
What is the capacity of the children's nursing workforce in five selected sub-Saharan African countries? Gathering insights from Kenya, Malawi, Uganda, South Africa and Zambia.

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LIST OF ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
ARC	African Health Profession Regulatory Collaborative of Nurses and Midwives
CHW	Community Health Worker
CNPDI	Child Nurse Practice Development Initiative
CoMMiC	Committee on Morbidity and Mortality in Children under 5 years
DCST	District Clinical Specialist Team
EU	European Union
FUNDISA	Forum of University Nursing Deans of South Africa
GDP	Gross Domestic Product
HEI	Higher Education Institution
HIV	Human Immunodeficiency Virus
HRH	Human Resources for Health
HURAPRIM	Human Resources for Primary Care in Africa
ICTS	Information and Communication Technology Services
ILO	International Labour Organisation
KCN	Kamuzu College of Nursing
NMC	Nursing and Midwifery Council (United Kingdom)
NQF	National Qualifications Framework
ORT	Oral Rehydration Therapy
SAD	Staff related access deficit indicator
SADC	Southern African Development Community
SANC	South African Nursing Council
SDG	Sustainable Development Goals
U5M	Under-Five Mortality
UCT	University of Cape Town
UN	United Nations
UN-IGME	UN Interagency Group for Child Mortality Estimation
UNICEF	United Nations International Children's Emergency Fund
WHO	World Health Organisation
WISN	Workforce Indicators of Staffing Need

DECLARATION

I, Natasha North, hereby declare that the work on which this dissertation is based is my original work (except where acknowledgements indicate otherwise) and that 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.

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Date:

This study has been approved by the Human Research Ethics Committee of the University of Cape Town (HREC REF: 411/2017).

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While it is recommended that an academic librarian or information specialist is consulted regarding formulation of the search terms and strategy for a scoping review (Yoshida et al., 2016) the participation of Ms Dilshaad Brey, Subject Librarian for Paediatrics, Child Health & Neonatal Medicine, of UCT's Health Sciences Library, extended far beyond that of consultee. Dilshaad's command of content in her field, her commitment to unearthing Afrocentric knowledge, and the grace with which she facilitates the application of rigorous process to untidy questions contributed beyond measure to the generation of whatever insights this study was able to achieve. Dilshaad's mastery of the science and the art of knowledge transfer

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TERMINOLOGY

The nomenclature pertaining to the category of nurses which is the subject of this study varies throughout the Region. For example, terms such as a specialist or speciality (Public Health And Social Development Sectoral Bargaining Council, 2007; South African Nursing Council, 2012) children's nurse are applied almost interchangeably within South Africa at the present time, while internationally they may be understood to refer to a children's nurse with a sub-specialisation e.g. paediatric critical care. The terms children's nurse, child health nurse and paediatric nurse are all in widespread usage, with differences partially explained by whether the term denotes a status conferred by role, qualification or registration. The term 'registered' children's nurses adds a further level of ambiguity, since one of the questions this study explores is to what extent this category of nurses are indeed separately recorded on professional registers. This study therefore applies the widely understandable plain English description of 'children's nurse' to refer to nurses who have undertaken post-basic training leading to a qualification as a specialist paediatric or child health nurse.

In any consideration of children or paediatrics, an authorial decision must be made regarding the use of these terms. Terminology, common usage, social and legal contexts vary between and indeed within the countries in this study. The Declaration on the Rights of the Child provides that "a child means every human being below the age of eighteen years" and for consistency this definition has been adopted for this study where the default term "children" is used (The United Nations, 1989). However, many statistical reports categorise the child population either as 0-16 years, or sub-categorise neonates or infants, or children between birth and five years of age. Where sub-categories apply, this is stated in the text.

ABSTRACT

Background

This study attempted to identify as far as possible the extent of the children's nursing workforce in five selected countries in the sub-Saharan African region. Strengthening children's nursing training has been recommended as a primary strategy to reduce the under-five mortality rate in African nations, including South Africa and Malawi. The current level of data monitoring capacity worldwide means that it is not possible to disaggregate the children's nursing workforce in countries in the World Health Organisation African Region from the data provided by the WHO Global Atlas of the Health Workforce database. Yet developing an accurate depiction of the specialist children's nursing workforce is a necessary step towards optimizing children's health service delivery.

Methods

In attempting to respond to this need, this study adheres to a collaborative research philosophy, using a convergent parallel mixed methods design, incorporating a scoping documentary review, together with quantitative (surveys and case study compilation) and qualitative (interview) components collected independently and then integrated during analysis and interpretation, to generate data addressing three related questions: how many children's nurses are believed to be in practice nationally; how many such nurses are recorded on the nursing register nationally; and how many children's nurses are being produced through training.

Results

Findings suggest there are approximately 3 728 children's nurses across the five countries in this study. A combined total of 260 children's nurses are produced through training each year across the five countries on average. Survey responses, interview data and content analysis of items identified through the scoping review suggest that adequate information regarding the children's nursing workforce is not currently available to inform decision-making.

Conclusion

In conclusion, it is hoped that the data generated might contribute towards identifying the size of the children's nursing workforce, as a first step towards identifying what would represent a viable and sustainable regional children's nursing workforce for the future.

CHAPTER 1: INTRODUCTION

1.0 INTRODUCTION

This study set out to quantify, as accurately as possible, the size of the children's nursing workforce in five countries in sub-Saharan Africa. Nurses are the backbone of health care delivery in Africa, forming the largest part of the professional health workforce (Bangdiwala & Osegbeaghe, 2010). Close to half the population in many African countries is aged under 18, and children represent a high proportion of hospital admissions, with neonates in one study accounting for 40% of critical care bed occupation (Gillespie, Kyriacos, & Mayers, 2008).

Progress in postgraduate education and training within the African Region has resulted in the presence within the workforce of a small cadre of nurses with specialised knowledge and skills relating to the care of sick babies and children, gained through additional qualifications (Coetzee et al., 2016). These specialist children's nurses are a precious resource in a Region where more than 100 children per 1 000 may die before the age of five (UNICEF, 2017), and where as many as 80% per cent of nursing posts are vacant in some remote areas (USAID, 2010).

Despite the potential importance of this cadre of nurses, there is a lack of accurate high-quality information about this emerging sector of the nursing workforce. The current level of data monitoring capacity means that it is not possible to disaggregate the children's nursing workforce in countries in the WHO African Region from the data provided by the WHO Global Atlas of the Health Workforce database. Developing an accurate depiction of the specialist registered children's nursing workforce is a necessary step towards optimising children's health service delivery, and ultimately improving child health.

1.1 THE CHALLENGE OF HUMAN RESOURCES FOR CHILD HEALTH

Reducing the unacceptably high level of infant and child mortality, originally articulated in Millennium Development Goal 4 (UN General Assembly, 2000), remains a global priority now expressed through sub-goal 3.2 of the United Nations Agenda 2030 for Sustainable Development (United Nations, 2015). The aim is now to end preventable deaths of newborn babies and children under five years by 2030, with all countries aiming to reduce neonatal mortality to at least as low as 12 deaths per 1000 live births and under-five mortality to at least as low as 25 deaths per 1000 live births, a target which remains out of reach for a number of African countries based on current projections (You et al., 2015).

The Sustainable Development Goals (SDGs) also commit member states to “substantially increase... recruitment, development, training and retention of the health workforce in developing countries” (United Nations, 2015). Strengthening children’s nursing training is recommended as a primary strategy to reduce the under-five mortality rate in African nations, including South Africa (CoMMiC, 2014) and Malawi (Task Force on Scaling Up Education and Training for Health Workers, 2007).

Concentrated work in response to these commitments has coalesced into the emerging interdisciplinary topic of human resources for health. This work has generated a number of important insights which need to form the organising principles for any enquiry into the health workforce. As will be shown below, it is now generally understood that the determinants of health worker capacity are multidimensional, encompassing a range of factors which include availability, distribution, employment status, and performance.

Previous studies have provided estimates of health worker inflow and outflow at a macro level (Kinfu, Dal Poz, Mercer, & Evans, 2009). Disaggregation of reported healthcare workforce figures by specialisation remains a major challenge (Jim Campbell. April 2016. Personal communication). The gaps in the existing picture in the Region of the nursing workforce as a whole, and the children's nursing workforce in particular, result in part from challenges in system and organisational capacity. It cannot, for instance, be assumed that accurate empirical data will be available from national registries.

The absence of this information is currently a barrier to those who want to move forwards with the creation of a viable and sustainable children's nursing workforce (de Francisco Shapovalova, Meguid, & Campbell, 2015). In response to this need, this study attempted to quantify the children's nursing workforce in five selected countries in sub-Saharan Africa.

1.2 PURPOSE OF THIS STUDY

The goal of this study was to identify, as far as possible, the capacity of the children's nursing workforce in five selected countries in the sub-Saharan African region, as a first step towards identifying what would represent a viable and sustainable children's nursing workforce for the future.

The research question explored through this study was, therefore:

What is the capacity of the children's nursing workforce in five selected sub-Saharan African countries?

The investigative approach employed pursued this question through two routes. Firstly, recognising that numbers provide only a partial representation of capacity, a scoping review of documentation documentary was undertaken to consider:

What can be discovered from documentary sources regarding the capacity of the children's nursing workforce?

Secondly, the investigative approach pursued through questionnaire surveys and interviews aimed to establish:

How many specialist children's nurses are currently on the professional register?

How many specialist children's nurses are currently in clinical practice?

How many specialist children's nurses are currently being produced through training?

1.3 RESEARCH STRATEGY

This study used a convergent parallel mixed methods design, incorporating quantitative (surveys and case study compilation) and qualitative (interview) components, collected independently and then integrated during analysis and interpretation. The study adhered to a collaborative research philosophy.

There were three key components of the study:

- *A scoping review of documentation* was undertaken, appraising available documentation in respect of the children's nursing workforce for each of the five countries;
- *Questionnaire surveys* were administered to three groups of participants in order to elicit information about the number of children's nurses i) in practice nationally ii) recorded on the professional register ii) being produced through training;
- *Interviews* were conducted with key informants to supplement the information gathered and participants were asked to engage with the information in order to improve accuracy and assist with corroboration.

The methodology was selected in order to access both subjective and objective knowledge relating to the children's nursing workforce, with the intention of maximising understanding and enabling corroboration between sources where existing factual information was known to be scarce (Creswell, Klassen, Plano Clark, & Smith, 2011; Johnson, 2007).

This study extended to five countries in the sub-Saharan African Region: Kenya, Malawi, Uganda, South Africa and Zambia. It was believed at the outset that these were the only countries training children's nurses in the Region, and this assumption was subsequently verified through data collection. In total, 12 individuals were recruited to participate in the study.

Results are presented separately in sequential chapters in relation to the data elicited from the surveys and scoping review. Information obtained from the interviews was incorporated into the reporting of both the above in order to correct, supplement or corroborate emerging findings. Where additional material derived from interviews is included, this is indicated in the text.

1.4 OUTLINE

Having introduced the motivation for this study, shown briefly how it locates within the broader context of human resources for child health, and outlined the research strategy selected, the remainder of this dissertation is set out as follows. Chapter two provides a conceptual framework, grounding the enquiry in the body of existing research relating to the health workforce, as well as providing essential contextual information about child health and children's nursing. Chapter three describes the research procedures followed, showing the development of the research strategy and providing detailed method statements regarding the approach to collection and analysis of data.

Chapters four and five are each devoted to presenting the findings of the investigation. Chapter four presents the findings of the questionnaire surveys in the form of predominantly quantitative data. Results elicited regarding the number of children's nurses i) in practice nationally ii) recorded on the professional register ii) being produced through training are set out and discussed. Chapter five presents the data obtained through the scoping review, and highlights findings relating to the development of the children's nursing workforce in the five countries. These two chapters each open with a recap of the purpose and methods of the study component, with findings presented in the form of tables and narrative accounts of the results. An interpretation of data is then offered within each chapter, and emerging themes and insights are identified.

These themes and insights are explored further in Chapter six, before conclusions and implications are drawn from across the findings and applied to the challenge of quantifying the children's nursing workforce. Finally, a brief summary and recommendations for further research and action are offered, together with concluding points.

CHAPTER 2: HUMAN RESOURCES FOR HEALTH, AND FOR CHILDREN'S HEALTH.

2.0 OVERVIEW

Development of the children's nursing workforce in Africa needs to be understood as a response to the needs of the Region's young and rapidly growing population, and consideration of this topic needs to be grounded within the wider field of human resources for health. This chapter sets out to ground the research question at the heart of this study within existing knowledge and debates, moving from the general to the specific, considering in turn: human resources for health; the children's health needs of the African Region; and the children's nursing workforce in Africa.

As was seen briefly in Chapter one, a considerable body of work now constitutes the emerging interdisciplinary field of human resources for health. The focus of this study is the child health workforce, and the children's nursing workforce in particular. Consideration of this sub-set of the health workforce requires the application of considerations, principles and disciplinary approaches first defined in relation to the health care workforce as a whole. Before moving on to consider the specific features of the children's nursing workforce, therefore, this chapter begins with a review of the emergence of human resources for health as an issue of global concern, tracing developments in understanding of the central problems and the chain of solutions and responses. Having provided a broad account of key developments in the field of human resources for health as a whole, the next section of the chapter provides an overview of key socio-demographic data for the five countries in relation to child health profiles, health expenditure and health worker density. Having established this context, the specific role and contribution of children's nurses is finally considered and the rationale for investigating the capacity of this specialist cadre of the children's health workforce is established.

2.1 THE EMERGENCE OF HUMAN RESOURCES FOR HEALTH AS AN ISSUE OF GLOBAL CONCERN

The shortage of health workers in many of the countries of the sub-Saharan region has been identified as a major barrier to improving health and a very significant constraint on the implementation of evidence based interventions and priority programmes aimed at improving health (Crisp, 2008; Scheffler, Mahoney, Fulton, Dal Poz, & Preker, 2009, p. 860) . Estimates of the precise extent of the health worker shortage vary, depending on the methods used. It is clear that low resourced countries have a very low provider-to-population ratio, with the World Health Organisation calculating the ratio to be around 2.9/1000 across the African Region as a whole and some estimates suggesting that the health workforce in the lowest resourced African countries falls short of recommended levels by as much as 140% (Bangdiwala & Osegbeaghe, 2010; Kinfu et al., 2009; World Health Organisation, 2006b).

Measurable improvements in health were selected as key indicators of progress towards the Millennium Development Goals established through the United Nations Millennium Declaration in 2000 (UN General Assembly, 2000), and more recently the Sustainable Development Goals established as part of the United Nations Agenda for Sustainable Development (United Nations, 2015). The Joint Learning Initiative (a multi-sectoral consortium on human resources for health established in the wake of the Millennium Declaration) concluded that a 'human resources crisis' would prevent many countries from achieving universal health coverage, and ultimately from achieving either the MDGs or the SDGs (Jimba et al., 2010; Joint Learning Initiative, 2004). In the face of growing demand from decision makers for reliable up-to-date information about the health workforce, it was noted that in many low resourced countries, human resources for health data were incomplete, inconsistent, out of date, or unavailable (Spero, McQuide, & Matte, 2011, p. 2).

The considerable amount of work and progress that took place since the establishment of the Joint Learning Initiative in 2004 saw Human Resources for Health emerge as a cross-disciplinary field, spanning population health, economics and social policy. The World Health Organisation's World Health Report for 2006 framed human resources for health as a truly global issue and highlighted problems of outward migration from low resourced nations as an issue of concern. This was accompanied by the establishment of a global network of

stakeholders to advocate for human resources for health, the Global Health Workforce Alliance (the successor body to the Joint Learning Initiative).

Most recently, analysis of the health workforce has been considered as part of macro-economic policy development. The Lancet Commission on Investing in Health, established to examine how the context for health investment had changed – not least in the light of increasing focus on the health workforce – reported that approximately 25% of economic growth in low and middle income countries between 200 and 2011 resulted from improvements in health (Jamison et. al., 2013). The finding that the return on investment in health can be estimated at nine to one has become highly influential in advocating for investment in HRH.

As Berland and others demonstrate, the development of the human resources for health discourse can be seen to follow a path that began with concern regarding capacity, widened to include the challenges of mobility and measurement and branched out to explore a variety of responses (Berland et al., 2016). There is now a very considerable body of information relating to the extent of shortages in the health workforce, and analysis of the situation has become increasingly finely grained.

2.2 MEASURING THE HEALTH WORKFORCE

2.2.0 Aspects of measurement

Before moving on to consider what is known about the extent of the children's nursing workforce in particular, it is necessary to consider in more detail some of the underlying concepts and philosophies that have driven explanations of and approaches to the phenomenon of human resources for health. Dal Poz and others have helpfully characterized explanations of and responses to the situation in terms of three headings: density (how many workers are there?); distribution (where are they?); and performance (what are workers doing, and how well are they doing it?) (Dal Poz, Gupta, Quain, & Soucat, 2009).

2.2.1 Health worker density

Since the availability of health workers determines whether services can be provided, workforce density has become a key dimension of the way that human resources for health is conceptualised. The value of setting targets for health worker distribution in specific nations is primarily as a precursor to developing benchmarks for density (Kinfu et al., 2009, p. 225). Many different measures can be used as benchmarks. Some measures calculate the additional inputs needed to achieve either overall health related goals such as universal health coverage, while others use interim indicators such as coverage of live births by a skilled birth attendant or compliance with vaccination programmes (Fulton et al., 2011, p. 888). Some general density targets have been set for the whole health workforce, and in South Africa at least two attempts have been made to devise density targets for nursing (Uys & Klopper, 2013) and children's nursing in particular (McKerrow, 2014).

The most widely used model is that developed by the WHO, which proposes a minimum health workforce density of 2.28 doctors, nurses or midwives per 1 000 population (World Health Organisation, 2006b, p. 3). This has been used as the basis for large scale workforce surveys and calculations, with the WHO African Region found to have serious health workforce shortages. The 2006 World Health Report found that 57 countries worldwide fell below the threshold considered necessary to provide adequate essential health, and it has been estimated that the workforce in some African countries would need to be scaled up by 140% to attain global sustainable development goals. When rising population size and the escalating burden of disease are taken into account, none of the countries in the WHO African region are on course to achieve WHO projections regarding the size of the workforce required to achieve SDGs (Scheffler, Liu, Kinfu, & Dal Poz, 2008).

A second, alternative, model for calculating health worker density has been developed by the International Labour Organisation. The staff related access deficit indicator (SAD), which compares health workforce density in a given country against population-weighted median health workforce density in a group of low vulnerability countries, defines adequate population coverage by health workers to be 3.45 health workers per 1 000 population, and finds that one third of the world's population lacks access to health care because of gaps in the health workforce (International Labour Organisation, 2010). By this definition, the ILO finds that more than 90 countries worldwide have a deficit in their health workforce. The ILO has

found that more than 1.5 billion people worldwide live in socio-economic contexts that challenge adequate resourcing of universal health coverage (Scheil-Adlung, 2013).

A third modelling approach uses task analysis to calculate the required workforce density. The most widely used method is the Workforce Indicators of Staffing Needs (WISN) model developed by the WHO. The WISN method uses routine health information and information from government reports as well as interviews with doctors, other health workers and patients to calculate the time needed to perform key healthcare tasks. The approach involves identifying the health care tasks regarded as essential, establishing how long it takes each task to be performed by an individual worker, and then multiplying the time required by the numbers of patients needing that intervention, in order to identify the staffing hours and numbers needed (Shipp, 1998).

Although it is clearly necessary to establish these kinds of absolute definitions of density, not least in order to enable measurement of the health workforce, such approaches also have inherent limitations. As the topic has become more established, economists have highlighted the importance of understanding the full range of contextual factors leading to health workforce shortages not only in relation to need (which underpins most current targets), but also demand (Dal Poz et al., 2009; Scheffler et al., 2009; Willcox, Peersman, Daou, Diakité, et al., 2015).

2.2.2 Health worker distribution

In the same way that approaches to measuring the workforce have become increasingly multi-layered, appreciation for the complexity of the root causes of the situation is growing. Clearly, measures employed to alleviate shortages need to be based on a sound understanding of the causes (Willcox, Peersman, Daou, Diakité, et al., 2015). Many factors have been identified as contributing to the outflow of workers from low-resourced areas.

Past and present underinvestment in pre-service training (Jimba et al., 2010, p. 16) and in-service training (Bangdiwala & Osegbeaghe, 2010, p. 298), workplace conditions (Bangdiwala & Osegbeaghe, 2010; Berland et al., 2016, p. 16; Bradby, 2014; Kasper & Bajunirwe, 2012; Nguyen et al., 2008), and employment competitiveness and attractiveness (Bangdiwala & Osegbeaghe, 2010; Berland et al., 2016) all have a part to play in shaping human resources for

health. Political instability and conflict, and issues such as HIV/AIDS which affect the health workforce as well as the general population also result in outflow from the health workforce in low resourced countries (Jimba et al., 2010, p. 19). In some cases the outflow represents an absolute loss. But in many cases health workers move to other settings where they can find employment as a health worker, or stay put but take employment in another sector – another reason registry data offers only partial insight into the active workforce.

2.2.3 The need for localised understanding

Much of the literature published in high impact journals tends to approach the challenges of human resources for health from a global or certainly a macro perspective. However, care was taken to include literature published in journals specific to African nations or the Region within the reviews conducted for this study. This local literature provides considerable additional context. In particular, many of these authors provide a deeper and more nuanced understanding of the issues than is apparent in analyses offered from the 'centre' of policy making. These insights and perspectives are challenging to some of the default assumptions about the root causes of HRH shortages.

A more context-specific analysis of the workforce suggests that there is no absolute deficit in global terms. Both under- and over-supply are best understood as highly localised and regional. This can be seen in many countries within sub-Saharan Africa. In a review of published and unpublished grey literature on human resources in nations participating in the HURAPRIM project, Willcox and colleagues found that in Uganda, for example, shortages of health workers were highly localised, and worse in primary care than at secondary and tertiary level (Willcox, Peersman, Daou, Diakité, et al., 2015). Similarly, in the case of Kenya, 'brain drain' and migration are revealed to be minor factors in reality. A detailed analysis of Kenyan healthcare workforce statistics revealed negligible outflow due to workforce migration and identified underemployment as a far more significant factor in the country's workforce crisis (Oyugi, 2015).

Within the context of this more localised understanding, it is therefore more helpful to adopt the term 'gaps' rather than 'shortages' when considering the health workforce (Scheil-Adlung, 2013, p. 888) at both the global and local levels. Analyses such as these establish that attempts

to understand the capacity of the children's nursing workforce require the consideration of more factors than simply numbers.

2.3 RESPONSES TO THE HEALTH WORKER CRISIS

2.3.0 Monitoring capacity vs workforce capacity

Responses to the health worker crisis in low resourced nations have attempted to address the factors identified above in a variety of ways. Broadly, however, responses fall into two categories: attempts to increase the capacity of the health workforce (in terms of either quantity of workers, quality and productivity of workers, or both); and attempts to improve the accuracy of data about the health workforce.

2.3.1 Increasing the capacity of the health workforce

The World Health Report 2006 set out a working lifespan approach, categorizing interventions according to workforce entry (basic training), active performance support of people in the workforce and exit-stage measures to mitigate migration and attrition (World Health Organisation, 2006b, p. 9). Early efforts to improve health workforce capacity in the short term included initiatives designed to improve the remuneration and working conditions of health workers, facilitate the use of telemedicine, and encouraged short term in-migration from surplus to deficit countries (Kinfu et al., 2009).

2.3.2 Improving the accuracy of data about the health workforce

The quality of data regarding the health workforce in lower income countries is frequently poor, and as a result estimates of the workforce are inaccurate, and vary considerably (Bangdiwala & Osegbeaghe, 2010, p. 298). This realisation has resulted in greater prioritization of measurement capacity, to ensure the availability of better quality information regarding the state of the health workforce. Such information needs to address several dimensions: availability; distribution; employment status, and also performance of health workers (de Francisco Shapovalova et al., 2015). A lack of accurate data impedes monitoring, implementation of and adherence with codes of practice on health worker migration and impedes progress tracking in relation to specific goals and targets regarding health worker

density. The WHO Handbook on Monitoring and Evaluation of Human Resources for Health (Dal Poz et al., 2009) proposes that the number of doctors, nurses and midwives per 10,000 population should be used as a core indicator of health worker density and provides a framework for establishing a minimum data set, consistently maintained internationally. It does however remain the case that detailed information about the health workforce is not available for all African countries (Kinfu et al., 2009; World Health Organisation). One of the difficulties of conducting international comparisons of health worker density arises from a lack of standardised definitions of worker cadres (Fulton et al., 2011, p. 3).

2.3.3 Regulatory capacity

The capacity to accurately monitor the state of the health workforce depends to a large extent on the capacity of national health professional regulatory bodies. In most countries of the world, nursing is a regulated profession. This function is commonly fulfilled by an official body which is responsible for regulating nursing and midwifery standards in accordance with relevant national legislation. The functions of nursing regulatory bodies typically include specifying requirements for continuing professional development, awarding and recording nursing and midwifery registrations and licenses to practice and maintaining codes of professional conduct. Regulatory bodies may also provide recommendations to the national Ministry of Education regarding nursing and midwifery training, the scope of professional practice and the accreditation of curricula (Spero et al., 2011, p. 2).

Clearly, accurate professional regulation and the maintenance of an up to date register is a prerequisite to understanding the state of the health workforce, as a first step to improving capacity. Without functional professional registration systems, the number of health workers may be overestimated or underestimated, because the professional registers are not being regularly updated and might include nurses who remain on the register but are working outside of the country, or the sector (Willcox, Peersman, Daou, Diakite, et al., 2015). It is sobering therefore that Uys and Klopper, following a review of institutional accreditation processes for health professional education worldwide, concluded that 'more than half the countries of the world appear to lack a credible, transparent and comprehensive accreditation system' (Uys & Klopper, 2013, p. 5).

Several large-scale initiatives have addressed the challenge of increasing regulatory capacity in lower resourced nations. The African Health Profession Regulatory Collaborative of Nurses

and Midwives (ARC) awarded funding and capacity building assistance to in-country teams to carry out regulatory improvement projects, a number of which concerned national nursing regulatory systems within the African Region (Dynes et al., 2016). The approach to the work of the ARC projects was informed by the Institute of Healthcare Improvement model for breakthrough organisation change. Similarly, the Capacity Project, an initiative of IntraHealth with financial support from USAID, has been working to improve the human resource information systems in a number of African countries (IntraHealth, 2006).

Despite such efforts, the current level of data monitoring capacity worldwide means that the information available to the compilers of the WHO Global Atlas of the Health Workforce – the most comprehensive picture available – lacks granularity. It is not normally possible to disaggregate the mix of nurses from the data provided by the WHO Global Atlas of the Health Workforce database (Scheffler et al., 2009). Yet developing an accurate depiction of the specialist children’s nursing workforce is a necessary step towards optimizing children’s health service delivery. The next section of this chapter will address the reasons for this.

2.4 CHILDREN’S NURSING IN AFRICA IN THE CONTEXT OF HUMAN RESOURCES FOR HEALTH

2.4.0 Children’s nursing: a response to Africa’s young population

Having traced the recognition and conceptualisation of gaps in the health workforce as a whole and the emergence of this as an issue of both global and local concern, the next section of this background chapter presents factual socio-demographic information relating to child health and the health workforce. Development of the children’s nursing workforce in Africa needs to be understood as a response to the needs of the Region’s young and rapidly growing population. Sub-Saharan Africa is the region with the highest under-five mortality rate in the world, accounting for half of all deaths among children under-five globally (UNICEF, World Bank, UN-DESA Population Division, 2015). The 2015 UNICEF and WHO report *Levels and Trends in Child Mortality* found that within sub-Saharan Africa one child in 12 dies before the age of five. This contrasts sharply with the situation in high-income countries where under-five deaths are a rare event afflicting fewer than 1 child in 150 (World Health Organisation, 2017b). Forty five per cent of under-five deaths in sub-Saharan Africa occur in the neonatal period, during which time prematurity and complications during labour and delivery are the leading causes of death. As both children’s nursing in Africa and the emerging interdisciplinary field of

HRH mature, it is both possible and necessary to consider Africa's child population and children's nursing workforce in sharper focus.

In this next section, information gathered through structured online searching of official databases including statistical reports and health workforce registries is presented. Firstly, an overview of key socio-economic data is presented for the five countries in the form of two charts summarising child health profiles (Figure one), leading causes of under-five mortality (Figure two), and health expenditure and health worker density (Figure three), before implications relating to the children's nursing workforce across the five countries as a whole are briefly foregrounded.

2.4.1 Socio demographic profiles of the countries in this study

Factual socio-demographic information relating to child health and the health workforce is available through a number of official databases, statistical reports and health workforce registries, including:

- The World Bank's Health Data Bank is a comprehensive database of health, nutrition and population statistics which integrates the most current data from the United Nations Population Division, the World Health Organization, the United Nations Children's Fund, and the Joint United Nations Programme on HIV/AIDS (World Bank, 2017)
- The World Health Organisation's Global Health Workforce Statistics is a searchable online resource which collects and compiles cross-nationally comparable data on health workers in all 193 WHO Member States (World Health Organisation, 2017a)
- The World Health Organisation's Global Health Observatory data, in relation to WHO maternal and child health data (World Health Organisation, 2013).
- UNICEF's online resource *Monitoring the Situation of Children and Women* (UNICEF, 2016) presents the most up-to-date data and analysis on the situation of children, including by condition and country, and makes use of data and estimates produced by the UN Inter-agency Group for Child Mortality Estimation (IGME) (You et al., 2015).

For each country in the study, socio-demographic information specific to child health and children's healthcare gathered from the sources above is now appraised in relation to the following headings and indicators.

Child health profile: In order to build a picture of both child health status and the capacity of children's healthcare in each country, six indicators were selected. The primary measure of child health selected was overall mortality rates among children under five years of age, commonly referred to as U5M. The extent to which children aged 15 and under make up the total population was included as an indication of demand for children's healthcare, with the indicators being children aged 0-15 and 0-5 years as a percentage of the total population. Additional indicators selected were prevalence of stunting; rates of exclusive breast feeding under six months; percentage of children with diarrheal disease receiving oral rehydration therapy (ORT) and continued feeding. By implication, therefore, as well as being a useful indicator of multiple dimensions of child health, compliance with key interventions such as exclusive breastfeeding and ORT can be seen as an indirect indicator of overall child health system capacity, consistent with the approach to quality improvement advocated by the Institute of Medicine, as well as by others working specifically in sub-Saharan African settings (Burger, Rossouw, Smith, & Ranchod, 2016; Institute of Medicine & Committee to Design a Strategy for Quality Review and Assurance in Medicare, 1990).

Health expenditure: Health expenditure as a percentage of gross domestic product (GDP) was selected as an indicator of the level of overall health system resourcing, as this was considered instructive in appraising workforce planning decisions regarding children's nursing. The Abuja Declaration was issued in 2001, when the Heads of State of African Union countries committed to a target of allocating at least 15% of their annual budget to health sector improvement (World Health Organization, 2014). This is a figure approximately equivalent to US\$34 per person per year, the level recommended by the WHO Commission for Macroeconomics and Health in order to provide an adequate level of health care provision for a low income country (World Health Organization, 2011). While the contribution of commercial investment, philanthropy, and the role of faith based organisations is highly relevant to understanding health expenditure, and may have an influence on children's nursing capacity, information was not available in a format which enabled reliable comparative data to be presented for the countries in this study (Sambo, Kirigia, & Orem, 2013; World Health Organization, 2014) (Olivier et al., 2015). Where information was available about the extent of health care

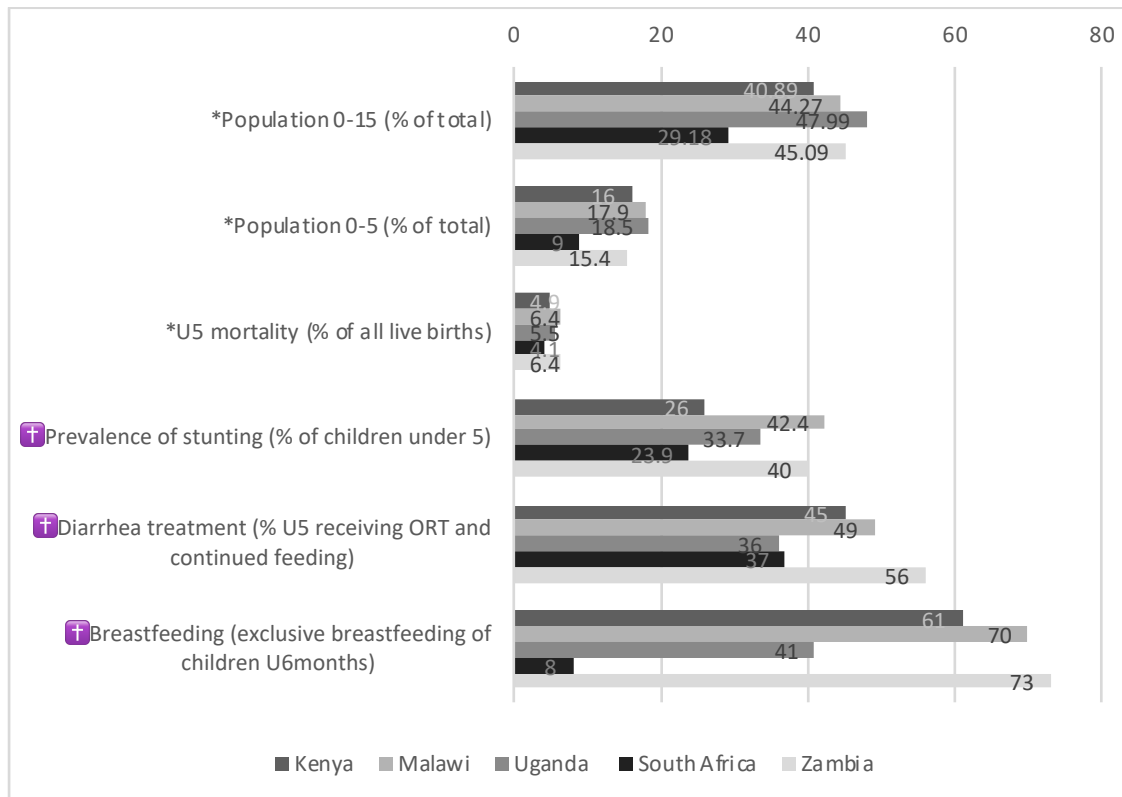
provision by faith based health providers, or the extent of funding for health from sources other than the nation's government and citizens, it has been included in the narrative profiles with appropriate commentary. The income classification applied by the World Bank was also identified for each country.

Health system coverage: Community health worker (CHW), nurse and midwife density (per 1 000 population, most recent available year) was selected as a finer measure of the combined nursing workforce, and as an indication of child population coverage and child health system capacity, in preference to the less specific measure of density of physicians per 100 000 population. The inclusion of CHWs is problematic, as will become apparent in later chapters, but this data source was nevertheless considered to be the most robust source of comparable information for the countries in this study. While the inclusion of information regarding the numbers and capacity of paediatric health facilities at secondary and tertiary level in each country would be highly relevant to the questions at the heart of this study, it is beyond the scope of this study to gather that data. Additional characteristics including the extent of health facility and health services provision and average distance from a health facility were included where available, as further indicators of children's health service coverage.

2.4.2 Child health profiles (all countries)

Beginning with a consideration of the data retrieved in respect of child health, it can be seen from Figure one that even South Africa, the country in this study with the lowest proportion of children relative to the total population, nonetheless has a situation where almost one in three of the population are under fifteen years of age. Uganda, the country in this study with the highest birth rate, has one of the largest child populations in the African region, with almost half (48%) of the population aged under 16, and nearly a fifth (18.5%) aged under five (World Health Organisation, 2016).

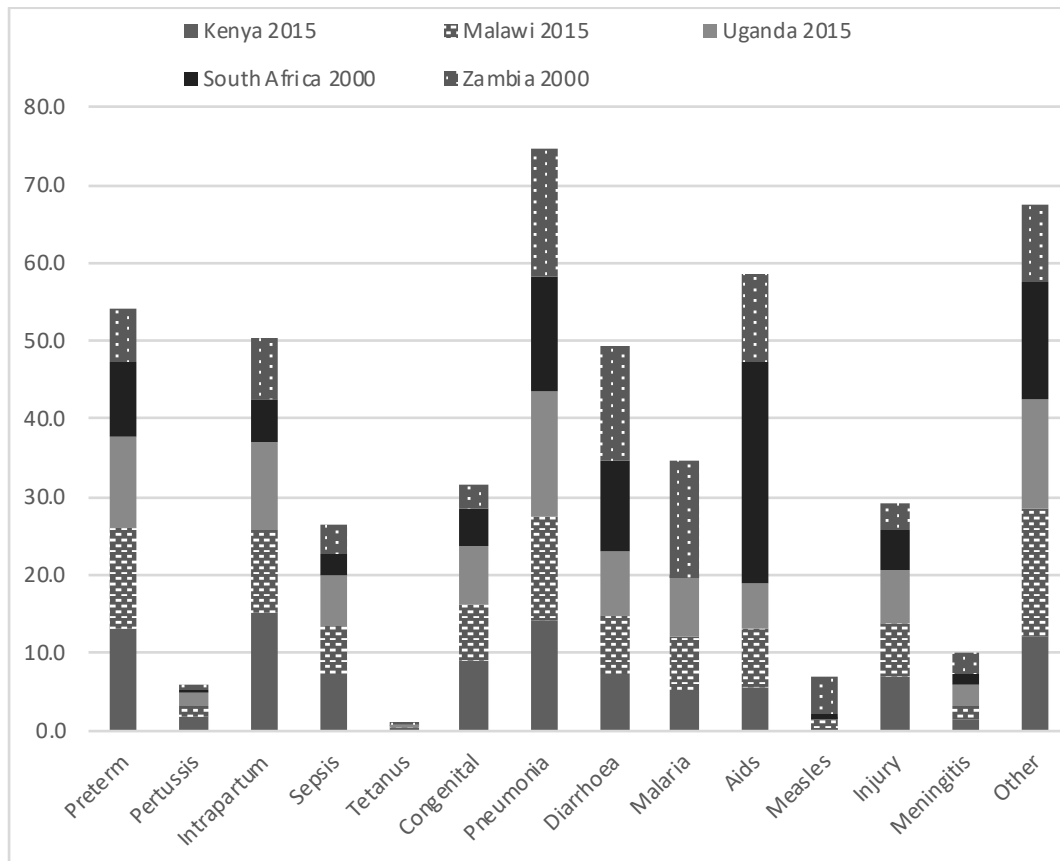
Figure one: Child health profile (selected indicators), all countries



Sources: * The World Health Organisation, Global Health Observatory data (2017). *WHO maternal and child health data*. Retrieved from <http://www.who.int/gho/database/en/> † UNICEF, Monitoring the Situation of Children and Women (2017). *Statistics by Topic and Country: Child health*. Retrieved from <https://data.unicef.org/topic/child-health/>

The high incidence of stunting (weight relative to age) depicted makes it reasonable to infer that many children who become sick will already be weakened through sub-optimal nutrition, which is likely to increase the acuity of their condition. Under-nutrition is associated with almost half of all under-five deaths throughout the sub-Saharan region. This high-need child health profile is confirmed by the data retrieved in relation to deaths among children before the age of five. None of the countries in this study are close to achieving the SDG goal of reducing under-five mortality to at least as low as 25 deaths per 1000 live births. Currently in Malawi and Zambia, approximately 64 children per 1 000 die before their fifth birthday. South Africa, the country with the lowest U5M rate in this study, would still need to achieve a reduction in deaths among under-fives of almost a half from the current rate of 41 per 1 000, in order to achieve the SDG target.

Figure two: Leading causes of under-five mortality, all countries



Source: UNICEF Global databases. *Child Mortality Estimates. Global and regional child deaths by cause.* Estimates generated by the WHO and Maternal and Child Epidemiology Estimation Group (MCEE) 2015. Downloaded from <http://data.unicef.org>

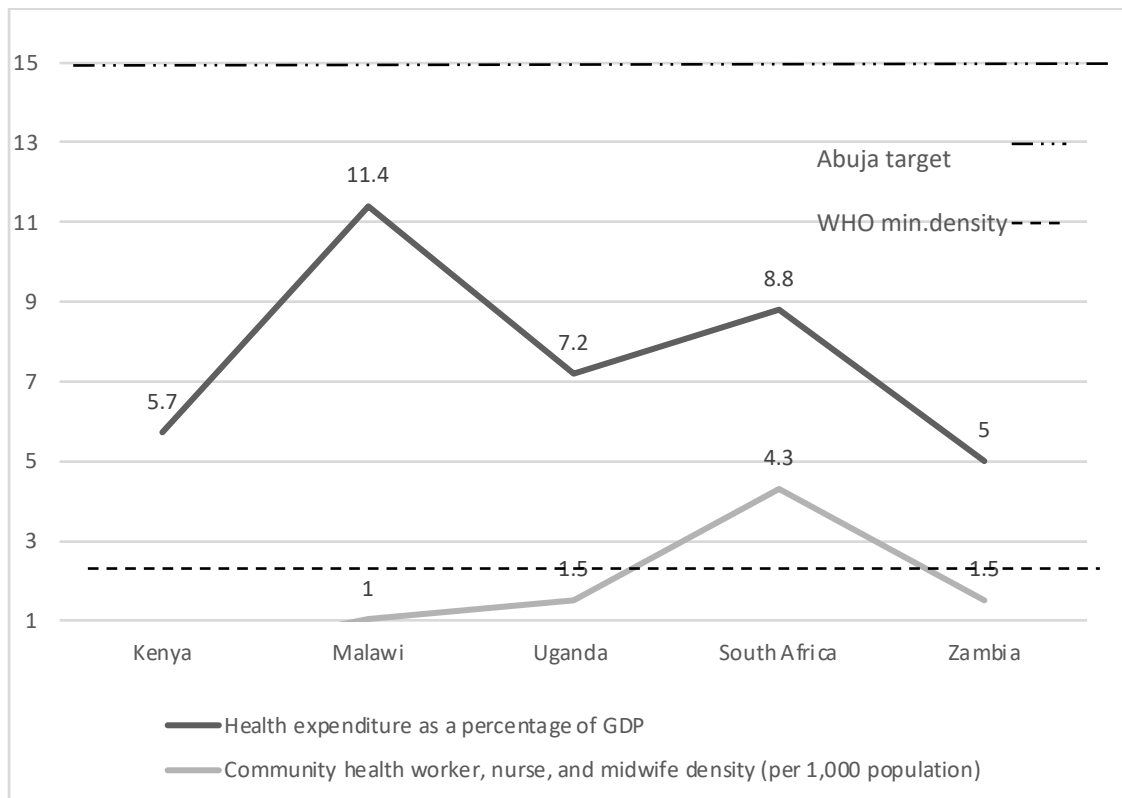
Reviewing the data retrieved in respect of child health, it is clear that all of the country health systems in this study face considerable demands as a result of extensive child populations and challenging socio-economic circumstances. It is apparent that the five countries in this study face the burden of child health problems typical of many emerging economies, combining the needs of a large number of vulnerable newborns, the unfinished agenda of communicable diseases among children and a growing incidence of trauma and injury accompanying rapid social change. This wide spectrum of conditions means that health professionals must be prepared to see and manage large numbers of child patients with a multiplicity of health needs, a need which is recognised by a number of the national governments concerned (South Africa Department of Health, 2003; Task Force on Scaling Up Education and Training for Health Workers, 2007).

2.4.3 Health expenditure (all countries)

Health expenditure as a percentage of GDP ranges between 11.4% (Malawi) and 5% (Zambia), as shown in Figure three, with all of the countries in the study allocating less than the 15% of GDP advocated through the Abuja declaration. Of the five countries in the study, two (Malawi and Uganda) are classified by the World Bank as low income countries, two (Kenya and Zambia) as lower middle income, and one (South Africa) is classified as upper middle income.

This overview of the socio-economic circumstances facing the countries in this study further illustrates the need to understand the health care workforce not just in terms of size, but also of composition. In the context of severe resource limitations it is desirable for decision makers to be able to make informed decisions regarding the likely return on investment of further capacity development of the children's nursing workforce.

Figure three: Health expenditure and health worker density (all countries)



* Kenya: workforce density data not available

2.4.4 Health system coverage

Reviewing the data retrieved and presented in Figure three above, it can be seen that the WHO's minimum recommendation of 2.28 community health workers, nurses or midwives per 1 000 people is not achieved by four of the five countries in this study. Closer review suggests marked inequities in the distribution of staff and facilities, with rural areas reported to be severely under-served in all of the countries studied. Nursing vacancy rates within health services are reported to be as high as 80% in some areas in countries within this study (Ferrinho, Siziya, Goma, & Dussault, 2011; USAID, 2010).

Appraisal of the socio-demographic profiles presented above makes clear the extent of the challenge faced by all of the countries in this study in responding to the health needs of extensive child populations, including large numbers of newborns and vulnerable children, in the context of extreme resource limitations. The data vividly illustrate the gaps in the health workforce as a whole, but also establish the existence of an apparently widening gap between the needs of a growing child population and the capacity of health systems to meet these needs.

2.5 CHILDREN'S NURSING IN AFRICA

In 2012, a colloquium was convened by the Child Nurse Practice Development Initiative (CNPDI) of the University of Cape Town to investigate the situation facing children's nursing training in South Africa, with the goal of clarifying the national need for children's nurses and strengthening and expanding postgraduate children's nursing training programmes (Coetzee, 2014). The colloquium used participative techniques to engage 38 stakeholders from the health and education sectors and concluded that 'a significant role for paediatric nurses exists in directing nursing care to decrease the mortality and morbidity of children in hospital' (Coetzee, 2014, p. 5). This is in addition to the recognised contribution that children's nurses make to child health at primary level, and to District and Community Service Teams at the health systems level.

In South Africa, it has been suggested that children's nurses need to be equipped through training to effectively address the leading causes of child morbidity and mortality (the

conditions shown in Figure two) as a priority. Subsequent to the colloquium, the South African Nursing Council consulted on and published a set of competencies for paediatric nurses, which describe the paediatric nurse specialist as 'a change agent with advanced knowledge and skills to put into practice, as well as a researcher for evidence-based practice and a nurse consultant for students, staff and the multidisciplinary team' (South African Nursing Council, 2012, p. 2).

The role of the paediatric nurse specialist as defined by SANC extends to being "a resource person for students, staff, and others, other healthcare providers and the public, through discrete expertise based on a core body of knowledge and skills continually expanded by continuing education and refined by research" (South African Nursing Council, 2012). This role definition is complemented by that provided by Coetzee, who highlights that in the South African context particularly, the work of children's nurses' is not primarily directed at disease processes, but rather at supporting the processes of health, through activities such as maintaining adequate nutrition and hydration, skin integrity, hygiene and mobility, as well as managing stress and comfort (Coetzee, 2010). Children's nurses face the additional requirements of working with parents and families, and must care for these individuals too, as well as facilitating any adult learning necessary for the child's treatment and care (Coetzee, 2010).

There are important differences however between the roles envisioned for children's nurses in South Africa, other sub-Saharan health systems and higher income countries elsewhere. The Nursing and Midwifery Council (NMC) of England and Wales, for example, has published an extensive set of professional competencies relating to children's nursing (Nursing and Midwifery Council, 2014), which differ markedly in content and emphasis from those provided by the South African Nursing Council. The NMC's six headings include professional values (in particular the promotion of anti-discriminatory practices and inclusion), communication and interpersonal skills (such as developing partnerships based on trust), nursing practice and decision making (with an emphasis on shared decision making with children and families), and team working. Whilst these are all desirable skills and attributes, they contrast sharply with the more pragmatic demands on children's nurses in lower resourced settings such as South Africa, with the emphasis of the latter firmly on assessment, diagnosis and treatment (South African Nursing Council, 2012).

2.6 THE IMPORTANCE OF MEASURING CHILDREN'S NURSING CAPACITY

Nurses and midwives make up the largest single group within the health workforce across the African Region (International Labour Organisation, 2010; World Health Organisation, 2006a), so building the capacity of the nursing workforce is an important way to advance the global health improvement agenda (Dynes et al., 2016). While specialist nurses may offer a cost-effective way to maximise the effectiveness of the health workforce, intelligent deployment of this group of staff is only possible if accurate workforce data is available.

Differentiating between specialisations among registered nurses makes it possible for policy makers to answer a number of questions. In relation to workforce planning for paediatrics, these could include: How many children's nurses are there currently? What is the optimal mix? What is achievable at different levels of resourcing? What inputs would be required to achieve this, in terms of training, investment, and employment? As a first step, this study seeks to establish the capacity of the children's nursing workforce in five selected sub-Saharan African countries.

2.7 SUMMARY

Key points

- Children's health is a central issue of concern for African countries, with children representing almost half of the population in some countries and high levels of child morbidity and mortality.
- In the context of a widening gap between the growing needs of an expanding child population and the ability of health systems to meet these needs, one recommended response is to increase the capacity of the children's nursing workforce. This is advocated as a way to improve the quality of care and improve outcomes.
- There has been a consistent focus within global sustainable development directives that responses to the health worker crisis should prioritise the delivery of preventive interventions at the level of populations and communities and focus on increasing the numbers of lower-cost staff such as community health workers.
- Within the maturing interdisciplinary field of human resources for health, the nursing workforce has to date been considered mainly as comprising generalists, with little apparent consideration of specialisation.

- There are indications of an evolving focus within human resources for health (HRH), extending to a more detailed understanding of workforce composition.
- Specialist nurses may offer a cost-effective way to maximize the effectiveness of the health workforce, but intelligent deployment of this group of staff is only possible if accurate workforce data is available.

CHAPTER 3: METHODOLOGY

3.0 OVERVIEW

This chapter presents the research strategy governing this study, and locates the development of this strategy within the context of the problems, concepts and methodological approaches described in Chapter two. The overall design of the study is explained, and research procedures for the main investigative elements are described.

3.1 DESIGN

3.1.0 Questions in Context

The review of the literature presented in Chapter 2 reveals four key insights which have informed the design of this study. Firstly, no examples of disaggregated workforce data specific to the children's nursing workforce were identified in the initial literature review. Secondly, it is apparent that the limitations and gaps in the existing picture of the nursing workforce as a whole, and the children's nursing workforce in particular, result in part from challenges in system and organisational capacity. It cannot be assumed that accurate empirical data will be available from national registries, and this study must be designed accordingly. Thirdly, and more encouragingly, a considerable body of theory and practical guidance relating to healthcare workforce analysis has been developed over the past two decades. These 'tools' are available to be applied to the design of this study, particularly the questionnaire design. Fourthly, the determinants of health worker capacity are multidimensional, encompassing availability, distribution, employment status and performance. These dimensions are reflected in the design of this investigation.

3.1.1 Purpose of the study

These observations confirmed the conceptualisation of the goal of this investigation:

To identify as far as possible the extent of the children's nursing workforce in five selected countries in the sub-Saharan African region, as a first step towards identifying what would represent a viable and sustainable children's nursing workforce for the future.

The research question explored through this study was, therefore:

What is the capacity of the children's nursing workforce in five selected sub-Saharan African countries?

Specifically, the investigative approach aimed to establish:

How many children's nurses are currently on the professional register?

How many children's nurses are currently in clinical practice?

How many children's nurses are currently being produced through training?

Additionally, recognising that numbers provide only a partial representation of capacity, a scoping review of documentation documentary was undertaken to consider:

What can be discovered from documentary sources regarding the capacity of the children's nursing workforce?

Ultimately, it was hoped that the study might generate data which could contribute towards identifying what would represent a viable and sustainable regional children's nursing workforce for the future.

3.1.2 Conceptual framework

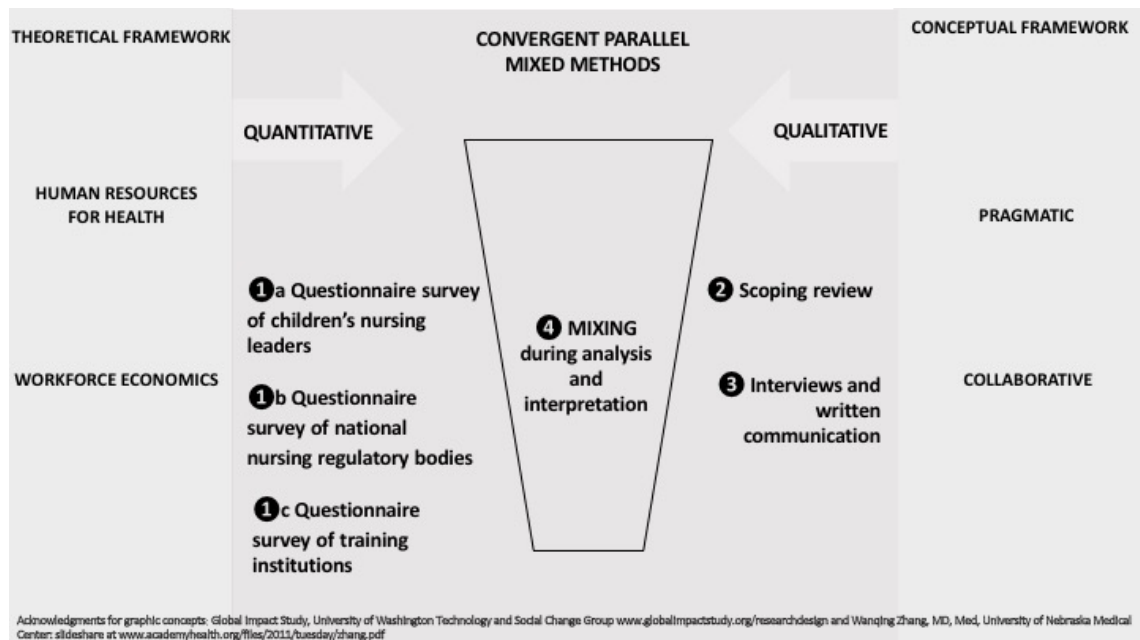
The conceptual design of this study has been informed by a pragmatic paradigm. In selecting a mixed method approach, both objective and subjective knowledge relating to the shape of the children's nursing workforce was valued through a study design that incorporated quantitative and qualitative components (Creswell et al., 2011).

The study as a whole conformed to a convergent parallel mixed methods design. A diagrammatic overview of the study design is provided below in Figure four. In this model, qualitative and quantitative data were collected independently and then mixed during interpretation (Clark & Ivankova, 2015). The approach to mixing was integrative, leading to the transformation of data, with the ultimate goal being the production of a unified summary of

the data - specifically, as valid a depiction as possible of the children’s nursing workforce. Where marked discrepancies were found between the data from different sources, and this could not be resolved, the intended strategy was to present the differing results side by side, with inferences subsequently drawn in the discussion (Creswell et al., 2011). This design was selected in order to allow for the greatest possible breadth and depth of understanding, facilitating corroboration between data sources on a topic where factual information is currently scarce, and where existing published data may contradict with reports from credible informants (Johnson, 2007).

In accordance with a pragmatic worldview, it is also accepted that research always occurs in social, historical, political or other contexts (Molina-Azorin, 2016). The process of conducting a scoping review of relevant documentation for each of the countries included in this study was selected as a complementary strategy in order to place the information gathered through surveys and interviews in context.

Figure four: Overview of research design



3.1.5 Participant research

Efforts to build sustainable children’s nursing training capacity in South Africa and a number of other countries in the sub-Saharan region have been led by the Child Nurse Practice

Development Initiative (CNPDI) since 2008 (Coetzee et al., 2016). I have had the privilege of working within this academic unit since 2015. In addition to researching the topic of children's nursing I therefore work actively to deliver, grow and improve the training the unit offers to children's nurses, as well as engaging with nursing educators and other stakeholders in countries which are working to establish children's nursing training programmes in partnership with the unit. It is entirely in keeping with the participatory and emancipatory philosophy of the CNPDI that this study should take the form of participant research, and I gladly acknowledge my position as a participant researcher.

As can be seen from Figure four, there were four key components of the study design. The sequential ordering of the research activities occurred as indicated in the diagram. A detailed methods statement for each component is provided below.

3.2 SURVEYS AND INTERVIEWS

3.2.0 Questionnaire surveys

The main quantitative component used to produce the case studies was questionnaire surveys administered to a purposive sample of three groups of informants. A form of purposive sampling known as expert elicitation sampling (Palys, 2008) was used to elicit information from:

- a) individuals who hold a national leadership position in respect of children's nursing, paediatrics or child health within the relevant country;
- b) individuals who lead the national nursing regulatory body of the relevant country;
- and
- c) individuals who lead children's nurse training institutions in the relevant countries.

All forms of purposive sampling may affect reliability and validity, by introducing greater subjectivity than other methods (Battaglia, 2008). This can happen through the introduction of bias into a study, perhaps because the informants are likely to be known personally to the researcher, or because the decision to use the approach reflects a lack of rigour more generally (Walker, 2014). A useful indication of the suitability of purposive sampling as a method is to consider whether with another researcher addressing the same question would generate a different sample (Battaglia, 2008, p. 254). Furthermore, when correctly selected

and applied, it can be argued with justification that the inherent bias of expert sampling actually contributes to its efficiency (Tongco, 2007). Purposive sampling approaches are considered to be the most appropriate form of sampling when studying a population that is very limited in size because of its characteristics, when the rationale for its adoption clearly expresses the judgements that have been applied, and when the choice of method is consistent with the theoretical and conceptual framework of the study (Battaglia, 2008). Expert sampling is also recommended as an approach in situations where there is a lack of empirical knowledge, and where uncertainty may be high (Palys, 2008). The use of expert sampling was justified in the case of this investigation because of the objectively small size of the children's nursing workforce in these countries and the lack of existing empirical data.

The criteria for inclusion in this questionnaire component of the study at the time of data collection was as follows: the individual was a council member of a national nursing institution; the individual was a nursing educator at a training institution in the country; or, the individual held another leadership position within the national children's nursing, paediatrics or child health communities. These characteristics were selected on the basis that they conferred a high level of familiarity with the children's nursing workforce, and/or access to records and relevant information.

The three surveys administered are described below.

1 *a Questionnaire survey of Children's Nursing Leaders*

This questionnaire was administered to a purposive sample of individuals who held a leadership position within the national children's nursing, paediatrics or child health communities in each of the five countries. Respondents were asked to report, to the best of their knowledge: how many nurses with a post basic qualification in paediatrics or child health are currently practising in the country; the nomenclature pertaining to this category of nurse; how many facilities or institutions are providing post basic training leading to registration as a specialist paediatric or child health nurse; and the level at which qualifications are awarded. Respondents in this category were asked to state the sources of information they consulted in providing the information requested in the questionnaire, which could include: records maintained by facilities and institutions; personal communication; records maintained by the individual; and other sources. Respondents were asked to self-evaluate the quality of the information they provide, in terms of its currency and accuracy, using a six point scale. This

provided an additional level of transparency, as another precaution against the introduction of bias through purposive sampling (Battaglia).

1 b *Questionnaire survey of National Nursing Registries*

The second questionnaire survey was administered to a purposive sample of individuals who were, at the time of data collection, the registrars of the nursing registries in each of the five countries. This questionnaire was designed to elicit information relating to arrangements for maintaining a register of nurses with a specialist post basic qualification in paediatrics or child health. Respondents were asked to confirm the number of such nurses on the register, as well as the nomenclature pertaining to this category of nurse. Although in some cases this information was publicly available, the extent to which the registers could be navigated and interrogated varied between countries. This approach was therefore chosen to provide consistency. Respondents were additionally asked to report the number of institutions accredited to provide educational programmes leading to registration as a specialist paediatric or children's nurse, and information about any national specifications regarding the macro-curricula for children's nursing training.

1 c *Questionnaire survey of Heads of Schools of Nursing*

The third questionnaire survey was administered to a purposive sample of individuals who were, at the time of data collection, the Heads of Schools of Nursing at institutions offering specialist training in paediatric nursing or child health nursing. Respondents were asked to confirm the extent of the institution's current activities in relation to programmes leading to registration as a specialist paediatric nurse or child health nurse, the nomenclature pertaining to this category of nurse, and to provide the number of nurses graduating from such programmes in the previous year. Information was sought regarding the nature and duration of programmes offered, minimum entry requirements, and the existence of national and local policies or training plans determining the provision of children's nursing training in the institution. Finally, respondents were asked to indicate whether the institution had encountered challenges in offering the programmes, and the nature of these challenges.

The questionnaires are reproduced in full in Annex one.

The questionnaires were designed with reference to a number of pre-existing data gathering instruments, and guidance produced by international authorities. The WHO's *Handbook on*

Monitoring and Evaluation of Human Resources for Health edited by Mario del Poz was a key source of advice. In particular, the work of Richard Scheffler, Yohannes Kinfu and colleagues, formerly of the World Health Organisation's Department of Human Resources for Health, is acknowledged (Kinfu et al., 2009; Scheffler et al., 2008). The extensive work undertaken to compile the World Health Organisation's reports on the healthcare workforce was invaluable as a source of inspiration in designing this far more limited study. Yohannes Kinfu was kind enough to share the data collection instrument relating to training institutions, and this directly informed the design of the questionnaire relating to training institutions used in this study, although the two are not identical.

3.2.1 Interviews

③ *Interviews with leaders*

Telephone interviews were scheduled with participants in the final phase of data collection. In a review of the evidence relating to telephone interviewing, Whitehead concluded that telephone surveys are a favoured method when working with a geographically disparate purposive sample, offering increased cost and time effectiveness when compared to face to face interviewing, and are generally more acceptable to busy participants (L. Whitehead, 2007). In general, telephone interviews have been found to be as effective as face to face interviewing when the questions and design have been carefully approached (Lewis, 2015; L. Whitehead, 2007).

The purpose of these interviews was to:

- Present the information already gathered from the scoping review and invite input;
- Highlight and invite observations on any discrepancies arising from the survey responses;
- Elicit additional information pertinent to potential emerging findings and themes.

Telephone interviews took the form of an in-depth, semi-structured dialogue based on the points above. An example of the schedule used to guide the interviews is provided in Annex two. Interviews lasted for between thirty minutes and one and a half hours. Participants were reminded when interviews were being scheduled that they should arrange for the interview to take place somewhere they could talk privately and without interruption. Participants were advised at the consent stage that the telephone interview would be recorded using a digital recording device, in order to facilitate transcription of the interview. This was reiterated by the

researcher at the start of the interview, and the participant was asked to affirm their agreement before proceeding.

As before, the key informants were selected through purposive (expert) sampling. The same criteria for inclusion as for the Children's Nursing Leaders was used, and relevant information was incorporated into the final country case studies. This element of the design addressed some of the potential weaknesses of purposive sampling, by ensuring transparency and introducing another element of triangulation in a way that was also consistent with the collaborative research philosophy of this study.

3.3 ADMINISTRATION AND ANALYSIS OF SURVEYS AND INTERVIEWS

3.3.0 Study population

This study extends to five countries in the sub-Saharan African Region: Kenya, Malawi, South Africa, Uganda and Zambia. It was believed at the outset that these are the only countries training children's nurses in the Region, and this assumption was subsequently verified through the data collected. One individual was approached at each of the training institutions. In South Africa, the records published by the Forum of University Nursing Deans of South Africa (FUNDISA) indicated that seven Schools of Nursing were offering training leading to registration as a paediatric nurse or a children's nurse and one individual was be approached at each of these institutions. In each country, there is one nursing registrar. In addition, for each country, one individual was recruited to complete the survey as a national children's nursing leader, and one individual was recruited to participate in a key informant interview. In total 12 individuals were recruited to participate in the study.

3.3.1 Recruitment and Enrolment

All participants in the study were provided with a detailed explanation of the aims of the study and a description of what being involved would entail. Recruitment followed a similar process in all cases, regardless of whether individuals were being recruited to participate in surveys or interviews. Potential respondents and participants were emailed by the researcher. The email contained an invitation to take part, as well as an information sheet about the study and a copy of the consent form, and participants were provided with the researcher's office contact

details in order to clarify information, ask questions, and facilitate informed consent (see also 3.5.2). Potential respondents in the internet mediated surveys were provided with a link to the online survey included within their email message. Potential participants in the interview category were asked to specify a convenient time for a telephone interview.

3.3.2 Administration of surveys and interviews

The questionnaire surveys were created in Google Forms, which also provided the platform for administration and data capture. The use of an internet-mediated approach to survey-based health services research offers many advantages (Baernholdt & Clarke, 2006; Kralik, Price, Warren, & Koch, 2006). In this case, an internet-mediated approach allowed for the inclusion of a geographically dispersed population sample (Mann & Stewart, 2000; L. C. Whitehead, 2007), and reduced barriers to participation in the form of scheduling appointments or returning questionnaires by post (Shih & Fan, 2008). In particular, internet-mediated approaches are advocated when sampling through invited participation where a discrete population can be identified (L. C. Whitehead, 2007). Although low response rates can be an issue (Etter, 2006), full integration of recruitment methods, presentation and the login method was used to offset this (L. C. Whitehead, 2007).

Caution is required when selecting internet-mediated methods, for example where access to the internet may be limited or where the computer literacy of either the participants or the researcher is inadequate (Mann & Stewart, 2000). However, the characteristics of this expert sample meant that all participants have access to the internet through their places of work, and all could be expected to have an adequate degree of digital literacy – assumptions which were borne out through the process.

In designing the questionnaires, care was taken to eradicate response effects as far as possible. The internet-mediated surveys were short in length (maximum nine questions). The questionnaires did not include attitudinal questions. Reliability and validity were enhanced through the use of closed ended questions, discrete multiple choice responses, and ratings scales (Higgins & Green, 2008).

3.3.3 Analysis of qualitative data

Interviews were transcribed by the researcher. Microsoft Word's advanced functions were used to facilitate data analysis of the transcribed material. For a case study approach involving textual information presented in narrative form, this method can be preferable to conducting analysis in Excel, because of the benefits of 'keeping the data whole' during analysis and subsequent presentation (Hahn, 2008). Key elements of the approach employed included: establishing an explicit transcription strategy from the outset, and adopting a consistent approach to coding content (La Pelle, 2004).

3.3.4 Analysis of quantitative data

Questionnaire responses were analysed to present data in the form of country-level, comparative and regional findings. The questionnaires were structured to support this analysis. Data was exported from Google Forms as a .csv file to enable analysis and presentation of results in spreadsheet form using Excel. This data was used to populate the country profiles, supplementing the information retrieved through literature search. This process generated descriptive statistical information which was presented through tabulated and graphical description as well as statistical commentary. In this case, the number of case studies and the volume of data generated was not sufficient to support the use of quantitative techniques such as meta-analysis.

3.3.5 Data synthesis

Data analysis is the process of "examining, categorizing, tabulating, testing, or otherwise recombining both quantitative and qualitative evidence to address the initial propositions of a study"(Yin, 2003, p. 109). Data derived from the three processes of analysis described above was integrated or 'mixed' during analysis to generate as valid as possible a description of the capacity of the children's nursing workforce in five selected sub-Saharan African countries, with presentation of data taking the form of descriptive statistics and narrative reporting.

3.4 SCOPING REVIEW

3.4.0 Rationale

The purpose of conducting the scoping review, aligned to the objective of this study, was to contribute to identifying, as far as possible, the capacity of the children's nursing workforce in five selected countries. As was established in Chapter two, since the size of the workforce is only one of a number of dimensions of capacity, a scoping review was undertaken to supplement the numerical information obtained via the questionnaire surveys, in order to identify other relevant information.

A scoping review, in common with all forms of systematic review, seeks to synthesise knowledge in a systematic, transparent and reproducible way (Tranfield, Denyer, & Smart, 2003). A scoping review is distinct from other forms of knowledge synthesis in that it is particularly suited to addressing an exploratory research question where it is suspected that substantial gaps in both research and general knowledge exist (Peters et al., 2015). The purpose of a scoping review is to chart the literature relating to a specified question, by mapping the main sources and types of evidence available, the gaps in knowledge, and the concepts underpinning a research area, by systematically searching, identifying and synthesising existing knowledge (Colquhoun et al., 2014). Scoping reviews are emerging as an increasingly valued research tool for researchers exploring health questions where it is desirable to identify a wide range of literature relevant to the question of interest (Arksey & O'Malley, 2005), as a first step towards investigating what research has been done in a field, and what other knowledge exists (Colquhoun et al., 2014).

Whilst scoping reviews are often undertaken as a preliminary step prior to a systematic review, Peters et al highlight their value in mapping a body of literature relative to location, country, context, source and origin (Peters et al., 2015). The importance of developing a localised understanding of human resources for health, as outlined in Chapter two, informed the approach taken to planning and conducting the review. Information which originated within the countries included in this study was actively sought. The review of locally-originating documents was informed by the recognition that the volume of peer-reviewed publications providing robust research-based policy analysis specific to the countries in this study is small, with descriptive accounts forming a large part of the literature (Gilson & Raphaely, 2008), often without a review of the effects of interventions (Colquhoun et al., 2014;

Levac, Colquhoun, & O'Brien, 2010). The central importance of information documented in grey literature when exploring topics where information is scarce, or where highly contextualised information is desirable, has been recognised and the process of mapping the genesis of such information can itself be informative (Godin, Stapleton, Kirkpatrick, Hanning, & Leatherdale, 2015). The initial review of published literature described in Chapter two had already established this as a relevant consideration. The selection of a widely open and inclusive review method was consistent with the overall intention of this study's design, which was to maximise understanding and enable corroboration between sources where existing factual information was known to be scarce (Creswell et al., 2011; Johnson, 2007). The iterative nature of scoping reviews was a further consideration (Levac et al., 2010), which enabled the incorporation of information obtained via stakeholder consultation through surveys and telephone interviews.

3.4.1 Identification of the review question

The review question central to the scoping review was defined to be consistent with the overall objective of this study, which was to identify, as far as possible, the capacity of the children's nursing workforce in the five selected countries. Primary and subsidiary review questions were defined as follows, as advised by the Joanna Briggs Institute guidelines (The Joanna Briggs Institute, 2015), informed by the appraisal of factors associated with workforce capacity described in Chapter two:

What can be discovered from existing documentary sources regarding the capacity of the children's nursing workforce in Kenya, Malawi, South Africa, Uganda and Zambia, with regards to:

1. *arrangements for regulation and recording of the children's nursing workforce*
2. *key recent policies and directives regarding the children's nursing workforce*
3. *participation in global health workforce development initiatives relevant to the development of the children's nursing workforce*
4. *specific references to the children's nursing workforce within key recent policies and directives regarding child health.*

3.4.2 Identification of items

The scope of the review was determined in accordance with the purpose and questions defined above. A search plan detailing the resources, search terms, websites, and limits used was developed prior to conducting the search (Higgins & Green, 2008), and was revisited and finalised in the light of emerging findings with subsequent iterations documented. Multiple databases were included since no single database can be expected to contain all items relevant to a specific topic, and as a strategy to reduce retrieval bias arising from errors or different approaches to categorisation, given that non-standardised key words are likely to apply to grey literature (Evans, 2002; Grant, 2004; Lefebvre, Manheimer, & Glanville, 2008).

The search plan was developed to incorporate three main searching strategies: peer-reviewed research publication databases; grey literature databases and targeted websites including relevant online resource libraries; and consultation with stakeholders. Searches for peer-reviewed research publication were conducted in four databases to identify significant or relevant publications: PubMed; EBSCO Host (CINAHL; AfricaWide Information; Health Source/Nursing), and Scopus. The results were limited to publications in the English language, involving human subjects, published between 2005-2016. Search terms were defined using the thesaurus in CINAHL to refine key words. MeSH terms were also identified.

The search of grey literature databases and targeted websites including relevant online resource libraries extended to the World Health Organisation's African Region Digital Library, the HRH Global Resource Centre maintained by USAid (USAid, n.d.) and the associated CapacityPlus Project online resource library maintained by IntraHealth (IntraHealth, 2006). Websites of the national Ministry of Health and the nursing regulatory body in each country were also searched, with searches performed manually because the lack of consistency in site design meant a consistent process could not be followed.

Table A: Search terms for peer-reviewed research publications

MeSH term	Key word search
<i>Set 1: Define the workforce</i>	
Health personnel	Nurs*
Nurses	Human resources
Education [subheading]	Employees
Pediatric Nurse Practitioners	Workforce
Health manpower	Qualification* OR Education*
	Regist*
<i>Set 2: Define the child population</i>	
Infant	Child* OR Paediatric OR Pediatric OR Infant*
Child	
Pediatrics	
<i>Set 3: Define location</i>	
Africa South of the Sahara	Sub-Saharan Africa OR Southern Africa

3.4.3 Inclusion and exclusion criteria

Eligibility criteria were determined as detailed in Table B. One amendment was made subsequently to the eligibility criteria presented below. It was originally intended that only items which referred directly to the children’s nursing workforce would be included. However, initial appraisal of a number of sources suggested that the absence of specific consideration of the children’s nursing workforce, particularly within national policy documents related to children’s health strategies or nursing workforce development, was also potentially instructive for the purposes of this review, and items assessed as potentially relevant in this regard through initial screening were therefore included.

Table B: Item eligibility criteria

<i>Inclusion criteria</i>	<i>Exclusion criteria</i>
Related to the situation, strategies, plans, or interventions relevant to the children’s nursing workforce* in Kenya, Malawi, South Africa, Uganda, or Zambia	Did not relate to the children’s nursing workforce*
Published by a government department at either the national or provincial/sub-national level within Kenya, Malawi, South Africa, Uganda, or Zambia	Published by a government department outside Kenya, Malawi, South Africa, Uganda, or Zambia
Published by an NGO reporting on information relevant to the children’s nursing workforce	Did not contain information specific to Kenya, Malawi, South Africa, Uganda, or Zambia
Available in English	Unavailable in English
Most current version of the document available (including drafts and discussion documents)	Document has been superseded
Items published between 2005-2016	Items published before or after 2005-2016 (up to specified date of search)
Full free text availability via website or under UCT library subscription	Full text not available

* See below regarding the subsequent amendment of this criterion

The inclusion and exclusion criteria were applied consistently to items identified through searches of all sources. Initial screening was conducted by reading the abstracts of peer-reviewed documents. Where formal abstracts were not available, as was frequently the case with grey literature items, executive summaries or tables of contents were read for identified documents (Godin et al., 2015). After screening, the full text of relevant items was retrieved for inclusion in the review. A documented account of the process of conducting the scoping review was maintained, as recommended (The Joanna Briggs Institute, 2015), and was referred to in compiling the presentation of findings provided in Chapter five.

3.4.4 Content analysis

An initial charting table was constructed in the form of a content extraction matrix (see Annex three), and used to record key information about the source, using the approach recommended by the Joanna Briggs Institute (The Joanna Briggs Institute, 2015). Headings relevant to the review questions were generated as shown in Figure five, and were used as the basis for initial coding. The content extraction matrix was applied to each document in turn, and data was entered into a Word document, with data tabulated, grouped and synthesised according to the headings described. Endnote was used to manage items, and recording and analysis was performed using Microsoft Word's advanced functions.

Figure five: Headings for initial charting of results developed at protocol development stage

- Publication details (Author(s), Title, Year of publication)
- Origin/country of origin (where the information detailed in the source was published, and where the work to obtain the information was conducted)
- Type of document (Peer reviewed publication, policy document, briefing paper, web content)
- Key contents that relate to the scoping review question/s:
- What do the sources reveal regarding:
 1. the size of the children's nursing workforce, and arrangements for monitoring and recording specialist qualifications in children's nursing
 2. consideration given to children's health services within national policies and strategies
 3. the nature and area of focus of HRH interventions relevant to the children's nursing workforce
 4. how the role of children's nurses within health systems is envisaged and described.

The initial charting table was used to enable organisation of the extracted content into categories. The iterative nature of a scoping review enables the identification of emerging content and their refinement as the data were reviewed (Levac et al., 2010). The initial categories were refined iteratively as the review proceeded in order to generate a system for coding all relevant content, with lettered sub-categories added. The resulting list of final categories and sub-categories is presented in Chapter five. In the final stage of the review, in order to reduce error arising from reviewer bias, a reappraisal of all sources was conducted, with the finalised coding guide applied systematically (Tranfield et al., 2003).

3.4.5 Consultation

It is recommended that consultation with clearly defined stakeholders with insights into the body of knowledge relevant to the review question should be considered for all scoping reviews (Levac et al., 2010), for the purpose of eliciting suggestions of additional sources not identified by the initial search strategy, as well as accessing insights beyond those in the literature (Arksey & O'Malley, 2005). Consultation was incorporated into the design and conduct of this review in two ways:

i) Questionnaire survey

Participants responding to the questionnaire survey of Heads of Schools of Nursing were asked "Are there national and local policies or training plans which guide the provision of children's nursing training in your institution?".

ii) Telephone interviews

Participants in telephone interviews were presented with country-specific narrative summaries of the information reviewed during the first stage of the scoping review and were asked to comment on it, prompted by the following questions: "What are the main drivers of children's nursing workforce development in your country?", and "Are there other sources that should be referred to, for example: key recent policies and directives regarding the nursing workforce; participation in global health workforce development initiatives; key recent policies and directives regarding child health?".

3.4.6 Approach to quality appraisal within the scoping review

There is as yet no consensus regarding the best approach to appraising the quality of items within a scoping review which incorporates such a mix of items, although a variety of means have been suggested (M. Dixon-Woods et al., 2006; Pope, Ziebland, & Mays, 2000; Spencer, Ritchie, Lewis, & Dillon, 2003). While some existing quality appraisal checklists such as the Critical Appraisal Skills Programme (CASP) appraisal checklist seek to facilitate appraisal of the validity of outcomes or findings, many items in this review could be anticipated to take the form of strategies or descriptions (M. Dixon-Woods et al., 2006), and would not therefore report on outcomes.

The expectation of a systematic review is that the process should provide an explicitly defined method for searching, synthesising and interpreting literature, with documentation of each step to enable replication (Mary Dixon-Woods et al., 2007; Tranfield et al., 2003). The application of systematic methods can improve the quality of review syntheses that include diverse items, including grey literature, by providing a more comprehensive and less biased set of reports to examine (Godin et al., 2015). The value of the relevance of items to the research question has been proposed as a more useful criterion than study design when appraising quality for a diverse scoping review (Thomas & Harden, 2008). In the case of this study, a widely inclusive and open scoping review with rigorous documentation of the approach was determined to be the most suitable approach in relation to an enquiry involving consideration of diverse mechanisms, non-linear events, and strategies and interventions for which outcomes are frequently unreported.

3.5 ETHICAL CONSIDERATIONS

3.5.0 Scope of the ethical issues encountered

The ethical issues associated with data collection using interviewing and internet mediated surveys are very similar, and can be considered together. The main ethical issues pertinent to this study concerned arrangements for meeting research costs, the design of processes to obtain informed consent, the approach to confidentiality, and maintaining security of the data.

3.5.1 Research related costs

Participants may have incurred a modest cost for the data or airtime used in completing the survey, depending on how they accessed the internet or receive calls. Reimbursement was not being offered. It was hoped that participants would be motivated by the opportunity to take part in extending the knowledge base about children's nursing practice. The Child Nurse Practice Development Initiative met the costs of telephone interviewing in relation to this study, and is in receipt of external grant funding intended to support capacity building work of this nature.

3.5.2 Consent

A two-fold approach to obtaining consent was followed. Firstly, participants were invited to email the completed consent form back to the researcher. Secondly, since it is recognised that the challenges of obtaining an original signed version of the consent form could be considerable given the geographical spread of the sample population and the limitations of the postal services in many of the areas involved, the consent form was reproduced in full at the start of the participant information questionnaire. Participants had the opportunity to review the information contained, and were then invited to click 'Yes, I agree' in order to proceed to the questionnaire. Schneier advises that gaining informed consent in the context of internet-mediated research is best regarded as a process rather than a product (Schneier, 2000). Signed consent forms are not generally regarded by the international academic community as a necessary condition of participation in either telephone or internet mediated research, provided that the other conditions for informed consent are met, and there is evidence that a process has been entered into regarding the provision of information and agreement to enter into the study (L. C. Whitehead, 2007). It is noted that the National Health Act 2003 requires the obtaining of written consent in the case of medical research involving human participants (South African Parliament, 2003). This study constitutes health services research, rather than medical research, and the HREC exercised their permitted latitude to waive the requirement for signed written consent in the context of an internet and telephonically mediated study which met and exceeded all other requirements regarding ethics and safeguarding of participants.

3.5.3 Confidentiality

It is not always possible to ensure complete anonymity when using an expert elicitation sampling approach, particularly where the sample may be as small as three or four respondents per country. In cases where there is a compelling reason for doing so and participants explicitly authorize the disclosure of their identity, it is permissible to do so (Watson, McKenna, Cowman, & Keady, 2008). The design of this study required the presentation of information received by some participants to other participants in order to receive comment, in line with the iterative, collaborative and participatory philosophy. It is very likely, given the small size of the children's nursing community, that participants may have been known to each other, and the possibility existed that they might deduce each other's

identity even if it were not revealed. Conducting this study on the basis of quasi-anonymity would have offered few practical benefits and may in fact have mitigated against individual accountability for responses (Goodman 1987 and Sackman 1985 in Watson 2008 *op cit*). In such cases it is vital that the researcher makes it clear to participants that their identity will be revealed to other participants. The likelihood that this will introduce participation or response bias is low, given that the information sought is largely numerical or historical, and objective rather than subjective (Watson et al., 2008). Indeed, it has been argued that knowing who the other participants are can motivate individuals to take part in studies of this nature, ultimately improving the quality of responses (Rauch 1979 in Watson 2008). Furthermore, in keeping with the collaborative research philosophy guiding this study, it was intended that participants should be enrolled as partners in the research process, contributing to the pooling of knowledge and information regarding the state of children's nursing. However, to offset concerns regarding identification, all responses were delinked from individual respondents' names, and presented and attributed at the level of institution and role only.

A copy of the consent form is provided at Annex four, and shows how the information above was explained to participants. As an additional safeguard, online participants were required to review and click [Yes] to select one of two specified options for attribution. Google Forms' features were used to ensure that submission was automatically disallowed if the respondent did not provide agreement.

Specifically in relation to the integrity of the internet mediated surveys, security settings ensured that the surveys could not be accessed without permission. The site was protected from outside interest and the researcher ensured that firewalls and virus scans were up to date (Haxton, Doering, Gingras, & Kelly, 2012).

After the initial invitation, the protocol allowed for a total of three reminders to be sent at two weekly intervals requesting the respondent to complete the questionnaire or to schedule a telephone interview. The first two reminders were by email only, and the third was by email and telephone. If the participant had not responded after the third reminder they were considered to have opted out of participating in the study. If a suitable alternative person could be identified who met the criteria for inclusion, they were approached at this stage.

3.5.4 Data security

Transcripts and digital recordings of telephone interviews were stored in password protected directories maintained as part of the University's ICTS systems, and were accessible only to the researcher. The internet-mediated surveys were removed from the Google Forms platform once the study was complete, and a record of the responses was stored as a password protected file as above.

3.5.5 Risks and benefits (beneficence and non-maleficence)

The study involved no foreseeable risks or potential harm to participants, as this study involved internet mediated and telephonic interviewing and documentary review. Participants were advised that participation in the study did not confer any direct benefits on them personally, and did not involve reimbursement, but that by choosing to participate they would be helping to construct a comprehensive picture of children's nursing capacity.

3.5.6 Suitability of the researcher

The researcher had previously received training in social science research methods and has experience of designing, administering and managing health services research programmes involving interviewing and focus groups as well as self-completion, interviewer-administered and internet-mediated surveys.

CHAPTER 4: AN ANALYSIS OF CHILDREN'S NURSING CAPACITY. NUMBERS OF REGISTERED CHILDREN'S NURSES AND TRAINING ACTIVITY.

4.0 OVERVIEW

Following on from the presentation of findings generated through the compilation of country case studies in the preceding chapter, Chapter four now presents data obtained through questionnaire surveys in the form of predominantly quantitative data relating to key aspects of reported children's nursing workforce capacity across all of the five countries in this study. Firstly the methods pursued and the response elicited are described. The approach to data analysis is summarised, and an account of processes undertaken to assess the reliability and validity of the data is provided. The three research questions explored through this study are used as a framework for presenting the data obtained. Data are therefore presented in relation to three key findings, related to the major elements of the questionnaire surveys: reported children's nursing workforce capacity; reported children's nursing training activity; and the challenges associated with providing children's nursing training. The results of the scoping review are presented separately in Chapter five.

4.1 RESEARCH METHODS

4.1.0 Sample and response rate

Data collection extended to five countries in the sub-Saharan African Region: Kenya, Malawi, Uganda, South Africa and Zambia. It was believed at the outset that these are the only countries training children's nurses in the Region, and this assumption was subsequently verified through the data collected. In total 12 individuals were recruited to participate in the study. All the responses received were appraised and considered to be legitimate for inclusion, and all were usable. Responses for each component of the study were as follows (summarised in Table C below):

- *Questionnaire 2a. Survey of children's nursing leaders.*

One individual per country was recruited to complete the survey as a national children's nursing leader, in accordance with the selection criteria. A 100% response rate was received (5/5).

- *Questionnaire 2b. Survey of National Nursing Registries.*

Requests to participate in this study were sent to the registrars of the National Nursing Registries for all five countries, with follow-up according to the protocol. After the initial invitation, a total of three reminders were sent at two weekly intervals requesting the respondent to complete the questionnaire or to schedule a telephone interview. The first two reminders were by email only, and the third was by email and telephone. If the participant had not responded after the third reminder they were considered to have opted out of participating in the study. A zero response rate (0/5) was received from this category of respondent.

- *Questionnaire 2c. Survey of Heads of Schools of Nursing*

One individual was approached at each of the four training institutions in Kenya, Malawi, Uganda, and Zambia to complete the questionnaire survey of Heads of Schools of Nursing. These institutions were believed to be the only institutions providing children's nursing training programmes in these countries, and this belief was assumption was confirmed by respondents. A 100% response rate was received (4/4). One additional higher education institution was identified by a respondent as possibly offering relevant training, and attempts were made to contact this institution to participate in the survey of Heads of Schools of children's nursing. No response was received. Private correspondence indicates that this institution is not currently offering training relevant to the purposes of this study (M. Coetzee, personal communication, January 14, 2018). In South Africa, the records published by FUNDISA indicated that seven Schools of Nursing were offering training leading to registration as a paediatric nurse or a children's nurse. The record of the Child Nursing Educator Forum Nov. 2017 was used to extract data relating to training activity at these institutions and a summary table was produced. Data were obtained for 7/7 institutions (100%) for the year 2015.

4.1.1 Key informant interviews

One individual in each country was recruited to participate in a key informant interview, the main purpose of which was to triangulate data obtained from other sources. A total of 3/5 participants were recruited and interviewed.

Table C: Summary of participation and responses

	<i>Kenya</i>	<i>Malawi</i>	<i>Uganda</i>	<i>South Africa</i>	<i>Zambia</i>
2a. Survey of children's nursing leaders.	1	1	1	1	1
2b. Survey of National Nursing Registries.	0	0	0	0	0
2c. Survey of Heads of Schools of Nursing	1	1	1	7	1
Key informant interviews	0	1	1	1	0

4.2 DATA ANALYSIS

4.2.0 Analysis of data

Analysis of data was driven by the primary goal of this study, which was to identify as far as possible the extent of the children's nursing workforce in five selected countries in the sub-Saharan African region. In some instances data obtained from participants in this study were supplemented with data from two other sources: the record of the Child Nursing Educator Forum Nov. 2017 and secondary analysis of data from an unpublished MPH study (Chukwu, 2017), to enable a more comprehensive compilation of data, and the origins of all data are clearly shown in the text and tables.

4.2.1 Reliability and validity

No substantial inter-respondent disparities were apparent in respect of the data for any of the five countries. Data were further assessed for internal consistency as follows for each country: (a) Estimation of annual output through training based on reports for 2015 (b) Multiplication of that figure by the number of years the course(s) have been in operation (c) The resulting number should be equal to or less than the number of children's nurses on the register or reported to be in practice. It is recognised that student numbers may vary year-to-year in reality. In the absence of participation by the South African Nursing Council, the reliability of

the figure reported for South Africa was assessed through analysis of the annual reports produced by the South African Nursing Council relating to Additional Qualifications on the Register listed between 2010 and 2016 (South African Nursing Council, 2010-2016). It was not possible to perform this check for the other countries, either because registers were not available for inspection or because children's nursing qualifications could not be disaggregated from published totals.

Calculation of mean annual in-country (excluding South Africa) training output was performed as follows: (a) the estimated annual production of children's nurses through training was calculated as shown in Table C, (b) addition of the total of nurses from other SADC countries trained in SA (101) to the total trained in-country (397). Comparison of the resulting total (498) to the reported numbers in practice (528) appears to confirm a good degree of internal consistency in the responses.

4.3 REPORTED CHILDREN'S NURSES ON NATIONAL PROFESSIONAL REGISTERS

4.3.0 Response from national nursing registries

The lack of response from national nursing registries meant that an important data source intended to enable triangulation was omitted. South Africa was the only country for which information relating to the numbers of children's nurses on the register was available through published information.

4.3.1 Information from the South African register

The South African Human Resources for Health Strategy, published in 2011, observed that the number of registrants holding an additional specialist nursing qualification in paediatric nursing science fell each year between 1996 and 2010 (South Africa Department of Health, 2011b). The figures presented in the document suggested that there appeared to be fewer than 1500 qualified paediatric nurses on the South African Nursing Council professional register in 2010, with about 100 children's nurses graduating from South African nursing schools annually (Coetzee, 2014)].

This information was noted to be inconsistent with the finding that an average of 175 nurses gained relevant qualifications registerable with SANC each year during the period 2012-2016 (Chukwu, 2017). Additional data collection for this study therefore included analysis of the

annual circulars produced by the South African Nursing Council relating to Additional Qualifications on the Register between 2010 and 2016 (South African Nursing Council, 2010-2016). When all post-basic nursing qualifications relevant to paediatrics were considered, including qualifications arising from recently-established educational programmes in paediatric critical care as well as long-established programmes such as post-basic child nursing science, the register recorded an increase in the number of nurses holding post-basic nursing qualifications relevant to paediatrics of 12.3% over the last six years, from 2 772 in 2010 to 3 115 in 2016, as shown in Table C. Application of the same method revealed the presence of 2 969 qualified paediatric nurses on the register in 2010, almost twice as many as the 1 500 counted in the Human Resources for Health Strategy of 2011.

Table D: Additional qualifications relevant to children's nursing on the SANC register 2010-16

	2010	2011	2012	2013	2014	2015	2016
Advanced paediatrics and neonatal nursing science	35	30	28	27	25	22	25
Medical and surgical nursing science:							
critical care nursing - child	23	31	34	34	47	77	50
Medical and surgical nursing science:							
paediatric intensive nursing	1	1	1	1	1	1	1
Paediatric nursing science	1497	1420	1360	1326	1273	1153	1076
Post-basic child nursing science	1216	1351	1433	1581	1683	1831	1963
Total	2772	2833	2856	2969	3029	3084	3115

4.4 REPORTED CHILDREN'S NURSING WORKFORCE CAPACITY

The data collected suggest that the combined children's nursing workforce reported for the five countries in this study totals 3 728 nurses. This is made up as follows: South Africa (3 200); Uganda (261); Zambia (105); Malawi (92); Kenya (70). Data in Table D presents reported children's nursing workforce capacity.

Table E: Reported children's nursing workforce capacity

	<i>N^o. in practice</i>	<i>N^o. on register:</i>	<i>N^o. produced by training (2015):</i>	<i>N^o. institutions training children's nurses:</i>	<i>N^o. of programmes offered</i>
Kenya	70	-	22	1	2
Malawi	92	-	27	1	2
South Africa	3200	3115 ^c	191 ^a	7 ^a	10 ^{a,b}
Uganda	261	-	0	0	0
Zambia	105	-	32	1	1

Sources: Original data plus record of the Child Nursing Educator Forum Nov. 2017^a, data from unpublished MPH study^b (Chukwu, 2017), analysis of the annual circulars produced by the South African Nursing Council relating to Additional Qualifications on the Register between 2010 and 2016^c

4.5 REPORTED CHILDREN'S NURSING TRAINING ACTIVITY

4.5.0 Training activity all countries

The data suggest that on average each year, a combined total of 260 children's nurses are produced through training across the five countries in this study. A total of 17 educational programmes leading to a qualification in paediatric nursing or child health nursing are offered by 10 institutions across the countries in this study. Table F presents data relating to the four countries outside South Africa where training is provided. South Africa is currently the only country where training is provided by more than one institution, and data relating to South Africa are presented separately in Table G. Four institutions offer a single educational programme, five offer two programmes and one institution offers three. The level of educational qualification awarded on successful completion of the programmes ranges from five programmes at National Qualification Framework (NQF) level six, all of which are offered by South African institutions, to qualifications at Masters level (NQF level 9 equivalent) offered by two institutions, one in Malawi and one in South Africa.

The data suggest a steady growth in children's nursing training activity since 2006, measured by the number of programmes being offered. Prior to this, the data suggest that South Africa was the only country in southern Africa training children's nurses. A total of six new

training programmes were reported to have been established between 2006 and 2016, in Kenya (2006 and 2013), Malawi (2010), Zambia (2014) and South Africa (2015).

Table F: Reported children's nursing training activity (Kenya, Malawi, Uganda, Zambia)

Country	Institutions		Programmes				
	Count	Location	Title	Level	Year est'd	Duration of study	Graduates 2015
Kenya	1	Gertrude's Children's Hospital, Nairobi	Higher National Diploma in paediatric nursing	HND	2006	1 year	15
			Higher National Diploma in paediatric critical care nursing	HND	2013	1 year	7
Malawi	1	Kamuzu College of Nursing, University of Malawi	Bachelor of Science (Paediatric Nursing)	BSc	2010	3 years	6
			Master of Science in Child Health Nursing	MSc	2010	2 years	21
Uganda	1	Jinja School of Nursing and Midwifery	Diploma in Paediatric nursing		-	-	-
Zambia	1	Lusaka Schools of Nursing	Advanced Diploma in Pediatric Nursing	HND	2014	1 year	32
Total:							81

Table G: Reported children's nursing training activity South Africa

<i>Institutions</i>		<i>Programmes</i>		
<i>Location</i>	<i>Title</i>	<i>NQF Level</i>	<i>Duration of study</i>	<i>Graduates 2015*</i>
Ga-Rankuwa Nursing College, Pretoria, Gauteng	Post Basic Diploma in Child Nursing Science	6	1 year	22
King Edward VII School of Nursing, Pietermaritzburg, KZN	Post Graduate Diploma Child Nursing Science	6	1 year	30
	PGDip Neonatal Nursing Science	6	1 year	30
Lilitha Nursing College, East London, Eastern Cape	Post Basic Diploma in Child Nursing Science	6	1 year	14
Rahima Moosa Nursing College, Johannesburg, Gauteng	Post basic diploma in Child Nursing Science	6	1 year	20
University of Cape Town, Western Cape	Post Graduate Diploma in Child Nursing	8	1 year	35
	Post Graduate Diploma in Child Critical Care Nursing	8	1 year	16
	Masters of Nursing in Children's Nursing	9	2 years	
Department of Nursing Science, University of Pretoria, Gauteng	Bachelor of Nursing for Registered Nurses with Children's Nursing Qualification	7	1 year	10
University of the Free State School of Nursing, Bloemfontein, Free State	Advanced Diploma in Nursing (Child Psychiatric Nursing)	7	1 year	14
	Advanced Diploma in Nursing (Children's Nursing)	7	1 year	
			Total:	191

* Source: Record of the Child Nursing Educator Forum Nov. 2017

4.5.1 National training output

Examination of the data in Tables E and F suggests that a total of 81 children’s nurses were produced through training by Kenya, Malawi and Zambia in 2015, and 191 by South Africa for the same year. South Africa is the region’s largest children’s nursing training provider. Because data are available regarding the number of children’s nurses reported trained at 5/7 South African institutions between 2012-2016 = 60 (Chukwu, 2017), it is possible to estimate that 179 children’s nurses are produced across South Africa’s seven training institutions on average per year. Of these 179 nurses, 150 (84%) are South African, and the remainder were reported to be from other SADC countries. It can therefore be calculated that approximately 885 additional children’s nurses were made available to the South African workforce through training between 2012 and 2017.

Using the data available, an attempt was made to calculate average annual training output for Kenya, Malawi and Zambia using similar methodology. Because data are only available for a single year for these countries, the resulting projections cannot be considered reliable, but are presented in Table H for illustrative purposes.

Table H: Calculation of mean annual in-country (excluding South Africa) training output

Country	Year training started	Number of years trainees produced (A)	Reported output 2015 (B)	Children’s nurse production to 2015 (A x B)
Kenya	2006	10	15	150
	2013	3	7	21
Malawi	2010	6	6	36
	2010	6	21	126
Uganda	-	-	-	-
Zambia	2014	32	2	64
Total produced by in-country training to 2015: 397				

4.5.2 Trans-national training activity

The data suggest that South Africa is a strategically important training hub for the wider region. Secondary analysis of unpublished data from an MPH study revealed that South African institutions trained approximately 101 additional children's nurses from SADC countries outside South Africa between 2012 and 2017 (Chukwu, 2017). Three higher education institutions (HEIs) reported training children's nursing students from other African countries between 2012 and 2016, with one HEI accounting for five out of six (50) international trainees, and one other institution accounting for nine of the remaining ten over the same period. From these data it can be estimated that South African institutions produce approximately 17 children's nurses from other African countries annually. Information reviewed from the Child Nurse Educator Forum suggests that only one South African HEI is currently accepting trainees from other African countries, with the other HEI's suspending international admissions in recent years because of ongoing difficulties securing temporary registrations for international students with the South African Nursing Council.

4.5.3 Challenges associated with providing children's nursing training

Participants responding to the questionnaire survey of Heads of Schools of Nursing were asked to state what challenges their institution has faced in offering a programme leading to qualification in paediatric nursing or child health nursing. Three respondents provided short written information in response to this question, from Malawi, Zambia and South Africa. A total of 28 factors were identified from respondents' answers. Analysis of the responses established a diverse range of issues, which were grouped into six broad themes. A summary of the responses is provided in Table H. Challenges reported by respondents from each country are described in more detail within the relevant country profiles. The challenge of resources was the most commonly expressed issue and was mentioned by all respondents. Challenges connected to financial support for students were mentioned by all respondents and were seen as adversely impacting student recruitment and student retention. The second most widely cited resource-related challenge concerned the availability of human resources for teaching and learning, with two respondents stating that the lack of suitable staff for classroom and practical teaching and learning was problematic. As is illustrated by Table I, some of the responses spanned more than one category.

Table 1: Resource challenges associated with providing children's nursing training

Theme	Sub-theme	Stated challenge
Resources	Student finances and support	Students drop out because they cannot afford the college fees Few scholarships offered to students Student unrest - #FeesMustFall protest movement for free higher education
	Material	Lack of software for data analysis in research Inadequate referencing software Poor internet
	Human	Few resources for clinical skills laboratory Lack of trained lecturers in pediatric nursing Few teaching staff (theory and practice) Inadequate child health nursing clinical experts for mentoring our students
Student preparedness for study		Student prior experience in paediatric nursing setting Students' academic foundation Students' language & numeracy literacy Students' research literacy Students' IT literacy Paeds nursing content at undergrad
Challenges of designing and teaching the course		Course needs to reach a wide geographical range of nurses, all with different clinical needs Time - course very full for a one year course Course needs to be applicable for nurses normally working in both secondary and tertiary facilities
Information Technology		Students' IT literacy Lack of software for data analysis in research Inadequate referencing software Poor internet
Challenges experienced by students		Challenges related to working in a new clinical environment Need to heavily support the students psychologically Not able to offer as a distance course, so students must [move], find accommodation, leave families - leads to social, cultural and familial upheaval Students may encounter xenophobia Student challenges related to moving into the role of the student, as well as a professional nurse
Other		Delays in temporary student registration of international nurses

Based on responses from three countries: Malawi, Zambia and South Africa

There was however considerable diversity between the challenges articulated by the respondents. The South African respondent highlighted a number of challenges associated with students' preparedness for study and challenges associated with designing and delivering a programme for students who come from very different educational and professional backgrounds. The Malawian

respondent expressed a different perspective, with the main focus of concern expressed relating to inadequate availability of material resources for teaching and learning. In relation to the expressed challenges associated with information technology (IT), respondents referred to both human and material factors including the inadequacy of software, internet connectivity and challenges associated with students' IT literacy.

4.6 LIMITATIONS

The lack of response from national nursing registries meant that an important data source intended to enable triangulation was omitted. South Africa was the only country for which published information relating to the numbers of children's nurses on the register was available. Previous studies have found a substantial discrepancy between the numbers of nursing professionals working within state and private health care in South Africa, and the numbers maintaining current registration, suggesting a significant number may be working overseas or in non-clinical roles in South Africa (Willcox, Peersman, Daou, Diakité, et al., 2015). The current South African Department of Health HRH Strategy assumes that 18% of all nurses on the register will not be actively working in South Africa, and that 41.4% work in the private sector (South Africa Department of Health, 2011b). When all post-basic nursing qualifications relevant to paediatrics are considered, the register records the number of nurses holding post-basic nursing qualifications relevant to paediatrics as 3 115 in 2016. It is likely therefore that, while the figure of 3 200 children's nurses practising in South Africa reported by the respondent matches quite closely the figure of 3 115 on the published register, it is an over-estimation of the numbers present in the workforce. Further research is required to establish a more accurate figure in relation to children's nurses actively working within children's health care services. This need is given additional impetus when it is considered that despite an estimated 885 additional children's nurses being made available to the South African workforce through training between 2012 and 2017, the number of such nurses on the professional register shows a net increase of only 259 over the same period (from 2 856 in 2012).

Where projections across all seven South African institutions have been calculated, it is possible that the activity reported may not be representative of the institutions who did not respond. This is only an issue in respect of South Africa, and is most likely to have resulted in slight over-

estimation of nurses trained from other Southern Africa Development Community (SADC) nations. It was unfortunately not possible to identify the countries of origin or the destinations of the other SADC trainees reported by SA institutions due to confidentiality restrictions governing the original data collection. It is likely that there is an element of double counting of nurses who were trained as part of a jointly offered programme, the transitional blended masters curriculum offered by the University of Cape Town and Kamuzu College of Nursing prior to commencement of wholly in-country training in Malawi (Coetzee et al., 2016).

The decision to collect data relating to training outputs for a single year (2015) was made because it was believed that this would support participation because it would be less onerous to respondents, who may not have had access to detailed records for previous years. While the 100% response rate suggests that this strategy was successful, the availability of data for a single year placed constraints on the interpretation of data. In particular, it limited the ability to calculate an accurate total for training output since inception of in-country training programmes, since reported 2015 output may not be typical. Triangulation through telephone interviews suggested that reported numbers of both training outputs and numbers in practice were broadly accurate, with no serious discrepancies detected. Again, the absence of data from the national registries compounds this limitation.

4.7 SUMMARY OF FINDINGS

Key findings

While the scope of this study was necessarily limited, analysis of the data from the questionnaire surveys provides the following information about workforce capacity and training activity in relation to children's nursing.

- The combined children's nursing workforce reported for the five countries in this study totals approximately 3 728 nurses. This is made up as follows: South Africa (3 200); Uganda (261); Zambia (105); Malawi (92); Kenya (70).
- It is estimated that a combined total of 260 children's nurses appear to be produced through training across the five countries in this study each year on average.

- A total of 17 educational programmes leading to a qualification in paediatric nursing or child health nursing were reported to be offered by 10 institutions across the countries in this study.
- A steady growth in children's nursing training activity was reported, with a total of six new training programmes established between 2006 and 2016, in Kenya (2006 and 2013), Malawi (2010), Zambia (2014) and South Africa (2015).
- The data point towards South Africa being a strategically important training hub for the wider region, with South African institutions training approximately 101 additional children's nurses from SADC countries outside South Africa between 2012 and 2017.

Having set out the data obtained from participants through the survey component of this study, the next chapter reports on the findings of a scoping review of existing information, with the aim of supporting triangulation of the survey data as well as enabling consideration of findings from the basis of a slightly fuller understanding of the contexts of each country and the wider Region.

CHAPTER 5: MAPPING AND EXPLORING EXISTING INFORMATION ABOUT THE REGISTERED CHILDREN'S NURSING WORKFORCE IN KENYA, MALAWI, SOUTH AFRICA, UGANDA AND ZAMBIA.

5.0 OVERVIEW AND PURPOSE

In this chapter, the information elicited from a scoping review of documentation relating to the children's nursing workforce is presented. The purpose of the scoping review was to contribute to identifying, as far as possible, the capacity of the children's nursing workforce in five selected countries. The scoping review was undertaken to supplement the numerical information obtained via the questionnaire surveys, in order to identify other relevant information such as training arrangements or workforce reports, recognising that the size of the workforce is only one of a number of dimensions of capacity.

5.0.1 Summary of methods

A full methods statement for the scoping review is provided in Chapter two. In summary:

- *Identification of items:* The search plan was developed to incorporate three main searching strategies (see 3.4.2): peer-reviewed research publication databases; grey literature databases and targeted websites including relevant online resource libraries; and consultation with stakeholders. Search terms (3.4.2) and inclusion and exclusion criteria (see 3.4.3 and Table B page 51) were developed and applied.
- *Approach to content analysis:* Initial headings to guide content analysis were identified through the background literature review (see Figure five, page 52). A data extraction matrix was constructed and used to perform content analysis (3.4.4). Iterative refinement of these headings resulted in the generation of four main headings and 12 sub-categories of content, which were used to structure the charting table presented in Annex five.

- *Consultation:* Consultation with stakeholders represented an additional source of data which contributed to the mapping of the knowledge base, and was an intentional part of the design of the scoping review, aligned with the participatory and collaborative research philosophies. Consultation was incorporated into the design and conduct of this review through the questionnaire survey of Heads of Schools of Nursing (data source 1c) and telephone interviews with individuals in positions of leadership related to children’s nursing (data source 3). A full description of the approach to consultation can be found in Chapter two (3.4.5).

5.0.2 Approach to presentation of results

Findings are presented as follows:

- *Mapping of items:* A summary of items identified is presented by type of item and country of origin, in order to provide an overview of the composition of the knowledge base.
- *Mapping of topics:* Analysis of the subject matter representing the primary stated focus of the item.
- *Content analysis by category:* Content extracted from items is presented and interpreted in relation to the four main categories identified.
- *Incorporation of interview data:* Where data obtained from participants speaks directly to the content identified, or where it assists with interpretation of findings, verbatim quotations from participants are included within the presentation of findings. The inclusion of this information alongside the results of the scoping review is consistent with the approach advocated by the Global Poverty Research Working Group to facilitate the creation of socially useful knowledge through the intentional mixing of data gathered through different methods, specifically in relation to the development of policy-oriented case studies (Hulme, 2007), and conforms to the integrative approach to the mixing of data within a convergent parallel mixed methods design described in Chapter three.

Summary information for all items is provided in Annex five.

5.1 OVERVIEW OF ITEMS IDENTIFIED

5.1.0 Identification of relevant sources

The search of peer-reviewed research publication databases yielded the following results:

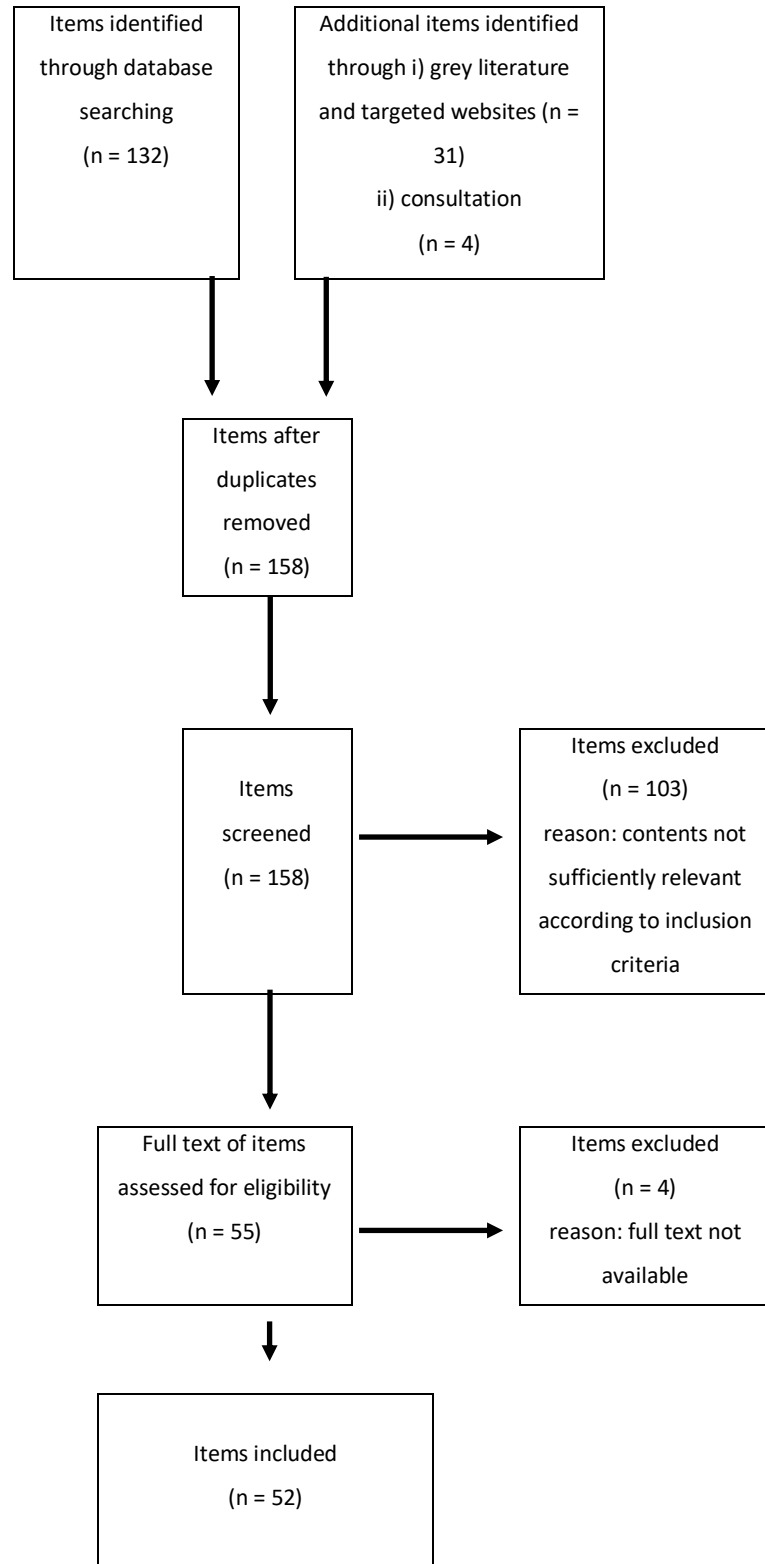
- PubMed: 73 results of which 5 were determined relevant;
- EBSCO Host (CINAHL; AfricaWide Information; Health Source/Nursing): 36 results of which 4 were assessed as relevant; and
- Scopus: 23 references of which 4 were relevant.

After removal of duplicates, a total of nine items of published peer-reviewed research were identified. A further 11 items of peer-reviewed literature were identified from grey literature databases and targeted websites. In total, 20 items were identified through the search of peer-reviewed research publication databases; 31 through grey literature databases and targeted websites, and four through stakeholder consultation (although only one of the latter was a uniquely identified item). Attempts were made to obtain full texts in three cases where items were not available due to broken links, by contacting the publishing organisations or authors directly, and by searching in Google Scholar, but none of these attempts were successful. Ultimately, 52 items were identified for review through application of the search strategy, as depicted in Figure six.

5.1.1 Participation

Questionnaire survey: Participants responding to the questionnaire survey of Heads of Schools of Nursing were asked “Are there national and local policies or training plans which guide the provision of children’s nursing training in your institution?”. Three respondents provided information in response to this question for Malawi, South Africa and Zambia. Respondents mentioned a total of eleven sources of guidance relevant to the provision of children’s nursing training. All of these had already been identified and analysed, and these were subsequently reviewed again to ensure identification of all relevant factors.

Figure six: Search decision process and results by stage



Telephone interviews: Participants in telephone interviews were presented with country-specific narrative summaries of the information reviewed during the first stage of the scoping review and were asked to comment on it, prompted by the following questions: “What are the main drivers of children’s nursing workforce development in your country?”, and “Are there other sources that should be referred to, for example: key recent policies and directives regarding the nursing workforce; participation in global health workforce development initiatives; key recent policies and directives regarding child health?”. Interviews were conducted with individuals in Malawi, South Africa and Uganda. Application of the recruitment protocol described in Chapter three (see 3.5) did not result in the participation of eligible respondents in Kenya and Zambia.

This dual strategy resulted in the successful gathering of data from four countries to contribute to the scoping review, with only Zambia not commenting directly in relation to this component of the study.

5.2 ITEMS IDENTIFIED

5.2.0 Analysis by type of item

As can be seen from Table J, peer-reviewed research or discussion documents in the form of published papers in academic journals were the most numerous type of item identified.

Table J: Distribution of items by country of origin and type of item

	<i>Kenya</i>	<i>Malawi</i>	<i>South Africa</i>	<i>Uganda</i>	<i>Zambia</i>	<i>Total: by type</i>
Peer-reviewed publication	5	4	9	5	3	26
Policy/strategy document	1	2	3	2	2	10
Report	5	2	2	4	3	16
Total: by country	11	8	14	11	8	52

5.2.1 Analysis by topic

Analysis of the subject matter of the peer-reviewed items resulted in the identification of the following topics representing the primary stated focus of the item:

- presentation of descriptive analyses of workforce data and workforce modelling projections (9/52)
- descriptions of globally-funded HRH interventions (14/52)
- presentations of findings in relation to studies of the factors influencing nursing workforce capacity such as employee health, retention or morale (14/52)
- strategy or advocacy regarding specialisation of the children's nursing workforce (9/52)
- other (6/52).

Considered by country and type of item, the most commonly identified topics in all types of items are shown in Table K. The subject matter of the peer-reviewed items reviewed suggest there may be differences in research agendas between the countries in this study, with South African and Kenyan items accounting for the majority of items representing analyses of workforce data and workforce modelling projections (4/5 of the items identified), with the high quality of the Kenyan information particularly notable. No items containing workforce analysis information were identified for Uganda at all. Among the peer-reviewed items identified, papers considering the factors influencing nursing workforce capacity accounted for the majority of all peer-reviewed items identified items (12/26). This finding may have been substantially different if the eligibility criteria had not prioritised items originating in the countries concerned. It is also possible that the time-lag associated with peer-reviewed publication and policy documentation means that the results reflect activity that was carried out some time ago, rather than representing current foci and preoccupations.

Table K: Topics identified, by country and type of item

	Kenya	Malawi	South Africa	Uganda	Zambia	Proportion of total, by type
Topic one: Descriptive analyses of workforce data and workforce modelling projections						
Peer reviewed publication	0	1	3	0	1	5/26
Policy/strategy document	0	1	0	0	1	2/10
Report	2	0	0	0	1	2/16
Topic two: Descriptions of globally-funded HRH interventions						
Peer-reviewed publication	2	1	0	2	0	5/26
Policy/strategy document	n/a	n/a	n/a	n/a	n/a	n/a
Report	2	2	1	2	1	9/16
Topic three: Factors influencing nursing workforce capacity e.g. employee health, morale						
Peer-reviewed publication	2	2	3	3	2	12/26
Policy/strategy document	0	0	1	0	0	1/16
Report	0	0	0	1	0	1/16
Topic four: Strategy or advocacy regarding specialisation						
Peer-reviewed publication	1	0	3	0	0	4/26
Policy/strategy document	0	0	2	1	1	4/10
Report	0	0	1	0	0	1/16
Topic five: Other						
Peer-reviewed publication	0	0	0	0	0	0/26
Policy/strategy document	1	1	0	1	0	3/10
Report	1	0	0	1	1	3/16

5.3 CATEGORISATION OF CONTENT

5.3.0 Analysis of content

Having mapped items by type, origin and stated subject matter, the second stage of the review focused on a more detailed appraisal of content. The four subsidiary review questions described in Chapter three were applied to guide content analysis of all items, using the initial data extraction matrix shown in Annex three. This resulted in the identification of 12 sub-categories of content, as shown in Figure seven.

In the remainder of this chapter, results of the scoping review are presented in relation to distribution of items identified by country and type of item, and then presented for each content category as listed in Figure seven alongside quotations from telephone interviews where appropriate.

Figure seven. Content analysis sub-categories developed under initial review questions

Initial review questions	Sub-categories
1. What is the size of the children's nursing workforce, and what arrangements exist for monitoring and recording specialist qualifications in children's nursing?	a) disaggregation b) numbers c) capacity of regulatory bodies
2. What consideration is given to children's health services within national policies and strategies?	a) priority given b) acknowledged weaknesses c) stated or recommended priorities and targets
3. What is the nature and area of focus of HRH interventions relevant to the children's nursing workforce?	a) HRHi b) vertical programmes eg HIV/AIDS, MNCH etc c) other
4. How is the role of children's nurses within health systems envisaged and described?	a) deployment b) recognition of specialisation c) any national targets or recommendations for size of workforce, training outputs or ratios

5.3 PRESENTATION OF RESULTS BY CONTENT CATEGORY

5.3.1 Monitoring and recording the children's nursing workforce

Items were reviewed for content relevant to the size of the children's nursing workforce, and arrangements for monitoring and recording specialist qualifications in children's nursing. A total of 17 items were identified which contained content relevant to this category, with items identified and reviewed from across all five of the countries in this study. Of these 17 items, six were identified which contained specific references to the specialist children's nursing workforce.

Information about the size of the children's nursing workforce

Items from only two countries provided disaggregated nursing workforce data identifying the numbers of specialist children's nurses. Both of these items were national level policy/strategy documents. The Kenyan Nursing Workforce Report states that for the deployed nursing workforce, 13% have post-basic training in speciality areas (Kenya, 2012, p. 10). The document states that 3% of the nursing workforce in Kenya is thought to have speciality training in an area other than midwifery, with paediatrics specifically mentioned as one of these areas, although no precise figure is given. In addition, South Africa's Human Resources for Health strategy presents data showing fewer than 1500 qualified paediatric nurses on the South African Nursing Council professional register in 2010, with about 100 children's nurses reported to be graduating from South African nursing schools annually (South Africa Department of Health, 2011b, p. 44)¹.

Three items were identified which expressed a desire for more information specific to the size of the specialist children's workforce. In an analysis of the implementation of new pay arrangements for nurses in South Africa, Ditlopo and colleagues found evidence of "vagueness in the definition of what constitutes specialisation" (Ditlopo, Blaauw, Rispel, Thomas, & Bidwell, 2013, p. 5). South Africa's Committee on Morbidity and Mortality in Children recommended "SANC accreditation for neonatal nursing courses to be fast-tracked [and] SANC recognition of post-basic neonatal nursing qualifications" as priority interventions (CoMMiC, 2014, p. 33). The World Health Organisation's

¹ The accuracy of the numerical depiction of the children's nursing workforce contained in the South African Department of Health's Human Resources for Health Strategy is discussed further in Chapter four (see 4.3.1).

Zambia Country Office annual report for 2016 highlighted that “The lack of a comprehensive human resource information system also poses a major challenge to Human Resources for Health (HRH) management” (World Health Organisation Zambia Country Office, 2016, p. 43).

National nursing registries were the most commonly mentioned source of information regarding the nursing workforce, followed by national employer payroll data. The content reviewed indicates that a lack of accurate and up to date information about the nursing workforce is widely regarded as impairing development of effective decisions about workforce and resource allocation, with weaknesses mentioned in relation to all of the countries in this study. Prior to the establishment of a nursing database system in Kenya, Riley et al described a situation where a lack of reliable nursing workforce information was seen as seriously impairing development of effective workforce and resource allocation decisions (Riley et al., 2007). A case study of implementing new pay arrangements for nurses in South Africa highlighted weak HRH information systems, concluding that “information systems required for successful policy implementation, such as the public sector human resource data base and the South African Nursing Council register of specialised nurses were incomplete and inaccurate” (Ditlopo et al., 2013, p. 2). The South African Department of Health’s own HRH strategy acknowledges weaknesses with statutory council records which are “not a true reflection of the numbers of health professionals available for the workforce” (South Africa Department of Health, 2011a, p. 26) .

The information provided by interviewees concurs with the finding that only South Africa currently monitors and reports on the size of the registered children’s nursing workforce.

“The recording is done according to qualifications. So if a nurse has a masters in paediatrics, they are recorded as having such. [The register] records the qualification held, but it does not separately record the category of specialists. We are still yet to put up a category of all of the specialists.”

Director of Nursing and Midwifery, Malawi

Information about the capacity and expectations of regulatory bodies

Analysis of the material extracted revealed that descriptive statements of the functions and responsibilities of nursing regulatory bodies were widely available. None referred specifically to responsibility for recording specialist children's nursing qualifications. As presented above, the items reviewed cite a number of weaknesses and challenges with data systems to monitor the nursing workforce.

The content of the items reviewed suggest that there may be a difference between the way that national nursing regulatory bodies are involved in policy development by central government health ministries. Content suggested that the nursing regulatory bodies in Malawi, Zambia and Kenya are accorded a prominent role in the implementation of strategic interventions to build nursing workforce capacity, through specified commitments. For example, the Kenya Nursing Workforce report credits the Nursing Council of Kenya with contributing to the development of Kenya's ability to accurately track the nursing workforce (Kenya, 2012, pp. 4,9). The Malawi Nurses and Midwives Council is mentioned within the Malawi Ministry of Health's Human Resources for Health Strategic Plan 2012-2016 as having a pro-active role in relation to workforce planning: "In liaison with the Ministry of Health, the Council also advocates for increase of nurses and midwives in the country to ensure provision of quality nursing and midwifery services" (Government of the Republic of Malawi, 2012, p. 32).

One interviewee saw the growth of specialisation as having implications for information systems:

"The growth of specialists is a new demand on the register. In Malawi now we have those doing nursing education, reproductive health, midwifery, community... It's a different dynamic and we need to respond accordingly, as a country and as a registering board."

Director of Nursing and Midwifery, Malawi

In the absence of participation in this study by registrars of national nursing registries, the information retrieved through documentary review relating to the existence, function and recent agenda of national nursing registries in each of the five countries represents the totality of what this study was able to establish.

5.3.2 National policies and strategies specific to the children's nursing workforce

A total of ten items identified were classified as national policy or strategy documents. These items were appraised to identify whether they contained information which suggested that specific consideration had been given to children's health services within the national policy and strategy, together with other items which provided analysis, commentary or advocacy regarding national policy and strategy. Information was extracted in relation to:

- a) the level of priority given to children's health, and/or children's nursing within the policy or strategy
- b) weaknesses and challenges associated with children's health, and/or children's nursing acknowledged in the item
- c) stated or recommended priorities and targets specific to children's nursing workforce capacity.

Priority given to children's health

National policy and strategy documents for all of the countries in the study were identified and content was extracted in relation to the relative importance attached to improving services and outcomes in relation to infant and child health. Review of the content suggested that a very high level of priority was given to this objective by national level policy statements across all five of the countries in this study. Improvements to services and outcomes in relation to infant and child health were stated first in lists of strategic objectives and priorities within all of the national policy documents identified. Indeed, not just the first objective but the majority of objectives stated in the national level policies identified relate to children's health in some way, with for example 6/9 of Uganda's targets being directly related to infant and child health (Uganda Ministry of Health, 2015). Similarly, Malawi's HRH Strategic Plan identifies childhood and maternal underweight/stunting as the second of ten leading health needs to which the health workforce must be equipped to respond (Government of the Republic of Malawi, 2012). Children under five are identified as the first of 11 priority population groups that should be the focus of targeted efforts to increase HRH capacity. This finding is consistent with the recommendations and analyses identified in other sources within this review, with both peer-reviewed literature and reports and grey literature all emphasising the urgent need to improve infant and child morbidity and mortality. A number of strategic intentions are announced in the national policy documents which

would have direct relevance for the children’s nursing workforce, such as the establishment of new hospitals likely to serve a high proportion of child patients (Government of the Republic of Kenya, 2013), although no examples were identified where implications for the children’s nursing workforce were explicitly recognised.

Acknowledged weaknesses with the children’s health services workforce

The children’s nursing workforce was widely acknowledged to be below the required capacity in content extracted from items of all types across all five of the countries in this study. Stated weaknesses with the children’s health care workforce identified from the items reviewed were multifactorial. They included: a lack of capacity due to staff numbers (Gillespie et al., 2008; South Africa Department of Health, 2003; Swingler et al., 2012; World Health Organisation Zambia Country Office, 2016); staff performance (R Deussom, 2014); weaknesses in training for staff, attributed to problems with the quality of training (Government of the Republic of Malawi, 2012), and inadequately aligned curriculum content (Mumbo & Kinaro, 2015). The majority of content identified dealt with the capacity children’s health workforce at a broadly generic level. Within national level policy documents, problem identification was presented at a high level of aggregation, with statements applying to the whole health care workforce, or to nurses homogeneously.

The impact of inadequate workforce capacity on child health was explicitly stated in the content identified. The Kenya Health System Assessment, for example, highlighted that the full 24 hour package of defined minimum services specified in the Kenya EPH, including maternal and child health services, was only available at 16% of facilities, and 50% of hospitals (USAID, 2010, p. 102). Lala and colleagues describe a “nursing crisis in paediatrics in South African state hospitals” and suggest that the shortage of appropriately trained nurses may be the most serious of the many problems that South African hospitals face (SG Lala, N Lala, & Dangor, 2017, p. 64).

One interviewee expressed the view that, even in South Africa which has achieved disaggregated recording of the nursing workforce, this information is not being used to inform planning:

“The main focus ... is on norms and numbers [of all categories of nurses], it’s not about specialisation”.

Provincial Head of Paediatrics and Child Health, South Africa

Another interviewee suggested that other factors beyond the non-availability of numbers may compromise decision-making:

“The contribution of the specialist children’s nurses that do exist isn’t always made the most of in the services, they don’t have that understanding.”

Nursing Consultant, Uganda

Stated or recommended priorities and targets relating to children’s health

Differences were apparent in the way that countries made links between the objective of improving child health, and the specificity of the actionable steps to achieve this that were extracted from the plans. While, as stated above, all of the countries studied were found to have developed national level plans which gave a high level of priority to children’s health, only one such document attempted to estimate the number of children’s nurses available to health services in the country,² which provides a further indication that the capacity to accurately monitor and record the extent of the children’s nursing workforce is indeed under-developed at present. Specific actions which were directly or indirectly pertinent to the children’s nursing workforce included proposals to establish new facilities and service delivery infrastructure for children’s health care (Rakuom, 2010), and proposals to address problems with staffing capacity in order to optimise usage of existing facilities (Gillespie et al., 2008; Rakuom, 2010; Swingler et al., 2012).

The Nurses and Midwives Council of Malawi’s Professional Practice Standards for Registered Nurses makes explicit that the responsibilities of all nurses are exercised within a system adhering to a primary health care model: “[In clinical practice, the nurse...] Utilises the principles, concepts and components of Primary Health Care (PHC) and other relevant theories in providing care.” (Nurses and Midwives Council of Malawi, 2012, p. 15).

The South African Nurses Council also describes the role of the specialist (advanced practice) children’s nurse within the context of a model of primary health care, while recognising that specialist practice applies across all settings: “These competencies transcend settings in which

² See Chapter four (4.3.1).

child nursing is rendered (community, healthcare environment, rural and urban)” (South African Nursing Council, 2012, p. 1).

5.3.4 HRH interventions relevant to the children’s nursing workforce

A total of 13 items were identified which contained information regarding global development funded HRH interventions potentially relevant to the children’s nursing workforce. Of these, five were peer reviewed publications (5/26, 19% of all peer reviewed items), and nine were briefing papers or reports (9/16, 56% of all reports).

Two topics formed the subject of the majority of items. The most numerous topic identified took the form of accounts of interventions to establish or improve HRH information systems (7/13, 54%). Where content suggested a desire to track nurses’ acquisition of additional knowledge and skills, this was most often in relation to specific vertical programmes, such as Voluntary Counselling and Testing, in connection with Prevention of Mother to Child Transmission (Riley et al., 2007; USAID, 2010), rather than in connection with specialist post basic qualifications in children’s nursing. This was the second most numerous topic identified, with descriptive reports of HRH programmes in relation to vertical programmes e.g. HIV/AIDS, or maternal and newborn survival accounting for (3/13, 23%) of the items reviewed within this category. The content relating to recording nurses’ training and qualifications associated with vertical programmes placed an emphasis on task shifting, often to lower qualified cadres of staff, with no mentions made of specialisation in nursing.

The information elicited confirms that health systems in each of the five countries have actively participated in international and local initiatives aimed at building the capacity of human resources for health, and in particular associated HRH information systems. Again, it cannot be assumed that this continues to represent the focus of activity in the countries concerned, since this may be a feature of publication-lag.

5.3.5 The role of children's nurses within health systems

A total of 18 items were identified which contained information relating to the way in which the role of children's nurses within health services and systems was envisaged or described, in relation to either: deployment; recognition of specialisation; or any national targets or recommendations for size of CN workforce, training outputs or ratios. Analysis of findings resulted in the identification of three sub-themes:

- a) deployment
- b) recognition of specialisation
- c) any national targets or recommendations for size of CN workforce, training outputs or ratios.

Children's nursing specialisation is a consistently absent theme from national macro-level health system strategies. It is considered as part of health care workforce strategies, but it is not explicitly stated how this strategy of increasing specialisation aligns with or integrates with EPHs or UHC. The information reviewed suggests there is some recognition of the need to re-orientate nurses to the new scopes of practice required by these newer forms of service delivery (South Africa Department of Health, 2003).

The items identified reveal that four of the countries in this study have articulated national strategies to develop the specialist children's nursing workforce to some extent. Uganda is the only country for which no items elicited content which suggested the existence of policies or strategies in this regard. The content extracted suggests that Uganda's policy towards health workforce development is in fact to pursue a comprehensive approach to capacity building, with a stated reluctance to build capacity amongst defined sub-categories of staff. The Ugandan MoH's stated strategy is to pursue a comprehensive approach to system strengthening, with the rationale given that "a focus on specific cadres (e.g. Medical Officers, midwives, nurses) or facility types (e.g. HC IVs) leads to imbalances, with key services being affected in the drive to improve other services" (Uganda Ministry of Health, 2015, p. 47).

The national policy and strategy documents reviewed identified explicit measures to encourage professional specialisation in children's nursing in Kenya, South Africa, Malawi and Zambia.

Kenya's Nursing Workforce Report, a comprehensive descriptive and statistical report prepared with support from the CDC, states that the policy of the Ministry of Health is to work towards having specialised services at each district hospital (Kenya, 2012). While the document records that 3% of the registered nursing workforce has post-basic training in a specialised area, no figure is given for the number of nurses with a post-basic qualification in children's nursing. In 2003 the South African national Department of Health published a strategic framework for modernisation of tertiary hospital services (South Africa Department of Health, 2003). Amongst other measures, the strategy proposed suggested staffing levels, equipment and facilities for all levels of care in the SA health system. These included detailed specifications for paediatric settings at varying levels of acuity and specialty. The national government recognized that the shortage of specialist nurses with post basic training was particularly severe in relation to paediatric intensive care. Proposals to strengthen the availability of specialised nursing expertise included: expanding the availability of and funding for specialised nursing training; and incentivising specialist skills development through better career pathways and remuneration.

Zambia's current National Health Strategic Plan is a highly comprehensive strategy with detailed consideration of nursing workforce issues and an explicitly articulated plan for increasing nursing specialisation. It states an objective "To effectively manage and develop the nursing and midwifery workforce in order to enhance individual and organizational performance", and as one of five measures to achieve this objective includes action to: "Review the organograms and establishment ... for nurses and midwives to increase the numbers and provide streamlined career progression and specialisation" (Zambian Ministry of Health, 2017, p. 73).

Despite the depiction of the role of children's nurses as located within a primary health care model (5.3.2 above), analysis of the items reviewed suggests a diversity of views. The South African Nursing Council has specified competencies for a category of specialist children's nurse which corresponds to the role of advanced nurse practitioner internationally. SANC maintains that: "The Child Nurse Specialist is found in the following healthcare settings: Primary healthcare, district, regional, tertiary and academic centres; specialised children's hospitals; academic/tertiary hospitals with paediatric/children's units; private healthcare centres; educational institutions: researchers and educators; at management level: managers, coordinators of programmes and other quality improvement structures" (South African Nursing Council, 2012, p. 2) Within the

clinical continuum “The focus is on preventive and promotive healthcare. The specialist is in partnership with families and other healthcare providers (family-centred care). He/She functions at PHC Level where he/she screens/triages, assesses, plans, implements, evaluates and refers a child who warrants a higher level of care accordingly. The specialised nurse also provides curative and rehabilitative healthcare” (South African Nursing Council, 2012, p. 3) This latter task represents the totality of the role described by Lala and colleagues, whereby “In paediatrics, nursing is an essential component of care because children require near-constant supervision. In addition to their need for emotional support and comfort, hospitalised children are absolutely dependent on nurses for the monitoring of their general condition and vital signs, administration of medication, delivery and monitoring of intravenous fluids, feeding, bathing, and nappy changes” (SG Lala et al., 2017, p. 64).

The role of children’s nurses – perceptions of interviewees

Interviewees were also asked to comment directly in response to the questions ‘How do children’s nurses contribute to children’s health in your country?’ and ‘Do children’s nurses carry out the same duties and tasks as other categories of nurses?’. They provided insightful descriptions of the role of children’s nurses.

“They contribute greatly in terms of how they are trained and the power to think and do the work they do. They are trained to identify conditions, make plans and commence the initial treatment before the doctor comes in. In Malawi, the ratio of doctors to patients is very low, and the patients are so many. Wherever they are working, these specialist nurses are empowered, through their specialist training...Because of that they are really able to take the lead in managing the children, depending on whichever areas they are in. In outpatients, they are able to triage children and say ‘this child requires quick attention’. They are able to facilitate the management. The delays associated with starting treatment are getting less now.”

Director of Nursing and Midwifery, Malawi

“The two [children’s] nurses at [name of hospital], they are very good. One is running the whole feeding clinic.”

Nursing Consultant, Uganda

“Specialist children’s nurses should mostly be working at the level of district hospitals. Then you need sub-specialists at regional and tertiary level – the neonatal nurses, and critical care [children’s] nurses. And the role of children’s nurses [at district hospital level] is to be the institutional memory. They are the hearts and brains of a service.”

Provincial Head of Paediatrics and Child Health, South Africa

5.4 CONCLUDING ANALYSIS

In summary, the content identified illustrates not only the gaps in the children’s workforce, but also the gaps in the capacity to monitor the health workforce. The content of items identified pointed towards the central importance of child health, and the pivotal role of children’s health services and specialist professionals. Yet activity within the field of HRH information systems identified was predominantly conducted with reference to the total or adult population, with the accompanying assumption that the health workforce consists of generalists. Published information regarding the extent of the children’s nursing workforce was identified for only one country (South Africa). It is possible that the ability to record this information has been developed in Kenya, but information about the size of the children’s nursing workforce in Kenya was not found in any of the items identified.

5.5 LIMITATIONS OF THE SCOPING REVIEW

It cannot be assumed that this scoping review resulted in the comprehensive identification of items, because resources precluded exhaustive efforts being made to obtain items. Efforts to obtain items not available online were restricted to an initial email request and one follow-up email. It is possible that with greater input, including enlisting the support of participants, more items could have been obtained for inclusion. This is particularly likely to have been of value in relation to national policy and strategy documents, a number of which were noted to be referred to in other sources (for example, the ‘national nurse training plan’) but which could not be identified or obtained.

A second limitation is apparent in the gap between the limited number of items identified through the scoping review, and the much larger body of information which was uncovered serendipitously as this study unfolded. While the scoping review maps the items identified using the search strategy described, comparison of the items identified to the much larger body of literature identified through other means suggests that the search terms and strategy may have been inadvertently limiting. A possible explanation for this is that search terms were inconsistent with key words used in the cataloguing of items. In particular, it could have been expected that more items produced by national governments and ministries would have been identified for review. This limitation could perhaps have been avoided through the adoption of a more comprehensive and structured approach to the systematic identification of grey literature.

5.6 SUMMARY OF FINDINGS

Key findings

- The nursing workforce tends to be treated as a homogenous category of the wider workforce within the majority of items identified for this review.
- Disaggregated information regarding the children's nursing workforce was identified for only one country (South Africa). Documentation and participant responses suggests that the ability to disaggregate the children's nursing workforce in Kenya and Uganda may exist, but no evidence of such information having being published was found.
- There appear to be widely acknowledged concerns regarding the capacity of nursing regulatory bodies, and evidence of numerous targeted capacity building interventions involving regulatory bodies was identified, mainly focusing on HRH information systems.
- There is some evidence to suggest that nursing regulators may play a fuller role in policy formulation in some countries (Malawi, Zambia and Kenya) than in others, although the reasons for this are not clear.
- Children's health care is afforded the highest level of priority within national health system strategies for all the countries on this study. While deficits in HRH are seen as detracting from the ability to achieve improvements in child health outcomes, no national health system strategy documents contained reference to the children's nursing workforce at a disaggregated level.
- Four of the countries in this study (Malawi, Kenya, South Africa and Zambia) have explicitly articulated national plans to develop the capacity of the children's nursing workforce to some extent.
- Information gathered through stakeholder consultation suggests that children's nurses make a distinctive contribution to children's health care within primary health care systems at a variety of levels.

CHAPTER 6: DEVELOPING THE CAPACITY OF THE REGISTERED CHILDREN'S NURSING WORKFORCE: IMPLICATIONS OF THE PURSUIT OF SPECIALISATION IN LOWER-RESOURCED HEALTH SYSTEMS.

6.0 OVERVIEW

Chapter six begins by marshalling the themes and insights arising from the data described in Chapters four and five. Four main observations are offered, based on the findings from this study. These observations are presented in the light of data from this study, and some interpretation is offered. Some conclusions are suggested, together with recommendations for further research and action. Finally a reflective account of the conduct of this study is provided, addressing strengths and limitations of the study as well as a personal autobiographical reflection.

6.1 SUMMARY OF OBSERVATIONS

6.1.0 Summary

The size of the registered children's nursing workforce in Africa was previously unknown. As a first step, this study sought to establish the capacity of the children's nursing workforce in five selected sub-Saharan African countries. In establishing how many children's nurses are there currently, and the extent of training activity, the findings provide a hopeful message about growth in capacity. They also suggest a potentially interesting observation about a distinctive approach to workforce development, through specialist capacity building within the contexts of lower-resourced health systems conforming to a primary health care model.

6.1.1 Conclusions

Based on the findings of this study, five main observations are offered. Firstly, the information gathered through this study suggests that by the end of 2018 there will be around 4 000 specialist children's nurses working in Kenya, Malawi, South Africa, Uganda and Zambia. It is believed that this is the first time a systematic count has been made of this population of nurses.

Secondly, the results of the surveys conducted for this study establish that, across the five countries in this study:

- 17 educational programmes leading to registration as a specialist children's nurse are currently offered by 10 institutions;
- of these, six new training programmes were established between 2006 and 2016;
- these six institutions are producing around 260 newly registerable children's nurses per year between them.

Thirdly, based on investigation and documentary review, it seems reasonable to conclude that accurate official information regarding the extent of the children's nursing workforce is not currently available to inform decision making in any of the countries in this study. Fourthly, despite evidence of numerous targeted capacity building interventions, there remains an acknowledged need to further develop the ability of nursing regulatory bodies to contribute to policy making by providing information about the registered children's nursing workforce. Finally, improving children's health is given consistently high priority across all the countries in this study, within a model of primary health care. Within this context, it appears that the development of a specialised registered children's nursing workforce is being pursued as a deliberate policy objective by four of the five countries in this study. These observations are now considered in turn.

6.2 DISCUSSION

6.2.1 The extent of the registered children's nursing workforce in Kenya, Malawi, South Africa, Uganda and Zambia

Analysis of the data from the questionnaire surveys generated the following information about workforce capacity:

- The combined children’s nursing workforce reported for the five countries in this study totals approximately 3 728 nurses.
- This is made up as follows: South Africa (3 200); Uganda (261); Zambia (105); Malawi (92); Kenya (70).

Based on these findings, it is possible to anticipate the existence of a critical mass of specialist children’s nurses in the workforce, able to lead and implement far-reaching improvements in the quality of care provided to hospitalised children (Coetzee et al., 2016). Children’s nursing in Africa is coming of age. The achievements in establishing a viable and sustainable specialist children’s nursing workforce reported in this study point towards a need for HRH information systems to change. Recording of the nursing workforce cannot sensibly be approached as though all nurses are generalists. Children’s nurses perform a wide variety of clinical, professional and organisational leadership roles with far-reaching impact on children’s health services and systems. The information gathered for this study contains indications that the role of children’s nurses in African countries is different to the role in higher income settings, but this has not yet been investigated. There is a need to understand what this cadre of staff really represents. There is also a need for more sophisticated information systems to make the children’s nursing workforce visible, so that children’s nurses can be utilized to best effect within the health system.

6.2.2 The extent of training activity leading to registration as a children’s nurse in Kenya, Malawi, South Africa, Uganda and Zambia

The findings of the questionnaire survey reported in Chapter four suggest that there has been a steady growth in children’s nursing training activity in recent years.

- A combined total of 260 children’s nurses appear to be produced through training across the five countries in this study each year on average.
- A total of 17 educational programmes leading to a qualification in paediatric nursing or child health nursing were reported to be offered by 10 institutions across the countries in this study.

- Of these, a total of six new training programmes were established between 2006 and 2016, in Kenya (2006 and 2013), Malawi (2010), Zambia (2014) and South Africa (2015).
- The data point towards South Africa being a strategically important training hub for the wider region, with South African institutions training approximately 101 additional children's nurses from SADC countries outside South Africa between 2012 and 2017.

Many policies dealing with the nursing workforce tend to assume that all nurses have similar qualifications and that it is efficient to deploy them interchangeably (Uys & Klopper, 2013). Yet undergraduate, pre-service registered nurse training in many African countries focuses almost entirely on the comprehensive care of adult patients. In reality, it is impossible to operate high quality services in areas such as primary care, critical care (Uys & Klopper, 2013), or paediatrics without nurses prepared in these specialties. In the context of the lower-resourced, demand-stretched health care systems considered by this study, the increase in training activity reported represents a strategically significant investment in workforce development.

6.2.3 The availability of information about the children's nursing workforce

The data generated by this study suggest that adequate information is not currently available to inform decision making:

- While deficits in HRH are seen as detracting from the ability to achieve improvements in child health outcomes, no national health system strategy documents were identified that made reference to the registered children's nursing workforce at a disaggregated level. References were identified within some documents specific to the nursing workforce, but these were not cross-referenced within macro-level national health system strategies.
- Disaggregated information regarding the children's nursing workforce was identified for only one country (South Africa). Documentation suggests that the ability to disaggregate the children's nursing workforce in Kenya may exist, but no evidence of such information having been published was found.

The data sources reviewed suggest that the specialist registered children's nursing workforce tends to be subsumed within the homogenous category of the wider nursing workforce. A failure to differentiate between specialist and non-specialist nursing professionals, and to accurately identify the types of specialisation present within the nursing workforce may result in underproduction or inefficient utilisation of specialist nurses (an important but relatively expensive and scarce resource).

There are indications of an evolving focus within HRH, extending to a more detailed understanding of workforce composition. Work by Scheffler and colleagues used economic forecasting to model both need and supply for doctors, nurses and midwives in 39 African countries (Scheffler et al., 2009). The study showed that altering the workforce skill mix to achieve a higher nurse/midwife to doctor ratio is likely to be an effective and more affordable way to eliminate health workforce shortages. The shape (composition) as well as the size of the health workforce is an important consideration. The impact on the wage bill of employing different groups of worker varies considerably. As Scheffler highlights, physicians are expensive, nurses somewhat less so, and lay health workers cheaper still. At the same time, pre-service (basic) training has to be seen as a long term solution as it takes time for specialist nurses to reach their full capacity within the system (Kinfu et al., 2009). However, the information generated through this study and in particular the non-participation of representatives of national nursing registries and the absence of accurate published information regarding the extent of the registered children's nursing workforce suggests that HRH information systems still continue to consider the nursing workforce as comprising generalists, with little apparent consideration of specialisation. Specialist nurses may offer a cost-effective way to maximize the effectiveness of the health workforce, but intelligent deployment of this group of staff is only possible if accurate workforce data is available.

6.2.4 The contribution of nursing regulatory bodies to developing the registered children's nursing workforce

The integrated findings of the questionnaire survey presented in Chapter four, and the scoping review reported in Chapter five, are as follows.

- None of the national nursing registries invited to participate in the study provided information relating to the composition of the registered children’s nursing workforce.
- Published information relating to the composition of the registered children’s nursing workforce was available for only one country (South Africa), and this appeared to be inaccurate.
- There appear to be widely acknowledged concerns regarding the capacity of nursing regulatory bodies, and evidence of numerous targeted capacity building interventions involving regulatory bodies was identified, mainly focusing on HRH information systems.
- There is some evidence to suggest that nursing regulators may play a fuller role in policy formulation in some countries (Malawi, Zambia and Kenya) than in others, although the reasons for this are not clear.

The observation that some national nursing regulatory bodies appear to have been more fully involved in policy formulation than others is consistent with the situation described by Rispel and Bruce in South Africa (Rispel & Bruce, 2015). Whilst the essential role of nurses in participating in policy formulation has been attested to globally and locally, an analysis of nurses’ participation in key national health workforce policies has suggested that the involvement of nurses in policy-making is frequently sub-optimal at a variety of levels, including national leadership bodies such as nursing associations and regulatory bodies (Ditlopo, Blaauw, Penn-Kekana, & Rispel, 2014).

The Capacity Project provides an account of the experience of the individuals involved in developing a new HRH information system at Uganda’s national nursing registry, in a vividly descriptive report titled “I can now speak boldly”. The report quotes a senior nursing officer at the council as saying: “I used to feel guilty when requested to talk about the total number of qualified nurses and midwives in the country because I knew that we did not have accurate data” (The Capacity Project, 2008). Elsewhere in the report, participants reflect on their perceptions of the benefits of the new information system: “We can now forward accurate data, which is important for planning... the computerised data management will go a long way in supporting not only the Ministry of Health, but all other stakeholders and ministries, to carry out realistic planning for health services.” Whilst the reasons for non-participation by registrars in this study are not known, it is possible that the situation described above prevails in relation to data about the registered children’s nursing workforce, and this may have influenced the decision of officials not to respond.

The report also speaks to feelings of deep responsibility on the part of regulators, as well as a wish to improve the situation. This suggests that sensitive and supportive interventions to improve capacity to monitor the specialist registered children's nursing workforce could be welcomed.

6.2.5 The pursuit of specialisation within a primary health care model

Children's health is a central issue of concern for African countries, with children representing almost half of the population in some countries and high levels of child morbidity and mortality. As was detailed in Chapter five, the documentary review found evidence to suggest that:

- Children's health care is afforded the highest level of priority within national health system strategies for all the countries on this study.

In the context of a widening gap between the growing needs of an expanding child population and the ability of health systems to meet these needs, one possible response is to increase the capacity of the children's nursing workforce. In this regard, as was established in Chapter five:

- Four of the countries in this study (Malawi, Kenya, South Africa and Zambia) have explicitly articulated national plans to develop the capacity of the registered children's nursing workforce to some extent.

The findings suggest that all of the countries in this study are pursuing reforms of health services which have implications for the way children's health needs are met. While the detail of implementation varies, the goals of achieving universal access to health care through a primary health care delivery model were common to all of the strategies reviewed. The content of items pointed towards developments such as decentralisation of services, removal of fees for basic services, and re-engineering of services, as being widespread throughout the countries studied.

The national policy and strategy documents reviewed identified explicit measures to encourage professional specialisation in children's nursing in Kenya, South Africa, Malawi and Zambia. Items

reviewed from these countries also suggested a clear articulation of national health service infrastructure within national plans, with numbers and responsibilities of hospitals at varying levels described, including responsibilities for providing specialist paediatric referral services.

As was seen in Chapter two, the deployment of specialist nursing staff within lower-resourced health services is controversial. Many people would argue that it is a high-cost strategy of questionable value. It could also be seen as challenging the orthodoxy that sustainable development in health should prioritise preventive interventions at the level of populations and communities. It appears in some ways to run counter to the dominant strategies apparent in health workforce development initiatives over recent years (see 5.3.4), which have focused on increasing the numbers of lower-cost staff such as community health workers.

Although it is increasingly asserted that specialist nursing saves lives, the evidence to date derives almost exclusively from higher-resourced settings. In the global North, certification as a specialist nurse, when accompanied by a degree level qualification in nursing, has been found to be positively associated with better patient outcomes in specialist care settings (adult surgical inpatient units), including decreased mortality and reduced failure to rescue rates (Uys 2013; Kendall-Gallagher et al 2011). Morrison and colleagues (Morrison, Beckmann, Durie, Carless, & Gillies, 2001) provided evidence that nursing care without expertise can be regarded as a harmful intrusion for the patient, resulting in a higher level of adverse events, especially when a lack of nursing expertise is combined with staff shortages, poor supervision, and low staffing levels – precisely the conditions that prevail in many low resourced settings (Scribante & Bhagwanjee, 2008, p. 1317). While the study undertaken by Morrison and colleagues focused on an adult ICU setting, it is reasonable to infer that a similar situation applies to the delivery of children’s nursing care by nurses who have not received formal specialist instruction in children’s nursing.

Preventive strategies have an important part to play in reducing under-five mortality and interventions at the community level are deservedly a key component of child health improvement programmes throughout the sub-Saharan region. But preventive and community based interventions are not in themselves enough to improve outcomes for the sickest children. The quality of healthcare provided to children at different stages of their lives has been proposed as an important indicator of health system capacity (McKerrow & Mulaudzi, 2010). When it is

considered that almost half of children aged under five who die in South Africa do so in hospital (Swingler et al., 2012, p. 739), the importance of improving the effectiveness of the health care provided to children is underlined.

Specifically within lower-resourced countries, there is some evidence to suggest that maternal, child and infant mortality rates significantly decline with an increase of qualified health workers, above all maternal mortality, even when controlling for other factors such as female literacy and income levels (Speybroeck, Kinfu, Dal Poz, & Evans, 2006). The lack of access to the benefits of modern medicine and science is a point of debate in global health care ethics (Farmer & Campos, 2004). Clinician leaders within lower-resourced nations are also increasingly challenging the view that countries with high rates of child mortality would not receive a beneficial return on investment in specialised care, such as paediatric intensive care services (Appiah, Owuso, Awuah, Ampong, & Addo-Yobo, 2016).

Having marshalled the findings and insights arising from this study, the next section of this chapter attempts to identify the implications arising from these findings, together with recommendations for further research and action.

6.3 IMPLICATIONS

6.3.1 The potential for specialisation in lower-resourced health systems

The plans and concrete actions taken to develop children's nursing capacity identified through this study suggest that health service decision makers in the five countries included believe that the ability to provide contextually specialist children's nursing care to sick and injured children is a contextually appropriate, efficient and effective way to improve child survival. However, there is no question that building specialist nursing capacity through post-basic training represents a relatively costly long-term investment for a health care system which requires sustained political support and investment (Kinfu et al., 2009).

The United Nations high-level commission on health employment and economic growth, with input from the International Council of Nurses, has articulated the need for a comprehensive

approach to nursing workforce development, concluding that capacity building efforts must focus on building not only “strength in numbers” but also nurses’ capacity to practice high quality care, educate and train other health workers, lead effective teams, organisations and systems, and advocate for health in partnership with others (World Health Organization, 2016). This could arguably be taken as further support for an agenda of targeted specialisation.

The challenging working conditions encountered by many health workers, especially those working in rural and more remote settings, are well documented in relation to their impact on quality and outcomes (Bangdiwala & Osegbeaghe, 2010; Scheffler et al., 2008). These challenges place a very significant constraint on the implementation of evidence based interventions and priority programmes aimed at improving health in some of the worst affected countries and regions (Crisp, 2008). This realisation has led to calls for investment in personal resilience and leadership capacity (Crisp, 2008), quality of care and the capacity of leaders to teach, support, and manage (Nakanjako et al., 2015; Nichols, Davis, & Richardson, 2010), at the same as increasing staff numbers. Indeed, specialist children’s nurses could be seen as having a role to play in ensuring that the existing health workforce can be deployed and utilised to maximum effect. While this study identified documentary evidence that specialisation was being pursued as a deliberate strategy, as Chapters four and five detail, very little information was identified which articulated the rationale behind this agenda.

Some consideration of the contribution of children’s nursing specialists to service leadership and quality improvement is apparent within the proposals to establish District Clinical Specialist Teams (DCSTs) within South Africa’s health system (Oboirien et al., 2015). The staffing composition of DCSTs envisaged by the national department of health makes specific provision for a paediatric nurse. As a member of the DCST, that nurse would be expected to have a role in relation to the provision of clinical governance, supportive supervision and the co-ordination of care and measures to improve care integration, as well as providing training and mentorship to senior registered children’s nurses at facility level (Oboirien et al., 2015). The description of the role of paediatric nurse within South Africa’s DCSTs is the most explicit articulation of a specialist registered children’s nursing role identified through this study.

While specialist nurses may offer a cost-effective way to maximize the effectiveness of the health workforce, intelligent deployment of this group of staff is only possible if accurate workforce data is available. This is why it is imperative to develop a more finely grained understanding of the state of the specialist children's nursing workforce.

6.3.2 Specialisation requires disaggregation

Since specialist post basic education of nurses is advocated internationally as a strategy to address the health worker crisis (K rouac S & H, 2011), the lack of evidence and precise conceptual thinking represents an important gap in the evidence base, which can only be closed with better quality information regarding the extent of the children's nursing workforce, and the current scope of their roles.

In a systematic review of task shifting in HRH by Fulton and colleagues spanning the period 2006 to 2010 (Fulton et al., 2011), no studies exploring the use of registered children's nurses were identified. As reported in Chapter five, no additional evaluative studies focusing on registered children's nurses' roles were identified in the literature search and documentary review for this dissertation using very similar search terms, despite the emergence of maternal, infant and child health as a focus area during this period.

Existing supra-national systems for workforce monitoring do not appear to provide sufficiently precise mechanisms for achieving disaggregation of the registered children's nursing workforce at country level. The International Labour Organisation develops and maintains internationally standardised classifications of occupation (ISCO) (International Labour Organisation, 2010). The most recent update, in 2008, categorised health workers into three sub categories: health professionals, health associate professionals, and personal care workers, as well as five titles relating to non-clinical health work, e.g. health service manager. The ISCO provides 38 occupational titles relating to health workers in total. ISCO 2008 provides two categories of occupation for nurses and midwives: Nursing Professional and Midwifery Professional. Although this is a helpful step in disaggregating the nursing and midwifery workforce and the medical doctor workforce for workforce planning purposes, which had not been possible previously, it does not

provide a basis for monitoring the presence within the workforce of nursing professionals with specialist qualifications in infant or child health.

The European Union Programme for Action on health workers (2007-13) provided a platform for workforce surveillance, which recognised the complexity of the multiple information domains generating data to enable comprehensive assessment of national health workforces (Pamela McQuide et al., 2018). The network of data collection established through this programme fed into a hierarchy of Country Health Systems Surveillance (adopted by WHO, the Health Metrics Network and the IHP+) and National Health Equity Surveillance (as recommended by the WHO Commission on the Social Determinants for Health). The tiered combination was intended to support a culture of dynamic surveillance to inform country actions, consistent with World Health Assembly Resolutions 62.12 and 62.14 to develop and strengthen health information and surveillance systems in support of universal coverage, primary health care and health equity. These principles could usefully inform the development of a system to monitor, record and report on the extent of the registered children's nursing workforce in Africa.

6.4 RECOMMENDATIONS

The implications of the findings of this study point towards further work in the form of research, and practical action within the scope of socially responsive academic endeavour, as well as possible contributions to policy development. Firstly, further research is recommended in order to **establish the scope of practice of children's nurses in lower resourced settings**. Are they a drop in the ocean, or an important strategic resource? What information is needed to enable their deployment to maximum effect? Observational research could help to establish answers to some additional questions. Do children's nurses carry out the same tasks and functions as other categories of nurse? Are their roles and responsibilities different? In what way? There is also a need to undertake thoughtful measurement of the impact of this cadre of nurses across a variety of outcomes, including through cost-benefit analysis.

Secondly, it is recommended that **national nursing registries disaggregate nurses with children's nursing qualifications on the register** so that the size of the workforce can be accurately

monitored. Regular reports should be made available to inform planning. There would also be merit in **the development of more robust systems for tracking retention and deployment of children's nurses** trained to date, in order to inform refinement of training plans and workforce strategies. This relatively small cadre of the specialist nursing workforce would be most efficiently monitored through **a collaborative approach to reporting, facilitated by one central co-ordinating institution**. The Child Nurse Practice Development Initiative would be well placed to undertake this, in partnership with stakeholders in the countries involved. As a natural extension of this study, the facilitation of the process of developing **workforce development plans for children's nursing** should be undertaken. These plans should be developed as part of **nationally-specific information-based children's nursing workforce strategies**, encompassing systematic analyses of desired staffing norms for children's nursing and the development of training plans to meet these needs, accompanied by tracking of how and where children's nurses are being deployed. This work requires deep pursuit, ideally within the community based participatory research tradition.

6.5 REFLECTIONS ON THE RESEARCH PROCESS

6.5.1 Strengths and limitations

Specific methodological constraints and limitations arising in connection with the investigative component of this study, and the scoping review, are outlined and discussed in the relevant sections in Chapters four and five. More generally, some profound limitations must be acknowledged in relation to this study. Attempting to establish a reliable depiction of the children's nursing workforce for five African countries within the constraints and conventions of an unfunded Masters level study was an ambitious undertaking. The motivation was a sense of responsibility to record and make visible the pioneering work being done to develop the children's nursing workforce by the exceptional educators and professionals in each of the countries involved. While the study succeeded in capturing some numerical information, it was not possible to do justice to the level of insight offered by the participants across a range of topics. As responses were analysed, answers immediately suggested many further questions which it was beyond the scope of this study to pursue. Some of these are listed under the suggestions for further research below.

If the extent of insight offered by participants had been better anticipated, interviews could have been used more extensively as a data collection technique and it is likely this would have contributed to the development of a fuller understanding of the roles and expectations of children's nurses in lower-resourced settings. A further limitation was inherent from the outset, given the circularity of a situation where resource and capacity limitations were known to constrain the ability of organisations to collect, retrieve and communicate accurate information about the children's nursing workforce. The fact that emails were replied to, calls were answered, and information was laboriously collected and generously shared speaks to the professionalism and commitment of the children's nursing leadership community in Africa. In adopting a purposive expert sampling technique, this study was heavily reliant on the participation of a very small number of individuals. A decision was made at the outset to restrict inquiries to a minimum, to reduce the burden on participants. Despite some initial concern, it quickly became apparent that an internet mediated survey was an ideal way to gather data from this population.

The most serious limitation in this study was undoubtedly the lack of participation from officials within any of the national nursing registries. While this prompted a great deal of reflection, it is not wise to attempt to infer too much from silence, and neither is it good research practice. If a subsequent attempt is made to gather this data, strategies to overcome this lack of response could include more active enrolment of key individuals within national ministries of health to support the requests for participation, combined with a clearer illustration of the practical value of participation for the purposes of workforce planning. Measures to offset a lack of organisational capacity could include offering the services of a researcher to undertake records reviews, rather than asking registries to compile and share data.

6.5.2 Autobiographical reflection

The timing of submitting this dissertation coincides almost exactly with the anniversary marking four years since I moved to South Africa with my family. When I set myself the personal goal of finding a way to translate the experience of twenty years working in policy and health services development in England, with the intention of applying this experience productively in a new setting, I am not sure I appreciated the fundamental nature of some of the adjustments that

would be required of me. The process of undertaking this study at Masters level, which I began two years ago, has provided the framework within which many of the most beneficial adjustments have been made. It was daunting to start out on this process without the benefit of the networks and relationships that had sustained much of my earlier career. Collaborative and participatory research has many merits as a research technique, and I have greatly appreciated the opportunity to become more familiar with its application. In the case of this study, the practice of collaboration and the conscious adoption of a participatory mind-set supported much more than the collection of data. This shift in perception also made it possible for me to enter into a welcoming community of African educators, academics and practitioners.

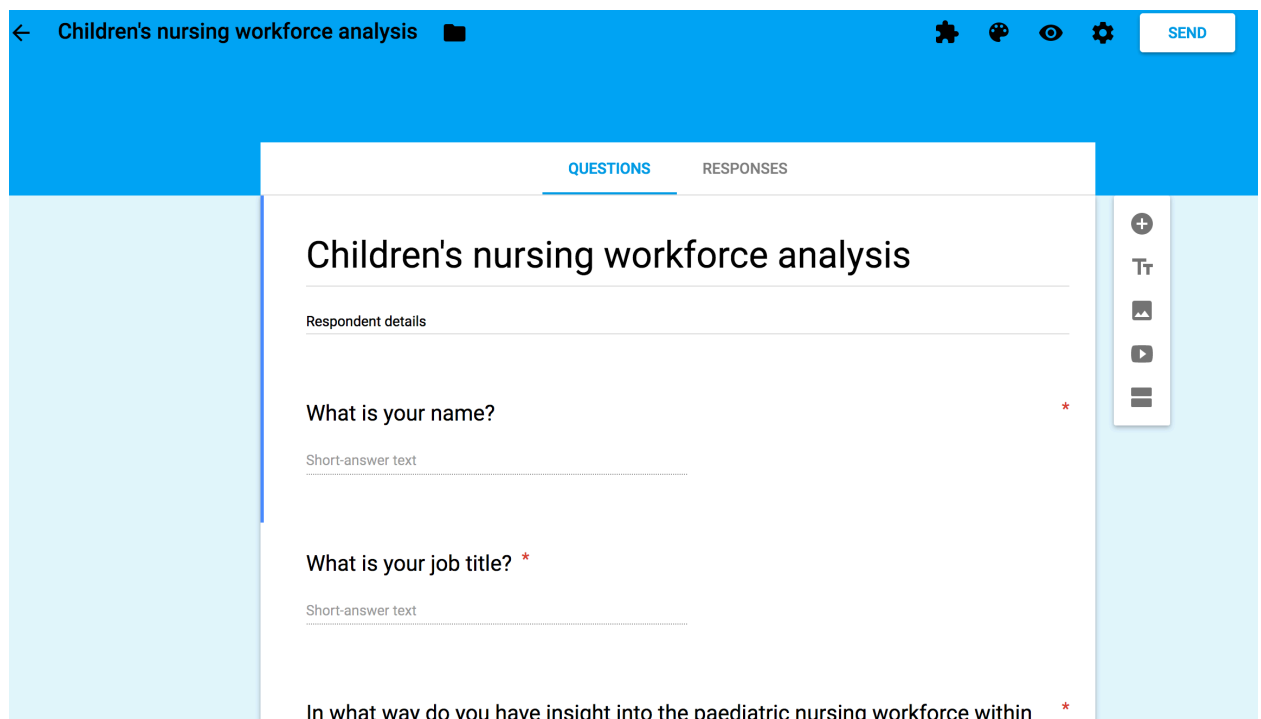
Post-graduate research commonly requires the slaying of some personal dragons. I learnt some lessons about the importance of a methodical approach to organising and managing information. Some of these lessons were painful, though thankfully none were disastrous, and all were valuable. The fieriest dragon I had to face was insecurity about submitting my research and analytical abilities to academic scrutiny, after many years working outside of the academic environment. The courage I needed came from the data. I have tried to do it justice.

ANNEX 1: QUESTIONNAIRES

The study design included three questionnaire surveys. The questionnaires were administered using Google Forms, which is a platform fully supported by UCT ICTS. An illustrative screen shot of the questionnaires as they appeared on screen to respondents is provided below, and the questions and response format are reproduced in full below in plain text format.

1A. QUESTIONNAIRE SURVEY OF CHILDREN'S NURSING LEADERS

An illustrative screen shot of the online appearance of the questionnaire is provided below.



The screenshot shows a Google Form interface. At the top, there is a blue header bar with a back arrow, the title 'Children's nursing workforce analysis', and several icons (gear, person, eye, gear) and a 'SEND' button. Below the header, there are two tabs: 'QUESTIONS' (active) and 'RESPONSES'. The main content area has a title 'Children's nursing workforce analysis' and a section for 'Respondent details'. There are three questions visible, each with a red asterisk indicating it is required. The first question is 'What is your name?' with a 'Short-answer text' input field. The second question is 'What is your job title?' with a 'Short-answer text' input field. The third question is partially visible: 'In what way do you have insight into the paediatric nursing workforce within'. On the right side of the form, there is a vertical toolbar with icons for adding, deleting, and editing questions, as well as a hamburger menu icon.

Questions with response formats:

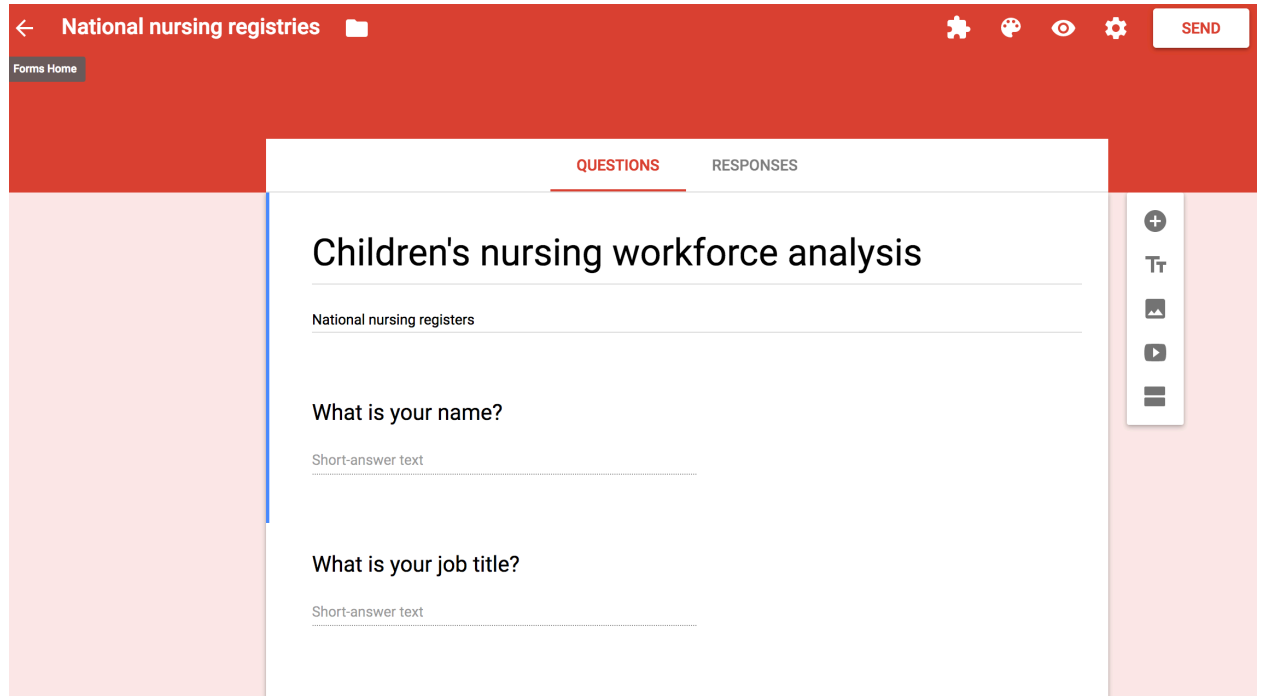
1. What is your name? [Short answer text]
2. What is your job title? [Short answer text]
3. In what way do you have insight into the children's nursing workforce within your country? [Multi choice: I am a council member of a national nursing organisation; I work at

a national nursing regulatory body; I am a nursing educator; other. Short answer text if other].

4. How many nurses with a post basic qualification in paediatrics or child health are currently practising in your country? [Short answer text]
5. How many facilities or institutions are providing post basic nursing education leading to a qualification in paediatrics or child health in your country? [Multi choice: 0, 1, 2, 3, 4, 5-10, more than 10]
6. At what level are qualifications offered? [Multi choice: Post Graduate Diploma, Masters, PhD]
7. Please list the sources of information that you have consulted in providing information for this study. [Multi choice: Records maintained by facilities and institutions, Personal communication, Records that I keep myself, Other. Short free text if Other]
8. How current is the information that you have consulted? Please state the year published/obtained. [Calendar: Day, month, year]
9. How accurate do you think the data sources you have used are? [Linear scale 1-6]

1B. QUESTIONNAIRE SURVEY OF NATIONAL NURSING REGISTRIES

An illustrative screen shot of the online appearance of the questionnaire is provided below.



The screenshot shows a web interface for a questionnaire. At the top, there is a red header bar with a back arrow, the text 'National nursing registries', and several icons (gear, palette, eye, gear) and a 'SEND' button. Below the header, there is a white navigation bar with 'QUESTIONS' and 'RESPONSES' tabs. The main content area is white and contains the following text:

Children's nursing workforce analysis

National nursing registers

What is your name?

Short-answer text

What is your job title?

Short-answer text

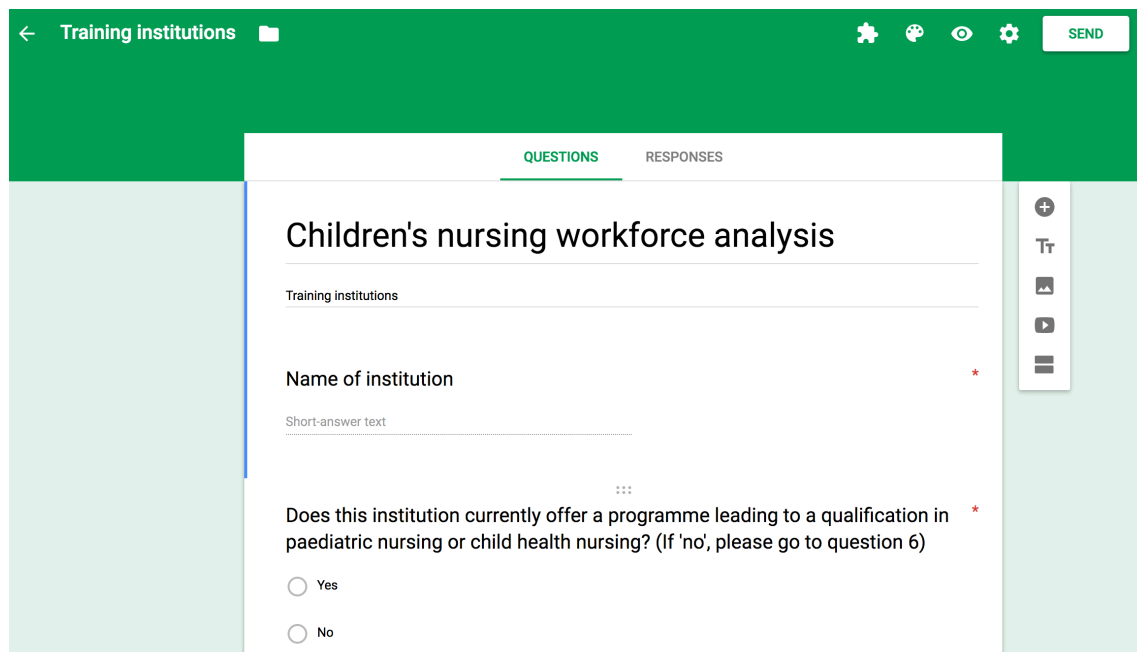
On the right side of the main content area, there is a vertical toolbar with icons for adding content (+), text formatting (Tt), image upload, video, and a menu icon.

Questions with response formats:

1. What is your name? [Short open answer]
2. What is your job title? [Short open answer]
3. Does your register record nurses with a specialist post basic qualification in paediatrics or child health? [Multi choice: Yes/No]
4. If yes, what is/are the name(s) given to this category of nurse on your register? [Short open answer]
5. If yes, how many nurses in this category are currently on the register? [Short open answer]

1C. QUESTIONNAIRE SURVEY OF HEADS OF SCHOOLS OF NURSING

An illustrative screen shot of the online appearance of the questionnaire is provided below.



The screenshot shows a mobile application interface for a questionnaire. At the top, there is a green header with a back arrow, the text 'Training institutions', and several icons (a puzzle piece, a person, an eye, and a gear) along with a 'SEND' button. Below the header, there are two tabs: 'QUESTIONS' (which is active) and 'RESPONSES'. The main content area is titled 'Children's nursing workforce analysis'. It contains a form with the following elements: a label 'Training institutions' above a text input field; a label 'Name of institution' followed by a red asterisk, with 'Short-answer text' written below it; a vertical ellipsis icon; a question 'Does this institution currently offer a programme leading to a qualification in paediatric nursing or child health nursing? (If 'no', please go to question 6)' followed by a red asterisk; and two radio button options: 'Yes' and 'No'.

<https://www.dropbox.com/s/vk4j7spui3u8wz7/Screenshot%202016-09-20%2010.33.42.png?dl=0>

1. Name of institution. [Short open answer]
2. Does this institution currently offer a programme leading to a qualification in paediatric nursing or child health nursing? (If 'no', please go to question 6) [Yes/No]
3. What is/are the title(s) of the qualification(s) awarded? What is the minimum entry requirement for the programme(s)? [Multi choice: diploma, entrance exam, other]
4. How many nurses graduated from these programmes in 2015? [Short open answer]
5. What is/are the length/s of the programmes offered? [Multi choice: less than one year/ one year/ two years/ more than two years]
6. When did this institution first start offering these programmes? [Calendar: Day, month, year]
7. If your institution previously offered a programme leading to a qualification in paediatric nursing or child health nursing, what is the last year in which students graduated? [Calendar: Day, month, year]
8. What challenges has your institution faced challenges in offering a programme leading to a qualification in paediatric nursing or child health nursing? [Short open answer]

9. Are there national and local policies or training plans which guide the provision of children's nursing training in your institution? If yes, please list these. [Open answer text]

ANNEX TWO: INTERVIEW SCHEDULE

Telephone interviews took the form of an in-depth, semi-structured dialogue guided by the based points below.

INTERVIEW GUIDE

Thank you for agreeing to take part in an interview as part of this study. The questions relate to the research questions at the heart of the study, which are:

What is the capacity of the children's nursing workforce in five selected sub-Saharan African countries?

Specifically:

How many specialist children's nurses are currently on the professional register?

How many specialist children's nurses are currently in clinical practice?

How many specialist children's nurses are currently being produced through training?

Interview schedule

The interview will be semi-structured. The purpose of the telephone interview will be to ask for your views and comments on a country profile of Malawi's children's nursing workforce. The profile has been developed using data collected from other participants in the study, as well as from documentary sources. You are now being asked to engage with the information in order to comment on its accuracy from your perspective.

The respondents who have contributed to data collection so far are either:

- a) individuals who hold a national leadership position in respect of children's nursing, paediatrics or child health within the relevant country;
- b) individuals who lead the national nursing regulatory body of the relevant country; or
- c) individuals who lead children's nurse training institutions in the relevant countries.

Before the interview, please would you read the attached information, and be ready to give your feedback and comments:

Table A - reported children's nursing workforce capacity information

Table B - reported children's nursing training activity

Part C presents some contextual information regarding Malawi's health system, with a particular emphasis on factors relevant to children's nursing.

Questions

Are nurses with a specialist post-basic qualification in paediatrics or child health recorded on the national nursing register in your country?

If yes, what is/are the name(s) given to this category of nurse on the register?

How many nurses in this category are currently on the register, do you think?

Looking at Table A, do you think this is an accurate account of the children's nursing workforce capacity in your country currently?

Did any of the information surprise you? What would you have expected instead?

Where there is a difference between the information provided by Respondent 1 and Respondent 2, which do you think is more accurate?

Looking at Table B, do you think this is an accurate account of the training activity taking place in your country currently?

Did any of the information surprise you? What would you have expected instead?

How do children's nurses contribute to children's health in your country?

Do children's nurses carry out the same duties and tasks as other categories of nurses? In what ways are their roles and responsibilities different?

What are the main drivers of children's nursing workforce development in your country?

Looking at the information in Part C, what corrections and improvements can you suggest to make this an accurate summary?

Are there other sources that should be referred to, for example:
key recent policies and directives regarding the nursing workforce
participation in global health workforce development initiatives
key recent policies and directives regarding child health.

What missing contextual information regarding Malawi's health system, with a particular emphasis on factors relevant to children's nursing, can you provide?

Is the description of the health system, with a particular focus on acute paediatric care facilities, correct?

ANNEX THREE: SCOPING REVIEW. INITIAL DATA EXTRACTION MATRIX

Publication details	Type of document	Purpose and audience	Relevant content relating to either: Arrangements for regulation of the nursing workforce Key recent policies and directives regarding the nursing workforce Participation in global health workforce development initiatives Key recent policies and directives regarding child health.
<i>Sources identified through original literature review</i>			
<i>World Health Organisation's African Region Digital Library</i>			
<i>HRH Global Resource Centre</i>			
<i>CapacityPlus Project online resource library</i>			
<i>National Ministry of Health web publications</i>			
<i>National Nursing Council publications</i>			

ANNEX FOUR: CONSENT FORM AND INFORMATION FOR PARTICIPANTS

Invitation to participate in a research study entitled: What is the capacity of the children’s nursing workforce in five selected sub-Saharan African countries? Gathering insights from Kenya, Malawi, Uganda, South Africa and Zambia.

This study has been approved by the Human Research Ethics Committee of the University of Cape Town (HREC REF: 411/2017). This study is being carried out as part of the requirements for a dissertation in accordance with the requirements for the degree of MSc Med Paediatrics (dissertation only).

This study aims to establish the current capacity of the children’s nursing workforce in five countries (Kenya, Malawi, Uganda, South Africa and Zambia). Efforts to build viable and sustainable children’s health services are being made in each of these countries, and these efforts will be helped by the development of a comprehensive, shared description of the current workforce.

You are being invited to contribute to this study because you are one of several key individuals with knowledge and expertise regarding children’s nursing in your country. In each of the five countries involved in this study, three individuals will be asked to contribute information based on what they know. This information will be pooled together to form the most comprehensive picture possible, covering how many children’s nurses are in practice, how many are on the professional register, and how many are being trained.

You are being asked to contribute to this study by participating in an online survey and/or [delete as appropriate] a telephone interview. The online survey will take between five minutes and half an hour to complete. The telephone interview will last no more than an hour, and will be initiated by the researcher and conducted using a method of your choosing, for example landline, Skype audio, WhatsApp voice call.

Contributing to this study does not involve any procedures, drugs or other treatments and there are no foreseeable risks involved in participating. Participation is entirely voluntary, and you are free to decide not to participate, or to withdraw at any time. Choosing to participate does not confer any direct benefits on you. By choosing to participate, you will be helping to construct a comprehensive picture of children's nursing capacity.

The UCT's Faculty of Health Sciences Human Research Ethics Committee can be contacted on 021 406 6338 in case you have any ethical concerns or questions about your rights or welfare as a participant on this research study.

Declaration

I consent to participate in the study described above, entitled What is the capacity of the children's nursing workforce in five selected sub-Saharan African countries? Gathering insights from Kenya, Malawi, Uganda, South Africa and Zambia.

I understand that the information I provide will be shared with key individuals in this study with the aim of building a comprehensive picture of the situation [Yes/No]

I understand that my name will not be disclosed in the course of this study [Yes/No]

Attribution (select one only)

I understand and agree that the information I provide will be attributed according to the information I provide regarding my job title and the name of the organisation I work for (for example, Head of Department, Margaret Houlihan School of Nursing, USA) [Yes/No]

OR

I require the maximum degree of anonymity that can be provided through this study design, and agree only to the information I provided being attributed to 'a respondent from (country)' [Yes/No]

Signed:

Print name:

Date:

ANNEX FIVE: SCOPING REVIEW CHARTING TABLE. SUMMARY
INFORMATION, ALL ITEMS.

Table K. Scoping review: summary information, all items.

Publication details	Country of origin	Type of document	Question, topic or focus of the item (five most frequently occurring topics)	Key content related to the scoping review question/s	Route of identification
			<p>1 <i>descriptive analyses of workforce data</i></p> <p>2 <i>descriptions of globally-funded HRH interventions</i></p> <p>3 <i>Factors influencing nursing workforce capacity</i></p> <p>4 <i>Strategy or advocacy regarding specialisation of the children's nursing workforce</i></p> <p>5 <i>Other</i></p>	<p>(1) arrangements for regulation and recording of the children's nursing workforce;</p> <p>(2) key recent policies and directives regarding the children's nursing workforce;</p> <p>(3) participation in global health workforce development initiatives relevant to the development of the children's nursing workforce;</p> <p>(4) specific references to the children's nursing workforce within key recent policies and directives regarding child health.</p>	<p>i) academic literature search</p> <p>ii) grey literature databases and targeted websites</p> <p>iii) stakeholder consultation</p>
Gross JM, Rogers MF, Teplinskiy I, Oywer E, Wambua D, Kamenju A, et al. The Impact of Out-Migration on the Nursing Workforce in Kenya. Health services research. 2011;46(4):1300-18.	Kenya	Peer-reviewed publication	1	<p>(3) This study analysed de-identified nursing data from the KHWIS, an information system developed through a collaboration between the Kenya Department of Nursing (DON), the Nursing Council of Kenya (NCK), the Centers for Disease Control and Prevention (CDC), and the Lillian Carter Center for International Nursing at Emory University, Atlanta, GA, USA. No information specific to children's nursing specialisation.</p> <p>Other content of note: Although half of all nursing positions in Kenya are unfilled, a third of all Kenyan nurses are unemployed.</p>	i
Riley PL, Vindigni SM, Arudo J, Waudu AN, Kamenju A, Ngoya J, et	Kenya and USA	Peer-reviewed publication	2	<p>Peer reviewed paper describing the establishment of a nursing database system in Kenya</p> <p>(3) Lack of reliable nursing workforce information seen as</p>	i

Publication details	Country of origin	Type of document	Question, topic or focus of the item (five most frequently occurring topics)	Key content related to the scoping review question/s	Route of identification
al. Developing a nursing database system in Kenya. Health Services Research. 2007;42(3p2):1389-405.				seriously impairing development of effective workforce and resource allocation decisions. Describes creation of a national electronic nursing workforce database to provide more reliable information on nurse demographics, migration patterns, and workforce capacity, resulting in the creation of Kenya's first HRIS for nursing. No information specific to children's nursing specialisation. (2) (3) Desire to track nurses' acquisition of new knowledge and skills specific to vertical programmes (e.g. PEPFAR Voluntary Counselling and Testing and Preventing Mother to Child Transmission of HIV).	
World Health Organisation's African Region Digital Library	Kenya	Online resource library	n/a	Generic statistical documents (2010) and no items specific to child health or nursing.	ii
GHWA 2011: establishing a robust and sustainable human resources information system in Kenya	Kenya	Unknown	n/a	Not available: removed from online library. Unable to obtain. Requested through World Vision (publishers) – no response.	ii
USAID. Kenya Health System Assessment (2010). Maryland, USA; 2010.	Kenya and USA	Report	1	Report commissioned for funders. Comprehensive health system assessment which presents high-quality information from a variety of sources. (4) Ensuring universal access to maternal, child, and neonatal health services is a national service delivery priority. (4) Notes that the full 24 hour package of defined minimum services specified in the KEPH (including maternal and child	ii

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				<p>health services) was available at only 16 percent of all facilities, and 50 percent of hospitals.</p> <p>(1) There is a formal process for certification and re-certification for medical professionals in Kenya (Association of Medical Practitioners 2007, Nursing Council 2009). For example, nurses who graduate from accredited nurse training institutions in Kenya and pass the examination are registered for a three-year term. Every three years, nurses are recertified based on documented criteria such as continuing education credits.</p> <p>(1) In Kenya HRH data systems were fragmented and disconnected. The regulatory agencies do not have adequate resources to enforce existing legislation and regulations; they have inadequate human, technical, and financial resources to deal with an increasingly sophisticated society.</p> <p>(3) At least two donor-driven efforts to set up HRIS (Human Resources Information System) databases are described, in parallel with the IPPD. Human resource planning is now guided by the National HRH Strategic Plan, which was funded by USAID and prepared by the health ministries through the support of the Capacity Project, although implementation has been delayed partly due to a failure to agree between split departmental responsibilities.</p> <p>Other information of note: 128 nurses per 100 000 (2006) but this figure includes nurses who may be registered but not practicing, with underemployment of nurses a significant issue in Kenya.</p>	

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Mumbo HM, Kinaro JW. Assessment of quality and relevance of curricula development in health training institutions: a case study of Kenya. Human resources for health. 2015;13(1):67.	Kenya	Peer-reviewed publication		<p>Nurse deployment: Provincial hospitals 14%; district hospitals 54%; health centres 15%; dispensaries 17%. Less than one third of healthcare workers are employed at the primary level, with significantly more than half employed at district hospitals. This distribution is at odds with the intent of the NHSSP II and the “care pyramid” discussed in that document.</p> <p>Final report and evaluation of IntraHealth International’s USAID-funded FUNZOKenya Project (2012–2017).</p> <p>(3) The Ministry of Health in Kenya with the support of Capacity Kenya Project, IntraHealth International Inc., undertook a performance needs assessment (PNA) of the health training system in 2009.</p> <p>(2) (4) Project goals included strengthening capacity of training institutions and regulatory bodies to enhance quality standardization. Findings suggested gaps in quality and adequacy of curricula in nurse training institutions, with students inadequately prepared for clinical placement, as most failed to directly respond to national health needs.</p>	ii
Oyugi BO. Potential Impact of devolution on motivation and job satisfaction of healthcare workers in Kenya: Lessons from early implementation in Kenya and experiences of other Sub-Saharan	Kenya	Peer-reviewed publication	3	<p>Published dissertation study exploring the impact of devolution on motivation and job satisfaction of HCWs, using published academic research and media reports.</p> <p>(4) Highlights the need to adequately prepare HCWs for the changed service demands of a devolved service.</p> <p>(4) Describes Kenya’s decentralisation programme, resulting in the establishment of 47 semi-autonomous counties,</p>	ii

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African Countries. The Journal of Global Health Care Systems. 2015;5(1).				<p>responsible for administering public health services. The four-tiers of health service delivery are described as community service, primary care service, county referral service, and national referral service.</p> <p>(1) (4) The national government provides guidance on the needed competencies and skills, and facility norms in addition to monitoring the distribution and attrition of HCWs. It develops the policies and the Standard Operation Procedures (SOPs) that assess and guide the training of HCWs. The counties are the main executioner of the healthcare services and ensure users get equitable treatment, and that HCWs perform their functions satisfactorily.</p> <p>Other information of note: In addition to a very useful overview of political and health reforms, the paper provides a fresh analysis of the specific cultural factors that influence nursing retention. Mentions corruption and tribalism as factors in staff deployment, and describes the expectations of health workers in terms of social standing and the reasons why they may feel they have no option but to leave the health workforce. Recommends greater transparency in access to training and educational opportunities, to improve equity of participation.</p>	
Yinger N, McQuide P. Strengthening Professional Associations for Health Workers. 2009.	Kenya and USA	Report	2	(3) Descriptive report of process and outcomes of the Capacity Project's Strengthening Health Professional Associations Initiative. In Kenya, the Project supported two nursing associations to strengthen strategic planning and management; improve communications within and across associations as well as with policy-makers and the media; and improve ethical standards of practice. No information specific to children's	ii

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Kenya Ministry of Health. Kenya Nursing Workforce Report: The Status of Nursing in Kenya, 2012. 2012.	Kenya	Report	1	<p>nursing specialisation.</p> <p>(1) (3) The development of this national descriptive and statistical nursing report was made possible by support from the U.S. President’s Emergency Plan for AIDS Relief (PEPFAR) through CDC Kenya, who has supported the development of health workforce information systems in Kenya since 2002. These information systems, which were developed through a collaboration between the Emory University Kenya Health Workforce Project, Nursing Council of Kenya (NCK) and Kenya Ministry of Health (MOH), include the Regulatory Human Resources Information System (rHRIS) in the NCK and the Kenya Health Workforce Information System (KHWIS) in the Nursing Unit, formerly the Department of Nursing, MOH. Data from the rHRIS and KHWIS informed the development of this report.</p> <p>(4) Stated MoH policy is to work towards having specialised services at each district hospital. Specifies a ratio of two nurses (RCNs) per 10 000 population.</p> <p>(4) Of note that three of the six defined standard activities for registered nurses relate exclusively to the provision of children’s health care (immunisation, under-5 examinations, school health), while the remaining three (outpatients, inpatients, nutrition education) can be assumed to involve a high proportion of child patients given population composition.</p> <p>(1) In Kenya, the Nursing Council of Kenya (NCK) set standards related to the education and practice of nurses. The NCK uses the Regulatory Human Resources Information System (rHRIS) to track nurses through the process of training, examination</p>	ii

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				<p>and registration to practice nursing. The rHRIS provided data for this report on the supply and regulation of nurses in Kenya.</p>	
				<p>(1) Kenya, like many other countries in the region, now requires nurses to obtain continuing professional development (CPD), which is linked to licensure renewal. The NCK also requires nurses to renew their licenses every three years.</p>	
				<p>(1) (4) For the deployed nursing workforce, 13% have post-basic training in specialty areas. While 79.5% of the nursing workforce received basic midwifery training as part of their pre- service education, an additional 10% of deployed nurses have a post-basic specialization in midwifery (i.e. advanced training). Another 3% of the deployed nursing workforce has specialty training in other areas, including psychiatry, ophthalmology, paediatrics, peri-operative, anaesthesia, critical care, nephrology and accident and emergency.</p>	
				<p>(4) Underemployment: Since 2006, the Government of Kenya (GOK) has been working to create the fiscal space necessary to hire and deploy more qualified licensed nurses to meet the demands for service delivery through the Emergency Hire Program and more recently in 2010 through the Economic Stimulus Package.</p>	
				<p>(1) Deployment of nurses: In Kenya, nurse deployment differs across facility types. While hospitals only comprise 8.4% of health facilities, 67.9% of the nursing workforce is deployed in hospitals. According to the Master Facility List (MFL) as of 2013, there were 4,031 public sector health facilities, 3,550 private and 1,057 faith-based facilities in Kenya. Of the nurses</p>	

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Government of the Republic of Kenya. Kenya Second Medium Term Plan 2013-2017. Nairobi; 2013.	Kenya	Policy/strategy document	5	<p>deployed in hospitals, 16.9% are deployed in Kenya's two parastatal hospitals, Kenyatta National Hospital and Moi Teaching and Referral Hospital.</p> <p>National strategy document. Presents the Kenya Vision 2030 strategy.</p> <p>(2) Flagship projects include several measures relevant to provision of health care to children. The need to improve inadequate infrastructure for comprehensive basic health care (model health facilities) and level 4 health facilities is recognized and afforded priority. Measures to effect improvement include improving access to referral systems; increasing the utilization of services at lower levels of the health services and reduce self-referral to the higher levels of care; improving reverse referral and feedback information systems; strengthening outreach systems for provision of health services to marginalized and vulnerable population; provision of quality emergency health services at the point of need regardless of ability to pay.</p> <p>(2) The development of 100 new Level 4 Hospitals will be facilitated by review of the health facility infrastructure norms.</p> <p>(2) Re-engineering Human Resource for Health will be pursued through: training and career paths development for human resources; and review and application of evidence based health work force norms and standards; improving management of the existing health work force by putting in place attraction, retention and motivational mechanism; putting in place systems to measure performance and competence of health</p>	ii

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				work force; and facilitation of national capacity development. No information specific to children's nursing specialisation	
Rakuom C. Nursing human resources in Kenya: case study. International Centre for Human Resources in Nursing, editor. Geneva: International Council of Nurses; 2010.	Geneva and Kenya	Report	1	Case study prepared for the International Council of Nurses. (2) KEPH specifies training needs for nurses relevant to child health (two weeks to age 12) regarding protection against immunisable diseases; survival of common childhood illnesses; adoption of healthy lifestyles. (2) (4) National health reform agenda has resulted in establishment of more than 30 new district hospitals with accompanying new infrastructure including specialised health care units with implications for paediatrics and neonatal services. (2) (4) Describes elements of current national nursing strategy: nursing education enhanced to include improved skills, new competencies and specialization; new nurse-clinician track being designed to provide for post-basic training specialisation in nursing; promotes implementation of Advanced Nursing Practice.	ii

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Website of the Nursing Council of Kenya. Accessed April 10 2017 http://nckkenya.com/	Kenya	Web content	n/a	Website refers to 2017 – 2022 Strategic Plan. Launched March 2017. Not available on website or via Google Scholar. Copy requested from NCK: no response.	ii
Klopper H, Uys L. The State of Nursing and Nursing Education in Africa. A country by country review Indianapolis Sigma Theta Tau International 2013.	South Africa (with country-specific contributors)	Book	5	Reference book. Provides a comprehensive profile of arrangements specific to nursing in African countries. (2) The government has implemented a human resource plan to increase the number of nurses to WHO recommended staffing norms. (4) Kenya developed its first national nursing and midwifery strategy in 2007. One of the areas of focus is the encouragement of professional specialization. (1) The Nursing Council of Kenya is a statutory body of the Ministry of Health, formed under the Nurses Act (1948). The Council oversees compulsory registration and relicensing every three years.	ii
Ellard D, Simkiss D, Quenby S, Davies D, Kandala NB, Kamwendo F, et al. (2012). The impact of training non-physician clinicians in Malawi on maternal and perinatal mortality: a cluster randomised controlled evaluation of	UK and Malawi	Peer-reviewed publication	4	Description of the design of a cluster RCT to evaluate training provision of HCWs. Narrative includes information of note: (4) Specialisation: Models of healthcare developed in Europe, based on highly trained medical specialists using complex technology, are not practical or sustainable in lower-resourced settings in sub-Saharan Africa. Advocates a tiered approach There is evidence to support a different model of service provision in Africa “whereby the relatively scarce resource of medical obstetric specialists are focused to train and support a	i

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the enhancing training and appropriate technologies for mothers and babies in Africa (ETATMBA) project. BMC pregnancy and childbirth. 2012;12.				service mainly provided by health-care staff other than doctors, i.e. non-physician clinicians (NPCs) such as assistant medical officers, clinical officers, midwives and outreach community health-workers. In this model, the medically trained specialist obstetricians, mainly operating in large centres and capital cities, can focus their attention on management of difficult clinical cases and on providing support, leadership and training for NPCs". Highlights that the drive to increase nursing numbers has more recently been accompanied by a focus on improving the quality of care, as initially increased staffing inputs were not accompanied by correspondingly better outcomes.	
Global Healthcare Workforce Training Alliance (2007). Country Case Study: Malawi's Emergency Human Resources Programme [Internet].	USA and Malawi	Report	2	Case study report (2) Malawi's HRH initiatives since the late 1990s are presented as a good example of a comprehensive national scale-up plan for the health workforce. Describes the approach taken by the Ministry of Health which commenced an emergency training plan for health workers in 2002, followed by a more comprehensive six-year Emergency Human Resources Programme (EHRP) in 2004. This is one of the six pillars of what is known as the health sector-wide approach (SWAp), focusing on retention, deployment, recruitment, training and tutor incentives for 11 priority groups of staff, including nurses. (3) There has been a considerable amount of external support, aimed at building institutional capacity to provide leadership as well as direct measures to build HCWF capacity. Major funding for the programme comes from the Malawi Government, DFID, the Global Fund to Fight Aids, Tuberculosis and Malaria and the health SWAp.	i

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Zere E, Walker O, Kirigia J, Zawaira F, Magombo F, Kataika E. Health financing in Malawi: evidence from national health accounts. BMC international health and human rights. 2010;10(1):27.	Malawi	Peer-reviewed publication	1	Reports on analysis of Malawi's national health accounts. Of note: Highlights the significant role of overseas support in Malawi's HRH activities, with external (international aid and donors) funding accounting for 60.7% of total health expenditure, and total health public spending 21.6%.	i
Chimwaza W, Chipeta E, Ngwira A, Kamwendo F, Taulo F, Bradley S, et al. What makes staff consider leaving the health service in Malawi? Human resources for health. 2014;12(1):17.	Malawi	Peer-reviewed publication	3	Reports on a survey of staff involved in adverse incident reporting, examining morale and motivations. The most commonly cited critical factors were being treated unfairly or with disrespect, lack of recognition of their efforts, delays and inconsistencies in salary payments, lack of transparent processes and criteria for upgrading or promotion, and death of patients. No specific mentions of children's nursing.	i
McCoy D, McPake B, Mwapasa V. The double burden of human resource and HIV crises: a case study of Malawi. Human resources for health. 2008;6(1):16.	Malawi	Peer-reviewed publication	3	Malawi is one of the countries where the additional healthcare demands resulting from the high incidence of HIV/AIDS combine with workforce attrition or absence to create a 'double burden'. No specific mentions of children's nursing.	i
Mwenyekonde E, Makoka M,	Malawi and USA	Report	2	(3) Report of an HRH intervention facilitated by CapacityPlus to build the capacity of the Christian Health Association of Malawi	i

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Nyamupachitu,T, Mwarey D, Jaskiewicz W. . Christian Health Association of Malawi: General Report of the Health Workforce Productivity Assessment and Early Progress on Implementation of Improvement Interventions. 2015.				(CHAM) to apply the Health Workforce Productivity Analysis and Improvement Toolkit. Highlights the significant role of faith based organisations in provision of health care and health care professional training in Malawi. The Christian Health Association of Malawi (CHAM) provides 37% of health services in Malawi through its network of 175 health facilities nationwide and has the second-highest number of health workers (over 9,000) employed in its institutions after the Ministry of Health.	
Malawi Ministry of Health. Human Resources for Health Strategic Plan 2012-2016. 2012.	Malawi	Policy/strategy document	1	(2*) This was identified as the most recent published plan available, despite being for the period 2012-2016. This plan is notable for the extent to which it presents detailed information regarding nurse training activity and sets out a plan to increase the nursing workforce, with specific consideration of the specialist children’s nursing workforce. (2*) (4*) The plan refers to an attempt made in 2007 to project HR requirements for both public and private health sectors for a 10-year period. This envisaged a significant role for Clinical Nurse Specialists, numbering 3 983 by 2017 (175 in public sector employment and 3 708 in private sector employment). In the 2012 plan, these projections were considered unattainable. (4*) The plan sets out projections for post-basic nursing training, including a Master’s Degree in Paediatric Nursing Science. Projected training output is stated at 2 per year.	li and iii

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				<p>(4*) Under Strategic Objective 4: Strengthen HRH training and development, a specified key intervention is to “Scale up the training of specialists for human resources for health” (p 40).</p>	
				<p>(4) Childhood and maternal underweight/ stunting is listed as the second of ten leading health needs to which the health workforce must be equipped to respond. Children under five are identified as the first of 11 priority population groups that should be the focus of targeted efforts to increase HRH capacity.</p>	
				<p>(2) The plan provides an appraisal of current nursing education and training facilities, identifying a total of 13 Health Training Institutions (HTIs). The plan articulates concern regarding the quality of training being offered by some of these colleges, listing inadequate training materials and tutors, and facilities which require upgrade and expansion if the country is to meet its supply projections.</p>	
				<p>(1*)The Malawi Nurses and Midwives Council is mentioned within the plan as having a role in relation to workforce planning: “In liaison with the Ministry of Health, the Council also advocates for increase of nurses and midwives in the country to ensure provision of quality nursing and midwifery services” (page 32).</p>	
				<p>(1*)The plan record a total of 2 928 Registered Nursing Professionals in 2010. Disaggregation of this total by specialisation and the recording of additional qualifications is not presented.</p>	

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Website of the Nurses and Midwives Council of Malawi Accessed 21 st April 2017 www.nmcm.org.mw	Malawi	Web content	n/a	Information for health professionals, their employers, HEIs, and officials within health professional regulatory bodies. The Nursing profession is regulated in accordance with the provisions of the Nurse and Midwife Act (No. 16 of 1995). The Nurses and Midwives Council of Malawi regulates nursing and midwifery care, and oversees standards of training and practice. The Council is headed by a Registrar and sits within the national Ministry of Statutory Corporations.	ii
Nurses and Midwives Council of Malawi. Professional Practice Standards for Registered Nurses. Lilongwe: NMC Malawi; 2012.	Malawi	Policy/strategy document	5	<p>(1) Professional practice standards for all categories of nurses. Separate comparable document for midwives. Specifies five professional characteristics: professional service to the public; knowledge-based practice; continuing competence; ethical practice, and professional responsibility and accountability.</p> <p>(1) Two statements refer to specialisation of the nursing workforce:</p> <p>7.2.0 STANDARD 1: The nurse shall apply specialized body of knowledge and skills in the provision of care to optimize the client's health status.</p> <p>6.7.2 Performance indicators: Clinical practice. [The nurse] Participates in conducting inventories to gain accurate information on the following: i) the human resources available to clients, their numbers, skills mix and specialisation within the practice setting; ...</p> <p>This is notable for the way that the effective management of human resources for health is described as a core nursing responsibility.</p>	iii

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Scribante J, Bhagwanjee S. National audit of critical care resources in South Africa–nursing profile. South African Medical Journal. 2008;97(12):1315-8.	South Africa	Peer-reviewed publication	1	<p>(4) The document also makes explicit that the responsibilities of all nurses are exercised within a system adhering to a primary health care model:</p> <p>6.2.2 [In clinical practice, the nurse...] Utilises the principles, concepts and components of Primary Health Care (PHC) and other relevant theories in providing care.</p>	i
Swingler G, Hendricks, Hall D, Hall S, Sanders D,	South Africa	Peer-reviewed publication	4	<p>(1) The South African Nursing Council maintains a register of nurses in South Africa, which gathers information pertaining to the qualifications of nurses but does not track whether these nurses are practicing and if so, where they are practicing.</p> <p>(1) Migration of nurses is often given as the reason for the acute shortage of nurses in South Africa. The National Nursing Association and Professional Union in South Africa (DENOSA) commissioned a report on nurse emigration in South Africa, published in 2001. This report noted with caution the differences in emigration data collected by different institutions in South Africa, and the authors concluded it was not possible to determine the actual number of nurses leaving the country, or to which country they have moved.</p> <p>(2) Argues that child health status and child health services in South Africa are in a poor state compared to other middle</p>	i

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McKerrow N, et al. Can a new paediatric sub-specialty improve child health in South Africa? South African medical journal. 2012;102(9):738-9.				<p>income countries. Summarises data to show that South Africa's child health statistics have deteriorated, with under-5 mortality rising from 56 per 1 000 live births in 1990, to 67 in 20081 and just over half of all under-5 deaths occurring outside health facilities.</p> <p>(2) In the health sector, human resource numbers and skills have not grown in proportion with the population or increasing burden of disease. Between 1997 and 2006, the number of specialists [doctors] in the public sector declined by 25%.</p> <p>(2) (4) Minister of Health has announced plans for re-engineering primary healthcare, seen as a critical component of the National Health Insurance (NHI). District clinical specialist teams each including a paediatrician, based in all health districts, will complement existing services, shifting the emphasis from individual patient care to community care.</p>	
Uys L, Klopper H. What is the ideal ratio of categories of nurses for the South African public health system? South African Journal of Science. 2013;109(5/6):1-4.	South Africa	Peer-reviewed publication	1	<p>(4) Discusses ideal ratios of nurse categories according to qualifications framework in South Africa. Considers three categories of nurses (1) enrolled nursing auxiliaries (ENA) who train for 1 year, (2) enrolled nurses (EN) who train for 2 years, (3) registered nurses/midwives (RN/M) who train for 4 years and (4) specialist registered nurses/midwives (SRN/M) who have 1 or 2 years post-RN/M training.</p> <p>(4) The authors argue that nurses having specialist training in diagnosis are seen as important in primary health care services, while nurses prepared in Critical Care Units are essential. Different ratios of nursing categories will be essential for different levels of the health-care system, such as primary health care (clinics and centres), district hospitals, regional</p>	i

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				<p>hospitals and tertiary or specialist hospitals. Recommends that EN training should be curtailed, since ENs are currently overpriced and overutilised in the system. Sets ratios for different categories of nurses (EN:RN:spRN) in the public health system (rather than absolute numbers). This is based on an increasingly higher proportion of registered nurses and specialist registered nurses at secondary and tertiary levels. (Regional referral hospitals 1:1.5:1.5 Tertiary hospitals 1.3:1.2:1.5).</p> <p>(4*) (2) Notes that in the suggested staffing norms for hospital units developed by the South African Department of Health, “the need for specialist nurses is recognised for ICU units only, despite comprehensive recognition for the need for specialist doctors, and the provision of additional qualifications for nurses in areas such as paediatrics and geriatrics.”</p>	
Lund C, Boyce G, Flisher AJ, Kafaar Z, Dawes A. Scaling up child and adolescent mental health services in South Africa: human resource requirements and costs. Journal of Child Psychology and Psychiatry. 2009;50(9):1121-30.	South Africa	Peer-reviewed publication	1	<p>(2) This paper presents a model to calculate the human resources required to scale up CAMHS in South Africa. Shows that little is known about the resources that would be required to provide child and adolescent mental health services in low and middle-income countries (LMICs), with global methodologies for calculating the resources and costs for LMICs extending to scaling up adult services only (Chisholm, Lund, & Saxena, 2007).</p> <p>Highlights the inequities of access to care, and the historical origins of the present situation.</p>	i
Gillespie R, Kyriacos U, Mayers P. The critical care nursing workforce	South Africa	Peer-reviewed publication	1	Quantitative survey study to quantify the nursing workforce and compare it with requirements of critical care units (CCUs) in hospitals of the Western Cape. Questionnaire survey.	i

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in Western Cape hospitals-a descriptive survey. Southern African Journal of Critical Care. 2008;22(2):50-6.				<p>(2) Identified: 39 adult ICUs (12; 27), 2 paediatric ICUs (public), 14 neonatal ICUs (4; 10), 13 adult HCUs (11, 2), 1 paediatric HCU (public), 3 neonatal HCUs (public) and 5 high-dependency units (HDUs) for adults (public), with 720 functional unit beds in total (359; 361).</p> <p>(1) Recorded the registration categories of nursing staff as either registered nurses or registered nurses with additional critical care training. Does not mention children's nursing.</p> <p>(2) Found that more children and neonates (40.2%) were admitted to public sector units than to private sector units (6.95%).</p> <p>(4) Reviewed student completions reported for 2004 and found that public sector higher educational institutions reported training only 3 paediatric and no neonatal CCNs, while 6 neonatal and no paediatric CCNs were reported to be trained in the private sector.</p>	
SG Lala, N Lala, Dangor Z. The nursing crisis in paediatrics in South African state hospitals - an unaddressed problem. South African Journal of Child Health. 2017;11(2):64-5.	South Africa	Editorial in academic journal	3	<p>The authors suggest that the shortage of appropriately trained nurses may be the most serious of the many problems that South African hospitals face.</p> <p>(4) Describes the role of the children's nurse:</p> <p>(4) Describes: "a vicious cycle where the working conditions in the paediatric wards make it difficult to recruit and retain new nursing staff – this lowers the morale of existing staff and</p>	iii

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				<p>perpetuates the nursing crisis.”</p> <p>(4) Notes that: ...”a great proportion of healthcare delivery, especially in rural and underserved areas, is dependent on nurse-based systems”.</p> <p>(2) Advocates the development of activity-based staffing norms : “Firstly, there is an urgent need to define what the minimum nursing paediatric workloads are, and the time and nursing staff numbers (across all categories – professional, enrolled and auxiliary) needed to complete a defined number of paediatric nursing procedures or activities, e.g. the time needed to feed a neonate using a cup and spoon or the time required to accurately draw up and administer an intravenous antibiotic. Although ideal nursing ratios for professional, enrolled, and auxiliary nurses have been proposed for the SA state health system,[2] these norms are unlikely to be reached in the short term. It is critically important that activity-based guidelines be developed urgently, so that task shifting can be planned, with registered nurses supervising enrolled and auxiliary nurses to provide safe and effective paediatric nursing care.”</p>	
World Health Organisation South Africa Country Office. Strengthening Health Systems through efficient and effective HRH: South Africa. 2015.	South Africa	Report	2	WHO country office website has no recent information. This is a one-page briefing providing an overview of key government policies on HRH. No mention of nursing specialisation.	i

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Department of Health. Strategic framework for the modernization of tertiary hospital services. Pretoria: Department of Health; 2003.	South Africa	Policy/strategy document		<p>Discussion document</p> <p>(4*) In 2003 the South African national Department of Health published a consultative document proposing a strategic framework for modernization of tertiary hospital services. Amongst other measures, the document proposed suggested staffing levels, equipment and facilities for all levels of care in the SA health system. These included detailed specifications for paediatric settings at varying levels of acuity and specialty.</p> <p>(4*) Highlighted that “the shortage of nurses with specialised training appears to be a problem in virtually every specialised discipline; in some specialties this shortage is extreme (e.g. adult ICU); in others it verges on the absurd (e.g. the Paediatric ICU group reported that there are only two registered <u>paediatric ICU nurses</u> currently working in South Africa)”.</p> <p>(2) Provides staffing norms for various categories of care, but not paediatrics.</p> <p>(2) South Africa faces the ‘triple burden of disease’ typical of many emerging economies, with the unfinished agenda of communicable disease co-existing with a growing incidence of non-communicable diseases among an increasingly urbanised and ageing population. South Africa’s third burden of disease can be understood as an ‘epidemic of trauma and injury which has accompanied rapid social change’, encompassing accidental and non-accidental injuries. This wide spectrum of conditions means that health professionals must be prepared to see and manage patients with a multiplicity of health needs.</p>	i

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				<p>(2) (4*) The authors argued that the shortage of specialist nurses with post basic training was particularly severe in relation to paediatric intensive care. Proposals to strengthen the availability of specialised nursing expertise included: expanding the availability of and funding for specialised nursing training; and incentivising specialist skills development through better career pathways and remuneration.</p> <p>(2) (4) Proposals to strengthen the availability of specialised nursing expertise includes:</p> <ul style="list-style-type: none"> • The urgent need to expand the availability of and funding for specialised nursing training • Incentivising the acquisition and updating of skills, by offering better career pathways and remuneration for nurses who acquire specialised qualifications and who continue to practice in their specialised field • Ending the practice of regularly rotating nurses through different wards and departments to avoid preventing the acquisition of specialised expertise. 	
Rose A, van Rensburg-Bonthuyzen EJ. The factors that attract healthcare professionals to and retain them in rural areas in South Africa. South African Family Practice. 2015;57(1):44-9.	South Africa	Peer-reviewed publication	3	(2) Strategies that offer enhanced compensation packages in order to attract health workers to rural posts will not result in sustained retention unless they also address the factors which lead to workers migrating from hard to fill posts in the first place.	ii

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Dhurup M, Van Zyl Y, Mokhathi M. Factors Influencing Job Satisfaction and Its Relationship on Career Development Among Nursing Staff within a Public Hospital in South Africa. Mediterranean Journal of Social Sciences. 2014;5(13):79.	South Africa	Peer-reviewed publication	3	Qualitative study using in-depth interviews and focus groups. Fourteen participants, purposive selection. Doctors who originated from rural areas were more likely to relocate there and be retained with enhanced employment packages.	ii
Ditlopo P, Blaauw D, Rispel L, Thomas S, Bidwell P. Policy implementation and financial incentives for nurses in South Africa: a case study on the occupation-specific dispensation. Global health action. 2013;6(1):19289.	South Africa	Peer-reviewed publication	4	Peer reviewed research study. Qualitative case study design using a combination of a document review and in-depth interviews with 42 key informants. (2) The authors relate how in 2007, the South African government introduced the occupation-specific dispensation (OSD), a financial incentive strategy, to attract, motivate, and retain health professionals in the public sector. Implementation commenced with the nursing sector, but the authors conclude there have been unintended negative consequences. (1*) (4*) The study found numerous implementation weaknesses. Weak HRH information systems identified including the public sector human resource data base and the South African Nursing Council register of <u>specialised nurses</u> which are described as incomplete and inaccurate, thus undermining the process. (1*) A second weakness was found to be vagueness in defining what constitutes specialisation. This undermined the objective of the OSD of retaining specialised nurses in clinical areas. (2) The OSD policy objectives include 'career pathing', 'pay and grade progression', 'specialty' as well as 'competencies' and	ii

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CapacityPlus Project online resource library https://www.intrahealth.org/countries/south-africa Accessed 17 th April 2017	USA (describes work in South Africa)	Web content	2	'performance'. Describes support by PEPFAR-funded CapacityPlus project to the Nursing Education Partnership Initiative (NEPI) in the form of support to Walter Sisulu university for pre-service training.	ii
South African National Department of Health. Human resources for health South Africa: HRH strategy for the health sector: 2012/13 - 2016/17 (2011)	South Africa	Policy/strategy document	3	Most recent document identified. Prepared with support from the UK Department for International Development's programme for Strengthening South Africa's Response to HIV and Health, and management support from HLSP. (2) Locates the need to address HRH capacity within the problematic health outcomes for a country at South Africa's level of development and with South Africa's level of health care resources; particular reference to under-five mortality, infant mortality and maternal mortality in South Africa all unacceptably high and increasing. (2) Sets out a vision to improve access to health care for all and health outcomes in the short and medium term, with a particular focus on improving maternal and child health. (2) Presents a plan to achieve the required human resources to implement re-engineered Primary Health Care and ensure the service capacity for a health system with improved financing through National Health Insurance. PHC re-engineering will be	ii

Publication details	Country of origin	Type of document	Question, topic or focus of the item (five most frequently occurring topics)	Key content related to the scoping review question/s	Route of identification
				<p>according to three main streams to consolidate PHC as the primary mode of health care delivery, located in a district-based service delivery model focusing especially on maternal and child mortality.</p> <p>Three implementation themes: District Clinical Specialist teams, a School Health Programme and Community Outreach PHC Teams.</p> <p>(4*) District Clinical Specialist Support teams will consist of four specialist clinicians (paediatrician, family physician, obstetrician & gynaecologist and anaesthetist), an advanced midwife, <u>advanced paediatric nurse</u> and advanced PHC nurse and will be deployed in each district. DCSTs will strengthen clinical governance of maternal, neonatal and child health services at hospitals, community and primary health care and home-based levels in order to promote the wellbeing of the population within the geographical catchment area of a regional hospital.</p> <p>(1) Recognises weaknesses with statutory council records which are “not a true reflection of the numbers of health professionals available for the health workforce”. The Council registers do not record whether a re-registering professional is in South Africa or not, whether they are practicing in South Africa or retired, and whether they are part time or full time.</p> <p>(1) Allowance was made for 18% of nurses who are registered but not actively working in South Africa. It was assumed that 41.4% of nurses work in the private sector.</p>	

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Website of the Nurses and Midwives Council. http://www.sanc.co.za/ Accessed April 15, 2017	South Africa	Website	n/a	Last annual report available 2013.	ii
South African Nursing Council. (2012). SANC Competencies - Paediatric Nurse Specialist 2012.	South Africa	Policy/strategy document	4	<p>(2) The publication of this guideline effectively brought the establishment of this category of specialist nurse into law in South Africa in 2012. The document stipulates competencies required of a Paediatric Nurse Specialist.</p> <p>(1) "Like in any specialised field, these competencies have certain criteria which delineate them from basic nursing practice or an associated specialised field of nursing."</p> <p>(1) The document describes the role, the route to qualification and registration, and the expectations of practitioners:</p> <p>(1) 2. NATURE OF SPECIALISATION A Paediatric (Child) Nurse Specialist is a professional nurse who has obtained a post graduate diploma qualification in child nursing science. The education and training must have been conducted at a nursing education institution which is accredited by the South African Nursing Council. The nurse specialist has a valid annual practising certificate for continuity of paediatric practice. The specialist is a resource person for students/learners, staff, other healthcare providers and the public. The Paediatric Nurse Specialist is a change agent with advanced knowledge and skills to put into practice, as well as a researcher for evidence-based practice and a nurse consultant for students, staff and the multidisciplinary team. She is the last in the continuum of specialised child nursing.</p>	iii

Publication details	Country of origin	Type of document	Question, topic or focus of the item (five most frequently occurring topics)	Key content related to the scoping review question/s	Route of identification
				<p>The specialty practice is based on a core body of knowledge and skills that is continually expanded by continuing education and refined by research.</p> <p>(4) The role is described within the context of a model of primary health care, while recognising that specialist practice applies across all settings: “These competencies transcend settings in which child nursing is rendered (community, healthcare environment, rural and urban). As a group, specialised child nurses provide a spectrum of other varieties of care, such as oncology, renal diseases and critical care.”</p> <p>(4) 3. CONTEXT The Child Nurse Specialist is found in the following healthcare settings: Primary healthcare, district, regional, tertiary and academic centres; specialised children’s hospitals; academic/tertiary hospitals with paediatric/children’s units; private healthcare centres; educational institutions: researchers and educators; at management level: managers, coordinators of programmes and other quality improvement structures.</p> <p>(4) 4. CLINICAL CONTINUUM The focus is on preventive and promotive healthcare. The specialist is in partnership with families and other healthcare providers (family-centred care). He/She functions at PHC Level where he/she screens/triages, assesses, plans, implements, evaluates and refers a child who warrants a higher level of care accordingly. The specialised nurse also provides curative and rehabilitative healthcare.</p>	

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CoMMiC. Interim report of the Committee on Morbidity and Mortality in Children Under 5 Years (CoMMiC). Pretoria: Department of Health; 2012.	South Africa	Report	4	<p>Most recent document available: third triennial report currently in press.</p> <p>Provides a detailed review of child health and makes recommendations to improve service delivery.</p> <p>(4) Highlights that a high proportion of child deaths are preventable. Audit of child deaths through the Child PIP system revealed modifiable and avoidable factors at all levels of the health system. 30% of modifiable factors contributing to avoidable deaths occurred at home, but among the remaining 70% of health system factors, most (80%) related to health personnel. A disproportionate number of modifiable factors continue to take place in the Accident and Emergency setting, considering the relatively short period that children spend there.</p> <p>(4) Found that access to health care for sick children remains a problem. 45% of child deaths occurred inside the health service, and of the 55% who die outside of hospital, many of these children had prior contact with the health service shortly before dying.</p> <p>(4*) (1*) Priority interventions recommended include:</p> <ul style="list-style-type: none"> Expanded training courses for <u>paediatric</u> and neonatal nurses 	ii

Publication details	Country of origin	Type of document	Question, topic or focus of the item (five most frequently occurring topics)	Key content related to the scoping review question/s	Route of identification
				<ul style="list-style-type: none"> SANC accreditation for neonatal nursing courses to be fast-tracked SANC recognition of post-basic neonatal nursing qualifications 	
Spero JC, McQuide PA, Matte R. Tracking and monitoring the health workforce: a new human resources information system (HRIS) in Uganda. Human resources for health. 2011;9(1):1-10.	USA and Uganda	Peer-reviewed publication	2	<p>(3) (1) The paper describes the work undertaken by IntraHealth's CapacityPlus initiative to facilitate Uganda's transition from a paper filing system to an electronic HRIS enabling accurate maintenance of health worker data at the Uganda Nurses and Midwives Council (UNMC). The project also involved an initial analysis of the UNMC training, licensure and registration records.</p> <p>(1) Describes the role and function of the Uganda Nurses and Midwives Council (UNMC). The UNMC is an official body charged with regulating standards for nursing and midwifery in Uganda. The UNMC is an arm of the MOH that makes recommendations to the Government of Uganda regarding issues pertinent to nurses and midwives. The Council's authority and scope is based on the 1996 Uganda Nurses and Midwives Act. Functions include setting continuing professional education requirements, providing and tracking nursing and midwifery registrations and licenses to practice, and serving in a disciplinary role in cases of professional misconduct.</p> <p>(2) Authority to govern nursing and midwifery training curricula, examinations, and training institution accreditation rests with the Ministry of Education and Sports. The UNMC also provides recommendations and contributions to the Ministry of Education regarding nursing and midwifery training and accredited curricula.</p>	i

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				No specific references to children's nursing.	
Nakanjako D, Namagala E, Semeere A, Kigozi J, Sempa J, Ddamulira JB, et al. Global health leadership training in resource-limited settings: a collaborative approach by academic institutions and local health care programs in Uganda. Human resources for health. 2015;13:87.	Uganda	Peer-reviewed publication	2	No specific references to children's nursing.	i
Hagiopian A, Zuyderduin A, Kyobutungi N, Yumkella F. Job satisfaction and morale in the Ugandan health workforce. Health Affairs. 2009;28.	USA and Uganda	Peer-reviewed publication	3	(3) Report of a nationwide study conducted for the Ugandan Ministry of Health to investigate health workforce morale, satisfaction, motivation, and intent both to remain in Uganda and to stay at the same facility. No specific reference to children's nursing. Other information of note: Ugandan health workers are dissatisfied with their jobs, especially their compensation and working conditions. Uganda's Ministry of Health' strategic plan for HRH health requires an understanding of working conditions and health workers' attitudes. Reported outcomes: MoH reported to be increasing staffing levels, improving training, and creating an "enabling" managerial environment.	i

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Uganda Bureau of Statistics. Uganda Demographic and Health Survey 2011. Kampala; 2012.	Uganda	Report	5	Presents statistical information regarding infant and child health. No specific references to children's nursing.	ii
R Deussom WJ. Using Evidence for Human Resources for Health Decision-Making: An Example from Uganda on Health Workforce Recruitment and Retention. Washington: IntraHealth; 2014.	USA and Uganda	Report	3	Technical briefing paper Describes Ugandan MoH's response to a midterm review of its Health Sector Strategic Plan II (2005/06–2009/10) which revealed that high turnover, absenteeism, and low productivity resulting in poor health workforce performance, were a “major constraint” on achieving the plan's goals to reduce maternal and child mortality, fertility, malnutrition, the burden of HIV/AIDS, tuberculosis, and malaria as well as disparities in health outcomes. Response included a motivation and retention strategy for HRH to “strengthen the capacity of the health system to improve the attraction, retention, equitable distribution, and performance of the health workers”. No specific references to children's nursing.	ii
CapacityPlus. Building HR Information Systems: Leading the Way Together in Uganda. 2007.	USA and Uganda	Report	2	(3) Reports on work by the Capacity Project for the Ugandan Ministry of Health to strengthen human resources for health management. (3) Involved the Ministry of Health devising and implementing a comprehensive agenda for human resources for health, including through improved human resources information systems (HRIS), the formation of a Health Workforce Advisory	ii

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				Board, and the establishment of a certification and licensing information system at the four health professional councils. Together, these measures provide a process for identifying training, registration and deployment information about health workers by demographic variables, districts, positions and categories of health workers. No specific references to children's nursing.	
The Capacity Project. "I Can Now Speak Boldly": Using Quality Data for Health Workforce Planning in Uganda. Washington; 2008.	USA and Uganda	Report	2	(1*) (3) Building on the work described in Building HR Information Systems: Leading the Way Together in Uganda above, a particular benefit to nursing is that the facility now exists to update entries on the nursing professional register to record qualifications acquired after initial registration. No specific references to children's nursing.	ii
Baumann A, Yan J, Degelder J, Malikov K. Retention Strategies for Nursing: A Profile of Four Countries. 2006.	USA (reports on work in Uganda)	Report	3	Briefing paper Retention strategies on four countries were analysed using a seven-point framework. Profiles for 2006 are presented with available country data including GDP and investment in health, mix of private/public investment, international migration, health policy frameworks, countrywide strategies, provincial/regional strategies, and professional associations/regulatory bodies. No specific references to children's nursing.	ii
Health Sector Service Delivery Team. Norms and Standards for Health Service Delivery. Nairobi: Ministry of Health 2006.	Uganda	Policy/strategy document	1	(2) (4) The current health sector strategic plan identifies specific categories of health worker as priorities for workforce development. Midwives and public health nurses are the only categories of nursing and midwifery professional listed, with no specific mention of children's nursing (p72).	ii

Publication details	Country of origin	Type of document	Question, topic or focus of the item (five most frequently occurring topics)	Key content related to the scoping review question/s	Route of identification
				<p>(2) The plan sets a target for increasing the number of health workers (doctors, midwives, nurses) per 1,000 population. Specifically for Nurses to increase from the 2013 baseline of 1:18,000 (HSSIP MTR 2013) to 1:17,000 by 2020 (p51). No specific references to children’s nursing.</p> <p>Deployment and staffing: Nurses and midwives are staffed to 83% and 76% respectively. Overall, staffing is skewed in favour of specialized health institutions and larger health facilities (RRH 81%; GH 69%, HC IV 85%, HC III 75% and HC II 49%).</p> <p>(2*) (4) The Ugandan MoH’s stated strategy is to pursue a comprehensive approach to system strengthening, with the rationale given that a focus on specific cadres (e.g. Medical Officers, midwives, nurses) or facility types (e.g. HC IVs) leads to imbalances, with key services being affected in the drive to improve other services (p47).</p> <p>(4) Reproductive, Maternal, Child and Adolescent Health (RMNCAH) was one of four cluster areas prioritized under the Health Sector Strategic and Investment Plan (HSSIP) 2010/11 - 2014/15. In reviewing progress made, challenges were identified involving quality of service delivery, with facilities facing frequent stock outs of life saving commodities, which reduces the confidence of mothers in using the services, and weaknesses in the emergency referral system to send mother and baby from one facility to the next, with no established referral protocol. There are still inequalities in accessing the services, with rural populations more disadvantaged. Finally, the sector was found to be slow in addressing the major risk</p>	

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				factors to RMNCAH, particularly the issue of exclusive breastfeeding.	
				(4) Among the key interventions specified in the plan p52-53, “Ensure adequate capacity for provision of timely interventions required for child survival” is the most relevant to the work of children’s nurses, with the lowest level of intervention specified as Level 2. Provide standardized quality Basic Obstetric and New-born Care (BeMONC) level 3 Provide standardized quality Comprehensive Obstetric and New-born Care (CeMONC) Level 4 Provide required post natal care for mothers and new-borns 3 (levels 2,3,4 health centres of varying sizes)	
				(2) Over this Plan period the sector will focus on attaining the following results: reducing the Infant Mortality Rate per 1,000 live births from 54 to 44 and the Maternal Mortality Ratio per 100,000 live births from 438 to 320/100,000; reducing fertility to 5.1 children per woman; reducing child stunting as a percent of under-5s from 33% to 29%; increasing measles vaccination coverage under one year from 87% to 95%; increasing TB case detection rate from 80% to 95%; increasing ART coverage from 42% to 80%; increasing deliveries in health facilities from 44% to 64; and increasing HC IVs offering CEmOC services from 37% to 50%. (Nine targets of which 6/9 relate explicitly to infant and child health).	
				Other information of note: Child health services are allocated 12.3% of the health budget with 96.9% of this going towards treatment.	

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				Communicable diseases remain the major cause of life lost. Malaria is the major cause of outpatient and inpatient attendances accounting for 13.7% (in children under five), 29% among five years and above and 0.72% mortality in 2013/14 (p30). No specific references to children's nursing.	
Website of the Uganda Nurses and Midwives Council. http://unmc.ug/ Accessed 26 th Jan 2017	Uganda	Web content	n/a	(1) Regulation of nursing and midwifery professionals is undertaken by the Uganda Nurses and Midwives Council. The Council was established in 1922 by The Uganda Nurses and Midwives Act (amended 1996). The Ugandan register currently details professionals who hold current licenses to practice. Licenses are required to be renewed every three years. No specific references to children's nursing.	ii
The Uganda Health Professionals Councils. Guidelines and Standards for Accreditation of Continuing Professional Development for Health Workers. Kampala; 2008.	Uganda and USA	Policy/strategy document	5	Guideline for health professionals (1) (3) The publication provides guidelines for planning, accrediting and implementing CPD for health professionals in Uganda. All health professional councils in Uganda require the professionals on their registers to undertake a minimum of 50 hours of continuing education per year for the renewal of their licenses to practice. Work supported by the Capacity Project.	ii
Chanda D, Gosnell DJ. The Impact of Tuberculosis on Zambia and the Zambian Nursing Workforce. Online Journal of Issues	Zambia	Peer-reviewed publication	3	Describes impact of Zambia's exceptionally high burden of TB-related ill health on the nursing workforce. No specific mention of specialisation or children's nursing.	i

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in Nursing. 2006;11(1):59-77.					
World Health Organisation Zambia Country Office. WHO Zambia Annual Report 2016. 2016.	Zambia	Report	5	<p>(3) Document produced by the WHO Country Office to provide an overview of health issues in Zambia.</p> <p>(4) Defines the guiding principle of the health delivery system in Zambia as Primary Health Care, defined as the achievement of equity of access to cost effective quality health care as close to the family as possible in a caring environment while striving to achieve universal health coverage.</p> <p>(1) States that the lack of a comprehensive human resource information system poses a major challenge for Human Resource for Health (HRH) management.</p> <p>(4) Details improvements in child mortality, which declined significantly from 37 in 2007 to 24 in 2013, with neonatal deaths accounting for about 40% of all childhood deaths. Zambia met the MDG 4 U5M target of 64 deaths per 1 000 live births in 2015.</p> <p>(4) Names contributing factors to the positive child health outcomes as including: improvement in breastfeeding rates (from 13% in 1990 to 73% in 2013); sustained high immunisation coverage; improved community case management of sick children coupled with improved case management at health facility level.</p> <p>(4) Notes an increase in the number of children accessing treatment due to improved Early Infant Diagnosis.</p>	i

Publication details	Country of origin	Type of document	Question, topic or focus of the item (five most frequently occurring topics)	Key content related to the scoping review question/s	Route of identification
				(4) Notes that the critical shortage of health workers remains a major challenge and is a constraining factor for the health system at all levels. Reproductive, Maternal, Newborn, Child and Adolescent Health are among the services most affected.	
Goma FM, Tomblin Murphy G, MacKenzie A, Libetwa M, Nzala SH, Mbwili-Muleya C, et al. Evaluation of recruitment and retention strategies for health workers in rural Zambia. Human resources for health. 2014;12(1):S1.	Zambia	Peer-reviewed publication	3	(2) Peer reviewed research study which looked at the impact of 19 health worker recruitment and retention strategies and their impact based on interviews with 45 health care work of various cadres in two districts in Zambia. (4) Highlights the high level of child health need, with more than half of children in Zambia suffering from chronic malnutrition, and stunting rates at 40%. HIV prevalence (12%) is among the highest globally, and malaria is endemic. (4) The health workforce is unevenly distributed with most health care providers working in urban areas while the majority of Zambia's population live in rural areas. No specific references to children's nursing.	ii
Ferrinho P, Siziya S, Goma F, Dussault G. The human resource for health situation in Zambia: deficit and maldistribution. Human resources for health. 2011;9(1):30.	Zambia	Peer-reviewed publication	1	Peer reviewed research study which reports on an analysis of secondary data from the "March 2008 payroll data base". Describes the way the HRH establishment is distributed in the different provinces of Zambia, by distribution of health workers by province and by level of care. (2) Nursing numbers are presented for four categories of registered nursing specialisation: ophthalmology, theatre, psychiatry and midwifery. No mention of children's nursing.	ii

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				<p>(4) The Zambian health sector has shown capacity for HRH innovation. Examples are initiatives such as upgrading the level of training (new degree courses launched or projected, e.g. BSc Nursing), facilitating direct access to diploma level specialist training (e.g. clinical officer, psychiatry, midwifery and mental health nursing), creating new cadres to formalize task delegation from higher level cadres (e.g. dispensers, counsellors and licenciates), informal task shifting (in early 2001, the Zambian law was amended to authorize nurses to prescribe and to insert drips).</p> <p>(4*) Notes that there are 6 tertiary level Central Hospitals, with sub-specialisations in internal medicine, surgery, paediatrics, obstetrics, gynaecology, intensive care, psychiatry, training and research. These hospitals also act as referral centres for 2nd level hospitals.</p>	
Dieleman M, Biemba G, Mphuka S, Sichinga-Sichali K, Sissolak D, van der Kwaak A, et al. 'We are also dying like any other people, we are also people': perceptions of the impact of HIV/AIDS on health workers in two districts in Zambia. Health Policy and Planning. 2007;22(3):139-48.	Zambia	Peer-reviewed publication	3	(3) Zambia is one of the countries where the additional healthcare demands resulting from the high incidence of HIV/AIDS combine with workforce attrition or absence to create a 'double burden'. Explores the impact of HIV/AIDS on health workers, describes their coping mechanisms and recommends supportive measures. No specific references to children's nursing.	ii

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Campbell J, Settle D. Taking forward action on Human Resources for Health in Ethiopia, Kenya, Mozambique and Zambia: Synthesis and measures of success: Capacity Project; 2010.	USA (with country visits)	Report	2	Briefing paper (3) Reports on information obtained through policy discussions during country visits between April 2008 and May 2009, as part of DfID/PEPFAR work. Provides high level summary of international HRH activities. No information specific to children's nursing, or specialisation.	ii
Makasa E. The Human Resource crisis in the Zambian Health Sector—a discussion paper. Medical Journal of Zambia. 2008;35(3).	Zambia	Peer-reviewed publication	3	(3) Provides a more layered analysis of the 'brain drain': Individual health workers who have migrated are understood to be striving for a better life elsewhere—some for personal gain, but many in order to support relatives who remain. The desire to undertake better training than the country of origin can provide is also recognised as contributing to decisions to migrate, perhaps only temporarily. No information specific to children's nursing, or specialisation.	
Tjoa A, Kapihya M, Libetwa M, Schroder K, Scott C, Lee J, et al. Meeting human resources for health staffing goals by 2018: a quantitative analysis of policy options in Zambia. Human resources for health. 2010;8(1):15.	Zambia and USA	Peer-reviewed publication	1	(2) Research study conducted in 2010. Used statistical modelling to forecast the size of the public sector health workforce in Zambia over the next ten years, based on a variety of scenarios. Concluded that only increasing training would enable achievement of staffing level goals. However, the authors concluded that the sizes of the training scale-up necessary to reach staffing targets for doctors, clinical officers, and nurses by 2018 were unfeasible or prohibitively costly. Presents data from the Government of the Republic of Zambia Ministry of Health which shows that in 2005 the country was operating with fewer than half the health workforce necessary to deliver basic health services, with even higher vacancy rates	ii

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				in rural areas. Staff-to-population ratios nationally were as low as 1 doctor per 14 500 people and 1 nurse per 1800 people. Data presented do not disaggregate the nursing workforce by specialisation.	
Ministry of Health and Republic of Zambia. National Human Resources for Health Strategic Plan 2011-2015 (2010).	Zambia	Policy/strategy document	1	<p>Most recent document identified.</p> <p>(4) In the introduction, child health is positioned as the primary reason for addressing HRH. "The performance of a health system is influenced significantly by the size, distribution, and skill set of its health workforce. Although the 2007 Zambian Demographic Health Survey showed that Zambia has achieved progress in reducing maternal and child mortality, further progress is necessary if the country is to achieve the Millennium Development Goals. This is, to a large measure, dependent upon the alleviation of the human resource shortage within the health sector."</p> <p>(1) Data suggest that national HRH information extends to six categories of nursing registration: enrolled nurse; operating theatre nurse; ophthalmic nurse; post basic nurse (BSc); registered mental health nurse; registered nurse.</p> <p>(2) Provides a map with geographical locations of all nurse training institutions and qualifications offered, and presents data regarding annual training output by qualification. Data are for 2010, using Ministry of Health's Enrolment Tracking Tool. Post Basic Nurse BSc (72), Post basic nurse MSc (19) and Registered nurse (785). Provides an analysis of entry requirements and duration of nursing and midwifery programmes. Does not mention children's nursing.</p>	ii

Publication details	Country of origin	Type of document	Question, topic or focus of the item (five most frequently occurring topics)	Key content related to the scoping review question/s	Route of identification
				<p>(2) (4) Sets goals to:</p> <ul style="list-style-type: none"> • establish nursing training at three institutions with a target of producing 100 graduates annually at each; • increase the number of trained Nursing and Midwifery tutors; • create positions for BSc Nurses and Midwives in health facilities to improve clinical instruction and quality of health services. <p>(1) Notes that The General Nursing Council (GNC) regulates the nursing and midwifery, teaching staff and training programs. This includes approving training programs in both public and private training institutions, including approving curricula, setting quality standards, and accrediting training institutions and sites for internships and practical training. Notes that the GNC is – in common with other regulatory bodies - facing challenges in the fulfilment of roles and responsibilities.</p> <p>(4*) Planned intervention B.2: Expand the national training capacity for production of HRH. To accommodate the planned expansion of the health workforce, the training capacity needs to be increased. For this, the expansion of the public sector must be in-line with the revised and updated National Training Operational Plan [not possible to access] to reflect the current infrastructure needs and other related investments that should be made. Investments in new training institutions should also be considered, such as expanding training for medical officers, clinical officers and registered nurses.</p> <p>(2*) (4) Describes the national network of health facilities. 21 Level 2 hospitals and 6 level 3 hospitals provide specialist</p>	

Publication details	Country of origin	Type of document	Question, topic or focus of the item (five most frequently occurring topics)	Key content related to the scoping review question/s	Route of identification
				paediatric care.	
Zambian Ministry of Health. <i>Zambian National Health Strategic Plan 2017-2021</i> . (2017)	Zambia	Policy/strategy document	1	<p>(4*) Very comprehensive strategy with detailed consideration of nursing workforce issues and an explicitly articulated plan for increasing nursing specialisation.</p> <p>(4*) Sets an objective “To effectively manage and develop the nursing and midwifery workforce in order to enhance individual and organizational performance”, and as one of 5 measures to achieve this objective, includes action to: “Review the organograms and establishment in public, faith- based, and private sectors for nurses and midwives to increase the numbers and provide streamlined career progression and <u>specialisation</u>”.</p> <p>(2*) (4*) Reports on outcomes from the National Human Resources for Health Strategic Plan 2011 – 2015. “In scaling-up the production of health workers, new training institutions (public and private) were opened. This subsequently contributed to the increase in the number of health workers, although the numbers are still too low to meet the required demand. In efforts to augment the number of health workers, new training programmes have been introduced for community health assistants, combined registered nurse midwifery, bachelor of dental surgery, direct entry midwifery, clinical instructor, HIV nurse practitioner, critical care, <u>paediatrics</u>, and master of medicine, bachelor of clinical sciences, and e-learning training of nurses”.</p> <p>(2*) (4*) The strategic interventions for nursing and midwifery services in the next five years will focus in the following areas:</p>	ii

Publication details	Country of origin	Type of document	Question, topic or focus of the item (five most frequently occurring topics)	Key content related to the scoping review question/s	Route of identification
				<p><u>nursing and specialized services</u>; midwifery; nursing and midwifery education; strong and effective partnership; nursing research and development; nursing and midwifery workforce; policy and legal framework; and finance and logistics management.</p> <p>(2*) (4*) Outlines strategic interventions for nursing and midwifery workforce. Objectives include: To provide integrated quality reproductive, maternal, neonatal, child, and adolescent services in order to contribute to the reduction in maternal, neonatal, and child morbidity and mortality.</p> <p>(2*) (4*) Strategic interventions include:</p> <ul style="list-style-type: none"> • “Strengthen and expand availability of medical, surgical, and other <u>specialised</u> nursing services at all levels of health service delivery” • Strengthen neonatal and child health nursing services at all levels of care • Strengthen adolescent health services at all levels of care. <p>(4) Describes role of nurses: “Nurses and midwives are the largest workforce in the health sector in Zambia. They provide a 24-hour critical continuum of care, which includes health promotion, prevention, curative, rehabilitative, and palliative services, in line with what is contained in the Nurses and Midwives Act No. 31 of 1997.”</p> <p>(4) Describes challenges for nursing workforce, with rapidly growing child population foremost: “The developments in nursing and midwifery are changing rapidly, with increasing</p>	

Publication details	Country of origin	Type of document	Question, topic or focus of the item (five most frequently occurring topics)	Key content related to the scoping review question/s	Route of identification
				<p>client or patient expectations and service needs. Over time, nursing and midwifery services have been hampered by a number of challenges. These include <u>rapid population growth</u>, increased disease burden from communicable diseases and NCDs, and shortage of nurses, midwives, and lecturers, leading to increased workload in both the clinical and training areas. This is exacerbated by inadequate equipment and supplies needed to provide quality care. In order to tackle this ever-increasing demand and dynamism of nursing and midwifery, there is need for pragmatic shift towards innovation, productivity, and improved efficiency.”</p>	

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