00)	<0.001	1.0 (0.95-1.00)	<0.001	0.25 (-0.19-0.70)	0.968	0.99 (0.96-1.00)	<0.001
11. Documentation of revised plans/changes in intervention OR re-evaluation of intervention plan at activity-level	0.57 (0.02-0.87)	0.742	0.99 (0.94-1.00)	<0.001	0.21 (-0.23-.67)	0.977	0.98 (0.94-1.00)	<0.001
12. Documentation of revised plans/changes in intervention OR re-evaluation of intervention plan at participation-level	0.86 (0.56-0.96)	0.098	0.99 (0.95-1.00)	<0.001	0.23 (-0.21-0.69)	0.974	0.98 (0.92-0.99)	<0.001
13. Documentation of progress/deterioration over the course of intervention at impairment-level	0.67 (0.15-0.91)	0.557	0.99 (0.98-1.00)	<0.001	0.61 (0.08-0.88)	0.677	0.55 (-0.01-0.86)	0.768
14. Documentation of progress/deterioration over the course of intervention at activity-level?	0.80 (0.41-0.95)	0.241	0.99 (0.95-1.00)	<0.001	0.61 (0.08-0.88)	0.677	0.61 (0.073-0.88)	0.679
15. Documentation of progress/deterioration over the course of intervention at participation-level?	0.13 (-0.33-0.64)	0.987	1.00	-	0.61 (0.08-0.88)	0.677	0.57 (0.02-0.87)	0.742

Items in bold italics: less than good agreement, i.e. ICC<0.60

Appendix XIV: Problems encountered and changes made to Audit checklist

<i>Pilot number</i>	<i>Problem/s identified</i>	<i>Changes made</i>
1	Differences in interpretations of what would be classified as impairment-, activity- or participation-level.	Definitions included in rubric Minor additions to items 6 and 10
2	Poor agreement between raters for several items. Examination of the grading rubric by an independent educator revealed that some terms were unspecific and therefore open to different interpretations by raters	Rubric revised to describe each criterion more precisely
3	Lack of clarity in interpretations of grading rubric and confusion about the differences between 'impairment-level' and 'activity-level'.	Decisions made: Interviews were not regarded as 'assessment' The activity had to be considered in light of the aim, i.e. if the activity was related to what the client had to do at work it was classified as being at participation-level rather than activity-level Descriptors for the 'not applicable' category and more specific criteria for 'somewhat' and 'completely' for items 4-5 and 7-12 were included in the grading rubric
4	As for pilot 3	The checklist was reduced to 10 items by collapsing each item about 'activity' and 'participation' into one; item 4 was removed as recording of assessments could actually be included in items 1 and 2 Rubric revised to reflect above changes
5		Criteria for items 1-8 in rubric were refined to make them more specific, e.g. item 2 had 'at least one goal' added to the beginning of the descriptors for 'somewhat' and 'completely'
6	7 items with an IRR of < 80% - more specific rubric seemed to create more uncertainty in making decisions about which category was correct → consulted 2 international colleagues with experience in conducting audits Differences in ratings occurred for 2 records due to the wording used in the record. In one record, one rater interpreted an entry as monitoring and the other as intervention, and in the second the recording of the assessment findings could also have been interpreted as an intervention.	Collapsed rating categories into 3 options (yes, no and not applicable). The 'not applicable' category was retained to ensure that a realistic reflection of the content of participant's records would be obtained but changes were made to make the descriptor clearer. For example some participants would not be involved in providing intervention and re-assessment may also not have been applicable in some cases, i.e. if they had not seen the patient for long enough or if the purpose of the occupational therapy service was purely assessment and referral or providing recommendations The following principles emerged from the training session: In item 1, it had to be clear that a recognised, criterion-based assessment had been done, e.g. it was not sufficient for the record to state that there was full passive range of movement in the upper limbs. Exercises were considered to be impairment-level rather than activity-level and would therefore be rated under item 5. Splints were regarded as being intervention at impairment-level (item 5) unless it was clear that the splints were being used in function. In this case, they would be classified under 'activity and participation-level' (item 6). Wheelchair dexterity would be classified under 'activity and participation-level' (item 6) and not 'impairment level' (item 5).

Appendix XV: 12 week questionnaire

Participant Number:

--	--

Date completed:/...../09

WESTERN CAPE OCCUPATIONAL THERAPY EVIDENCE-BASED PRACTICE STUDY

This is the second questionnaire in my study and is designed to get your ideas about various aspects of evidence-based practice. Please tell me what YOU really believe.

All responses will be treated in strict confidence. Individual identities will be masked and the analysis of the data will be blinded. Only the aggregate results will be published.

Please complete all the questions.

Thank you for your participation!

For the purposes of this questionnaire, Evidence-Based Practice is defined as follows:

Using evidence-based practice means the conscientious, explicit and judicious use of current best evidence in making decisions about the management of clients. That is, looking up, appraising and applying both basic, factual information as well as condition/problem-specific evidence.

Please read the 2 scenarios below, and try to answer all of the following questions to the best of your ability. Do not worry if you are unfamiliar with the diagnoses mentioned; this should not affect your answers. You will find most of the following questions quite challenging, and will need to think carefully when answering them. If you are unsure of an answer, please say so.

Scenario 1

You work in an out-patients anxiety disorders clinic where you have been seeing a large number of young adults whose high levels of anxiety are affecting their productivity. They have been attending a support group but you have recently started wondering about the value of cognitive behavioural therapy in reducing anxiety levels and enabling them to cope more effectively with their everyday activities.

Scenario 2

You have recently started receiving a number of referrals for people who have hypertension and cardiac problems. The focus of treatment until now has been provision of dietary advice and education. You are considering starting a stress management programme but would like to know whether this is likely to improve quality of life.

1. Write a focused question (PICO) for ONE of the above scenarios, which will help you to organise a search of the literature. [Population] [Intervention] [Comparative intervention] [Outcome]

P: _____

I: _____

C: _____

O: _____

Question: _____

2. What type of study (design) would best answer your question (refer to question 1)? Please ✓ one box.

- Case control
- Cohort
- Controlled trial
- Cross-sectional
- Randomised controlled trial
- Don't know
- Other (please specify) _____

3. Where would you look for information to answer these and other similar clinical questions? Please ✓ all boxes that apply.

- I wouldn't look for information, I would use my clinical experience
- I would talk to colleagues at my workplace
- I would consult experts in the field not at my workplace
- I would look on the Internet, e.g. Google
- I would look for an article in Pubmed
- I would use a database such as Cochrane or OTSeeker
- I would use a text book
- Other (please specify) _____

Please indicate how much you agree/disagree with the following statements by circling the most appropriate response.

		Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
4.	I have a clear understanding of what evidence-based practice is.	5	4	3	2	1
5.	Using evidence-based practice increases the certainty that the proposed intervention is effective.	5	4	3	2	1
6.	Research using clinical trials is generally more reliable than research using the observational method.	5	4	3	2	1

	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
7.					
8. The evidence-based practice process requires the appropriate identification and formulation of clinical questions.	5	4	3	2	1
9. Effective searching skills/easy access to bibliographic databases and evidence sources are essential to using evidence-based practice.	5	4	3	2	1
10. Evidence-based practice requires the use of critical appraisal skills to ensure the quality of all the research papers retrieved.	5	4	3	2	1
11. Critically appraised evidence should be appropriately applied to the client using clinical judgement and experience.	5	4	3	2	1
12. In your opinion, how much of occupational therapy practice currently, on average, is grounded in scientific evidence that looks specifically at client outcomes? _____%					
13. How frequently do you need , as opposed to actually use , research evidence for client-related purposes? _____ times per month (on average)					

Please circle the most appropriate response.

In the last 3 months, I have:	Every day	Every other day	Every week	Every month	Seldom or never
14. Looked up information relevant to occupational therapy on the internet	5	4	3	2	1
Looked up information in my undergraduate lecture notes	5	4	3	2	1
15. Looked up information relevant to occupational therapy in a textbook or reference book	5	4	3	2	1
16. Obtained a copy of a journal article from a library or other source (e.g. downloaded an article from the internet)	5	4	3	2	1
17. Asked a colleague for information about intervention methods / conditions	5	4	3	2	1
18. Attended a lecture/presentation/conference/training programme that included research findings related to intervention	5	4	3	2	1
19. Done a review of the literature or read a number of articles about a particular topic	5	4	3	2	1
20. Shared information regarding new intervention methods with my colleagues.	5	4	3	2	1
21. Participated in a journal club or similar interest group relevant to my area of work	5	4	3	2	1

22. On average, how often do you look up evidence (i.e. information relating to a client)?

_____ times per month

23. On average, when you look up evidence, how much time do you spend finding or looking it up? [This does NOT include your study time - ONLY the time it takes you to retrieve the material]

_____ mins

24. ***This is a 4-part question.***

FOR THE MOST RECENT CLIENT FOR WHOM YOU NEEDED TO LOOK UP INFORMATION:

i) How much time did you spend looking up the evidence relating to his/her condition/problem/ need? [This does NOT include your reading or appraisal time - ONLY the time it took you to retrieve the material]

_____ mins

ii) Approximately how long ago did this event take place?

iii) Did you find evidence?

- Yes (go to question iv)
- No (go to question 25)

iv) Where (what specific sources) did you find this evidence? ***You may ✓ more than one option.***

- On the internet
 - From a textbook
 - From original research papers
 - From the Cochrane database or OTSeeker
 - Other (please specify) _____
- _____

v) How much did the evidence contribute to your understanding of the client's condition, problem or need?

- Completely
- A lot
- Not sure
- A little
- Not at all

vi) How much did the evidence relate to client-oriented outcomes (e.g. improved quality of life, improved function)?

- Completely
- A lot
- Not sure
- A little
- Not at all

Please circle the appropriate response.

	5	4	3	2	1
25. In your opinion and judgement, how much has the use of evidence-based practice, on average, affected the management or outcome of the clients you have treated?	Completely	A lot	Moderately	A little	Not at all
26. During meetings, ward/social rounds or clinics, how frequently is current best evidence about the particular problem/need at hand discussed?	Completely	A lot	Moderately	A little	Not at all
27. How frequently have you raised the role of current best evidence at these meetings rounds/clinics?	All the time	Often	Sometimes	Rarely	Never
28. How much confidence do you have in your occupational therapy decision-making?	A lot	A moderate amount	Some	A little	None at all
29. How easy or difficult has it been for you to use evidence-based practice in the last month?	Very easy	Easy	Mixed	Difficult	Very difficult
30. How much do you consider the use of evidence-based practice a routine part of your work?	Completely	A lot	Moderately	A little	Not at all
31. How much has the use of evidence-based practice changed the way you work?	Completely	A lot	Moderately	A little	Not at all
32. How much do you support the principles of evidence-based practice?	Completely	A lot	Moderately	A little	Not at all
33. How useful do you believe evidence-based practice will be in your future practice as an occupational therapist?	Very useful	Useful	Mixed	Not useful	Completely useless
34. How willing are you to use evidence-based practice in the future?	Very willing	Willing	Mixed	Unwilling	Very unwilling

Please indicate how much you agree/disagree with the following statements by circling the relevant response.

	Strongly Agree	Agree	Indifferent	Disagree	Strongly Disagree
35. Evidence-based practice is a "cook-book" approach that disregards clinical experience.	5	4	3	2	1
36. There is no reason for me personally to adopt evidence-based practice because it is just a "fad" (or "fashion") that will pass with time.	5	4	3	2	1
37. Evidence-based practice is the future of occupational therapy and will become the standard of care.	5	4	3	2	1
38. It is easy to find the evidence in order to practice evidence-based occupational therapy.	5	4	3	2	1
39. Evidence-based practice takes too much time for busy therapists.	5	4	3	2	1
40. If evidence-based practice is valid, then anyone can see clients and do what occupational therapists do.	5	4	3	2	1

41. Evidence-based practice ignores the “art” of occupational therapy.	5	4	3	2	1
42. Occupational therapists, in general, should not use evidence-based practice because occupational therapy is about people and not statistics.	5	4	3	2	1
43. Previous work experience is more important than research findings in choosing the best intervention available for a client.	5	4	3	2	1
44. I personally appreciate the advantages of using evidence-based practice.	5	4	3	2	1
45. Evidence-based practice should be an integral part of continuing professional development programmes.	5	4	3	2	1
46. From my personal observation and experience, evidence-based practice is currently being used in South Africa.	5	4	3	2	1
47. If you were to use evidence-based practice, how would you prefer to be given the evidence? You may ✓ more than one box.					
<input type="checkbox"/> Via a desktop computer at home					
<input type="checkbox"/> Via a desktop computer in my workplace					
<input type="checkbox"/> Hard copy					
<input type="checkbox"/> Other (please specify) _____					

48. **Do you consider yourself an evidence-based practitioner currently?**

Yes (*Go to question 50*)

No (*Continue with the following questions*)

Please circle the relevant response.

49. I don't use evidence-based practice because:	Yes	No
• my consultants/supervisors/managers don't.	1	2
• I don't know how.	1	2
• I don't believe in it.	1	2
• my colleagues don't.	1	2
• I don't have time.	1	2
• of personal procrastination in changing old habits.	1	2
• other reason(s) (please specify) _____		

Please circle the relevant response.

	Yes	No
50. Do you feel you have the support of your peers in accessing and utilising evidence based knowledge?	1	2
51. Do you feel you have the support of your management in accessing and utilising evidence based knowledge?	1	2
52. Do you feel that your practice settings are supportive in your accessing and utilising evidence based knowledge?	1	2

53. Which of the following barriers to using evidence-based practice, if any, have you experienced in your workplace? **Please ✓ all boxes that apply.**

- Lack of time
- Large workload/caseload
- Lack of interest and support from my supervisor/head of department
- Lack of interest/support from management generally
- My own lack of interest and enthusiasm
- Professional isolation
- Entrenched behaviours and habits where I work
- Difficulty accessing a computer
- Difficulty accessing journals
- Limited searching skills
- Limited critical appraisal skills
- Use of research evidence is not a priority where I work
- Lack of evidence to support what we do in OT
- Limited support for continuing education where I work
- The large volume of published research – difficult to sift through it
- Limited resources and funding to support the change to EBP
- Benefits and advantages of adopting EBP are not clear
- Other barriers (please specify) _____

54. Have you tried to overcome any of these barriers?

- No
- Yes (please specify) _____

55. How do you feel about incorporating evidence into your occupational therapy practice at the moment?

There is no right or wrong answer – just ✓ the box that most sounds like how you feel right now. Choose one box only

- I am not really thinking about using evidence in my practice at the moment
- I am thinking about using evidence in my practice, but I have not made any specific plans yet
- I have started making plans about using evidence in my practice
- I have begun using evidence in my practice now and then
- I routinely use evidence in my practice. ***If you ticked this last box, please tell me how it is going.***

56. If you have changed your place of employment since agreeing to participate in the study, please indicate your main area/s of practice currently? *Please ✓ all boxes that apply.*

- paediatrics (please specify) _____
- stroke
- amputation
- hand conditions
- burns
- arthritis (please specify) _____
- depression
- psychoses (please specify) _____
- chronic diseases of lifestyle (please specify) _____
- anxiety
- intellectual disability (please specify: adults, adolescents or children) _____
- substance use disorder
- bipolar affective disorder
- work practice
- other (please specify) _____

Are there any other comments you would like to make?

Thank you for taking the time to complete this questionnaire.

Please contact Helen Buchanan (email: Helen.buchanan@uct.ac.za; tel: 021 406 6383) if you have any queries about this questionnaire.

Original sources of items used in this questionnaire:

Items 1-3 from the Adapted Fresno Test of Evidence-based Practice (McCluskey and Bishop, 2009; McCluskey and Lovarini, 2005)

Items 4-13 and 15-49 from Johnston *et al* (2003)

Items 13, 15-21 from Knowledge Acquisition Questionnaire (MacDermid *et al.*, 2006)

Items 50-52 from Familiarity and Access to Technology Questionnaire (MacDermid *et al.*, 2006)

Items 53-54 were from McCluskey (2003b)

Item 55 from Readiness to Change Clinical Practice Questionnaire (MacDermid *et al.*, 2006)

Items were adapted to apply to occupational therapy and the South African context. Permission to use these instruments has been obtained from the authors.

Appendix XVI: Audit checklist

Participant Number:

--	--

Evidence-based Practice Study: Chart Audit Form

Evaluation: Baseline ___ 3-month follow-up ___ Date _____

Record no.	No (0)	Yes (1)	N/A (exclude)	Comments
Baseline assessment at <u>impairment-level</u>				
Baseline assessment at activity and participation-level				
Goals of intervention				
<u>Evidence-base</u> for any OT intervention performed				
Recording of intervention at impairment, activity or participation level				
Monitoring changes in client's condition between two or more contacts at <u>impairment-level</u>				
Monitoring changes in client's condition between two or more contacts at <u>activity- &/or participation-level</u>				
Re-assessment at <u>impairment-level</u>				
Re-assessment at activity- &/or participation-level				
SUB-TOTAL SCORE	(A)(B)	
		SCORE OBTAINED (A):		
		MAXIMUM SCORE (9-B):		

Appendix XVII: Grading rubric for 12 week SAFT

Shortened Adapted Fresno Test of Competence in EBP: Grading Rubric for 12 week Questionnaire

General instruction to raters: If in doubt, mark down, not up.

Question 1

Instruction to raters:

This question is worth a total of 16 points as follows:

- a maximum of 3 points for the P, I, C and O parts of the question (see rubric below for mark allocations), and
- a maximum of 4 points for the question as a whole. If all four parts are present in the question, give an additional 4 marks. Deduct one mark for each missing component.

Each answer is to be placed into a designated marking category. Use the marking grid to record your scores. **If in doubt, consider whether what is written will contribute to an optimally specific search of the literature. Intervention of interest can be interchanged with comparison, but only score a response in one column.**

Please read the 2 scenarios below, and try to answer all of the following questions to the best of your ability. Do not worry if you are unfamiliar with the diagnoses mentioned; this should not affect your answers. You will find most of the following questions quite challenging, and will need to think carefully when answering them. If you are unsure of an answer, please say so.

Scenario 1

You work in an out-patients anxiety disorders clinic where you have been seeing a large number of young adults whose high levels of anxiety are affecting their productivity. They have been attending a support group but you have recently started wondering about the value of cognitive behavioural therapy in reducing anxiety levels and enabling them to cope more effectively with their everyday activities.

Scenario 2

You have recently started receiving a number of referrals for people who have hypertension and cardiac problems. The focus of treatment until now has been provision of dietary advice and education. You are considering starting a stress management programme but would like to know whether this is likely to improve quality of life.

Write a focused question (PICO) for ONE of the above scenarios, which will help you to organise a search of the literature. [Population] [Intervention] [Comparative intervention] [Outcome]

P: _____

I: _____

C: _____

O: _____

Question: _____

	<u>P</u> opulation	<u>I</u> ntervention	<u>C</u> omparison	<u>O</u> utcome
Excellent (3 pts)	Multiple relevant descriptors of population AND diagnosis/condition <i>e.g. "adults/young adults with anxiety", OR "adults/clients/people with hypertension and cardiac problems"</i>	Includes specific intervention of interest <i>e.g. "cognitive behavioural therapy" OR "CBT" OR "stress management" OR "stress management programme"</i> N.B. It is permissible to interchange comparison/intervention in Columns 2 and 3 but only score responses once	Identifies specific alternative of interest <i>e.g. "support group" OR "dietary advice" OR "education" OR "dietary advice and education"</i> N.B. Response must imply comparison/ alternative; it is permissible to interchange comparison/ intervention in columns 2 and 3 but only score responses once	Outcome that is objective and meaningful to the client <i>e.g. "reduce/decrease anxiety/anxiety levels" OR "improve ability to cope with everyday activities" OR "improve daily coping skills" OR "improve productivity" OR "improve quality of life" OR "improve ability to handle/cope with stress"</i>
Strong (2 pts)	One appropriate descriptor of condition OR population as above <i>e.g. "adults" OR "young adults" OR "anxiety" OR "hypertension" OR "cardiac problems"</i>	Mentions type of intervention, non-specific <i>e.g. "cognitive therapy" OR "mental therapy"</i>	Mentions a non-specific comparison group <i>e.g. "mental therapy" OR "activity" OR "therapy"</i>	Non-specific/ less accurate outcome <i>e.g. "coping skills" OR "improve prognosis"</i>

	<u>P</u> opulation	<u>I</u> ntervention	<u>C</u> omparison	<u>O</u> utcome
Limited (1 pt)	A single general descriptor unlikely to contribute to search <i>e.g. "client" OR "health problems" OR "problems" OR "people"</i>	Mentions intervention but unlikely to contribute to search <i>e.g. "therapy" OR "activity"</i>	Mentions comparison but unlikely to contribute to search <i>e.g. "compared to other methods" OR "no intervention"</i>	Reference to outcome , but so general as to be unlikely to contribute to search <i>e.g. "effects" OR "outcome" OR "efficacy"</i>
Not Evident (0 pts)	None of the above present or irrelevant/inappropriate descriptor	None of the above present or irrelevant/inappropriate intervention	None of the above present (nothing about comparison written) or irrelevant/inappropriate comparison	None of the above present or irrelevant/inappropriate outcome <i>e.g. "evidence" OR "benefits" OR "appropriate"</i>

Question 2

What type of study (design) would best answer your question (refer to question 20)? *Please V one box.*

Instruction to raters: Total number of points = 3. Points allocated as follows:

Best design (2 pts)	randomised controlled trial
Less desirable design (1 pt)	case control cohort controlled trial cross-sectional
0 points	don't know
bonus pt	other: systematic review

Question 3

Where would you look for information to answer these and other similar clinical questions? *Please ✓ all boxes that apply.*

Instructions to raters: One point for each option ticked. Additional points for specific examples given under 'Other'. Total points = 11.

0 pts	I wouldn't look for information, I would use my clinical experience
1 pt	I would talk to colleagues
1 pt	I would consult experts in the field
1 pt	I would look on the Internet
1 pt	I would look for an article in Pubmed
1 pt	I would use a database such as Cochrane or OTSeeker
1 pt	I would use a text book
1 pt for each of these categories	Other (please specify): <ul style="list-style-type: none">• Other databases, e.g. Cinahl, PEDRo• Clinical guidelines• Professional organisations, e.g. SA Society of Hand Therapists• Conference proceedings• Continuing education courses

Raters: Now add up total score and record beside items on questionnaire (Maximum total possible = 30).

Appendix XVIII: Audit grading rubric

Guidelines for Scoring Records for Audit

Definition of terms:

Activity-level: Execution of a task or action by an individual (WHO, 2002), e.g. ADL, watching TV alone, general mobility, preparing meals, housework, child care, transfers

Criterion-based: has a formal scoring system, i.e. a measurable rating scale

Goal: 'A vision statement about future desires that is delimited by the need that it addresses' (Pendleton & Schultz-Krohn, 2006 : 1211). It is related to where we see the client in the future but **not** how we will achieve the end-point.

Impairment-level: problems in body structures or function (WHO, 2002), i.e. performance components

Intervention: Any action by therapist to promote change in client's condition, performance or re-integration

Participation: involvement in a life situation (WHO, 2002), e.g. work, attending church, shopping, education, recreation & leisure, school

Items	0 (No)	1 (Yes)	Not applicable
Baseline assessment at <u>impairment-level</u>	No recognised or criterion-based impairment-level assessment recorded before intervention for that component was started	At least 1 recognised criterion-based assessment at impairment-level recorded before intervention for that component was started	-
Baseline assessment at activity- or participation-level	No recognised or criterion-based activity- or participation-level assessments performed before intervention for that performance area was started	At least 1 recognised criterion-based assessment at activity- &/or participation-level recorded before intervention for that performance area was started	-
Goals of intervention	No goals for intervention plan within first 2 contacts	At least one goal documented within first 2 contacts. Can be client goal or therapist goal.	-

Items	0 (No)	1 (Yes)	Not applicable
Recording of intervention at impairment, activity &/or participation level	No intervention for impairment-, activity- or participation-level needs recorded & conducted	At least one instance where intervention for impairment, activity- or participation-level needs is recorded & conducted	-
Monitoring changes in client's condition between two or more contacts at <u>impairment-level</u>	No information about changes in client's condition at impairment-level	At least 1 instance where changes in client's condition are documented at impairment-level	Applies if: No intervention provided in this context Client only seen for assessment, therefore re-assessment not required
Monitoring changes in client's condition between two or more contacts at <u>activity- &/or participation-level</u>	No information about changes in client's condition at activity- &/or participation-level	At least 1 instance where changes in client's condition are documented at activity- &/or participation level	No problems identified, therefore re-assessment not required
Re-assessment at <u>impairment-level</u> to confirm goals achieved	No recognised or criterion-based impairment-level assessments repeated from baseline to determine effect of intervention	Repeats & records at least 1 recognised or criterion-referenced baseline assessment at impairment-level	Client only seen once, therefore no monitoring or re-assessment possible
Re-assessment at <u>activity- &/or participation-level</u> to confirm goals achieved	No recognised or criterion-based activity- or participation-level assessments repeated from baseline to determine effect of intervention	Repeats & records at least 1 recognised or criterion-referenced baseline assessment at activity- &/or participation-level but not criterion-referenced	Intervention on-going, therefore re-assessment not yet appropriate. May still be done in the future. Client defaulted from OT therefore re-assessment not possible
SCORING GUIDELINES	Evaluation ultimately depends on the expertise of the rater to determine whether to evaluate records as 'somewhat' or 'completely' as the behaviours required may vary in different situations. Scores of zero are used when records have no mention of the item. Scores of 1 are used when there is some mention of the item but detail is missing, and scores of 2 are used to indicate the highest level of competency reflected by a clear record of the item.		

Appendix XIX: CONSORT 2010 checklist of information to include when reporting a randomised trial*

Section/Topic	Item No	Checklist item	Reported on page No
Title and abstract			
	1a	Identification as a randomised trial in the title	188
	1b	Structured summary of trial design, methods, results, and conclusions (for specific guidance see CONSORT for abstracts)	xxvii
Introduction			
Background and objectives			
	2a	Scientific background and explanation of rationale	188-194
	2b	Specific objectives or hypotheses	195
Methods			
Trial design			
	3a	Description of trial design (such as parallel, factorial) including allocation ratio	196
	3b	Important changes to methods after trial commencement (such as eligibility criteria), with reasons	N/A
Participants			
	4a	Eligibility criteria for participants	197
	4b	Settings and locations where the data were collected	201
Interventions			
	5	The interventions for each group with sufficient details to allow replication, including how and when they were actually administered	203-206, Appendix XXII
Outcomes			
	6a	Completely defined pre-specified primary and secondary outcome measures, including how and when they were assessed	201-202
	6b	Any changes to trial outcomes after the trial commenced, with reasons	N/A
Sample size			
	7a	How sample size was determined	198
	7b	When applicable, explanation of any interim analyses and stopping guidelines	N/A
Randomisation:			
Sequence generation			
	8a	Method used to generate the random allocation sequence	200
	8b	Type of randomisation; details of any restriction (such as blocking and block size)	200-201
Allocation concealment mechanism			
	9	Mechanism used to implement the random allocation sequence (such as sequentially numbered containers), describing any steps taken to conceal the sequence until interventions were assigned	200 & 233
Implementation			
	10	Who generated the random allocation sequence, who enrolled participants, and who assigned participants to interventions	200 & 246
Blinding			
	11a	If done, who was blinded after assignment to interventions (for example, participants, care providers, those assessing outcomes) and how	203, 209 & 233
	11b	If relevant, description of the similarity of interventions	N/A
Statistical methods			
	12a	Statistical methods used to compare groups for primary and secondary outcomes	210-211
	12b	Methods for additional analyses, such as subgroup analyses and adjusted analyses	N/A
Results			
Participant flow (a diagram is strongly recommended)			
	13a	For each group, the numbers of participants who were randomly assigned, received intended treatment, and were analysed for the primary outcome	214
	13b	For each group, losses and exclusions after randomisation, together with reasons	214
Recruitment			
	14a	Dates defining the periods of recruitment and follow-up	198-199, 207

	14b	Why the trial ended or was stopped	N/A
Baseline data	15	A table showing baseline demographic and clinical characteristics for each group	216
Numbers analysed	16	For each group, number of participants (denominator) included in each analysis and whether the analysis was by original assigned groups	215-232
Outcomes and estimation	17a	For each primary and secondary outcome, results for each group, and the estimated effect size and its precision (such as 95% confidence interval)	223-228
	17b	For binary outcomes, presentation of both absolute and relative effect sizes is recommended	224-226
Ancillary analyses	18	Results of any other analyses performed, including subgroup analyses and adjusted analyses, distinguishing pre-specified from exploratory	N/A
Harms	19	All important harms or unintended effects in each group (for specific guidance see CONSORT for harms)	N/A
Discussion			
Limitations	20	Trial limitations, addressing sources of potential bias, imprecision, and, if relevant, multiplicity of analyses	245-247
Generalisability	21	Generalisability (external validity, applicability) of the trial findings	242
Interpretation	22	Interpretation consistent with results, balancing benefits and harms, and considering other relevant evidence	233-241
Other information			
Registration	23	Registration number and name of trial registry	212
Protocol	24	Where the full trial protocol can be accessed, if available	Available from author
Funding	25	Sources of funding and other support (such as supply of drugs), role of funders	ii

*We strongly recommend reading this statement in conjunction with the CONSORT 2010 Explanation and Elaboration for important clarifications on all the items. If relevant, we also recommend reading CONSORT extensions for cluster randomised trials, non-inferiority and equivalence trials, non-pharmacological treatments, herbal interventions, and pragmatic trials. Additional extensions are forthcoming.

Appendix XX: Information sheet for Study 3

[University of Cape Town letterhead]

23 April 2008

Dear Colleague

Participation in a research project: 'Evidence-based practice in occupational therapy'

I am conducting a study towards a PhD degree to investigate Evidence-based practice in occupational therapy in the Western Cape. The study sets out to investigate the impact of two different educational interventions on practice. Research findings will be used to inform strategies for implementing evidence-based practice in occupational therapy in the future.

I am looking for OTs to participate in the study. Participants should work *at least 20 hours per week in any area of OT practice*, including direct client contact or planning/managing an OT service.

Participation in the study will entail the following:

Providing permission for access to your recent client records so that an audit can be conducted

While this may sound intimidating, I would like to assure you that the outcome of interest is NOT individual therapist's records, but rather the overall picture. The identity of therapists and clients will be protected by ensuring that numbers rather than names are used on audit checklists. Results will be published with sensitivity to ensure that there will be no harm to clients or therapists.

You will be required to sign consent for permission to access your records. Permission will also be obtained from the hospital medical superintendent or service manager

where appropriate. Participants will be contacted to arrange a suitable date and time for the audit. You will need to have the list of clients seen during the previous week so that a random sample of records can be drawn for audit. On arrival at your workplace, a research assistant will draw the random sample and will audit the records using an audit checklist. Once the audit has been completed, the research assistant will interview you about the selected records. The purpose of the interview is to gain further understanding into the factors you considered in making decisions about the client's management. As existing records will be used and it will take only the time required to locate the records, client care should not be compromised. The audit will be conducted in May 2008. At the end of the study a second audit will be conducted in the same way. It is anticipated that this will be in the first week of December 2008.

Participating in an intervention about evidence-based practice

This will entail attending either one or two half-day training sessions in June 2008. In addition, there may be a follow-up meeting in late November or early December 2008. All training sessions/meetings will focus on evidence-based practice for occupational therapy in the Western Cape. Application will be made for CPD points for each training session/meeting. All participants will be asked to complete a questionnaire before attending the first training session in June and again in late November/early December. The questionnaire will contain demographic information and questions related to different aspects of practice. All questionnaires will be coded with a personal identification number. Responses will be treated as confidential and only the research coordinator and I will have access to the codes and the linked names. Data will be treated confidentially at all times to avert potential harm to participants. All data will be maintained in a secure setting at the Department of Health & Rehabilitation Sciences.

Please note that participation in this project is strictly voluntary. **If you agree to participate, you will be randomly selected to attend one of two interventions.** Should one intervention be shown to be more effective than the other, participants who do not receive this intervention during the study will be given the opportunity of receiving it afterwards.

Possible disadvantages of participating in this study are that you may feel uncomfortable having someone read your records, however, please be assured that numbers will be used on the audit forms and only the researcher and research coordinator will be able to link the audit data to names of participants. Client details will not be captured. Possible benefits of participating will include an increased appreciation of evidence-based practice in occupational therapy. All results will be shared with participants by means of a feedback workshop once the results have been produced.

Approval for the study has been obtained by the Research Ethics Committee of the Faculty of Health Sciences at the University of Cape Town (REC REF: 259/2006).

Please do not hesitate to contact me if you have any questions or need any further clarification.

I would be very grateful for your support in this research project. If you are prepared to take part in the study, you will be requested to sign a consent form and return it to me at your earliest convenience.

Thank you for your time and consideration

Sincerely

Helen Buchanan
Lecturer: Division of Occupational Therapy
Tel: 021-406 6383
Email: Helen.buchanan@uct.ac.za

Dr Mark Blockman
Research Ethics Committee Office
Tel: 021-406 6492
Fax: 021-406 6411

Appendix XXI: Consent form for Study 3

EVIDENCE-BASED PRACTICE STUDY: CONSENT FORM

I have read the information provided about the research into *evidence-based practice in occupational therapy*.

I have understood the purpose of the research study.

I understand that the following will occur:

- my client records will be audited on two occasions (once at the beginning of the study and again after 6 months);
- I will be required to complete a questionnaire about evidence-based practice at the beginning and end of the study (6 months after EBP training);
- I will be randomly assigned to one of two interventions. Depending on which group I am in, I will be required to attend one or two training sessions (and possibly a follow-up meeting) about evidence-based practice in occupational therapy.
- Should one intervention be shown to be more effective than the other, participants who do not receive this intervention will be given the opportunity of receiving it after the study.

All these events will take place as far as possible during 2008.

I understand that all information will remain confidential. No identifying information will be used in any written account of the research, and audit checklists and questionnaires will be numbered to ensure that my name is not linked to the data.

I understand that I choose to participate in the study on a voluntary basis and that I am allowed to withdraw from the study.

I have had an opportunity to ask questions and these have been answered satisfactorily.

I agree / do not agree to participate in the research study.

Signature:

Date:

Name (please print):

Place of work:

Contact telephone no.: work.....home.....cell.....

Email address:

Current areas of practice: Please ✓ all boxes that apply.

- paediatrics (please specify)

- stroke
- amputation
- hand conditions (please specify)

- burns
- arthritis (please specify)

- depression
- psychoses (please specify)

- chronic diseases of lifestyle (please specify)

- anxiety
- intellectual disability
- substance use disorder
- bipolar affective disorder
- work practice
- other (please specify) _____

Appendix XXII: Description of the educational interventions in the OT EBP trial

Background to the interventions

Interventions were tailor-made for the local Western Cape context and developed with reference to literature and the results of the survey (see Chapter 4). Gaps in knowledge and skills, and identified barriers to implementing EBP, were specifically addressed. The intervention was based on evidence as far as possible. Decisions about the final content were made in consultation with local and international experts. The executive committee of the Metropole Occupational Therapists in Health (MOTH) group was consulted to identify the conditions most commonly treated by occupational therapists in the public sector, and to discuss how the research could be used to further their aims. The group was looking at quality assurance with the aim of establishing a minimum standard of care at each level of service. These standards would be linked to evidence. A task group was in the process of gathering guidelines from therapists to see what was available and identify gaps. Working with this group was in keeping with Forstelund *et al.*'s (2009) claims that efforts to promote EBP are strengthened by using existing networks and infrastructures.

Literature informing the type of interventions employed

Systematic reviews in *The Cochrane Library* were reviewed to inform the intervention as discussed in chapter 8. Education sessions were identified as most feasible in the context of the OTEBP trial. A systematic review concluded that continuing education sessions can produce small to moderate changes in practice (Forsetlund *et al.*, 2009). Furthermore, although didactic interventions were able to change practice, interactive interventions seemed most effective (2005) but it was not known whether these conclusions applied equally to occupational therapists as most studies involved physicians or nurses.

Theoretical foundation

According to Hammond and Klompenhouwer (1992), strategies aimed at changing practice need to increase knowledge about why and how to change, provide understanding about

beliefs and benefits of change, increase self-efficacy and provide opportunities to practice skills. To this end, theories of adult learning, motivation and behaviour change were drawn on to guide the development of the intervention. Theories focusing on individual rather than organisational change were selected.

According to Rogers (Rogers, 2003, p 1), '[g]etting a new idea adopted, even when it has obvious advantages, is difficult'. As implementing new ideas can take many years, much work has been done on understanding how to speed up the process of adopting an innovation (Rogers, 2003). The trans-theoretical stages of change model describes five stages, pre-contemplation, contemplation, preparation, action and maintenance, through which an individual must progress in order to adopt a pre-specified behaviour (DiClemente *et al.*, 1991, Prochaska *et al.*, 1992). According to this model, behaviour is influenced by an individual's readiness to adopt a behaviour when information about that behaviour is presented (Dalton and Gottlieb, 2003, Prochaska *et al.*, 1992). An item in which participant's rated their readiness to adopt EBP was included in the baseline and 12-week questionnaires to determine whether the intervention had been successful in evoking change. Additional information is provided in section 6.3.1.6

To encourage adoption of EBP, social learning theory was used in the intervention sessions. This theory focuses on learning that occurs in a social context where people learn from each other through observation, imitating actions and modelling (Rutledge, 2000). Principles from social learning theory were applied during the intervention to encourage behaviour change. The PI attempted to instil the belief that participants could 'do' EBP by giving confidence-building messages, allowing them to observe others being successful, and experiencing their own success. Other principles such as setting realistic expectations and learning through observing others were also applied (Dawes *et al.*, 2005).

Contextual information emerging from Study 1

Findings from the survey in chapter 4 that informed the content of the interventions included:

- Clinical experience, information from continuing education programmes and colleagues were used more frequently than research literature, showing a limited appreciation of the importance of drawing on scientific evidence in clinical decision-making.
- Very few respondents used the internet to access research evidence despite having access to a computer and the internet (although this may have been at home rather than work).
- Few respondents had access to an academic library.
- Although most respondents relied on secondary sources of evidence with few searching for, and appraising, primary literature, systematic reviews were hardly used and the majority reported poor confidence using *The Cochrane Library*. Respondents were mainly interested in using brief evidence-based summaries and evidence-based occupational therapy guidelines or protocols developed by others and very few were interested in learning search or appraisal skills.
- Respondents were reasonably confident in searching for literature but lacked confidence in evaluating studies and determining their significance.

Goals of the interventions were identified based on the above findings.

Goals of the interventions

The overall goals of both interventions were to:

- Improve knowledge and skills in the steps of EBP, namely developing focused questions, searching for evidence, appraising research articles, and applying research findings to practice;
- Foster positive attitudes towards EBP;
- Increase confidence in implementing EBP, and in so doing, influence behaviour;
- Facilitate the process of applying evidence by providing packages of 'strong' evidence that could be applied in practice;
- Raise awareness about the importance of monitoring the effectiveness of interventions through record-keeping thus encouraging participants to generate their own evidence;
- Encourage participants to develop action plans for starting to apply EBP (IE only).

Design of the interventions

Based on the literature and the survey findings (refer to Chapter 4) the principles used in the design of the education sessions were:

- Promotion of freely available internet resources;
- Development of support structures for participants who lacked access to a computer or the internet;
- Ensuring a balance in teaching the skills required for each of the five EBP steps (Dawes *et al.*, 2005, Soltani *et al.*, 2004). In particular, participants would need to learn how to evaluate studies and determine their significance for the SA context;
- Recognising the unrealistic emphasis placed on appraisal in the past, as well as limited time and high workloads, the focus would be on using pre-appraised literature, such as systematic reviews and that found in professional evidence databases such as OTseeker (<http://www.otseeker.com>) (Soltani *et al.*, 2004). As appropriate secondary sources may be absent in some areas of occupational therapy practice, basic appraisal skills would also be taught;
- Raising awareness of the importance of higher levels of evidence (Soltani *et al.*, 2004) rather than evidence based on clinical experience and information from colleagues;
- Introduce statistics at a later stage to prevent discouragement (Dawes *et al.*, 2005);
- The content of the interventions had to reflect the realities of clinical settings in terms of time and resource limitations (Soltani *et al.*, 2004). Strategies would need to instil confidence that EBP is possible in a busy work schedule;
- Address the barriers to EBP identified in the baseline survey, e.g. lack of access to a wide range of electronic journals/databases. Strategies should be devised to overcome barriers and manage change related to EBP (Hammond and Klompenhouwer, 2005);
- Develop action plans to start using EBP (McCluskey and Lovarini, 2005).

Length of the intervention

Two-day workshops for occupational therapists were conducted in Australia (McCluskey and Lovarini, 2005) and the UK (Hammond and Klompenhouwer, 2005). The former study included occupational therapists working in any area of practice and aimed to increase knowledge, attitudes and use of EBP, while the latter targeted occupational therapists

working in rheumatology with the goal of teaching them an effective strategy for implementing joint protection education with clients. Forsetlund *et al.*'s (2003) intervention for physicians to make public health practice more evidence-based varied between one and five days. A study conducted in government maternity units in SA used a single interactive workshop lasting between two-and-a-half and three hours to influence obstetric practice (Smith *et al.*, 2004). The argument for the brief intervention in the latter study was the scarcity of resources and the resultant need for cost-effective interventions. Recognising the difficulties occupational therapists might face in attending the intervention because of high workloads and staff shortages, a shorter course would be more feasible and more cost effective. Thus, in consultation with the MOTH group, a four-hour workshop was planned for each group with an additional two-hour session one week later for the IE.

Format of the interventions

The IE was multi-faceted as it consisted of more than one intervention, namely education, follow-up and reminders (Forsetlund *et al.*, 2009). Educational materials were considered part of the educational intervention (Forsetlund *et al.*, 2009). A *Microsoft PowerPoint* presentation was used for the DE and the first IE session. The content of these presentations were the same but small group discussions and hands-on practical exercises were included to practice specific skills in the IE. As the DE did not have a practical search session, additional slides were included in the presentation to show participants specific features they could use in specialised and traditional databases. Evidence 'packages' contained a minimum of three articles on a particular condition. The 'packages' consisted of evidence-based guidelines, CAPs, systematic reviews or pre-appraised literature considered to be 'best practice' for the areas in which participants worked. Advice was obtained from two international occupational therapists with considerable experience in EBP and specific areas of practice, namely stroke and paediatrics, about articles in their field that provided evidence of 'best practice'. Other articles were obtained by searching OTseeker, *The Cochrane Library*, Pubmed and CINAHL. In addition, searches for high quality clinical guidelines were conducted. Articles were selected based on the hierarchy of evidence and wherever possible, pre-appraised sources were used. Citations for the articles included in each evidence 'package' are shown in Table 88.

Table 88: Content of evidence 'packages'

<i>Topic and article</i>	<i>Type of document/study</i>
<u>Burns</u> Burn Therapy Working Group (2007) de Lateur <i>et al</i> (2007) Esselman (2007) Esselman (2006) O'Brien and Pandit (2003) So <i>et al</i> (2007)	Standards of practice RCT Editorial/literature review Cohort Systematic review RCT
<u>Depression</u> Cuijpers <i>et al</i> (2004) Ma and Teasdale (2007) National Institute for Health and Clinical Excellence (NICE) (2004) Royal Australian and New Zealand College of Psychiatrists Clinical Practice Guidelines Team for Depression (2006)	Meta-analysis RCT Clinical guideline Clinical guideline
<u>Hands and arthritis</u> O'Brien <i>et al</i> (2005) Wajon and Ada (2005b) Wallen (2005a) and Wallen (2004) Weiss (2008)	RCT RCT Critically appraised paper Cross-over trial
<u>Management</u> Caldwell <i>et al</i> (2005)	Action research
<u>Paediatrics</u> Blauw-Hospers and Hadders-Algra and (2001) Leksukulchai (2007) Spittle <i>et al</i> (2004) Walker <i>et al</i> (2007a) Wallen (2007b) and Wallen (2005)	Systematic review RCT Systematic review RCT CAP
<u>Stroke</u> Hoffmann (2007) Legg <i>et al</i> (2004) Logan <i>et al</i> (2004) National Association of Neurological Occupational Therapists (NANOT) (2001)	CAP Systematic review RCT Clinical guideline
<u>Substance use</u> Barrowclough <i>et al</i> (2007) Department of Health (England) and the devolved administrations (2004) Drake <i>et al</i> (2001) McGillicuddy <i>et al</i> (2003) Haddock <i>et al</i> (2008)	RCT Clinical guideline Systematic review RCT RCT
<u>Work practice</u> Aas (2003) Bennett (2007) Gross <i>et al</i> (1998) Krause <i>et al</i> (2003) Schonstein <i>et al</i> (2005)	CAP CAP Cluster RCT Systematic review Systematic review

Content of the interactive educational intervention (IE)

The two sessions were modelled on the intervention provided by McCluskey and Lovarini (2005) and consisted of lectures, practical sessions and small group discussions. Detailed content for sessions one and two are shown in Boxes 1 and 2 respectively. Appreciating that behaviour change requires support, participants were telephoned by the research coordinator a month after attending session two to check whether they had received the emailed notes, to determine how they were managing in using EBP, and to determine their need for additional assistance or information. The intention was for the PI to respond to

additional requests for information or assistance via email or telephone as outreach visits were not be feasible due to time and cost implications.

Box 1: Outline for IE session 1 (4 hours)

Introduction:

Announcements about OT EBP study

Introductions - participants introduce themselves (name, place and area of work, what they know re EBP & what they hope to learn from session)

Training outline and programme

What is EBP?

Misconceptions

Definitions: Participants identify main elements in the definitions by Sackett *et al* (2005) and Dawes *et al* (Jackson *et al.*, 2006)

Why should we use EBP?

Large group discussion

The 5 steps of EBP

Step 1: Formulating questions based on clinical scenarios – example of scenario and different types of questions that could be asked.

Exercise 1 (small groups): Identify at least one possible question you would like to answer in your area of practice (small group). Write it as a question you could use in a search. (PI moves around groups to provide assistance where necessary). Feedback from groups

Step 2: Finding research evidence to answer the question

What is evidence?

What type of evidence is best?

Primary and secondary research

How to search for evidence

Exercise 2: Write a search strategy for the question developed in exercise 1. Discuss with your group and get feedback.

Facilitator leads discussion to refine questions and assist groups to identify possible search terms

Doing an efficient search

Where to look for evidence – specialised and traditional databases, guideline sites.

Facilitator demonstrates resources available from **specialised** internet databases:

- Cochrane library – evidence provided; home page; different libraries; access through SA Cochrane Centre
- OTSeeker – evidence provided; quality rating scale; home page; how to do a search using drop down menus and key words; how to open article; where to find abstract; how to get full text
- PEDro – as for OTSeeker
- OTCATs – home page; how to get list of CATs; quality

Facilitator demonstrates resources available **in traditional databases:**

- Pubmed - Clinical queries → specialised search filters to make searching for answers to clinical questions more efficient – can specify type of question (therapy, diagnosis, prognosis or harm) or search for systematic reviews of primary studies only
- CINAHL

Exercise 3: Participants practise searching different databases for evidence to answer their PICO question

BREAK

Step 3: How to appraise an article

Discussion (large group) of article on Depression & exercise using GATE diagram & article (The World Bank Group, 2010c)

Step 4: Applying evidence & evaluating practice

Small group discussion: What do you need to consider when deciding whether/how to apply evidence?

Where to from here?

Explain content of folders and evidence 'packages'.

Task before next session: go through evidence 'packages'. At next session application of evidence in packages, record-keeping and any other issues identified by participants will be discussed.

Box 2: Outline for IE session 2 (2 hours)

Outstanding issues from last session

Reflect on what was covered in last session and identify any areas in which you would like more input/information. Write these on the yellow pieces of paper and pass to the front.

The facilitator sorts through questions and discusses each with group in the first half of the session.

BREAK

Occupational therapy records

Small group discussion:

How should evidence be documented in OT notes? When should it be included and when not?

What do you think OT records should look like if they are evidence-based?

Extract principles from each group – record on flip chart. Facilitator - outline from article in Australian OT journal

What barriers and facilitators are there in your work context that either make it difficult for you to use EBP or facilitate this?

Small group discussion:

What are the barriers that could make it difficult for you to use EBP?

What facilitators/enablers exist in your work environment that support EBP? Identify resources in your context you could access that would assist you to use EBP, e.g. CATs and CAPs, systematic reviews, journal clubs

Think of ways in which barriers could be overcome/minimised.

Feedback from each group – record on flip chart.

What can I do from here to either start using EBP or to strengthen my use of EBP? What changes will I need to do this? What supports can I draw on to help me succeed?

Small group discussion and make a list of suggestions of how you could continue developing your skills in and use of EBP

Feedback from groups – record on flip chart. Give handout with suggestions after discussion.

Closure

Summarise steps needed for EBP and outline strategies participants identified to help them use EBP

Encourage participants to contact facilitator for further help

Completion of evaluation forms

Didactic educational intervention (DE)

The focus was on knowledge acquisition and did not develop skills or apply concepts in practice. Box 3 provides the detailed content of the DE.

Box 3: Outline for DE

Introduction:

Announcements about EBP study

Introductions - Participants introduce themselves (name, place and area of work, what they know re EBP & why they think EBP is important to their work)

Training outline and programme

What is EBP?

Misconceptions

Definitions: Identify main elements in the definitions by Sackett *et al* and Dawes *et al*

Why should we use EBP?

The 5 steps of EBP

Step 1: Formulating questions based on clinical scenarios – example of scenario and different types of questions that could be asked

Step 2: Finding research evidence to answer the question

What is evidence?

What type of evidence is best?

Primary and secondary research

How to search for evidence

Doing an efficient search

Where to look for evidence – specialised and traditional databases, guideline sites

Powerpoint slides used to show different **specialised** and **traditional** databases:

- Cochrane library – evidence provided; home page; different libraries; access through SA Cochrane Centre
- OTSeeker – evidence provided; rating to help you assess quality; home page; how to do a search using drop down menus etc; how to open article; where to find abstract; how to get full text
- PEDro – as for OTSeeker
- OTCATs – home page; how to get list of CATs; quality
- Pubmed - Clinical queries → has specialised search filters to make searching for answers to clinical questions more efficient – can specify type of question (therapy, diagnosis, prognosis or harm) or search for systematic reviews of primary studies only
- CINAHL

BREAK

Step 3: How to appraise an article

Step 4 & 5: Applying evidence & evaluating practice

Evidence-based record-keeping

Mention briefly the information that should be recorded in patient records

Where to from here?

Explain what is included in folders and evidence packages

Give suggestions about how participants could become evidence-based practitioners

Closure & evaluation

Questions

Completion of evaluation forms

Strategies to achieve replication of the interventions

To ensure that the PI did not deviate from the format or content of each type of intervention, checklists were developed for the DE and both IE sessions. A consistent observer, the research coordinator, attended all sessions to observe and record how the session was conducted. Checklists for the IE and DE are available in Appendix XXIII.

Appendix XXIII: Observer checklists for interventions

Didactic educational intervention

Content	Covered (Yes/No)	Comments (see note below)
What is evidence-based practice?		
Why should OTs be evidence-based practitioners?		
Developing questions arising from a clinical scenario		
Where to find evidence		
How to appraise evidence		
How to apply evidence & evaluate practice		
Evidence-based record-keeping		
Evidence 'packages'		
Where to from here?		
Closure & evaluation		
Were any interactive exercises done in which participants were involved in tasks or small group discussions		

Note: Facilitator and participants may ask questions and give answers but the workshop content should be imparted to participants rather than providing opportunities to offer ideas or explore options and solutions.

Any other comments or observations?

.....

.....

.....

.....

Completed by:

Interactive educational intervention

Session 1

Content	Covered (Yes/No)	Comments (see note below)
What is evidence-based practice?		
Why should OTs be evidence-based practitioners?		
Developing questions arising from a clinical scenario		
Where to find evidence		
How to appraise evidence		
How to apply evidence & evaluate practice		
Evidence 'packages'		
Where to from here?		
Closure & evaluation		
Were participants given opportunities to discuss/apply what they had learnt?		
Were there any areas where opportunity to discuss/apply to practice should have been given but weren't?		

Note: In this training session participants should be involved in small group discussions or individual tasks where they apply what has been presented to their practice context. Participants must have opportunities to try out what they have learnt.

Any other comments or observations?

.....

.....

.....

.....

Completed by:

Session 2

Content	Covered (Yes/No)	Comments (see note below)
Were all issues identified by participants as needing further clarification/discussion covered?		
Was documenting evidence in OT records covered?		
Did participants identify barriers and facilitators to EBP in their own environments?		
Were strategies for overcoming barriers to EBP discussed?		
Did participants identify plans for taking EBP learning further?		
Were participants strongly encouraged to contact the researcher for further information/questions about EBP?		
Were participants given opportunities to discuss/apply what they had learnt?		
Were there any areas where opportunity to discuss/apply to practice should have been given but weren't?		

Note: In the first half of this training session issues raised by participants that they feel need further clarification or explanation will be covered. While some input may be given, participants should be involved in small group discussions or individual tasks where they apply what they have learned to their practice context.

Any other comments or observations?

.....

.....

.....

.....

Completed by:

Appendix XXIV: Ethics approval letter for Study 3

UNIVERSITY OF CAPE TOWN



Health Sciences Faculty
Research Ethics Committee
Room E53-24 Groote Schuur Hospital Old Main Building
Observatory 7925
Telephone [021] 406 6338 • Facsimile [021] 406 6411
e-mail: preaward@curie.uct.ac.za

14 July 2006

REC REF: 259/2006

Mrs H Bhuchanan
Health and Rehabilitation Sciences

Dear Mrs Buchanan

**EVIDENCE-BASED PRACTICE IN THE OCCUPATIONAL THERAPY PROFESSION IN
SOUTH AFRICA AND THE WESTERN CAPE**

Thank you for submitting your study to the Research Ethics Committee for review. It is a pleasure to inform you that the committee has approved the above mentioned study.

Please quote the REC. REF in all your correspondence.

Yours sincerely

DR. M BLOCKMAN
CHAIRPERSON

Appendix XXV: Approval letter from Department of Health



Verwysing
Reference
Isalathiso 19/18/RP37/2008

Nevrae
Enquiries
Imibuzo Dr T. Naledi

Telefoon
Telephone
Ifowuni 021 483 9901

**Departement van Gesondheid
Department of Health**

Ms H. Buchanan
Department of Health and Rehabilitation Services
University of Cape Town
F45 Old Main Building
Groote Schuur Hospital
Observatory
7925

Fax to 021 4066323

Dear Ms-Buchanan

Evidence-based practice in the Occupational Therapy Profession in South Africa and the Western Cape

Thank you for submitting your proposal to undertake the above-mentioned study. We are pleased to inform you that the department has granted you approval for your research. Please contact the following members of staff to assist you with access to the facilities:

- 1) Dr T. Carter at tcarter@pgwc.gov.za tel: 021 9384136 (Tygerberg Hospital)
- 2) Dr A. Krajewski at akrajews@pgwc.gov.za tel: 021 4043176 (Groote Schuur Hospital)
- 3) Dr L. Hering at lhering@pgwc.gov.za tel: 021 4403303 (Lentegeur Hospital; Stikland Hospital; Valkenberg Hospital; Alexandra Hospital)
- 4) Dr D. Erasmus at dierasmus@pgwc.gov.za tel: 021 6585091 (Red Cross Children's Hospital)
- 5) Dr S. Moeti at smoeti@pgwc.gov.za tel: 021 5087403 (Brooklyn Chest Hospital)
- 6) Dr D. Stokes at dstokes@pgwc.gov.za tel: 021 6585005 (Victoria Hospital)
- 7) Dr L. Naudé at lnaude@pgwc.gov.za tel: 021 9181222 (Karl Bremer Hospital)
- 8) Dr J. Mobbs at jhmobbs@pgwc.gov.za tel: 021 7127491 (DP Marais Hospital)
- 9) Dr K. Maart at kmaart@pgwc.gov.za tel: 021 4026992 (Somerset Hospital)
- 10) Dr F. Krige at frige@pgwc.gov.za tel: 023 3488101 (Boland/Overberg)
- 11) Mrs C. Bester at cwbester@pgwc.gov.za tel: 022 4879306 (Westcoast/Winelands)
- 12) Ms J. Hendry at jhendry@pgwc.gov.za tel: 021 3702316 (Western Cape Rehabilitation Centre)
- 13) Mr J. van Heerden at jvhheerd@pgwc.gov.za tel: 021 9542237 (Delft CHC)
- 14) Mr A. Patentia at apatentia@pgwc.gov.za tel: 021 9310211 (Elsies River CHC)
- 15) Mrs L. Appolis at lappolis@pgwc.gov.za tel: 021 3925161 (Mitchell's Plain CHC)
- 16) Sr C. Alexander at calexan@pgwc.gov.za tel: 021 8572330 (Macassar CHC)
- 17) Mrs Notshe at tel: 021 3613470 (Khayelitsha CHC)

We look forward to hearing from you.

Yours sincerely

DR J. JUPIDO
DEPUTY-DIRECTOR GENERAL
DISTRICT HEALTH SERVICES AND PROGRAMMES

DATE: 2018/06/20

CC: DR K. CLOETE D: MDHS
DR V. ZWEIGENTHAL

Appendix XXVI: Letter of permission from managers

[UCT letterhead]

(Insert date here)

To: (Address to be inserted)

Dear (Insert name here)

Re: Request for permission to conduct research at your institution

I am registered for a PhD degree at the University of Cape Town. In fulfilment of the requirements for this degree I am conducting a research project to investigate evidence-based practice (EBP) in occupational therapy in the Western Cape. Approval for the study has been obtained by the Research Ethics Committee of the Faculty of Health Sciences at the University of Cape Town (REC REF: 259/2006) and the Department of Health (Ref. 19/18/RP37/2008). I am writing to request your permission to conduct this research at your institution.

The focus of this research is on equipping occupational therapists with training in evidence-based practice and evaluating the impact of this training on their knowledge, skills, attitudes and practice. The occupational therapists working at your institution will be approached to participate in the study through an information session that will explain the purpose of the study and expectations of participants. Therapists who agree to participate will be required to sign consent forms, after which they will be randomised to receive one of two interventions. Both interventions will provide training in evidence-based practice but they will differ in their mode of delivery. Should one intervention be shown to be more

effective than the other, participants who do not receive this intervention during the study will be given the opportunity of receiving it afterwards.

To determine the effect of these interventions on practice, participants will complete a questionnaire and participate in an audit of their recent client records at the beginning of the study and 6 months after training. Participants will be aware that their records will be audited but will be advised that the outcome of interest is NOT individual therapist's records, but rather the overall picture. The identity of therapists and clients will be protected by ensuring that numbers rather than names are used on audit checklists. Results will be published with sensitivity to ensure that there will be no harm to clients, therapists or institutions.

Therapists will be contacted to arrange a suitable date and time for the audit and will be requested to have their records from the previous week available for the visit. A random sample of two records will be selected from the previous week's client list and these will be audited by two research assistants. Following the audit, an interview will be done to verify the information obtained in the audit. As existing records will be used and it will take only the time required to locate the records and approximately 45 minutes to conduct the interview, client care should not be compromised. The questionnaire will take approximately 20 minutes to complete and could be done in the therapists own time rather than during working hours. It is hoped that the initial audit and questionnaire will be completed in July/August 2008 and the final in January/February 2009. Please be assured that all information will be kept confidential and no information identifying the participants or the institution will be disclosed.

Participation in the study will entail the following from participants:

- 1. Providing permission to access their recent client records for the audit at baseline and 6 months post EBP training**

- 2. Providing a list of clients seen over the week preceding each audit**
- 3. Participating in an audit interview at baseline and 6 months:** once the audit has been completed, research assistants will interview participants about the selected records. The purpose of the interview is to gain further understanding into the factors that were considered in making decisions about the client's management. At the end of the study a second audit will be conducted in the same way.
- 4. Completing a questionnaire about evidence-based practice at baseline and 6 months**

All participants will be asked to complete a questionnaire before attending the first training session in July/August 2008 and again in January/February 2009. The questionnaire contains demographic information and questions about different aspects of EBP. Questionnaires will be coded with a personal identification number. Responses will be treated as confidential and only the research coordinator and I will have access to the codes and the linked names. Data will be treated confidentially at all times to avert potential harm to participants. All data will be maintained in a secure setting at the Department of Health & Rehabilitation Sciences.

- 5. Participating in training on evidence-based practice**

This will entail attending either one or two half-day training sessions in August 2008. In addition, there may be a follow-up meeting in late November or early December 2008. All training sessions/meetings will focus on evidence-based practice for occupational therapy in the Western Cape.

Application will be made for CPD points for attending the training and completing the questionnaires and audit. Other possible benefits of participation include an increased appreciation of evidence-based practice in occupational therapy. Findings will be shared with participants by means of a feedback workshop once the results have been produced. It is hoped that the study findings will inform strategies for implementing evidence-based practice in occupational therapy in the future.

I would be very grateful for your support in this research endeavour. Please do not hesitate to contact me if you have any further queries.

Thank you for your time and consideration

Sincerely

Helen Buchanan

Lecturer: Division of Occupational Therapy
Office

Tel: 021-406 6383

Email: Helen.buchanan@uct.ac.za

Dr Mark Blockman

Research Ethics Committee

Tel: 021-406 6492

Fax: 021-406 6411

University of Cape Town