Characteristics and Predictors of Treatment Effectiveness of Children seen at the Therapeutic Learning Centre, Division of Child and Adolescent Psychiatry, Red Cross War Memorial Children's Hospital during the period 1992-2008

by

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DECLARATION

I, Yumna Ohansay, hereby declare that the work on which this dissertation/thesis 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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ABSTRACT

The prevalence of childhood mental health disorders is estimated between 10% and 20% globally, while a South African study estimated the prevalence in the Western Cape to be 17%. A high degree of continuity exists between child and adolescent psychiatric disorders and those in adulthood, and early onset predicts chronicity and severity.

While there is a rapidly expanding evidence base about the effectiveness of interventions for childhood psychiatric disorders, especially related to pharmacotherapy, data on the outcome of inpatient care in childhood psychiatric disorders are limited. Some studies in the international literature have indicated clear benefits for inpatient treatment, whereas others have reported poor outcomes. However, these studies vary considerably in a number of ways, including methodology, patient characteristics, and period of follow-up.

To date, there has been no published audit of inpatient psychiatric care for children (pre-adolescents) within South Africa. This retrospective study examines the Therapeutic Learning Centre (TLC), an inpatient and day-patient psychiatric unit for children (ages 6-12 years), situated at Red Cross Children's Hospital in Cape Town, South Africa. The objective of this study is to describe the profile of service users and to investigate associations between outcome, patient and treatment variables

Information relating to all patients admitted to the TLC from 1992 till 2008 was examined. The patient sample consisted of 188 children with a median age of 9.8 years (IQR 3.25). Approximately 60% were English speaking, Caucasian males. There were significant histories of parental psychiatric disorder (56.9%) and child abuse (30.9%). The most common diagnoses were V-code: relational problems (40.4%), attention deficit and disruptive behaviour disorders inclusive (37.8%), anxiety disorders (22.3%) and learning disorders (22.3%). Multiple linear regression revealed that use of psychotropic medication and later year of admission were variables that predicted an improved outcome at discharge whereas higher levels of family participation, having follow-up at the TLC or departmental outpatient unit, later year of admission and lower occupational grade were variables associated with better outcome at follow-up 12-24 months post discharge.

It is hoped that these findings will be useful in informing the existing TLC program. Furthermore, this study, together with the database that has been created, will potentially stimulate further research in this field. These may include controlled trials of empirically validated treatments.

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ABBREVIATIONS

ADD	Attention Deficit Disorder
ADDBD	Attention Deficit and Disruptive Behaviour Disorder
ADHD	Attention Deficit/Hyperactivity Disorder
AJF	Prof Alan Flisher
CGAS	Children's Global Assessment Scale
CNS	Central Nervous System
CT	Cape Town
DBD	Disruptive Behaviour Disorder
DCAP	Division of Child and Adolescent Psychiatry
DSM-IV-TR	Diagnostic and Statistical Manual of Mental Disorders (fourth edition, text revision)
DSR	Depression Self-Rating Scale
ELSEN	Education for Learners with Special Educational Needs
FAM	Family Assessment Measure
FGA	First Generation Antipsychotics
GMC	General Medical Condition
HSC	Hopelessness Scale for Children
HSS	Hare Self-Esteem Scale
IPR	Index of Peer Relations
IQ	Intelligence Quotient
IQR	Interquartile Range
JSAIS-R	Junior South African Intelligence Scale – Revised
LAMIC	Low and Middle Income Country
MS	Mood Stabilisers
NOS	Not Otherwise Specified
OCD	Obsessive Compulsive Disorder
ODD	Oppositional Defiant Disorder
OT	Occupational Therapy/Occupational Therapist
PANDAs	Paediatric Autoimmune Neuropsychiatric Disorders associated with streptococcal infections
PDD	Pervasive Developmental Disorders

PQBPC	Patterson-Quay Behavior Problems Checklist
PTSD	Post Traumatic Stress Disorder
RCBP	Revised Child Behavior Profile
RCWMCH	Red Cross War Memorial Children's Hospital
RXH	Red Cross Hospital (the colloquial way of referring to the above Red Cross War Memorial Children's Hospital)
SA	South Africa
SAACAPAP	South African Association of Child and Adolescent Psychiatry and Allied Professions
SGA	Second Generation Antipsychotics
SSAIS-R	Senior South African Intelligence Scale – Revised
SSRI	Selective Serotonin Reuptake Inhibitors
TCA	Tricyclic Antidepressants
TLC	Therapeutic Learning Centre
UK	United Kingdom of Great Britain and Northern Ireland
USA	United States of America
WC	Western Cape
WHO	World Health Organisation
WISC-R	Wechsler Intelligence Scale for Children – Revised
WPPST	Wechsler Preschool and Primary Scale of Intelligence

CHAPTER ONE

1. INTRODUCTION

Chapter one provides an overview of the scope of the problem of mental disorders in children and adolescents in global terms, including reference to South Africa (SA). Interventions available for child and adolescent mental health disorders are described, with specific attention to inpatient and day-patient treatment for children. The Therapeutic Learning Centre (TLC), based at the Red Cross War Memorial Children's Hospital (RCWMCH[1]) in Cape Town (CT), is introduced and previous research conducted at this unit is briefly outlined. Finally, a rationale for the current study is presented.

1.1 CHILD MENTAL HEALTH GLOBALLY, AND IN THE SOUTH AFRICAN CONTEXT

A review of studies of the prevalence of child and adolescent psychiatric disorders indicate that about one in five children and adolescents suffer from such disorders (Patel, Flisher, Nikapota, & Malhotra, 2008). This estimate applies to both genders, a range of ages within childhood and adolescence, all social groups and in high-, low-, and middle-income countries (Flisher, Hatherill, & Dhansay, 2008). In a SA study, the prevalence of mental disorders in children and adolescents in the Western Cape (WC) was estimated to be 17% (Kleintjes, 2006), with generalised anxiety disorder (11%), posttraumatic stress disorder (PTSD) (8%), and major depressive disorder/dysthymia (8%) being the most common.

Child psychiatric disorders are multifactorial in origin. While some are highly heritable neurodevelopmental disorders such as autism, ADHD and schizophrenia, most involve both genetic and environmental risk factors. Causal processes often derive from an interaction between the two (McGuffin & Rutter, 2002). The association between psychosocial stress and psychiatric disorder in children and adolescents has long been recognised (Sandberg & Rutter, 2002). In a study carried out in one of the most deprived inner city areas of the United Kingdom (UK), it was found that about two-thirds of pre-school children had at least one

[1] The Red Cross War Memorial Children's Hospital (RCWMCH) will henceforward be referred to by its colloquial name the Red Cross Hospital (RXH)

psychosocial stressor and almost one-third had three or more psychosocial stressors (Davis & Spurr, 1998). In a study conducted in four child psychiatry clinics in Johannesburg, all the children had at least one psychosocial problem and there was an average of three per child (Vogel & Holford, 1999). The authors attribute many of these stressors, including family disintegration and dysfunction, crime, violence, unemployment, poverty and substance abuse to the effects of Apartheid. The World Health Organisation (WHO) has reported high correlations between poverty and psychopathology, especially in the face of rapid social change, high exposure to violence and low levels of education (Patel & Kleinman, 2003). The WHO has also reported that two-thirds of SA children have experienced a traumatic situation, with 8.4% meeting criteria for the diagnosis of PTSD (WHO, 2005b).

Psychiatric disorders in childhood and adolescence result in considerable impairment, and may impact multiple areas: academic performance, interpersonal relationships, social and leisure activities, and the ability to enjoy and obtain satisfaction from life. In addition to impairment in the child or adolescent, there is often considerable burden of care experienced by the parent or caregiver (Flisher, et al., 2008).

Many child and adolescent psychiatric disorders continue into adulthood, and early onset of psychiatric disorders predicts chronicity and severity. For example, in an often-cited United States of America (USA) study, it was reported that 75% of all adults with psychiatric disorder had an age-of-onset of 24 years or less. 50% had an age-of-onset of 14 years or less, and 25% had an age-of-onset of 7 years or less (Kessler, Berglund, Demler, Jin, Merikangas, & Walters, 2005).

A review of epidemiological research on age-of-onset of mental disorders which focused on WHO World Mental Health surveys also found that onset of mental disorders usually occurs in childhood or adolescence. These surveys were based on coordinated population surveys in 28 countries, including regions such as Africa, the Americas, Asia and the Pacific, Europe and the Middle East. Disorder-specific estimates were described and those disorders with particularly early age-of-onset distributions included: impulse-control disorders with median age-of-onset across countries of 7-9 years for attention deficit hyperactivity disorder (ADHD), 7-15 for oppositional defiant disorder (ODD), 9-14 for conduct disorder, and 13-21 for intermittent explosive disorder. Some anxiety disorders such as separation anxiety disorder and specific phobias were reported to have very early age-of-onset

distributions, with median age-of-onset in the range of 7-14 years (Kessler, Amminger, Aguilar-Gaxiola, Alonso, Lee, & Ustun, 2007).

Given the continuation of psychiatric disorders from childhood or adolescence into adulthood, it is not surprising that the economic implications (direct or indirect) of these disorders also persist into adulthood. Although the existing evidence is scanty and confined to the direct cost of a subset of disorders in the USA and UK, it does confirm that the long-term cost associated with child and adolescent psychiatric disorders is large. For example, the treatment costs for youth with ADHD are about double those of youth without ADHD. Furthermore, the cumulative cost of public services utilized through to adulthood by individuals with antisocial behaviour in childhood was ten times higher than for those with no antisocial behaviours by the age of 28 years (Romeo, Byford, & Knapp, 2005). It can thus be seen that the potential economic impact of successfully implementing well-validated prevention and early intervention strategies for children with Disruptive Behaviour Disorder (DBD) is enormous (WHO, 2005a).

Children and adolescents in low- and middle-income countries (such as SA) constitute 35-50% of the population and there is a huge gap between child and adolescent mental health needs and the availability of resources (Patel et al., 2008). In 2005, the WHO reported that mental health is discriminated against in SA by both private medical aids and state-funded health systems. Currently, there are only four psychologists, 1.2 psychiatrists and 7.5 psychiatric nurses to every 100 000 South Africans while only 0.038 psychiatric beds are available to service every 100 000 people (WHO, 2005b). It is thus important to target limited resources carefully. These interventions need to be evidence-based and meet the needs of the communities they serve.

1.2 INTERVENTIONS FOR CHILD AND ADOLESCENT PSYCHIATRIC DISORDERS

Interventions for child and adolescent mental disorders include mental health promotion, mental disorder prevention, and rehabilitation. Treatment modalities include psychological therapies, parent training, family therapy, social work intervention, and pharmacotherapy. Wherever possible, treatment should be community-based or part of an outpatient service, and should be minimally disruptive in terms of the child's family and community relationships and participation in the education system.

Modern approaches view child psychiatric inpatient services as the equivalent of intensive care services in medicine. As such, they should be reserved for the most severe or complex cases, are costly, and do not cure all (Blanz & Schmidt, 2000). Inpatient psychiatric treatment should be just one aspect of an overall management plan that provides a specialised assessment and treatment programme within a continuum of mental health services (Hersov, 1994). This continuum would include extensive outpatient treatment prior to admission, and could include further work with the child, family, school and community services after discharge, either to a day unit or to an outpatient service.

The decision to refer for inpatient treatment is a complex one. Costello, Dulcan, and Kalas (1981) derived six factors that discriminated between cases offered residential (inpatient) treatment, and outpatient treatment. Their findings largely agreed with two UK studies by Garralda (1986) and Wolkind and Gent (1987). In these UK studies the combination of complex needs and psychiatric disorder seems to be a stronger indicator for admission than aggression. Table 1 shows indications for inpatient admission in three studies. Although these provide helpful guidelines when considering inpatient referral, there are probably no absolute indications. Referral is often based on a combination of factors, which may include expertise in the referrer's service, availability of community resources, economic factors, and the philosophy, and location of a specific unit (Maskey, 1998).

Table 1: Indication for admission in three studies (Maskey, 1998)

Costello 1991	Garralda 1986	Wolkind and Gent 1987
Is the patient's condition deteriorating rapidly or failing to improve despite adequate outpatient treatment?	Acute disabling psychiatric states.	Severe emotional disorders
Have aggressive outbursts occurred towards animals or objects?		Severe conduct disorders – bizarre and borderline behaviours
Have aggressive outbursts occurred towards other people?		Aggressive outbursts towards other people
Are there physical or neurological conditions or a psychotic disorganized state that requires hospitalisation to initiate treatment or to establish a diagnosis?	Diagnosis Treatment: medical or behavioural High risk/severe disorders	Psychosis Neuropsychiatric disorder

Does a pathological or noxious situation exist among patient's family or associates that makes treatment without hospitalisation impossible? Or does the patient's disordered state create such difficulties that he or she has to be hospitalized?	Separation from home as a management strategy – psychosomatic or school refusal	Psychosomatic disorders
Does evaluation of patient's condition require 24-hour observation and evaluation that only a hospital can provide? (Include stabilization or re-evaluation of medication).	Neuropsychiatric assessment and evaluation	Complex comorbidity

Inpatient psychiatric units for children and adolescents were first established in the USA in the 1920s and 1930s. They were primarily intended for children with behavioural problems, following an epidemic of encephalitis (Hersov, 1994). The first was opened at Bellevue Hospital, New York. Although initially these units provided a largely custodial function, aiming to care for, rather than treat, children with emotional or behavioural disorders, by the late 1930's detailed diagnostic and treatment programmes were being designed around the application of individual and group psychotherapy. Meanwhile, in the UK, the inpatient department for children at the Maudsley Hospital opened in 1947 and others soon followed. Because serious mental disorders in childhood and adolescence were thought to be rare, there were only a small number of these units in the USA until the 1970s and 1980s, when scientific, political and economic factors led to the establishment of further inpatient psychiatric units for children and adolescents (Blanz & Schmidt, 2000). Between 1970 and 1980 admissions to private psychiatric hospitals increased threefold for 10-14 year olds and doubled for 15-17 year olds. These units were able to provide evaluation and treatment, by multiprofessional teams, for children and adolescents with a wide range of psychiatric disorders who had not responded to outpatient treatment. During this time, length of hospital stay was typically between a few weeks and a few months. Creating a milieu in inpatient units adapted to the severe and diverse needs of patients was a major challenge. The inpatient environment was increasingly seen as a vital part of the therapeutic intervention and, in fact, a treatment modality in its own right.

The most important components of the inpatient environment have been described as its physical environment, the staff, relationships between staff members and patients, structuring space and time, containment and behavioural change, and peer relationships (Green, 1998).

As management in inpatient units became more sophisticated, the gap between the range of treatments available in this setting and that provided in the outpatient service increased. To bridge this gap, Connell in the UK developed a day hospital for children in the early 1960's. In the USA, day treatment for children with psychiatric disorders dates back to 1943 and the number of day treatment programmes have steadily increased over the years. Partial hospitalisation made it possible for children with serious behavioural and/or emotional disorders to benefit from the therapeutic environment on a daily basis, without being completely removed from the community or the family setting. Day-patient units may be an integral part of an inpatient unit or a separate entity. Where day centres and inpatient units coexist, as is the situation in the TLC, flexibility of case management is possible. Admission as a day-patient allows an assessment to be made as to whether or not a more controlled inpatient environment is indicated. Attending the day-centre can also be useful for the child who has come to the end of his/her inpatient stay but needs help before re-joining his/her family and re-entering life in the community (Green, 2002).

1.3 THE TLC AT RXH

Similar to many units internationally (Kutash and Rivera, 1996), but unique to SA, the TLC is a psychiatric day- and inpatient unit. It is one of the units of the DCAP, RXH in CT, SA. The TLC admits children in the age range of 6 to 12 years, is serviced by a full multidisciplinary team, including a teacher, caters for assessment (3-5 weeks), and treatment (6-12 months) admissions and is structured around a normal school day routine. Sources of referral include schools, mental health workers, paediatricians, and social workers. A cognitive-behavioural approach is used within a milieu structure. The unit can accommodate 9 patients at any one time, 6 of which may be inpatients.

Originally, the TLC was opened as a psychiatric day hospital in December 1975 at the Child and Family Unit, RXH. The intention was to make a facility available to the greater CT area, for the assessment and short-term treatment of children who, because of serious maladjustment, could not be managed in school (Robertson and

Pikholz, 1987). Prior to this, children had to be admitted to medical wards, institutions for the mentally handicapped or adult psychiatric hospitals, environments that are inappropriate and possibly detrimental to children. Due to the Apartheid policies at the time, the unit was only open to White children. In 1992, the TLC amalgamated with the inpatient unit that had been opened in 1990 and currently provides a day- and inpatient service for all children in the WC between 6 and 12 years of age. While its official catchment area is the WC which has a population of about 5.36 million, it also serves the Northern Cape, with a population 1.15 million and the Eastern Cape, with a population 6.65 million (Statistics South Africa, 2009) as there are no dedicated child and adolescent mental health services in either of these provinces.

1.4 PREVIOUS RESEARCH AT THE TLC

Since opening in 1975, two follow-up studies of the day unit have been conducted. The first of these was a follow-up study of the first 20 children admitted to the Child and Family Unit Day Centre, as the TLC was then called. The psychiatric status of the children (and their families) was assessed at admission, discharge, and follow-up. Children younger than 10 were shown to benefit more from the treatment programme than older ones, and the study suggested that more attention had to be paid to the psychiatric needs of the family as a whole (Robertson & Friedberg, 1979).

The second of these studies followed up 45 of the 49 children admitted to the unit between 1979 and 1983. Feedback from parents and schools indicated that 2-6 years following discharge from the unit, 27% were asymptomatic, 49% showed varying degrees of improvement and 24% were unimproved. Examination of the characteristics of the 24% of children who demonstrated no improvement did not reveal any single indicator of poor prognosis or any simple way of identifying these children prior to admission. The two most significant factors related to poor outcome were the degree of family dysfunction and the lack of educational facilities for children with behavioural difficulties. Other factors that related to poor outcome were the severity of the child's psychiatric disorder, poor parental motivation for treatment and shorter length of treatment. The authors concluded that the outcome of the day-unit treatment would be improved if special educational facilities were available for children with behavioural difficulties upon discharge. At that time, no such special classes or schools were available in SA (Robertson & Pikholz, 1987).

Other publications that have originated from treatment received at TLC have included a paper describing the management of borderline disorder of childhood (Milne, 1995) and a case study regarding the pharmacotherapy of selective mutism (Harvey & Milne, 1998).

1.5 RATIONALE FOR CURRENT STUDY

While there is a rapidly expanding evidence base about the efficacy, effectiveness and cost-effectiveness of interventions for childhood psychiatric disorders, especially related to the use of pharmacotherapy (Evans, Foa, & Gur, 2005), there is little data on the outcome of inpatient or day-patient care in childhood psychiatric disorders.

As in the USA during recent years, financial pressures and political influences have forced inpatient treatment to decline, both in number of beds available for inpatient treatment, and duration of hospitalization (Woolston, 1995). Service providers are increasingly called upon to demonstrate efficacy and effectiveness of inpatient treatments (Sourander & Piha, 1998).

Although some studies have found clear benefits for inpatient treatment (Ney, Mulvhill, & Hanna, 1984; Woolston, 1995), others found a poor outcome (Pyne, Morrison & Ainsworth, 1985; Koret, 1980; Parham, 1987). A review of 24 follow-up studies of children younger than 12 years concluded that all reported at least some positive treatment outcomes. More than half of the studies reported positive long-term outcomes. Three broad groups of variables (patient, family, and treatment) demonstrated a relationship to outcome (Blotcky, Dimperio, & Gosset, 1984).

In a review of 34 studies, Pfeiffer and Strzelecki (1990) concluded that psychiatric hospitalisation of children and adolescents is often beneficial, especially if particular aspects of treatment are fulfilled. These aspects included a good therapeutic alliance (Clarkin, Hurst, & Crilly, 1987), planned discharge (White, Benn, Gross, & Schaffer-Lopez, 1979), and access to aftercare services (Gossett, Barnhart, Lewis, & Phillips, 1977).

Despite research into child inpatient efficacy, such as those studies mentioned above, a lot remains unknown about the factors influencing hospital admission, arrangements that result in the best outcome and appropriate norms for the length of hospital stays (Blanz & Schmidt, 2000). Furthermore, the number of studies is relatively small and of uneven quality (Green & Jacobs, 1998).

In 1998 it was decided to initiate a review of the work done at the TLC since amalgamation of the inpatient and day-patient units in 1992. This review would include a description of service users and treatment delivered, as well as an analysis of treatment modalities and outcome. A descriptive analysis of demographic and clinical data for the period 1992-1998 was carried out and presented as a poster at the 1999 South African Association of Child and Adolescent Psychiatry and Allied Professions (SAACAPAP) conference in CT. Unfortunately, due to staff constraints the study was placed on hold. While a few members of staff at the TLC have been working there for almost 20 years, retention of more junior staff members has been an ongoing challenge due to the very demanding nature of the work and significant levels of burnout.

A day- or inpatient unit is a dynamic system that manages a complex, albeit relatively small, caseload. Performing research in this environment requires ongoing motivation and support from already-burdened staff. Participation in the research process may be viewed as an additional burden and lead to a conflict in priorities (Riddle, 1989).

While working in the TLC as a senior registrar in 2005/2006, I was struck by the very complex cases with which the multidisciplinary team was faced, and the diagnostic and management dilemmas that these cases presented, usually as a result of the interaction of multiple factors which may have included demographic, socioeconomic, emotional, family and biological factors. As it had not been possible for staff to continue the research initiated in 1998, a study that examined the demographic and clinical data of TLC patients seemed to be extremely valuable. Furthermore, an assessment of the predictors of treatment effectiveness following admission to the TLC would be of considerable interest. In addition, a database could be designed for the study, which would be useful for ongoing capturing of patient information for clinical and research purposes.

The aim of this descriptive, retrospective study is to review all admissions to the TLC of the RXH during the period 1992-2008. The characteristics of service users, and treatment variables will be described. Outcome at discharge and at follow-up using a 5-point ordinal scale will be documented. It is hoped that patient, family and treatment variables which may be used as predictors of outcome and indications for hospitalisation will be identified and that the value of a specialised inpatient treatment programme for children with mental illness in the current SA context will be demonstrated.

CHAPTER TWO

2. LITERATURE REVIEW

In this chapter a systematic review of treatment effectiveness of inpatient and day-patient child psychiatric treatment programmes will be presented.

2.1 INTRODUCTION

The field of inpatient treatment in child psychiatry remains under-researched (Green, Kroll, Imrie, Frances, Begum & Harrison, 2001). In recent years, there have been a number of studies attempting to assess the efficacy of inpatient treatment, especially in view of the high cost of this intervention. Concerns about its possible negative effects and the possibility of outreach alternatives in countries such as the UK are discussed (Green, Jacobs, Beecham, Dunn, Kroll & Tobias, 2007). However, the body of existing research consists largely of descriptive, single-sample studies and is often of uneven quality, using heterogeneous samples and non-standardized measures (Epstein, 2004). Considerable methodological difficulties facing researchers in this area have contributed to the slow development of this field (Imrie & Green, 1998).

Day treatment is becoming increasingly accepted as an effective therapeutic modality (Kotsopoulos, Walker, Beggs, & Jones, 1996) and when compared with inpatient care, it is cost-efficient, does not disrupt family, peer, and community ties, and does not result in the child's total dependence on services (Sayegh & Grizenko, 1991). Similar to the field of inpatient treatment in child psychiatry, the research into the effectiveness of day treatment is limited to only a small number of studies. While most outcome studies suggest that day treatment programmes are effective for both behaviourally and emotionally disturbed children, methodological flaws limit their reliability (Sayegh & Grizenko, 1991). For example, many of the older studies are retrospective and have not used standardized questionnaires while others have not adequately addressed associated academic deficits which may be marked in these patient populations (Kotsopoulos et al., 1996). While the more recent studies

have made some methodological improvements, they still have drawbacks such as lack of a control group and no follow-up assessment.

2.2 OBJECTIVE

The purpose of this chapter is to review the published literature concerning the effectiveness of units such as the TLC. Since the TLC offers both inpatient and day-patient treatment, a systematic review of outcome studies pertaining to both inpatient and day-patient child psychiatric units was conducted in an attempt to review methodologies used, describe samples studied and to examine the findings relating to outcome.

2.3 LITERATURE SEARCH STRATEGY

In view of the fact that Blotcky et al. published a substantive review of 24 outcome studies of children treated in psychiatric hospitals in 1984, it was decided that this search would be conducted from 1983, the year that Blotcky's paper was accepted for publication.

A systematic review of the literature in all languages published between 1983 and 2010 was conducted. Medline, Embase, and PsychInfo databases were searched using a broad search strategy since it was found that many varying terms were used to refer to inpatient and day-patient child psychiatric units in the literature. Similarly, there were multiple terms used to describe outcome. Search terms included varying combinations of 'inpatient', 'day care', 'day hospital', 'child day care', 'partial hospital', 'psychiatric unit', 'mental health', 'service', 'treatment', 'management', 'facility', 'programme', 'program', 'therapeutic learning centre', 'clinic', 'ward', 'institute', 'department', 'facility', 'characteristics', 'predictors', 'profiles', 'evaluation', 'outcome', 'assessment', 'studies', 'follow-up', 'longitudinal', 'post-treatment', effectiveness', 'measurement', 'academic achievement', 'health-care' and 'quality'.

1759, 913 and 771 publications were initially identified in the PsychInfo, Medline, and Embase databases, respectively. The titles and abstracts were screened for relevance by the researcher and her supervisor (AJF) independently and 104 potentially relevant publications were identified using their concurring decisions. The reference lists of these publications were then hand searched for further relevant articles, as were a range of potentially relevant books. Studies pertaining to acute/emergency psychiatric admissions or admissions shorter than 4 weeks were excluded as well as articles where the patient samples included adolescents. These

exclusions were introduced to try and ensure that the patient samples examined in the retrieved papers would resemble the TLC patient sample as closely as possible. Outcome studies with patients up to and including 13 years of age were included.

2.4 RESULTS

2.4.1 Overview Of The Literature

Using the above criteria, we retrieved eleven publications suitable for inclusion. The majority of studies were excluded due to adolescents in the patient sample.

Of the eleven studies, none had been conducted in a low or middle income (LAMIC) country. Seven originated from North America, two from Europe, one from Australia and one from New Zealand. All were published in English. Six related to day treatment programmes and five were studies of inpatient psychiatric units.

Apart from Blotcky et al.'s review in 1984, the search yielded a further two reviews of outcome of psychiatric inpatient treatment. However, unlike Blotcky's review they included both child and adolescent patient samples (Pfeiffer & Strzelecki, 1990) (Epstein, 2004), which possibly make their findings less applicable to the TLC patient population.

Four reviews of studies of the effectiveness of day treatment psychiatric programmes for children were found (Zimet & Farley, 1985; Gabel & Finn, 1986; Baenen, Parris-Stephens, & Glenwick, 1986; Sayegh & Grizenko, 1991).

2.4.2 Psychiatric Day Treatment For Children

2.4.2.1 Summary of published reviews

Before examining the six studies identified in the search, the findings of the most recent review of outcome studies (Sayegh & Grizenko, 1991) will be summarized.

Sayegh and Grizenko (1991) reviewed eleven studies, published from 1965 through 1990, assessing day treatment programmes for children with the purpose of elucidating relevant research questions and methodological considerations raised by such research. Earlier literature reviews of day treatment programmes for children by Baenen, Parris-Stephens, & Glenwick (1986) and Gabel & Finn (1986) were also referenced.

The eleven studies were divided into two groups. The first group consisted of four studies that used a single outcome criterion (most frequently, reintegration into

regular schools following discharge) (LaVietes, Cohen, & Reens, 1965, Gold & Reisman, 1970, Gabel, Finn, & Ahmad, 1988 and Halpern, Kissel, & Gold, 1978). Previous such studies found that day treatment had a success rate of 65-70% for children with diagnoses similar to those in inpatient populations, and 80-90% for children with less serious disorders (Baenen et al., 1986). The usefulness of studies using a single outcome criterion may be limited. While reintegration is a key outcome variable, other potential outcomes of interest may inform the field. These include improvement in mental disorder severity, cost-effectiveness and reduced utilisation of mental health services. In addition, reintegration into school may be affected by other factors such as availability of school services and programme policy (Sayegh & Grizenko, 1991).

The main finding of the first group of studies was that day treatment reduced costs by reducing the need for residential placement, and was useful for preparing emotionally disturbed children for reintegration into regular schools while keeping them at home. However, day treatment was not always sufficient and sometimes a more prolonged follow-up period or short hospitalization period was necessary (Gold & Reisman, 1970; Halpern et al., 1978).

Of specific interest to the TLC study, a positive outcome was more likely with parental involvement in the treatment programme (LaVietes et al., 1965; Gabel et al., 1988) and with younger age at admission (LaVietes et al., 1965; Halpern et al., 1978). However, negative outcomes tended to be associated with inconsistent parental figures, violence in the home, child abuse, parental substance abuse, and severe aggressive behaviour (LaVietes et al., 1965; Halpern et al., 1978; Gabel et al., 1988).

The studies reviewed supported a multimodal approach to treatment, which included a teacher for academic and social skills training, and illustrated the importance of parents' participation in family therapy. However, the authors pointed out that the use of different outcome criteria and the diagnostically heterogeneous samples of children made it difficult to summarise the results of these four studies.

The second group of studies reviewed by Sayegh and Grizenko (1991) included 7 papers that used multiple outcome criteria to examine the effectiveness of day treatment (Prentice-Dunn, Wilson, & Lyman, 1981; Grizenko & Sayegh, 1990; Zimet, Farley, & Silver, 1980; Woollacott, Graham, & Stevenson, 1978; Winsberg, Bialer, & Kupietz, 1980; Cohen, Bradley, & Kolers, 1987; Cohen, Kolers, & Bradley, 1987). The definition of treatment outcome had been broadened to include improvements

in the child's behaviour and academic performance, in addition to the reintegration into regular school. The use of multiple outcome criteria allowed the investigators to identify independent aspects of change.

One of the main findings of this second group of studies was that day treatment generally had a 67% improvement rate when reintegration into regular schools and improvement in behaviour and academic performance were used as outcome criteria. However, children often needed ongoing treatment following discharge or special educational facilities in the long-term (Winsberg et al., 1980).

Drawing on information from earlier reviews, as well as the seven reviewed studies, the authors reported that day treatment was considered to be especially beneficial in attention deficit disorders (ADD), conduct disorders, adjustment disorders, severe emotional disturbances and developmental delays with normal nonverbal intelligence (Cohen, Bradley and Kolers, 1987). One study suggested that negative outcomes often associated with severe behaviour problems, were possibly due to premature evaluation of outcome (Zimet et al., 1980).

Patient characteristics that best predicted successful outcome were younger age and normal intelligence. Those with longer admission periods were also more likely to have a favourable outcome, as were those whose families had high motivation for treatment (Prentice-Dunn et al., 1981; Cohen, Bradley and Kolers, 1987).

A number of methodological weaknesses were identified. For example, many studies relied on clinical descriptions of outcome based on clinical judgement, rather than on more controlled experimental designs which examined the relationship between specific outcome variables and characteristics of the children and the treatment programmes. While some studies were better designed, methodological shortcomings that made their interpretation problematic included the use of outcome criteria not based on direct assessment of the child, retrospective design, the use of non-standardised measures and lack of control groups. In addition, many studies did not include an adequate description of the pre-treatment characteristics of the children and their parents.

The following suggestions were made to improve future research into the effectiveness of day treatment (Sayegh & Grizenko, 1991):

- Use of prospective rather than retrospective analyses of data
- Use of carefully selected control or comparison groups

- Use of standardised assessment instruments rather than subjective ratings
- Documentation of all relevant demographic data at intake
- Outcome criteria and time intervals at which these are to be assessed should be determined at the start
- Statistical analyses to be used should be decided at the start

2.4.2.2 Outcome studies included in the current review

The six outcome studies of day treatment included in the current review will now be examined further. These studies were all published between 1992 and 2001 and all originated from North America. Unlike earlier studies, these studies were all prospective and all made use of objective measures such as questionnaires, rating scales or intelligence tests. The samples were homogeneous in that all participants had been referred for severe behavioural problems (ages 5-13 years).

Four of the studies were authored or co-authored by Grizenko and based at the Lyall Preadolescent Day Treatment Program in Montreal, which provides multimodal treatment for children with severe behavioural problems.

Grizenko et al. (1992) studied twenty-five children (ages 6-12) who had been referred for behavioural problems leading to dysfunction in their home and school setting. The group included children with ODD (60%), ADD (32%), and conduct disorder (8%). A control group was drawn from twenty-five normal-population children who were matched sequentially by age and sex. Groups were compared on measures of self-esteem, peer relations and behaviour, using the Hare Self-Esteem Scale (HSS), the Index of Peer Relations (IPR) and the Revised Child Behavior Profile (RCBP), respectively. The treatment group and their parents were evaluated at admission and discharge, while the control group and their parents were assessed only once. Pre-/post-treatment comparisons revealed that at discharge, the test group's scores had significantly improved and did not differ from those of the control group.

Although the use of a normal control group and a diagnostically homogeneous patient sample greatly improved study design compared to earlier studies of day treatment, there were still limitations to this study. Firstly, measures were not done at follow-up and it is thus uncertain whether the gains in self-esteem, peer relations, and behaviour were maintained after discharge. Secondly, only one set of measures was administered to the control group. Thirdly, many of the children

belonging to the control group also had scores indicating relationship or self-esteem difficulties. Despite these limitations, the study demonstrated that children with behaviour problems experience significant disturbances in self-esteem and peer relations, and that these parameters, as well as behaviour, do improve following admission to an intensive multimodal day treatment programme (Grizenko, Archambault, & Pawliuk, 1992)

In 1993, a study of thirty children assigned to day treatment or waiting list at the Lyall Centre was carried out. The children had all been referred for disruptive behaviour problems and had one of the following DSM-III-R diagnoses: ADHD, ODD, conduct disorder or adjustment disorder with disturbance of conduct. The children (ages 5-12 years) had to be of normal intelligence for inclusion in the study. The children were compared on measures of behaviour (RCBP), self-perception (HSS, Depression Self-Rating Scale (DSR) and the Hopelessness Scale for Children (HSC)), academic performance and success of scholastic reintegration, peer relations (IPR), and family functioning (Family Assessment Measure (FAM)). Multivariate analyses of covariance revealed that the treatment group improved significantly more on behaviour and self-perception measures. Measures done at six months post-discharge showed that there had been improvements over time on all measures except academic functioning (Grizenko, Papineau, & Sayegh, 1993).

This study improved on previous studies methodologically in that a control group was used, the patient sample was homogeneous in terms of diagnoses, and measures were carried out at follow-up. It showed that, when compared with a wait list control group, multimodal day treatment for children with DBD resulted in greater improvement. A limitation of this study may be that the groups were sequentially rather than randomly assigned which may have affected the comparability of the two groups. For example, those children referred later in the academic year were placed on the waiting list, whereas those referred earlier formed the treatment group. Teachers and peers may thus have perceived the children who ended up on the waiting list differently than those who were referred earlier.

In another study carried out at the Lyall Centre, those patient characteristics that predicted a favourable outcome following admission to a day treatment programme for children with severe behaviour problems were identified (Grizenko, Sayegh, & Papineau, 1994). The sample was made up of 63 children (aged 5-13) admitted to the programme over a period of three years. The primary diagnoses of the children were ODD (65%), ADHD (24%), adjustment disorder with disturbance of conduct

(5%), and conduct disorder (5%). Predictors of improvement included clinical variables, intellectual and academic variables, demographic variables, psychosocial variables' biological variables, and family. Standardized measures and rating scales were carried out at admission and discharge. Outcome measures were behavioural improvement and school reintegration. Multivariate analyses revealed children who presented with less severe behavioural problems, lower IQ scores and more impaired family functioning made the greatest behavioural improvements. Factors that predicted reintegration into regular school after discharge were the absence of ADHD, better reading skills, younger age at admission and minimal marital discord.

The fourth study to emerge from the Lyall Centre was a five-year follow-up study evaluating long-term outcome and attempting to identify predictors of positive outcomes (Grizenko, 1997). The sample consisted of 33 children (aged 5-12 years), with normal intelligence who had the DSM-III-R diagnosis of ADHD (18%), ODD (67%) or conduct disorder (15%). Children and parents were evaluated using standardized questionnaires and rating scales to assess behaviour, self-perception, peer relationships, and level of impairment. These were done at admission, discharge, and five-years post-discharge. Reintegration into school and parental cooperation were measured using ordinal scales. Statistical analysis revealed that improvements on all measures were maintained between admission and five-year follow-up, even though there was deterioration between discharge and five-year follow-up and 9% of the children required further psychiatric treatment at follow-up. Factors that best predicted a positive outcome in terms of behavioural functioning at five-year follow-up were high levels of parental cooperation; lower total and externalizing scores on the initial RCBP, and the absence of a history of problem pregnancy. Of these, parental cooperation was the most important predictor of a positive outcome. Limitations of this study included the absence of a control group, the relatively small sample size and the fact that only 80% of the sample was followed up.

Kotsopoulos et al. (1996) evaluated the behavioural and academic improvement of children attending a day treatment programme at a tertiary setting in Ottawa, by assessing 46 consecutively admitted children (ages 7-13 years). Behavioural and academic measures were carried out at admission and discharge and intelligence and language assessments were done. The children had minimum IQ scores of 90, and were mainly referred for DBD and low academic achievement levels. DSM-III-R diagnoses included ADHD with or without aggressive behaviour, ODD, conduct disorder, adjustment disorder with disturbance of conduct, other adjustment

disorders and obsessive-compulsive disorder (OCD). Parents reported a significant improvement in both externalizing and internalizing behaviours, although teachers did not note this improvement. While participants gained one academic year, their academic skills were still low in terms of percentiles. The study's limitations are the absence of a control group, lack of follow-up post-discharge and the completion of the initial assessment while children had already started attending the programme.

The last is a study that examined treatment response in a child day treatment programme by using proactive aggression versus reactive aggression as a predictor of treatment response. In addition, parental participation in treatment, age at admission, IQ and medication status were also examined as potential indicators of outcome. The sample consisted of 54 children (ages 5-13 years) admitted to a day treatment programme for children with behavioural problems in Philadelphia. Most children had one or more DBD (72%), while the other 28% had a DBD in addition to another diagnosis such as adjustment disorder or PTSD. At discharge there was significant improvement in teacher-rated attention scores and global functioning scores, but not teacher-rated externalizing behaviour scores. Ratings of externalizing problems, proactive aggression, and reactive aggression did not change significantly. Younger age predicted greater progress in terms of global functioning. Children with high levels of proactive or proactive/reactive aggression did less well at discharge in terms of externalizing problems than did those with reactive aggression only. Drawbacks of this study are the absence of a control group, relatively small sample size, and no follow-up after discharge (Bennet, Macri, Creed, & Isom, 2001).

Table 2: Summary of studies of effectiveness of day treatment for pre-adolescents

Study	Study Design	Sample Size	Outcome Instruments	Results	Methodological Limitations
Bennet et al. 2001	Prospective	54	Rating scales, questionnaires, intelligence testing	Significant improvement in global functioning & teacher-rated attention problems. Reactive aggression predicted better outcome than proactive aggression	No control group Small sample size No follow-up post-discharge
Grizenko et al. 1992	Prospective	25	Rating scales, questionnaires	Improvement in self-esteem and peer relations	Small sample size No follow-up

					post-discharge
Grizenko et al. 1993	Prospective	30	Rating scales, questionnaires	Improvement in behaviours & self-perception; maintained at 6 month follow-up	Small sample size Short follow-up period
Grizenko et al. 1994	Prospective	63	Rating scales, questionnaires, intelligence testing	Predictors of positive outcome: using behavioural improvement as a measure: less severe symptoms, lower IQ, more disturbed family functioning; using school reintegration as a measure: younger age, absence of ADHD, no marital discord, higher reading scores, higher CGAS scores	No control group Small sample size No follow-up post-discharge
Grizenko 1997	Prospective	33	Rating scales, questionnaires	Improvement in all measures (behaviour, peer relations, self-perception & academic performance), maintained at 5-year follow-up. Predictors of positive outcome: parental cooperation, lower levels of externalizing behaviour, absence of problem pregnancy	No control group Small sample size
Kotsopoulos 1996	Prospective	46	Rating scales, questionnaires, intelligence testing	Improvement in internalizing & externalizing behaviours and academic performance	No control group Small sample size No follow-up post-discharge

Table 3: Summary of characteristics of samples examined in studies of effectiveness of day treatment for pre-adolescents

Study	Sample Size	Male (%)	Age range (years)	Diagnosis
Bennet et al. 2001	54	78	5-13	Behavioural Problems (DBD & other)
Grizenko et al. 1992	25	60	6-12	DBD
Grizenko et al. 1993	30	77	5-12	DBD

Grizenko et al. 1994	63	83	5-13	DBD
Grizenko 1997	33	91	5-12	DBD
Kotsopoulos 1996	46	85	7-13	DBD, adjustment disorder, anxiety disorder

Only a few studies have been published since Sayegh and Grizenko's review of the effectiveness of psychiatric day treatment programmes for children in 1991. These studies amount to 251 children (aged 5-13 years) who had all been admitted for behavioural problems. Unlike earlier studies, they have all used a prospective design and objective outcome measures. Grizenko et al. (1993), made use of a control group and carried out measures at admission, discharge and six-month follow-up and was probably the most robustly designed study. A possible criticism, however, is that the follow-up period was rather short. Grizenko (1997), improved on this by assessing outcome at five years following discharge, but this study lacked a control group. The only other study to use a control group was that of Grizenko et al. (1992). Limitations of the remainder of the studies were lack of control groups and absence of a follow-up assessment. All of the studies used relatively small sample sizes.

For children with severe behaviour problems, admission to a multimodal psychiatric day treatment programme results in improvement at discharge in a number of areas. These are peer relations (Grizenko et al., 1992; Grizenko, 1997), self-esteem (Grizenko et al., 1992; Grizenko et al., 1993; Grizenko, 1997), global functioning (Bennet et al., 2001), and academic performance (Grizenko, 1997; Kotsopoulos et al., 1996). While some studies showed an overall improvement in both internalizing and externalizing behaviours (Grizenko et al., 1993; Grizenko et al., 1994), others reported a significant improvement only in externalizing behaviours (Grizenko, 1997) and one paper reported behavioural improvement only reflected in the parents' questionnaire (Kotsopoulos et al., 1996). In the study that examined outcome at a six-month follow-up visit, the improvement recorded at discharge had been maintained across all spheres (Grizenko et al., 1993). In the study that evaluated participants five years following discharge, comparisons between initial and follow-up scores revealed that improvement was maintained on all measures, although there had been some deterioration between discharge and five-year follow-up on scores of self-esteem, behaviour, and depression (Grizenko, 1997).

Predictors of positive outcome were parental cooperation, less severe behavioural symptoms and a negative history of pregnancy complications (Grizenko, 1997), as well as younger age at admission and the absence of marital discord (Grizenko et al., 1994). Children with reactive aggression fared better than those with proactive aggression (Bennet et al., 2001). Since these studies included only children with severe behavioural problems, it is not known whether findings would apply to children with other diagnoses.

2.4.3 Psychiatric Inpatient Treatment For Children

Before examining the five studies identified in the search, the findings of the only review published to date that focused primarily on children will be summarized below (Blotcky et al., 1984). The main findings of two other reviews (Pfeiffer & Strzelecki, 1990; Epstein, 2004) will be only briefly mentioned since they include studies where the patient sample was made up wholly or partly of adolescents and may therefore be less relevant to the TLC study.

2.4.3.1 Summary of published reviews

Blotcky et al. (1984) reviewed 24 child inpatient follow-up studies of children (aged <12 years), conducted between 1936 and 1982. All these studies described some positive treatment effects, with more than half demonstrating positive long-term outcome. Findings were presented along ten dimensions relevant to long-term outcome (intelligence, organicity, diagnosis, symptom pattern, age at admission, sex, family functioning, treatment program, aftercare and interval between discharge and follow-up). Factors that were associated with a favourable prognosis were adequate intelligence, non-psychotic diagnoses, absence of neurologic disease, antisocial features and bizarre symptoms, good family functioning, later onset of symptoms, sufficient length of admission, specialised treatment programmes and participation in aftercare. Gender was not thought to influence outcome significantly.

Blotcky et al. recommended caution in interpretation of the studies' conclusions in view of the absence of rigorously controlled research designs. Some difficulties associated with this type of research were described. For example, assessment of complex behavioural and personality changes resulting from multimodal treatment programmes is much more difficult than evaluating changes in single variables. These difficulties are further compounded when major developmental changes are taking place in the maturing child. Since ethical constraints prohibit withholding

treatment from highly disturbed children in the interests of research design, control groups are often lacking and it is thus unclear which outcomes simply reflect the course of an illness or developmental maturation and which reflect the inpatient treatment (Blotcky et al., 1984).

Despite these limitations, Blotcky et al. pointed out that since all the follow-up studies reviewed demonstrated some positive treatment outcomes, excessive pessimism regarding the response of psychiatrically disturbed children to inpatient care was unwarranted. Blotcky's review had identified three broad groups of variables that demonstrated a relationship to the post-discharge functioning of children admitted to inpatient psychiatric units. These were patient variables (intelligence, CNS dysfunction, diagnosis, symptom pattern, gender), family variables (familial psychopathology, family functioning) and treatment variables (length of stay, aftercare, timing of follow-up). It is these groups of variables that were expanded upon to develop the list of variables subsequently explored in the TLC study.

Pfeiffer and Strezelecki's meta-analysis of 34 outcome studies of child and adolescent inpatient psychiatric hospital and residential treatment was published in 1990. Similar to the findings in Blotcky et al. (1984), those patients who did better were those with less severe, non-organic symptoms, the absence of antisocial features and well-functioning families. Specialised treatments and involvement in aftercare services were also predictors of positive outcome (Pfeiffer & Strzelecki, 1990). A criticism of Pfeiffer and Strezelecki's meta-analysis is that they had used new statistical analyses of existing 'poor' quality data (Epstein, 2004).

Epstein's paper (2004), respectively reviewed 26 and 14 studies of inpatient and residential treatment. These studies had been published between 1964 and 2001 and included child and adolescent samples. The studies reviewed were primarily descriptive, single-sample studies that often put forward equivocal findings in terms of the effectiveness of inpatient or residential treatment. Nevertheless, based on the studies reviewed, positive predictors of outcome were found to be younger admission age, high intelligence, less severe psychopathology at admission, absence of antisocial behaviours, a stable discharge environment, and participation in aftercare plans. Epstein (2004) concluded that while most young patients improved following admission to either an inpatient or residential unit, many did not. Functioning post-discharge was more strongly linked to a stable discharge setting than to change that had taken place during admission.

2.4.3.2 Outcome studies included in the current review

The five outcome studies evaluating inpatient psychiatric care for children were published between 1984 and 2003. Two originated from the UK, one from North America, one from New Zealand and one from Australia. All were prospective in design and used measures such as interviews, questionnaires, rating scales and intelligence tests.

Oliver and Knight (1984) evaluated the progress of 31 children (aged 4-11 years) admitted to a regional child psychiatric inpatient unit in Manchester. Children presented with an array of specific developmental disorders, such as elimination disorders, and behaviour disorders. The study utilized a number of instruments, such as the Rutter A Scale, and structured family interviews to assess the effectiveness of treatment. Assessments were done one month prior to admission, one week prior to discharge and at a six-to-nine month follow-up visit. Results indicated significant reductions in both global levels of disturbance and specific developmental problems and these changes remained stable during the follow-up period. Drawbacks of this study were the small sample size and the absence of a control group.

Ney, Adam, Hanton, & Brindad (1988) carried out a one-year follow-up study to evaluate a programme in Christchurch that offered five weeks of intensive inpatient treatment followed by five weeks of follow-up contact after discharge. 112 Children (aged 7-12 years) participated in the study. Most children had been diagnosed with conduct disorder. Other diagnoses included major depression, anorexia, autism, encopresis, and fire setting. Assessments, using questionnaires completed by patients, parents and teachers, were done at admission and one year following discharge. All children were found to have improved significantly on all five parameters of the Patterson-Quay Behaviour Problems Checklist (PQBPC). In addition most measures of family satisfaction and social functioning also improved. A methodological limitation of this study was the lack of a comparison group.

In a fifteen-month follow-up study of children admitted to a child psychiatric inpatient unit in Glasgow, Sheerin, Maguire, & Robinson (1999) used the Rutter Parent Interview, the Birlson Depression Scale, and the Harter Self Perception Profile for Children to measure symptomatology and self-esteem. 26 children (aged 3-13 years) were assessed at admission and at three and fifteen months post-discharge. Diagnoses were grouped into four broad categories, namely internalising disorders, externalising disorders, psychotic disorders and syndromes not elsewhere classified

(for example, encopresis and sleep disturbance). Analysis of the data revealed that an admission to the unit was associated with a significant reduction in overall symptomatology. Emotional-type symptoms were reduced at both follow-up visits and hyperactive-inattentive symptoms at the fifteen-month follow-up. There was no significant reduction in conduct symptoms or improvement in self-esteem. A possible limitation of this study is that diagnostic groups were reduced to four broad categories due to the low case-prevalence within the unit. Additional drawbacks include the small sample size and the lack of a control group.

Mayes, Krecko, Calhoun, Vesell, Schuch, & Toole (2001) examined outcome following child psychiatric hospitalization by assessing child, family, and treatment variables at admission, discharge, one-month and six-month follow-up points. Their sample comprised 110 children (ages 2-13 years). 81% had a diagnosis of behaviour disorder with the remaining children having diagnoses such as depression, anxiety disorder, PTSD, and anorexia. The Columbia Impairment Scale and the Children's Global Assessment Scale were used at admission, discharge, one-month and six-month follow-up to measure psychological functioning. Data analysis revealed significant improvements in discharge and follow-up measures. Children with more severe symptoms made greater improvements during admission but were more impaired at follow-up than those who presented with milder symptoms at admission. Children without a diagnosis of behaviour disorder did better than those with a behaviour disorder. None of the other variables examined (gender, race, age, IQ, family functioning, parental level of education, family medical history, parental participation in treatment, length of stay) had any significant association with admission progress or outcome at follow-up. While the sample size in this study was bigger than many of the other studies in this area of research, it is still limited by the absence of a control group.

In an Australian study, Gavidia-Payne, Littlefield, Hallgren, & Jenkins (2003) assessed the impact of inpatient treatment by examining child, parent, and family functioning outcomes prior to admission, at discharge and four months post-discharge. Questionnaires used included the Strength and Difficulties Questionnaire, the Health of the Nation Outcome Scales for Children and Adolescents, the Piers-Harris Children's Self-Concept Scale, the Parenting Scale, the Centre for Epidemiological Studies Depression Scale and the McMaster Family Assessment Device. 29 children (mean age of 9.3 years) participated in the study. 65% of children had behavioural disorders, 20% had adjustment or anxiety disorders, and 15% were diagnosed with pervasive developmental disorder (PDD).

Parent-child relationship problems were present in 30% of the sample. Over time, significant improvements in children's behaviour and functioning, parenting competency and practices were observed. There was also a reduction in parental depression. No significant changes were noted in family functioning. Apart from the small sample size and lack of a comparison group, this study is also limited by the fact that the effect of specific treatment variables on outcome was not explored.

Table 4: Summary of studies of effectiveness of inpatient treatment for pre-adolescents

Study	Study Design	Sample Size	Outcome Measures	Results	Methodological Limitations
Gavidia-Payne et al. 2003	Prospective	29	Questionnaires	Significant improvement in child behaviour and functioning, parent skills & levels of parental depression	No control group Small sample
Mayes et al. 2001	Prospective	110	Questionnaires Intelligence testing Rating scales	Significant improvement in psychological functioning at discharge & follow-up. Predictors of outcome: less severe symptoms & absence of behavioural problems.	No control group
Ney et al. 1988	Prospective	112	Questionnaires Interviews	Significant improvement on all 5 parameters of the PQBPC (conduct, personality, immaturity, delinquency, psychotic symptoms); improvement in social functioning	No control group
Oliver & Knight 1984	Prospective	31	Questionnaires Interviews Intelligence testing	Significant reductions in level of psychological disturbance and specific developmental problems, which were maintained throughout follow-up period	No control group Small sample
Sheerin et al. 1999	Prospective	26	Questionnaires Interviews Clinical assessment	Significant reduction in overall symptomatology, particularly so for emotional-type symptoms at both 3 & 15 month follow-up points & for hyperactive-inattentive symptoms at 15-month follow-up. No improvement in conduct or self-esteem. Those with depression benefitted most.	No control group Small sample Diagnostic groups conflated into larger groups due to low case prevalence within the unit

Table 5: Summary of characteristics of samples examined in studies of effectiveness of inpatient treatment

Author	Sample Size	Male (%)	Age (years)	Diagnosis
Gavidia-Payne et al. 2003	29	72	Mean age = 9.3	Mixed (behavioural disorders 65%, parent-child relational problems 30%, adjustment disorder, anxiety disorder, PDD)
Mayes et al. 2001	110	78	Range 2-13	Mixed (DBD, mood & anxiety disorders, autism)
Ney et al. 1988	112	73	Range 7-12	Mixed (Conduct disorder mainly, plus major depression, anorexia, encopresis, autism, child abuse)
Oliver & Knight 1984	31	65	Range 4-10	Behavioural disorders & specific developmental problems (elimination, speech disorders)
Sheerin et al. 1999	26	65	Range 3-13	3 broad groups (internalizing disorders, externalizing disorders, psychotic disorders)

As with research into psychiatric day treatment for children, there are few studies examining the effectiveness of psychiatric inpatient treatment for children. All the studies reviewed are prospective in design and utilise objective measures of assessment. All investigators have examined outcome not only at discharge, but also following a post-discharge period varying from 4-15 months. Although all the patient samples tended to be heterogeneous with regard to diagnoses, the majority of patients tended to have a behaviour disorder. Other common diagnoses were adjustment disorders, anxiety disorders, PDD and mood disorders. These studies include 308 children (ages 2-13 years) who have been admitted to an inpatient psychiatric unit. They approximated the 2:1 ratio of sex bias in childhood behaviour disorders with 71% being male (Oliver & Knight, 1984). Treatment programmes all employed a multimodal therapeutic model.

All of the studies showed significant improvements in one or more areas after inpatient treatment and these improvements were maintained at follow-up. Significant reduction in symptomatology was demonstrated (Oliver & Knight, 1984; Gavidia-Payne et al., 2003). This included a reduction in specific developmental problems, such as elimination disorders and speech disorders (Oliver & Knight, 1984). Emotional-type symptoms tended to improve earlier than hyperactive-inattentive symptoms (Sheerin et al., 1999). Significant improvements in psychological functioning (Mayes et al., 2001) and social functioning (Ney et al.,

1988) were found. There was no improvement in conduct symptoms or self-esteem (Sheerin et al., 1999). Child inpatient treatment was associated with improved competency, skills and lower levels of depression in parents (Gavidia-Payne et al., 2003). Predictors of positive outcome were less severe presentation and the absence of a behaviour disorder.

2.4.4 Conclusion

Psychiatric day-patient and inpatient treatment for children remain relatively neglected areas of research. In evaluating the results of the above-reviewed studies, it should be noted that they all have methodological limitations, some more than others. Most of the studies are limited by the absence of a comparison group, although this is understandable in view of the ethical concerns about withholding treatment from children and families in crisis (Bennet et al., 2001). Another limitation is that many of the studies have small sample sizes, albeit not surprising considering that day-patient and inpatient units usually only accommodate small numbers of patients at any one time, and that admissions are often lengthy (Green & Jacobs, 1998). While the studies of inpatient treatment include a wider range of disorders, the majority of children present with behavioural problems. The applicability of findings may not translate to those patients with other presentations. In addition, the effects of specific treatment variables on outcome have not been examined. Research into this particular area would be useful in order to determine the critical aspects of treatment associated with positive outcome (Gavidia-Payne et al., 2003). Finally, in view of the diversity found in inpatient and day treatment units and the many variables involved, data derived from one unit may not apply to other services. None of the papers reviewed have described units that offer both inpatient and a day-patient programme as the TLC does.

CHAPTER THREE

3. DESIGN AND METHODOLOGY

3.1 DESIGN

This is a descriptive, analytical, retrospective review of clinical records of all children admitted to the TLC from 1992 till 2008, either as inpatients or as day-patients. Data was captured in a database specifically designed for this study.

3.2 SETTING

The TLC is situated on a satellite campus of the RXH in CT, SA and has been functioning as a combined day- and inpatient unit since 1992. The unit caters for children (ages 6-12 years), although exceptions have been made. It is able to accommodate 9 patients at any one time, 6 of which may be inpatients. Admissions may be for the purpose of assessment (3-5 weeks), for treatment (6-12 months) or often a combination of the two. Occasionally the unit is able to accommodate a crisis admission, although this is not its key function. Children attend the unit during the school terms and return home during school holidays. Inpatients are required to attend from Monday to Friday, returning home for weekends with their parents or carers. Day-patients attend from 08h00 till 13h00 on school days. Many patients will spend time as both day-patients and inpatients during their admissions, depending on their specific needs and the course of their stay. The unit attempts to assess and treat patients diagnosed as suffering from a wide range of psychiatric disorders and upon discharge most return home, although some require long-term placement.

A multidisciplinary team, headed by a senior clinical psychologist, staffs the unit. The team includes a child and adolescent psychiatrist, a team of nurses (6 professional nurses during the day shift and 1 professional nurse and 1 staff nurse during the night shift), a social worker, a teacher, an OT, and a senior registrar undergoing training in child and adolescent psychiatry. In the past, the team also included a music therapist. Staff attend individual supervision sessions weekly and participate in a staff group, facilitated by an outside consultant every fortnight.

Admission to the TLC is reserved for the most severe cases that have been intractable to extensive outpatient treatment, including psychological, social, and/or biological interventions. Referrals are accepted from a wide range of agents

(schools, children's homes, social workers, primary health care workers, paediatricians, psychologists and psychiatrists) and are clinically assessed by the team for suitability for admission. Exclusion criteria are moderate, severe, or profound mental retardation, severe aggression, conduct disorder and physical conditions, which would not be manageable in the TLC setting.

3.3 TREATMENT

Historically, 'milieu therapy' focused on an individual psychoanalytic understanding of the child but, with time, successively incorporated concepts of group, behavioural, occupational and educational therapies to create a multimodal life experience (Woolston, 1995). Similarly, the TLC's treatment paradigm has shifted over the years. Currently, the programme is structured around a school day routine, but adopts a cognitive-behavioural therapeutic approach within a milieu environment. Although behavioural techniques are used in the unit, a psychodynamic understanding of cases is employed. The typical range of tasks undertaken by milieu staff was outlined by Green & Burke (1998) as:

(a) Basic care of the children: basic safety, nutrition, comfort and cleanliness
(b) Maintenance of the space and time organization of the unit
(c) Structured nursing and psychiatric assessments for individual children
(d) Individual counselling relationships with specific children
(e) Maintaining a healthy group dynamic amongst patients through active early interventions and group work
(f) Delivering specific psychological treatments such as anxiety management or cognitive-behavioural therapy
(g) Delivering and monitoring medications
(h) Taking part in team meetings or case conferences and presenting assessments
(i) Managing interactions with families at visiting times, including informal but intense communications from distraught or angry parents
(j) Maintaining physical organization and tidiness of the environment

In addition, all patients benefit from developmentally appropriate schooling, group sessions, group occupational therapy (OT), and one-on-one time with their 'special nurse'. The role of the 'special nurse' is to spend 'special time' with their assigned child for about one hour per week, with the purpose of forming a close and

meaningful relationship. This time may be spent doing a variety of activities ranging from play therapy to art, or an outdoor exercise. The special nurse also tends to have a closer relationship with the family of the child. Depending on individual patients' needs, treatment may also include individual OT, individual psychotherapy, parent-child work, and/or pharmacotherapy. In addition, parents attend weekly sessions with the social worker and a parent support group twice a term.

There are 3 weekly meetings where staff members discuss various aspects of patient management: ward rounds, 'goal meetings', and multidisciplinary case conferences. After each case conference, a feedback meeting is held between the staff and the parents of the particular child presented.

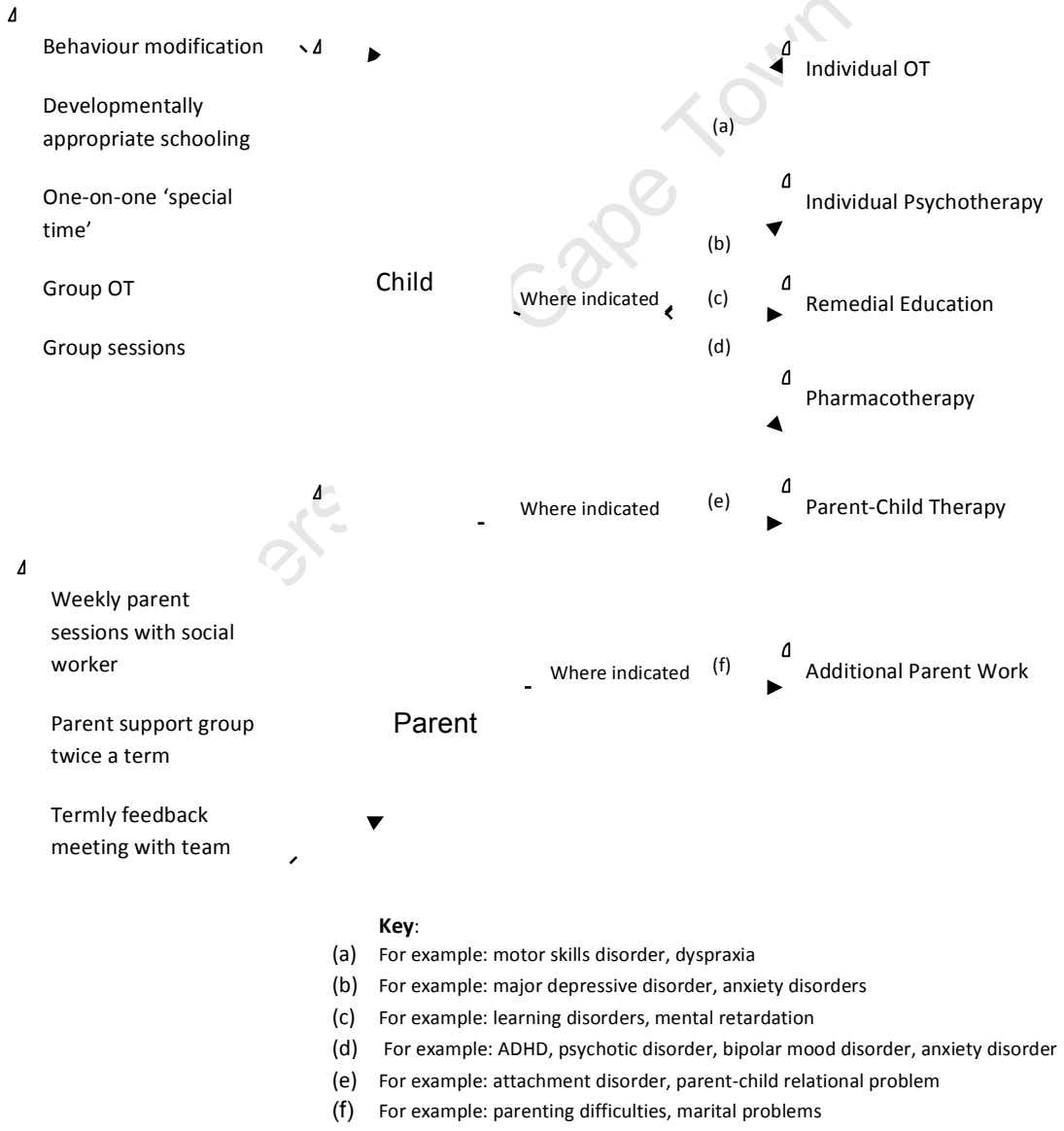

Figure 1: Integration of various treatment modalities used in the TLC

3.4 PARTICIPANTS

All patients admitted from 1992 till 2008 (216 in total) were included in the study. However, 15 patient folders were found to be incomplete or to contain insufficient information to make a comprehensive assessment and these patients were excluded from the study. In addition, there were 13 missing patient folders. Attempts to find them included searching for them manually in the TLC filing cabinets, as well as those cabinets containing the outpatient and archived folders. The patients' nursing and medical folders were also checked for misfiled psychiatric notes. Three patients were readmitted in this period. In all three cases, the diagnoses and measures including socioeconomic status and family structure, were unchanged and it was thus decided to exclude the second admission from the descriptive part of the study to avoid inflated data, but to use outcome data following the second discharge in the analytical part of the study. The final sample size was 188.

3.5 PROCEDURE

The Research Ethics Committee of the Health Sciences Faculty of the University of Cape Town approved this study. The collection of data did not involve any patient contact and the TLC and the researcher agreed upon the confidentiality of patients. The database was password-protected. Data was retrieved from a number of possible sources within the patients' folders, including referral letters, nurses' and clinicians' notes, discharge summaries, school reports, parent feedback forms and reports from special investigations or specialist referrals. Where subjective interpretation of clinical notes was required, the researcher consulted with members of the multidisciplinary team employed at the TLC, namely the head psychologist, the child psychiatrist, the head nurse, and the social worker. Concurring decisions were reached. Where information from the folders was unclear or missing, those staff members who have been employed at the TLC since the mid-nineties were interviewed. They were able to provide information about some of the patients' histories from longstanding familiarity with the cases. DSM-III-R diagnoses from older patient folders were reclassified to DSM-IV-TR diagnoses using concurring decisions of the researcher and her supervisor, AJF. The data was entered into a database and analysed using SPSS 14.0 for Windows.

3.6 MATERIALS

A database using Windows Access was designed to capture patient information, not solely for the purpose of this study, but also to enable the TLC to record patient details in the future. This can be used in the day-to-day operation of the unit, as well as provide a tool that will encourage and facilitate future research.

The database allows for the capture of:

- Contact information (patient particulars, demographic details and parents' contact details)
- Admission details (type of admission, date of admission and discharge, and source of referral)
- Patient history (patient psychiatric and medical history, family psychiatric and medical history, history of abuse, type of schooling and family structure)
- Clinical findings
- Special investigations
- DSM-IV-TR diagnosis (provisional or definitive)
- Treatment (psychotherapy - individual or group, OT - individual or group, parental guidance, family therapy, music therapy, pharmacotherapy)
- Discharge details (follow-up plans, length of stay, school to be attended following discharge, outcome at discharge, family participation during admission).

In addition, subsequent follow-up visits may be recorded, including the patient's outcome and compliance, as assessed by the clinician. The programme is able to automatically calculate the length of stay and the patient's age at admission. While most of the data is captured using drop-down menus, allowance has been made for the entry of additional relevant information in the form of free text fields.

3.7 MEASURES

For the purpose of this study, the following variables were captured:

1) Demographic variables
   - Gender.
   - Age at admission.
   - Race: This was classified according to the patient's hospital record: Black, Coloured, Indian, or White.
   - Language: English, Afrikaans, Xhosa, French, Other.

- Occupational grade: An occupational classification was used to assign socioeconomic status. The occupation of the member of the patient's household who earned all or most of the family's income was assessed as falling into one of the following groups: professional/managerial, clerical, artisan/skilled labour, manual/unskilled labour or unemployed. In those instances where more than one parent or carer worked, the higher earning occupation was recorded.
- Family structure: Depending on the child's family environment, caregivers and place of residence, there were seven possible options, namely living with both parents, living with one parent, living with both parents and relatives, living with one parent and other relatives, living with relatives but not parents, being fostered or residing in a children's home.
- IQ: above average, average, borderline intelligence, mild mental retardation, moderate mental retardation, unknown. IQ scores were recorded for those patients who had documented assessments in their clinical files. Various agents did the IQ tests (schools, previous clinicians prior to admission, TLC) and different tests were used, including the WPPST (Wechsler Preschool and Primary Scale of Intelligence), the WISC-R (Wechsler Intelligence Scale for Children – Revised), the JSAIS-R (Junior South African Intelligence Scale – Revised), and the SSAIS-R (Senior South African Intelligence Scale – Revised).

2) Variables relating to actual admission

- Year of admission.
- Sources of referral (outpatient unit, school, psychiatrist, psychologist, paediatrician, social worker, school, primary health carer/general practitioner).
- Reason for admission (diagnostic, therapeutic, combination, crisis).
- Type of admission (day-patient, inpatient, combination).
- School at admission (mainstream, schools that provide education for learners with special educational needs [ELSEN], nil).

3) Relevant variables obtained from the history or collateral information

- Family history of psychiatric illness (maternal, paternal, maternal and paternal, nil, unknown).
- History of child abuse (physical abuse, sexual abuse, emotional abuse or neglect): Child abuse was recorded as being present where there was a documented history thereof. If no record of child abuse was found it was

recorded as being unknown in view of the fact that it was often not specifically asked for in the history, especially in earlier years. The researcher thus felt that it was inaccurate to regard the absence of a documented history of abuse as a negative history, unless specified as such.

- Medical history.

4) Special investigations

- Psychometry (IQ testing).
- Blood investigations.
- Imaging (CT or MRI scan of brain).
- Electroencephalogram (EEG).
- Other investigations (e.g., Genetic testing).

5) Diagnosis

- DSM-IV-TR: diagnoses on Axes I, II, and III were captured. Diagnoses had been made on the basis of clinical interviews; no formal assessment tools had been used.

6) Treatment variables

- Individual psychotherapy.
- Group psychotherapy.
- Individual OT.
- Parental/family therapy.
- Music therapy.
- Psychotropic medication: The database captured whether or not patients were placed on medication, and the class/classes of medication. Where medication regimens were changed during admission, the discharge medication was recorded.
- Non-psychotropic medication: Similarly for non-psychotropic medication, it was recorded whether patients were on such medication, as well as the type of medication.
- Family participation in treatment plans (nil/poor, moderate, good, erratic/inconsistent, unknown): To assess family participation, the researcher used clinical notes to get an impression of parents' involvement in, and compliance with, treatment plans. In addition, parents' attendance at parent support meetings and weekly sessions with the unit's social worker, and weekend feedback forms completed by parents were considered. The researcher's impressions were discussed with the head of the unit, the unit's social worker and/or the head nurse and the family participation measure

was decided upon following concurrence among these individuals. Generally, if parents attended approximately 80% of meetings and therapy sessions, were compliant with medication and other therapy plans, and engaged well with the therapeutic team, they were assigned the 'good' score. A 'moderate' score would indicate approximately 60% attendance at relevant meetings and sessions, fair to good compliance with treatment plans, and fair to good engagement with the therapeutic team. An attendance rate of less than 60% at relevant meetings and sessions, poor compliance with treatment plans and failure to engage with the therapeutic team would warrant a family participation score of 'poor' or even 'nil'. Where participation fluctuated sufficiently enough to adversely affect engagement with the team and to compromise treatment plans, an 'erratic/inconsistent' score was assigned.

- The treatment modalities of behaviour modification, one-on-one time, and group OT were not included as variables for this study since all patients received these forms of therapy.

7) Discharge-related variables

- School at discharge (mainstream, ELSEN, home-schooling or nil).
- Discharge outcome (was measured using a five-point ordinal scale: no evidence of psychopathology, marked improvement, some improvement, no improvement, deterioration or unknown). To assess outcome, the researcher consulted with the senior psychologist, head nurse, psychiatrist, social worker, and a nurse employed at the unit since the early nineties. Discharge outcome was then assigned based on concurring decisions from this team. Factors considered when assigning outcome included symptom reduction, general level of daily functioning and interaction with family and peers.
- Length of stay (recorded as number of school days).

8) Follow-up variables

- Family compliance with follow-up: (nil/poor, moderate, good, erratic/inconsistent, unknown). Family compliance with follow-up was assessed in a similar fashion to family participation in treatment plans, except; in this instance the researcher discussed cases with the psychologist and psychiatrist who run the TLC follow-up clinic. The family compliance measure was derived at following concurring decisions of these three individuals.

- Outcome at follow-up: was measured on the same five-point ordinal scale used for outcome at discharge and was determined using the concurring decisions of members of the team involved in running the TLC follow-up service (senior psychologist, unit's psychiatrist and social worker). Factors considered when assigning outcome included symptom reduction, evidence of relapse, general level of daily functioning, interaction with family and peers and ability to reintegrate into school. The follow-up period ranged from 12-24 months.
- Place of follow-up: TLC or DCAP (Division of Child and Adolescent Psychiatry) outpatient follow-up, other child psychiatric follow-up service, social services, paediatric, private mental health care practitioner, school, children's home or nil/unknown.

3.8 ANALYTIC STRATEGY AND PLANNING

Data retrieved from patient clinical records was captured in a database using MS Access and once cleaned, was analysed using Windows SPSS.

For the descriptive part of the study, means and standard deviations were used to summarise patients' demographic characteristics and frequencies were used to summarise categorical data.

In view of the large number of possible diagnoses, diagnostic data was categorised to form 21 groups. For example, ADHD, ODD, and conduct disorder were all placed together in the category of 'attention deficit and disruptive behaviour disorders (ADDBD)'.

For the analytical part of the study, bivariate correlation tables were generated to explore possible concordances between the 21 diagnostic groups. When concordance was observed the chi-square test was used to determine the association.

Follow-up outcome code and discharge outcome code were graded 1 to 6 in the first and second models respectively.

1. Occupational grade was scored so that occupational grades representative of higher socioeconomic status were assigned a higher score.

2. Gender was coded so that males = 1 and females = 0.

3. Family structure was scored as follows so that the parameter ranged from 1 to 7 in an orderly manner.

Family Structure	Code
Both parents	1
Both parents plus other relatives	2
One parent plus other relatives	3
One parent	4
Relatives, not parents	5
Fostered	6
Children's Home	7

4. Family psychiatric history was coded as yes = 1 and no = 0

5. History of child abuse was not entered because only 'yes' and 'unknown' was available and it is incorrect to assume that 'unknown' is consistently 'no'.

6. Use of psychotropic medication and individual psychotherapy was coded as yes = 1 and no = 0

7. Family therapy and parental therapy were combined and coded as yes = 1 and no = 0 if either family or parental therapy was received.

8. Family participation was coded as follows:

Family Participation	Code
Nil/Poor	1
Erratic/Inconsistent	2
Moderate	3
Good	4
Missing data	5

9. Follow-up was coded as 'follow-up at DCAP/TLC' = 1, 'follow-up not at DCAP/TLC' = 0

10. Outcome codes were graded as below:

Discharge outcome & Follow-up outcome	Code
No evidence of psychopathology	1
Marked improvement	2

Some improvement	3
No improvement	4
Deterioration	5
Missing data	6

A stepwise regression procedure was used with discharge outcome and then with follow-up outcome as dependent variables. Child, family, and treatment factors were used as independent variables. Maximization of r-square was used as criteria for fit. The order of insertion is determined by using the partial correlation coefficient as a measure of the variables not yet in the equation. If the partial correlation drops after an insertion the variable with the lowest partial correlation is removed.

CHAPTER FOUR

4. RESULTS

Chapter four will describe the results obtained in the current study.

4.1 DESCRIPTIVE DATA

4.1.1 Demographic Data

4.1.1.1 Gender, age at admission, race, and language

188 patients were included in the sample, with 115 being male. The median age at admission was 9.8 years with an interquartile range (IQR) of 3.25 years. The distribution according to race was White 58%, Coloured 30.9%, Black 9.6% and Indian 1.6%. English was the first language of 63.8% of patients while 26.6% and 8.5% recorded Afrikaans and Xhosa as their home language, respectively. French was spoken by 1 child (0.5%) and 1 child (0.5%) was listed as speaking an 'other' language, presumed to be an indigenous language spoken in Namibia.

4.1.1.2 Occupational grade

Families' occupational grades were professional/managerial 37.2%, clerical 22.3%, artisan/skilled labour 14.9%, manual/unskilled labour 13.3% and unemployed 12.2%.

4.1.1.3 Family Structure

80% of patients lived with either one or both parents, whereas 20% did not. When broken down further, it was found that 41% of patients lived with both parents, 28.7% with one parent, 2.1% lived with both parents and relatives, and 8.5% lived with one parent and relatives. Relatives other than their parents were caring for 5.3% of patients, while 2.1% were fostered and 12.2 % were in the care of children's homes.

4.1.1.4 IQ

IQ assessments were not documented in 43.6% of cases. 6.9% had been assessed as having IQ scores that were above average, 30.4% as average, 10.6% as borderline, 8% fell into the mild mental retardation range and 0.5% into the moderate mental retardation range.

4.1.2 Measures Relating To Admission

4.1.2.1 Year of admission

The distribution according to year of admission is depicted in the figure below.

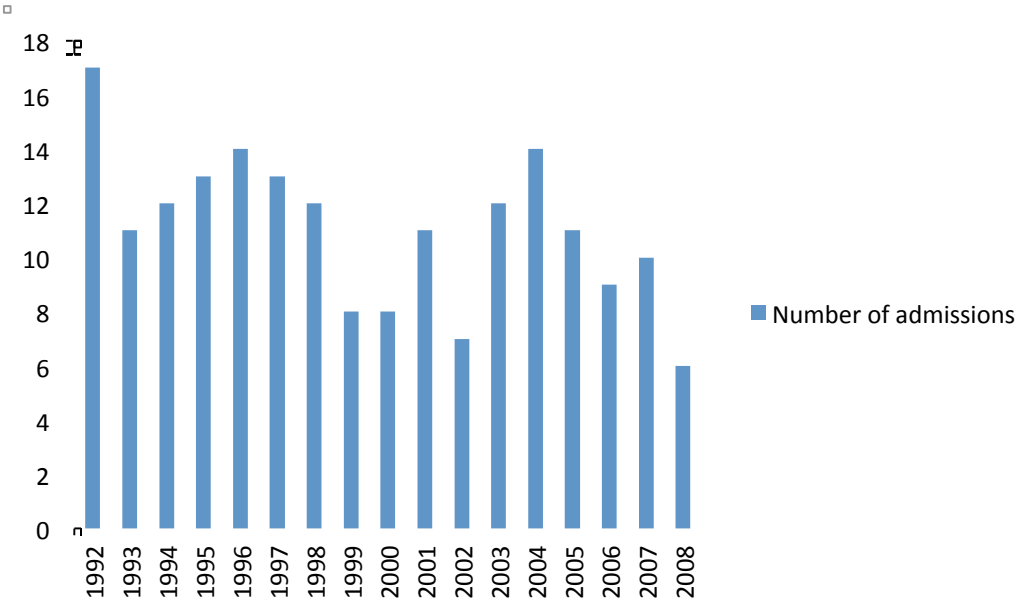

Figure 2: Distribution of admissions according to year

4.1.2.2 Sources of referral

Referrals were from varying sources and are outlined in figure 3 below.

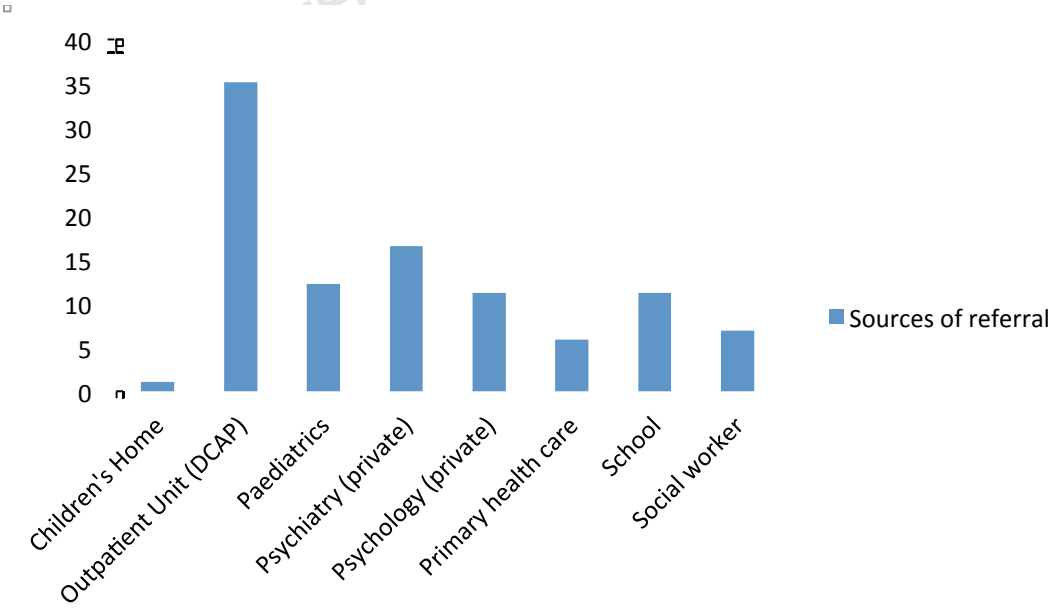

Figure 3: Sources of referral

4.1.2.3 Reason for admission

66.5% of patients were admitted for a combination of diagnostic and therapeutic purposes, 20.2% were admitted purely for diagnostic reasons, 9% only for therapeutic intervention and 4.3% were crisis admissions.

4.1.2.4 Type of admission

18.1% of patients were admitted as day-patients, 36.7% as inpatients, and 45.2% spent part of their admissions as day-patients and part as inpatients.

4.1.2.5 School at admission

At the time of admission, 76.1% of children were attending mainstream schools, 22.3% ELSEN schools and 1.6% was not in school.

4.1.3 Family And Personal Background History

4.1.3.1 Family history of psychiatric illness

56.9% of patients had parents who had a documented history of psychiatric disorder. Of these, 43% was a history from the mother, 20.6% from the father, and 36.4% from both parents. 23.4% of patients had a documented negative history for parental psychiatric disorder. In 19.7%, the parental psychiatric history was unknown.

4.1.3.2 History of child abuse

30.9% of patient folders documented a positive history of child abuse, whereas in 69.1% the abuse history was unknown. Of those who were abused, many experienced more than one type of abuse. 43.1% were exposed to physical abuse, 43.1% were exposed to sexual abuse, 20.7% experienced emotional abuse and 38.0% suffered from neglect.

4.1.3.3 Medical history

There was a positive medical history in 27.1% of patients and of these, 43% had neurological problems which included epilepsy, migraine, hemiplegia, spina bifida, spinocerebellar ataxia, Moebius syndrome, 'soft neurological signs', hearing impairment and PANDAS (paediatric autoimmune neuropsychiatric disorders associated with streptococcal infections). The most common disorder was epilepsy which was present in 23,5% of those with a medical history and in 6,4% of the whole

sample. The other common disorders among those with a medical history were asthma (13.7%) and eczema (3,9%).

4.1.4 Special Investigations

These investigations included blood tests, brain imaging (CT or MRI), electroencephalograms, psychometry, or 'other', and may have been done prior to admission by the referring agent or during admission. Psychometry was done in 54% of cases, 20% of patients received EEGs, 10% had brain scans, and 7% underwent blood investigations. 6% had 'other' investigations such as genetic testing.

4.1.5 Diagnosis

Using DSM-IV-TR, Axis I, II, and III diagnoses were recorded from the patients' discharge summaries and are presented in the table below.

Table 6: List of diagnoses present in the sample

AXIS I
Adjustment disorders
With depressed mood
With anxiety
With mixed anxiety and depressed mood
With disturbance of conduct
With mixed disturbance of emotions and conduct
Anxiety disorders
Generalised
OCD
PTSD
Separation
Social
Anxiety disorder (NOS)
ADDBD
ADHD
ODD
Conduct disorder
Eating disorders
Anorexia nervosa
Bulimia nervosa

Eating disorder NOS
Elimination disorders Encopresis Enuresis
Impulse control disorders
Learning disorders Mathematics NOS Reading Written expression
Mental disorder secondary to a general medical condition (GMC)
Mood disorder Bipolar Dysthymia Major depressive disorder Mood disorder NOS
Motor skills disorder
PDD Asperger's Syndrome Autistic disorder PDD NOS
Psychotic disorders Brief psychotic disorder Schizophrenia Psychotic disorder NOS
Reactive attachment disorder
Selective mutism
Somatoform disorders Conversion disorder Somatisation disorder
Tic disorders Tic disorder NOS Tourette's disorder
V Codes Relational problems Child abuse Family problem

No diagnosis on Axis I
AXIS II
Borderline intellectual functioning
Mental retardation Mild Moderate
AXIS III disorders
Any medical condition present

Due to the large number of diagnoses, it was decided to categorise diagnoses into groups. Although 'relational problem' and 'child abuse' are both classified as V Codes in the DSM-IV-TR, due to the large number of patients with these diagnoses, it was decided to regard these as individual categories, rather than to group them together with the other V Code diagnoses of 'family problem' and 'no diagnosis on Axis I'. The diagnoses 'borderline intellectual functioning' (11,2%) and mental retardation (7.9%) were grouped together to form one category. Of the 15 patients with mental retardation, only one had a diagnosis of moderate mental retardation while the remaining 14 had a diagnosis of mild mental retardation. A final list of 21 categories was compiled. The frequencies of these 21 categories are represented in the table below.

Table 7: Frequencies of diagnostic categories

Diagnostic category	Frequency	Percentage
Adjustment disorder	7	3.7
Anxiety disorder	42	22.3
ADDBD	71	37.8
Eating disorder	5	2.7
Elimination disorder	8	4.3
Impulse control disorder	2	1.1
Learning disorder	42	22.3
Mental disorder secondary to GMC	3	1.6
Mood disorder	23	12.2
Motor skills disorder	4	2.1
PDD	27	14.4

Psychotic disorders	5	2.7
Reactive attachment disorder	1	0.5
Selective mutism	17	9
Somatoform disorders	11	5.9
Tic disorders	3	1.6
V Code: Relational problems	76	40.4
V Code: Child abuse	28	14.9
V Code: Other	5	2.7
Borderline intellectual functioning and mental retardation	36	19.1
Axis III disorder	29	15.4

In the table above, the most common diagnostic category was that of relational problems, and among these the vast majority was parent-child relational problems. ADDBD was the next most commonly diagnosed category followed by the anxiety disorders and learning disorder. Among the anxiety disorders, separation anxiety disorder and generalized anxiety disorder were most commonly diagnosed.

In all cases of 'mental disorder secondary to GMC' the condition was epilepsy. V Code diagnoses included 'family problem' and 'no diagnosis on Axis I'.

Although 14.9% of patients had a formal diagnosis of child abuse documented on Axis I, 30.9% of patients' clinical notes reflected a history of child abuse.

There was a high level of *comorbidity*, with 81.9% of patients having more than one diagnosis. However, it should be borne in mind that 'Axis III disorders' was also a diagnostic category.

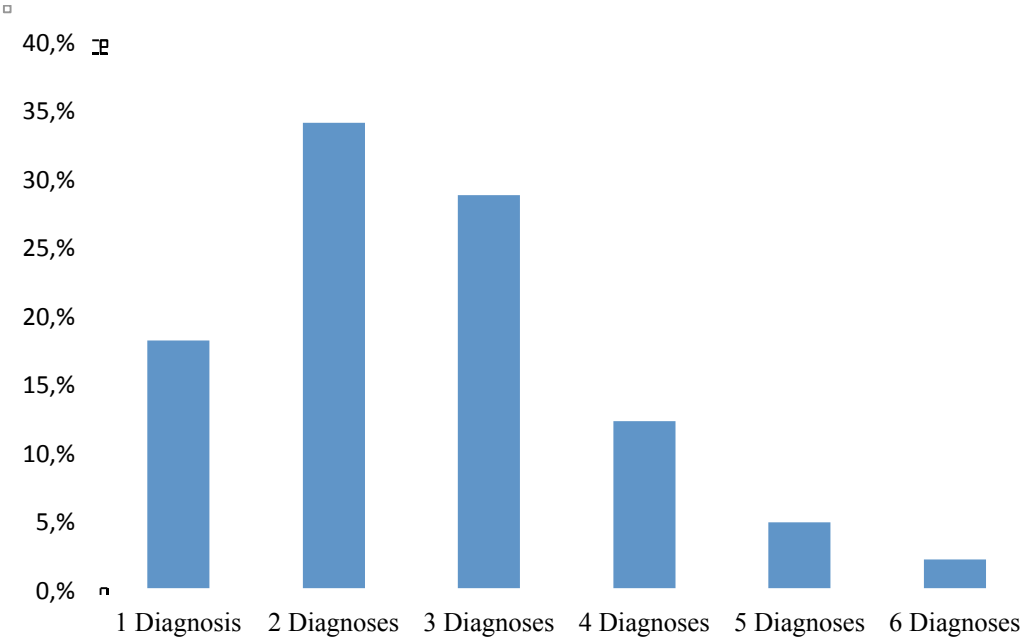

Figure 4: Distribution of patients according to their number of diagnoses

4.1.6 Treatment Variables

4.1.6.1 Psychotherapy, OT, music therapy, and parent/family therapy

19.1% of patients were referred for individual psychotherapy, 10.6% for individual OT, 6.9% for music therapy and 2.7% for group psychotherapy, respectively. 70.2% of parents participated in parent/family therapy.

4.1.6.2 Pharmacotherapy

With regards to medication, 61.2% of patients were prescribed psychotropic medications and 10.1% were on medication for medical conditions.

4.1.6.3 Psychotropic medication

Six classes of psychotropic medications were prescribed, namely selective serotonin reuptake inhibitors (SSRIs), first generation antipsychotics (FGAs), second-generation antipsychotics (SGAs), mood stabilisers (MSs), stimulants, and tricyclic antidepressants (TCAs). 49.5% of the patient sample was on monotherapy, and 11.7% on a combination of agents. 16 categories of psychotropic medications were created to accommodate all the combinations used.

Medication/s	Frequency	Percentage
SSRI	25	13.3
FGA	15	8
SGA	12	6.4
MS	4	2.1
Stimulant	24	12.8
TCA	13	6.9
SSRI and Stimulant	2	1.1
SSRI and SGA	4	2.1
SGA and MS	3	1.6
Stimulant and MS	1	0.5
Stimulant and SGA	7	3.7
Combination of two MS's	1	0.5
SSRI and SGA and MS	1	0.5
SSRI and SGA and Stimulant	1	0.5
SSRI and MS and Eltroxin	1	0.5
SSRI and Benzodiazepine	1	0.5
No medication	73	38.8
Total	188	100

Table 8: Type and frequency of psychotropic medication usage

4.1.6.4 Non-psychotropic medication

The most commonly prescribed agents for medical conditions were anti-convulsants (prescribed for epilepsy) and antimicrobials.

4.1.6.5 Family participation in treatment

58.5% of families were assessed as having a 'good' family participation score, with 15.4% scoring 'moderate'. 13.3% were scored 'erratic/inconsistent' and 11.7% participated poorly or not at all. 1.1% of families could not be assessed from the information available and were scored as 'unknown'.

4.1.7 Discharge-Related Variables

4.1.7.1 School at discharge

46% of patients were discharged to mainstream schools, 51.1% to ELSEN schools and 1.6% were to be home-schooled. 1.1% was not placed in any type of educational facility at the time of discharge.

4.1.7.2 Discharge outcome

23.4% showed marked improvement, 54.3% of patients showed 'some improvement', and 22.3% showed 'no improvement'.

4.1.7.3 Length of stay

Length of admission ranged from 2 to 475 days, with a median length of stay 110.5 days and an IQR of 142.5 days.

4.1.8 Follow-Up Variables

4.1.8.1 Family compliance with follow-up

35.6% had 'good' scores and 8% had 'moderate' scores. 7.4% had erratic/inconsistent compliance with follow-up and 11.7% complied poorly or not at all. Compliance with follow-up was unknown in 37.2% of cases, most of who were not followed up by DCAP.

4.1.8.2 Outcome at follow-up

23.9% of patients showed 'marked improvement' and 23.4% showed 'some improvement'. 9% were assessed as having had 'no improvement', whereas 0.5% showed 'no evidence of psychopathology'. The outcome in 43.1% was 'unknown'; this may have been because patients were followed up elsewhere or due to insufficient information in the clinical notes.

4.1.8.3 Place of follow-up

In 2003, the TLC follow-up clinic was formed to provide a dedicated follow-up service to children discharged from the TLC. Prior to this, the referring agent predominantly followed up patients after discharge. Prior to 2000, the majority of referrals were from clinicians in the outpatient department of the DCAP, and they thus followed up on these patients. Since 2000 however, the number of referrals from sources other than DCAP increased substantially. For the purpose of this

study, patients who were followed up at either the TLC clinic or DCAP outpatient clinic were grouped together, since both these clinics are part of the Division of Child and Adolescent Psychiatry, and the former evolved from the latter. The table below indicates the number and percentage of patients followed up at the various agencies/service providers.

Place of Follow-up	Frequency	Percentage
TLC or DCAP outpatient unit	119	63.6
Psychiatry outpatients at other hospitals (not RXH)	4	2.1
Social Services	22	11.7
School	7	3.7
Primary Health Care	7	3.7
Psychiatrist Private Practice	11	5.9
Psychologist Private Practice	7	3.7
Paediatrician	3	1.6
Children's Home	4	2.1
Unknown	4	2.1
Total	188	100

Table 9: Distribution of patients according to place of follow-up

22.9% of patients were sent back to the referring agent for follow-up, while 77.1% were either followed up by the TLC/DCAP or were referred on to other appropriate services, such as social services.

4.2 ANALYTICAL DATA

4.2.1 Establishing Concordance

Bivariate correlation tables and cross tabulation were used to determine possible concordances between the twenty-one diagnostic categories.

Conditions that were completely independent of the other diagnostic categories (no concordance) were: eating disorders, elimination disorders, impulse control disorders, somatoform disorders, tic disorders, disorders secondary to GMC, and V Codes (other than the V Code categories of relational problems and child abuse).

There were significant relationships between borderline intelligence/mental retardation and child abuse (p=.0005), and learning disorder (p=.014), respectively. ADDBD shared some commonality with learning disorder (p=.0005), mood disorder (p=.0006), anxiety disorder (p=.008), and selective mutism (p=.01), respectively.

Diagnostic Group	Diagnostic group concordant with	p Value
Borderline intelligence/ Mental retardation	Child abuse Learning disorder	.0005 .014
ADDBD	Learning disorder Mood disorder Anxiety disorder Selective mutism	.0005 .0006 .008 .01

Table 10: Concordance among diagnostic groups

4.2.2 Modelling Outcome

To determine whether child, family, and treatment variables were related to outcome, a linear regression model was constructed with outcome (discharge outcome and follow-up outcome, respectively) as the dependent variable. The adjusted R-Square value was used as the selection criterion. Variables entered into the regression equation included age, gender, race, occupational grade, IQ, history of child abuse, family structure, family psychiatric history, family participation in treatment, use of medication, use of individual psychotherapy, participation in family/parent therapy and place of follow-up.

4.2.2.1 Discharge outcome

Regression analysis using discharge outcome as the dependent variable, indicated that a subset of 12 variables maximized adjusted R-Square (.159) (Table 11). This indicates that only about 16% of the adjusted variance is explained by the independent variables in the equation (gender, race, occupational grade, IQ, history of child abuse, family structure, family psychiatric history, family participation in treatment, use of medication, use of individual psychotherapy, participation in family/parent therapy and place of follow-up).

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.553(a)	.305	.159	.566
Predictors: (Constant), length of stay, gender, level of family participation in treatment, family psychiatric history, IQ, year of admission, individual psychotherapy, occupational grade, family structure, psychotropic medication, family/parent therapy, follow-up at TLC/DCAP or other				

Table 11: Model summary for Regression Analysis using discharge outcome as a dependent variable

Stepwise regression indicated that use of psychotropic medication (p=0.037) and year of admission (p=0.042) were the only two variables that predicted outcome at discharge, and taking the signs of the coefficients into consideration, the use of psychotropic medication and later year of admission were factors associated with better outcome (Table 12).

Step	Variable entered	Final Step			Cumulative			
		β	*t*	Sig(*t*)	Adj R^2	*df*	*F*	Sig(*F*)
1	Use of psychotropic medication	-.259	-2.129	.037	.120	1	10.396	.002
2	Year of admission	-.252	-2.073	.042	.161	2	7.600	.001

Table 12: Stepwise Multiple Regression Analysis predicting outcome at discharge

The exclusion of the 22 patients who had length of stays of less than four weeks, made little difference to the model, with the adjusted R-Square changing from 0.159 to 0.155. The variables 'later year of admission', and 'the use of psychotropic medication', remained the only two important contributors to outcome at discharge.

4.2.2.2 Follow-up outcome

Regression analysis using follow-up outcome as the dependent variable, indicated that a subset of 13 variables maximized the adjusted R-Square (0.447) (Table 13). This indicates that about 45% of the adjusted variance was explained by the independent variables in the equation (age, gender, race, occupational grade, IQ, history of child abuse, family structure, family psychiatric history, family participation in treatment, use of medication, use of individual psychotherapy, participation in family/parent therapy and place of follow-up).

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.742(a)	.551	.447	1.215
Predictors: (Constant), age at admission, IQ, gender, level of family participation in treatment, follow-up at TLC/DCAP or other, family psychiatric history, individual psychotherapy, family structure, occupational grade, psychotropic medication, length of stay, family/parent therapy, year of admission				

Table 13: Model summary for Regression Analysis using follow-up outcome as a dependent variable

Using the stepwise procedure, the ultimate predictors of outcome at follow-up were level of family participation in treatment (p=.000), whether or not follow-up was at TLC/DCAP (p=.000), occupational grade (p=.006), and year of admission (p=.036) (Table 14). Higher family participation, having follow-up at the TLC/DCAP, lower occupational grade and later year of admission were factors noted to be associated with better outcome. The inclusion of diagnoses in the analysis did not improve the model.

Step	Variable entered	Final Step			Cumulative			
		β	*t*	Sig(*t*)	Adj R^2	*df*	*F*	Sig(*F*)
1	Follow-up at TLC/DCAP	-.423	-3.845	.000	.284	1	28.42	.000
2	Level of family participation	-.361	-3.861	.000	.360	2	20.41	.000
3	Occupational grade	0.267	2.815	.006	.403	3	16.53	.000
4	Year of admission	-.239	-2.137	.036	.434	4	14.21	.000

Table 14: Stepwise Multiple Regression Analysis predicting outcome at follow-up

The above analysis was repeated without those patients who had a length of stay of less than four weeks, since it was felt that they would not have benefitted from the unit's treatment programme during this short period. Patients with such brief admissions were primarily admitted for diagnostic reasons or may have been discharged prematurely due to unacceptable levels of aggression.

The exclusion of the 22 patients who had length of stays of less than four weeks, however, made little difference to the model. The adjusted R-Square changed from .447 to .427. The same variables (level of family participation in treatment, occupational grade, year of admission, follow-up at TLC/DCAP) remained the most important contributors to outcome at follow-up.

4.3 SUMMARY

These results will be discussed in the following chapter. However, a summary of the salient findings is given below.

4.3.1 Descriptive Data

Of the 188 patients included in the sample, 115 were male and the median age was 9.8 years (IQR = 3.25). The majority of the patients were English-speaking (63.8%) and demographically classified as White (58%). Most families (88%) were employed. 80% of patients were living with either one or both parents. Strikingly, 56.9% of patients had a documented history of parental psychiatric disorder and 30.9% had a positive history of child abuse.

Diagnoses were categorised into 21 groups, with relational problems (40.4%), ADDBD (37.8%), anxiety disorders (22.3%), and learning disorders (22.3%) being the most common. There was a high rate of comorbidity (81.9%).

With regard to treatment, 61.2% received psychotropic medication; monotherapy with SSRIs (13.3%) and stimulants (12.8%), respectively, were the most frequently prescribed. Parent and/or family therapy was the most frequently used non-pharmacological treatment modality (70.2%). Median length of stay was 110.5 days (IQR = 142.5).

In terms of outcome, 77.7% of the patients for whom we had data had shown a degree of improvement at discharge. Unfortunately, the outcome at follow-up is unknown in 43% of patients. However, 47.8% were assessed as having made some degree of progress at follow-up and only 9% were assessed as having made no progress.

4.3.2 Analytical Data

Bivariate analysis showed concordance between borderline intelligence/ mental retardation and child abuse (p=.0005) and borderline intelligence/ mental retardation and learning disorders (p=.014). ADDBD shared commonality with anxiety disorders (p=.008), learning disorders (p=.0005), mood disorders (p=.0006), and selective mutism (p=.01).

When considering follow-up outcome, regression analysis revealed that higher levels of family participation (p=.000), having had follow-up at the DCAP or the TLC (p=.000), later year of admission (p=.036) and lower occupational grade (p=.006)

were factors associated with a better outcome. In terms of discharge outcome, regression analysis showed that the use of psychotropic medication (p=.037) and later year of admission (p=.042) were the only two variables that predicted an improved outcome.

CHAPTER FIVE

5. DISCUSSION

The key findings of this study, which were summarised at the end of Chapter Four, will now be discussed in further detail. Findings will be explained in the context of the TLC and the SA setting. Where possible, findings will also be compared to those reported in the international literature. The methodological limitations of this study will then be addressed and potential future studies in this area will be presented.

5.1 DESCRIPTIVE DATA

5.1.1 Demographic Data

5.1.1.1 Gender, age, race, language, and occupational grade

Gender. There was a preponderance (61%) of males in the study which accords with epidemiological studies of psychiatric disorders in childhood (Sheerin et al., 1999; Blanz & Schmidt, 2000). This 2:1 male to female ratio is also well known in childhood behaviour disorders (Oliver & Knight, 1984).

Age. The median age at admission of 9.8 years (IQR = 3.25) is reflective of the unit's policy of admitting children between the ages of six and twelve, with the occasional exception in rare circumstances.

Race. The race distribution of the sample (58% White, 30.9% Coloured, 9.6% Black and 1.6% Indian) is not representative of the general population (Statistics South Africa, 2009). Although the TLC had originally been opened in 1975 as a psychiatric day hospital for White children, by the time it had amalgamated with the inpatient unit in 1992, it accepted children of all race groups (Robertson, 2009). Despite this, and the political transition in 1994, the vestiges of Apartheid still shape SA society. The overrepresentation of White children may be further explained by a number of factors. Firstly, the TLC is situated in an area historically allocated to 'White' or 'Coloured' under the Group Areas Act of 1950. While the TLC considers referral from the whole of the WC, it may be less accessible to those living further away. In addition, two other major psychiatric hospitals may have drawn referrals into their respective child psychiatry units. A second explanation is that just over a quarter of referrals came from the private sector suggesting that a large proportion of the

sample is from a relatively privileged and affluent background. The language barrier imposed by the limited number of Xhosa-speaking staff members would be another factor in the underrepresentation of Black children. Only 1.6% of the sample was Indian. A possible explanation may be cultural and religious differences that discourage parents from having their children admitted. For example, many Indian families in the WC are either Hindu or Muslim, and may shy away from an institution perceived as predominantly 'White' and therefore 'Christian'.

Language. English was the first language of 63.8% of patients while 26.6% and 8.5% recorded Afrikaans and Xhosa as their home language, respectively. French was spoken by 1 child (0.5%) and 1 child (0.5%) was listed as speaking an 'other' language, presumed to be an indigenous language spoken in Namibia.

The language distribution among the sample largely reflects the racial demographics. For example, 9.6% of the sample was Black and 8.5% were Xhosa-speaking. Most of the children classified as Coloured (30.9%) listed Afrikaans as their first language and 26.6% of children were reported to be Afrikaans-speaking. It is plausible that the majority of the White children would have been English-speaking, since the Afrikaans community tends to live in the catchment area of Tygerberg Hospital.

The distribution of language largely mapped the racial demographics, reinforcing the idea that the unit provided a service to only a limited sector of the population. Further inpatient services would need to strongly consider outreach, or the development of satellite units in disadvantaged areas.

Occupational classification. In this study, an occupational classification similar to that devised by Edwards in the 1930s and used by the US Census Bureau (Mueller & Parcel, 1981) was used as a measure of socioeconomic status.

Families' occupational grades were professional/managerial 37.2%, clerical 22.3%, artisan/skilled labour 14.9%, manual/unskilled labour 13.3%, and unemployed 12.2%, indicating that more patients came from the higher socioeconomic groups. This may reflect that these families are more able to access specialised services or more able to afford specialised services.

Another possible explanation is that occupational grade is also influenced, at least in part, by South Africa's Apartheid past. Since the majority of children in the sample

were White (60%), it could account for the majority of families having the two higher occupational grades (professional/managerial 37.2% and clerical 22.3%).

5.1.1.2 Family structure

In this study, a relatively high proportion (60%) of children had disrupted family structures. While 80% of patients lived with either one or both parents, only about half of these lived with both parents. The remaining 20% of children in this study were living in children's homes, foster care or with relatives other than their parents. This finding is not surprising since the literature indicates that lower levels of psychopathology are associated with an intact family structure.

During the past few decades, several studies have shown that family structure affects children's wellbeing. For example, children raised by both original parents tend to do better in several domains of wellbeing when compared to those who were born to single mothers or those whose parents are divorced, and parents' marriage or remarriage do not remove the disadvantages. These findings have been found to apply across ethnic and age groups (Thomson, Hanson, & McLanahan, 1994).

As mentioned above, children living in single-adult households have been found to be less well adjusted than children living with both biological parents (Barbarin & Soler, 1993). However, it may be factors such as economic hardship facing single mothers and their children, rather than family structure per se, which are related to the child's wellbeing (Vandewater & Lansford, 1998). Some studies have also shown that parental conflict may influence children's well being more than family structure alone (Vandewater & Lansford, 1998).

Research studies have shown that psychopathology among children in care is higher than that of the general population. For example, behavioural problems in this group may be at 2.5 times the rate expected in a community population (Clausen, Landsverk, Chadwick, & Litrownik, 1998).

5.1.1.3 Intelligence

IQ was only documented in 56% of cases and many of these cases would have been tested prior to admission to the TLC, particularly those referred by school psychologists. 6.9% had been assessed as having IQ scores that were above average, 30.4% as average, 10.6 as borderline, 8% fell into mild mental retardation range and 0.5% into the moderate mental retardation range. In these cases where IQ was documented, the distribution approximates normal, bearing in mind that the

TLC does not usually accept patients with IQ's lower than that falling within the 'mild mental retardation' range.

5.1.2 Measures Relating To Admission

5.1.2.1 Sources of referral

Ideally, a multidisciplinary outpatient team should have assessed children who are referred for inpatient admission, including liaison with education (Maskey, 1998). However, due to the limited availability of resources and the inaccessibility of specialised services to many patients, the majority of referred patients would not have had the benefit of a multidisciplinary team assessment. 35% of referrals were from the outpatient unit at the DCAP at the RXH. Just over a quarter of patients were referred by mental health providers (psychiatrists and psychologists) in the private sector. While these families are able to afford private health care, there is no private health facility for specialised inpatient or day-patient psychiatric services for children in SA. About 12% of referrals originated from paediatricians, predominantly from within the RXH. Those children referred by agencies such as schools (12%), social workers (6%) and children's homes (1%) may have presented with symptoms severe enough to warrant bypassing the outpatient unit and gaining direct admission to the TLC or may have been receiving intervention with limited response. About 5% of referrals originated from a primary care setting; the clinic at which the unit's psychiatrist consulted on a monthly basis. A very small number of referrals would have been "crisis admissions", for example children presenting with suicidal ideation who were not contained adequately in other settings, warranting urgent admission.

The TLC is burdened with large numbers of referrals, as evidenced by its long waiting list. Referral pathways with standard treatment protocols at each level of care have not been established. This, together with the lack of intersectoral liaison (for example between social services, health care and education), overloads the case burden given to child psychiatric units in SA (Vogel & Holford, 1999). Although admission to the TLC should be reserved for the most complex cases that cannot be managed by outpatient services, referrals are often accepted from multiple sources. This is in keeping with practices in the UK, for example, where admission thresholds are not absolute, but allow for the expertise and available resources in the referrer's service (Maskey, 1998).

5.1.2.2 Reason for, and type of, admission

The majority of patients (66.5%) were admitted for a combination of diagnostic and therapeutic purposes. 20.2% were admitted purely for diagnostic reasons. Intensive staff observation and removal from the family environment are two ways in which an inpatient or day-patient admission can uniquely aid in the diagnostic process. The 9% of patients admitted purely for therapeutic intervention were most likely being treated in the private sector but were referred for the multidisciplinary therapeutic input and milieu care exclusively provided by units such as the TLC. 4.3% were crisis admissions.

5.1.3 Family And Personal Background History

5.1.3.1 Family history of psychiatric illness

More than half of patients (56.9%) had a documented history of parental psychiatric disorder. Of these, 43% was a history from the mother, 20.6% from the father and 36.4% from both parents. The prevalence of parental disorder may however be even higher, since parental psychiatric history was unknown for 19.7% of the patients. Although details of parental disorder were not noted in all cases, diagnoses such as depression, anxiety disorder, alcohol and substance abuse, schizophrenia and personality disorder were recorded. These rates are similar to the 41.9% of mothers with a psychiatric diagnosis reported by Oliver and Knight (1984).

The adverse effects of maternal psychopathology on the development and functioning of children is well documented in the literature (Goodman & Gotlib, 1999). There is also a significant association between paternal psychiatric disorder and child psychopathology and in most cases the degree of risk associated with paternal psychopathology has been shown to be comparable to that associated with maternal psychopathology (Phares & Compas, 1992).

Most studies in this area have examined and demonstrated a link between parental affective illness and child psychopathology (Keller, Beardslee, Dorer, Lavori, Samuelson, & Klerman, 1986). Possible factors may be the heritability of the parental disorder, exposure to negative parental cognitions and behaviours, and the stressful context.

The high incidence of parental psychiatric disorder in this study is an interesting and important finding in that parental psychopathology may be a contributing factor in the development of the child's psychopathology and may also affect family participation in treatment and thus influence outcome.

5.1.3.2 History of child abuse

In this study, a history of child abuse denotes physical or sexual abuse or neglect, or a combination of these. Although only 14.9% of patients had a formal diagnosis of child abuse entered on Axis I, 30.9% of patients had a history of child abuse when case notes were also examined. This discrepancy is probably best explained by the fact that in the years prior to 2000, the system of documenting diagnoses did not allow for the recording of comorbid conditions. In most cases the V Code of child abuse would not have been the primary diagnosis and thus may not always have been recorded on the discharge summary (de Jager, 2010).

Rates of abuse reported in the international literature range from 19% (Mayes et al., 2001) to 49% (Sadeh, Hayden, Mcguire, Sachs, & Civita, 1994).

A two-year study of two outpatient child psychiatry clinics in Johannesburg found that 26% of girls and 14% of boys had a diagnosis of child abuse, either physical or sexual, or both (Vogel & Holford, 1999). This population sample, however, had a different demographic profile to that of the TLC sample in that it included patients up to nineteen years of age, 70% of the patients were Black, and there was a male: female ratio of 1:1.

In another SA study that looked at admissions to an inpatient mental health centre for children and adolescents in KwaZulu-Natal, the authors reported that in 2% of cases, the reason for referral was child abuse. However, the number of cases that subsequently received a diagnosis of child abuse was not specifically reported (Moodley & Pillay, 1993).

SA is known to have extremely high rates of sexual and physical abuse of children. For the year 2004-2005, children were victims in half of all reported cases of indecent assault (total cases 9805) and close to half of all reported rapes (total cases 54926) (Richter & Dawes, 2008).

Taking into account the high rates of child abuse in SA, the actual prevalence of child abuse in this study's sample may be even higher than the noted 30.9%. Existing psychiatric conditions, such as mental retardation or hyperactivity, may

increase a child's vulnerability to neglect and physical or sexual abuse (Sadock & Sadock, 2003f), and this may well apply to some of the patients in this sample. In other cases, the child abuse may have been a contributing factor to the development of the patients' psychiatric disorder. Other factors which are known to contribute to child abuse and neglect, and which may be relevant in this sample, are stressful living conditions including unemployment, overcrowding and housing problems, parental substance abuse and parental psychopathology (Sadock & Sadock, 2003f).

It is important to note that while a history of child abuse was recorded in 30.9% of patients in this sample, the abuse history of the remaining 69.1% is unknown since this information could not be elicited from the patient notes. While there is a higher index of suspicion for abuse in recent years at the TLC, and a specific abuse history is now routinely assessed for in the TLC, this study has highlighted the need to investigate this area more rigorously when patients are assessed. Knowledge of a history of abuse will not only aid in diagnosis but also in treatment and discharge planning and may have statutory implications.

5.1.3.3 Medical history

27.1% of the patient sample was noted to have a history of a medical disorder. 11.7% had one or more neurological problem (see section 4.1.3.3) and 6.4% had a form of epilepsy.

This finding is understandable since there is an association between neurological symptoms and psychiatric disorders, such as the occurrence of seizures in up to one-third of individuals with autism (Lord & Bailey, 2005) and the features of poor motor functioning and visuospatial impairments that occur frequently in early-onset schizophrenia (Sadock & Sadock, 2003b). In some cases, of course, the neurological condition may be causative in the development of psychopathology, such as the ictal/preictal/interictal symptoms of epilepsy. This group of patients requires special attention in terms of their medication since many of the commonly used anticonvulsants may have cognitive and psychological side-effects and they may interact with commonly prescribed psychotropic medications (Sadock & Sadock, 2003a).

Moodley and Pillay (1993) found a similar rate of medical problems among their sample when they reviewed admissions to an inpatient centre for children and adolescents in Kwazulu-Natal, where 33% of children had an Axis III diagnosis. The

prevalence of epilepsy was however higher; 24% of the sample had a diagnosis of epilepsy (Moodley & Pillay, 1993). This could possibly be explained by a higher prevalence of mental retardation (35%) and organic mental disorder (10%) in their sample when compared to the TLC sample, since epilepsy is often associated with these conditions.

In studies of children treated in psychiatric hospitals, "organicity" is one of the ten dimensions described with regard to long-term outcome, since a number of studies have found an association between CNS dysfunction and poor adjustment following inpatient psychiatric care (Blotcky et al., 1984). This will be elaborated on further in the discussion relating to outcome in section 5.2.3.

5.1.4 Special Investigations

Many patients did not undergo any special investigations. Psychometry was the investigation most frequently carried out (56% had IQ testing either prior or during admission) while, on the other hand, only 7% of children had undergone some form of blood testing.

While investigations are usually tailored to the child's history and clinical presentation, the TLC lacked the manpower to prioritise time-consuming psychometric tests. At the time of this study, the head of the TLC was the only psychologist employed by the unit and spent about 70% of his time on management matters. Ideally, another psychologist should be employed at the TLC, not only to administer psychometric tests but also in order to provide individual psychotherapy (de Jager, 2010). In inpatient child psychiatry, psychometry has an important function in the work-up of patients, particularly those with behavioural disorders, since these children often have specific learning difficulties. For other individuals, the presence of cognitive deterioration is important to note and monitor (Jacobs, 1998c).

5.1.5 Diagnoses

There were many Axis I diagnoses present in the sample and a high level of comorbidity, and a substantial number of patients had additional diagnoses on Axis II or III. This necessitated a reduction of the diagnoses to 21 categories, as explained in Section 4.1.5. Therefore, a patient with a diagnosis of ADDBD may have had only ADHD or may have had both ADHD and conduct disorder, for example. Similarly, a patient with 'anxiety disorder' may have had one or more type

of anxiety disorder. In the section below, the more prevalent diagnoses present in the TLC sample will be discussed in further detail.

5.1.5.1 Axis I diagnoses

The most prevalent diagnostic group was that of V Code: Relational problems (40.4%), with the overwhelming majority being parent-child relational problems. Research shows that parent-child conflict appears to act as a common vulnerability that increases the risk for numerous childhood disorders (Burt, Krueger, McGue, & Iacono, 2003). Three of the studies of inpatient child psychiatry reviewed in Chapter Two, presented similar prevalences of parent-child relational problems, namely 26% (Ney et al., 1988), 30% (Gavidia-Payne et al., 2003), and 33% (Mayes et al., 2001). In the SA study that looked at an inpatient mental health centre for children and adolescents in KwaZulu-Natal, 22% of patients had a V Code on Axis I and parent-child relational problems comprised most of this group (Moodley & Pillay, 1993).

The second most prevalent group was ADDBD (37.8%) and it is interesting to note that parent-child conflict is predictive of these disorders (Burt et al., 2003). The majority of these patients would have had ADHD or ODD, or both, and only a few would have had a diagnosis of conduct disorder. This is in keeping with the TLC's admission policy of not routinely admitting children with a diagnosis of conduct disorder in view of the poor evidence in the literature for the successful outcome of such treatment. The outcome is particularly poor when associated with a younger age-of-onset of conduct disorder (Pfeiffer & Strzelecki, 1990). Exceptions are usually made when there is a need for diagnostic clarification which has not been possible in the outpatient setting, especially in the presence of comorbidity, and when the admission may be useful to optimise medication regimes or to assess the patient's needs in order to provide a treatment plan for the future.

Most children with ADHD do not need an admission to a psychiatric unit. Those who are admitted to an inpatient unit will usually have a severe form of the disorder and/or one or more comorbid conditions or there may be a question of parental attitudes with high levels of expressed emotion and critical commenting. Others may warrant admission due to medication difficulties that are best resolved in a controlled setting such as an inpatient unit, or there may be factors such as concurrent epilepsy where medication commencement is best done under specialist observation (Jacobs, 1998b).

In another SA study a prevalence of 29% was reported for ADDBD in an inpatient sample (Moodley & Pillay, 1993), whereas the international literature reports rates ranging from 15% (Sheerin et al., 1999) to 65% (Gavidia-Payne et al., 2003). When looking at studies of day-patient units in particular, many of the units described tend to admit more patients with behavioural disorders, some exclusively so.

The relatively high prevalence rate of anxiety disorder of 22.3% in the TLC patient sample is expected, given that most epidemiological studies have found that anxiety disorders are the most common mental disorders in children and adolescents (Klein & Pine, 2005). Rates of anxiety disorder in children and adolescents has been estimated to be 8.5% in the WC of SA (Kleintjes, 2006) although rates range from 1.8% in New Zealand to 23.5% in Holland (Klein & Pine, 2005).

Reasons for admission of a patient with an anxiety disorder to a tertiary unit such as the TLC would be severity, school refusal, comorbidity, or complex medication issues. Alternatively, the anxiety disorder may be a comorbid condition.

Separation anxiety and generalised anxiety disorder were the most frequently diagnosed anxiety disorders in this sample of patients. The low prevalence of PTSD is remarkable since many SA children grow up in environments where exposure to violence is commonplace (Barbarin & Richter, 2001). This finding is in keeping with other SA research showing that PTSD is under-diagnosed in tertiary therapeutic units that treat comorbid anxiety and mood disorders (Van Zyl, Oosthuizen, & Seedat, 2008).

Other studies of child inpatient units have found similar prevalence rates of 20% for anxiety disorders (Gavidia-Payne et al., 2003), while some have reported markedly lower rates of 3% (Ney et al., 1988). A possible explanation for the 3% rate is that it represents the percentage of children who had anxiety symptoms as a presenting problem, rather than the percentage of children who ultimately were diagnosed with an anxiety disorder.

This study revealed that 22.3% of the sample presented with learning disorders. However, the prevalence of learning disorders in this sample may be even higher in view of the fact that in the years prior to 2000, the system of documenting diagnoses did not allow for the recording of comorbid conditions. A diagnosis of learning disorder may represent any one of the four learning disorders (reading disorder, mathematics disorder, disorder of written expression and learning disorder NOS) or a combination of these. Some of these patients, particularly those referred by their

schools, may have been diagnosed prior to admission although many would have been detected in the TLC's classroom and diagnosed following psychometric testing at the TLC.

In the study of two child and adolescent outpatient clinics in Johannesburg (Vogel & Holford, 1999), 35% of their sample was reported to have learning disorder. In the United States, learning disorders are estimated to affect at least 5% of school-aged children (Sadock & Sadock, 2003c).

Learning disorders are of particularly high incidence in the SA climate, because of the severe early childhood deprivation within critical periods of development, exacerbated by interacting cycles of poverty, inadequate health-care and education, and unemployment. In the SA setting, many children tend to become anxious or depressed and truant or get involved in criminal activity when their special education needs are not met (Vogel & Holford, 1999). This could explain why learning disorders are often co-morbidly associated with a DBD in the TLC sample.

In this study 14.4% of patients had a diagnosis of PDD. This result is very similar to the 15% of cases of PDD in an Australian study (Gavidia-Payne et al., 2003).

The vast majority of PDD cases in the TLC study fell into the category of PDD (NOS), while a few fulfilled the criteria for Asperger's disorder. Most patients had complex, severe presentations necessitating an admission for inpatient assessment, diagnosis, and management. This may have included a functional assessment or identification of comorbidity.

A minority of patients, apparently presenting with a severe DBD, bizarre behaviour or severe neglect, turn out to have social impairment within the PDD spectrum. An inpatient evaluation can be extremely valuable in these cases, transforming the perception and management of the problem (Green, 1998). This has certainly been the case for a significant number of children in the TLC sample, who are subsequently diagnosed with PDD.

A mood disorder was diagnosed in 12.2% of children in this study. This diagnostic category included major depressive disorder, dysthymia, bipolar mood disorder, and mood disorder (NOS). Those patients whose symptoms include suicidality or moderate to severe psychosis are not generally admitted to the TLC since the unit is not set up to deal with acutely suicidal or psychotic patients. The exclusion of this group of patients may in part, explain why other studies have reported higher

frequencies of mood disorder. For example, Ney et al. (1988) reported a slightly higher prevalence (17.5%) of 'depression' in their study. However, this figure represents the percentage of children who had 'depression' as a presenting problem, rather than the percentage of children who ultimately were diagnosed with a depressive disorder. Mayes et al. (2001) described 26% of their sample as having 'depression' while a further 6% fulfilled criteria for bipolar disorder.

While the prevalence of paediatric major depressive disorder has been estimated to be 2% in the general population (Birmaher, et al., 1996), about 25% of children referred to child psychiatry outpatient clinics are diagnosed with a major depressive disorder. However, children are not commonly admitted to an inpatient psychiatric unit for depression. More often than not, they are found to have a comorbid depression when admitted for other reasons (Jacobs, 1998a).

The relatively large number (9%) of patients with selective mutism admitted to the TLC can be ascribed to the success the unit has had in treating this condition (Harvey & Milne, 1998).

The relatively small number of children who presented with psychotic illnesses (2.7%) in this study is similar to the 4% of patients reported to have 'childhood psychosis' by Sheerin et al. (1999) and the 4% of the child and adolescent patient sample with schizophrenia in Moodley & Pillay (1993). It is possible that more children would have been admitted with psychosis if the TLC functioned as a containment ward.

5.1.5.2 Axis II diagnoses

19.1% of patients fell into this study's diagnostic category of 'borderline intellectual functioning or mental retardation'. Almost all of those individuals with mental retardation would have had mild mental retardation since the TLC does not generally admit patients with impairment beyond this degree. This policy is due to the observation that those children with limited intellectual capacity are unable to participate fully in, and learn from, the milieu environment, and other therapeutic inputs. This practice is supported by findings in the literature that have demonstrated a positive relationship between intellectual ability and favourable outcome following inpatient treatment (Pfeiffer & Strzelecki, 1990). A possible explanation for the significant number of patients with intellectual impairment is that up to two-thirds of children with mental retardation have comorbid psychopathology (Sadock & Sadock, 2003d).

It is difficult to find comparison figures of the prevalence of mental retardation in child inpatients in the literature, since many studies have excluded those patients with mental retardation from their research in an attempt to avoid heterogeneity of the study sample. Others have classified patients as having 'learning problems' which have included both mental retardation and learning disorders (Mayes et al., 2001). Moodley and Pillay (1993) reported a 35% frequency of mental retardation in their inpatient sample of children and adolescents in Kwa-Zulu Natal, while Vogel and Holford's (1999) study of two outpatient child and adolescent clinics in Johannesburg documented that just over 25% of patients had a diagnosis of mental retardation.

5.1.5.3 Comorbidity

81.9% of patients had concurrent comorbidity with most having either two (34%) or three (28.7%) diagnoses. This is comparable to Vogel and Holford's (1999) finding of an average of 2.8 diagnoses per child in their outpatient study. An American longitudinal community survey that studied the development and prevalence of mental health disorders in children (ages 9-16 years) found that 25.5% of children with a psychiatric diagnosis presented with two or more conditions (Costello, Mustillo, Erkanli, Keeler, & Angold, 2003). Similarly, the 1999 British Child and Adolescent Mental Health Survey found an overall prevalence of 9.5% for all psychiatric disorders and about 25% of those affected had two types of disorders, 2-5% had three disorders and up to 2% met criteria for four types of disorders (Arcelus & Vostanis, 2005). It is widely accepted that children often present with more than one psychiatric diagnosis and a number of aetiological mechanisms for this phenomenon have been proposed. True comorbidity may arise when different disorders share the same risk factors, for example, environmental risk factors such as parental stress or marital discord have been associated with conduct disorder, ODD and depressive disorders. Artefactual comorbidity may occur because of diagnostic coding difficulties, temporal relationships between psychiatric disorders, one disorder representing an early manifestation of another diagnosis or because of the classification system used (multiple diagnoses are more likely to occur when using the DSM-IV than the ICD-10) (Arcelus & Vostanis, 2005).

5.1.6 Treatment Variables

As mentioned in section 3.3, the TLC adopts a cognitive-behavioural therapeutic approach within a milieu environment. All patients participate in developmentally

appropriate schooling, attend group sessions, group OT and weekly one-on-one sessions with their 'special nurse'. Additional therapies may be indicated, depending on individual need.

5.1.6.1 Psychotherapy

19.1% of patients were noted to have received individual psychotherapy, which is less than what one may expect. This group, however, only reflects the number of patients who were referred for individual therapy while admitted to the TLC. For example, a number of those patients referred from private psychologists would have been in therapy at the time of referral and may well have continued sessions with their private therapists during their inpatient admission. This group also excludes the 6.9% of patients who received music therapy, a resource that was lost when the therapist left the TLC in the late 90's.

5.1.6.2 Parent/family therapy

In 70.2% of cases, parents were noted to participate in parent/family therapy. This figure is surprising since a fundamental criterion for admission is that parents attend weekly sessions with the unit's social worker. A possible explanation for this discrepancy is that the social worker's notes have not always been inserted into the patient's files following discharge.

5.1.6.3 Pharmacotherapy

61.2% of patients received psychotropic medication, with about 50% being on monotherapy. The most commonly prescribed agents were SSRIs (13.3%), followed by stimulants (12.8%), FGA (8%), TCA (6.9%), and SGA (6.4%). Kotsopoulos et al. (1996) provide an indication of the use of psychiatric medication in a sample of patients with varying diagnoses in a Canadian day treatment programme. They reported that 78% of the children were taking psychotropic drugs.

Changes observed over time in prescribing practice include increased use of SSRIs with a concomitant decline in the prescription of TCAs and increased use of slow-release methylphenidate and SGAs such as Risperidone. It should be noted that these trends are impressions gleaned from prescription charts and that change in prescription patterns was not formally examined in this study.

The reported figures represent the use of psychopharmacology across a period of sixteen years, so it is difficult to draw direct comparisons from the literature.

However, in an American study documenting trends in an inpatient child psychiatry setting from 1991-1998, the authors describe a 3.9-fold increase in the overall use of psychotropic medications. Significant increases were seen in the use of mood stabilisers (119%), antidepressants (117%) and stimulants (96%), and while there was no clear net change in the use of antipsychotic medications, FGAs were superseded by SGAs. Within the antidepressant class of drugs, the increase observed was attributed to increased use of SSRIs. Similar increases in the use of psychotropic medication in the paediatric age group were also noted in other countries, such as the Netherlands (Najjar, Welch, Grapentine, Sachs, Siniscalchi, & Price, 2004).

The increased use of psychotropic medication in the field of child psychiatry may be attributed to a number of factors. These include an emerging evidence base demonstrating the efficacy of psychotropic medications in children and adolescents, increased support for the biological basis of some childhood psychiatric disorders, advocacy efforts to recognize and manage the large number of children with mental health disorders and the marketing efforts of pharmaceutical companies to both consumers and prescribers (American Academy of Child and Adolescent Psychiatry, 2009).

5.1.6.4 Family participation in treatment

In this study, 58.5% and 15.4% of families were rated as having 'good' and 'moderate' family participation scores, respectively. This is an important variable to consider since there have been varying reports in the literature regarding the influence of family cooperation on the outcome of inpatient treatment. This will be discussed further in section 5.2.2.3.

5.1.7 Discharge-Related Variables

5.1.7.1 School at discharge vs. school at admission

At admission, 76.1% of children were attending mainstream school, 22.3% an ELSEN school and 1.6% were not attending school at all. By discharge, 46% were mainstreaming, 51.1% were in ELSEN schools, 1.6% were home-schooled, and 1.1% were not in school. The substantial increase in those children attending ELSEN schools, and the associated decrease in those attending mainstream, is largely due to the placement of individuals with learning disorders, mental

retardation, and PDD in appropriate learning environments. Those children not attending school at discharge would have been awaiting placement.

These figures are similar to other studies described in the literature. For example, in a study of a Canadian day treatment programme, at the time of discharge 44% of children had been reintegrated into mainstream classes and 56% had been placed in special educational settings (Grizenko et al., 1994).

5.1.7.2 Length of stay

In this study, length of stay ranged from 2-475 days, with an average stay of 126.6 days. When examining the international literature, length of stay varies considerably from study to study, and in some instances, reflects the unit's admission policy. In Oliver and Knight's (1984) evaluation of an inpatient psychiatric unit for children, the length of stay ranged from 21-608 days, while other studies have reported mean length of stays of 8 weeks (Sheerin et al., 1999), 30.4 days (Gavidia-Payne et al., 2003), and 14 days (Mayes et al., 2001). Shorter length of stays may reflect one of the changes in inpatient mental health care in recent years, which aims to reduce cost (Mayes et al., 2001). Length of stay will be discussed further in the next section when considering outcome predictors.

5.1.8 Follow-Up Variables

5.1.8.1 Family compliance with follow-up and outcome at follow-up

Compliance with follow-up was unknown in 37.2% of cases. Most of these patients had been referred back to the original referrer or had defaulted with follow-up at the DCAP/TLC. Outcome at follow-up was unknown in 43.1% of cases due to having been followed up elsewhere or due to insufficient information in the clinical notes. The high numbers of 'unknowns' in the above two variables is a weakness of this study, but was unavoidable due to the retrospective nature of the study.

5.1.8.2 Place of follow-up

In this study, 77.1% of children were followed up at the TLC/DCAP. Together with the two above-mentioned variables, place of follow-up is an important factor to consider since aftercare following discharge is one of the ten variables examined in both Blotcky and Pfeiffer's reviews of outcome studies in the field of inpatient child psychiatry. The relationship between place of follow-up and outcome following discharge from the TLC will be explored in the analytical section of this discussion.

5.2 ANALYTICAL DATA

5.2.1 Concordance

Concordances found in this study between various diagnostic groups will be explored here. None of the studies reported on in the literature review (Chapter Two) examined these relationships within their study samples, and thus adds to the value of the current data.

5.2.1.1 Concordance between Borderline intelligence/mental retardation and Child Abuse and Learning Disorder, respectively

Statistical analysis revealed that the diagnostic category of borderline intelligence/mental retardation was significantly concordant with that of child abuse (p=.0005). For the purposes of this study, a history of child abuse denotes physical or sexual abuse or neglect, or a combination of these. As mentioned in Section 5.1.3.2, SA has extremely high rates of both physical and sexual abuse of children (Richter & Dawes, 2008) and child neglect has been described as the most prevalent form of child maltreatment worldwide (De Bellis, Hooper, Spratt, & Woolley, 2009). The relationship between low IQ and child abuse is described in the international literature.

Child abuse and neglect have repeatedly been shown to be risks for a wide range of psychiatric and personality disorders (Cohen, Brown, & Smailes, 2001). Child abuse of all types is associated with a bigger incidence of mental retardation than might be expected in the general population. The multiple associations between child abuse and neglect and mental retardation include mental retardation as a risk factor for child abuse, and mental retardation as an outcome of child abuse (Valentine, 1990).

Children and adolescents with mental retardation are especially vulnerable to sexual abuse due to their dependence on caregivers, relatively powerless position in society, social and emotional insecurities, and lack of education regarding sexuality and sexual abuse (Tharinger, Horton, & Millea, 1990).

Regarding neglect, if one considers that the relationship between a consistent caregiver and infant is an essential experience-dependent interaction for normal development, it is not surprising that this development is impaired in cases of child neglect where the main feature is that of a chronically impoverished parent-child relationship. For example, De Bellis et al. (2009) examined neurocognitive

functioning in neglected children and showed significantly lower IQ, language, visual-spatial, learning and executive functions and academic achievement than in controls.

Another significant finding was the concordance between the categories borderline intelligence/mental retardation and learning disorder (p=.014). This association is foreseen since learning difficulties may occur in the context of global developmental delays or where there are circumscribed difficulties in cognitive processes (Snowling, 2002). While children with psychiatric and behavioural disorders often have learning disorders, there is limited research in this area. One limitation of learning disorder research is inconsistent and idiosyncratic definitions; the numerous tests used to assess IQ and achievement is another (Mayes & Calhoun, 2006).

A study which supported the association between borderline intelligence/mental retardation and learning disorder found in the TLC sample was one of a group of Dutch adolescents with intellectual disability that had a 13.9% prevalence of dyslexia. This was significantly higher than among adolescents in the general population (Oeseburg, Jansen, Dijkstra, Groothoff, & Reineveld, 2010).

5.2.1.2 Concordance between ADHD and DBD, and Anxiety, Mood, Learning Disorders and Selective Mutism, respectively.

In this study, ADHD and DBD (including ODD and conduct disorder) were grouped together to form one diagnostic category. It is not surprising that significant associations were found between this category and anxiety, mood, learning disorders and selective mutism, respectively. Comorbidity in ADHD has been recognised as one of the most important features of the disorder (Jensen, et al., 2001).

In a longitudinal study of co-existing disorders in ADHD, up to 26% of primary school-aged children in the general population meeting criteria for ADHD also met criteria for a “depressive syndrome” and another 12% had “emotional disorder” (equivalent to anxiety disorder) not associated with depressive syndrome (Gillberg, et al., 2004).

Learning disorders of various kinds have been associated with ADHD. Reading disorder is common in ADHD and this association seems to be attributed to the genetic overlap. About 25-40% of children with ADHD have major reading and writing difficulties. Disorders of written expression and dysgraphia have also been

reported to be common in ADHD. Based on studies from clinic samples, mathematics disorder is prevalent in up to 60% of patients with ADHD, although it is more strongly associated with the inattentive subtype (Gillberg, et al., 2004).

In this study a significant association was found between the categories 'ADDBD' and 'selective mutism' (p=0.01). Since there is substantial evidence that selective mutism is strongly associated with mild to moderate developmental disorders, including developmental coordination disorder (Kristensen, 2000), and there is a strong association between developmental coordination disorder and ADHD (Kadesjo & Gillberg, 1999), it is to be expected that ADHD would also be overrepresented in selective mutism (Gillberg, et al., 2004).

5.2.2 Outcome

In this study, outcome was assessed at both discharge and follow-up (12-24 months following discharge). The use of psychotropic medication (p=.037) and later year of admission (p=.042) were the only two variables that predicted an improved outcome at discharge. Factors associated with a better outcome at follow-up were higher levels of family participation (p=.000), having had follow-up at the DCAP/TLC (p=.000), lower occupational grade (p=.006), and later year of admission (p=.036).

5.2.2.1 Psychotropic medication

In view of the high prevalence of Axis I disorders amenable to pharmacotherapy present in the sample, it was expected that the use of psychotropic medication would be associated with an improved outcome at discharge. It is unclear why this was not also associated with improved outcome at follow-up. Possible explanations are that some patients may no longer have been on medication at follow-up, particularly when the follow-up period was up to 24 months and/or the condition being treated was in remission (mood and anxiety disorders). Furthermore, while the therapeutic value of a number of psychotropics is well-documented in the short and intermediate term (up to 24 months), the long-term efficacy of pharmacotherapy in children is not fully understood as yet (Vitiello, 2008). In addition, 43% of the sample did not return for follow-up.

The use of pharmacotherapy was not an identified predictor of either short or long-term outcome in the studies reviewed in the literature of either day treatment or inpatient treatment programmes. In some studies, patients received predominantly psychotherapeutic interventions and did not appear to have been on medication

(Erker, Searight, Amanat, & White, 1993; Sheerin et al., 1999), whereas in other studies only a small percentage of patients (7%) were medicated (Ney et al., 1988). In the paper by Mayes et al. (2001), use of medication was studied as a variable, but no significant association with follow-up outcome was found.

5.2.2.2 Later year of admission

The association between later year of admission and improved outcome was present at both discharge and follow-up. This finding is potentially linked to changes implemented at the TLC in 2000 that included more collaborative work with parents of patients, stricter adherence to the TLC's policy of not admitting children whose primary diagnosis was that of severe DBD and a shift from a predominantly psychodynamic approach to a more "biopsychosocial" approach (de Jager, 2012).

5.2.2.3 Family participation

In this study, a higher level of family participation in treatment during admission was found to strongly predict a better outcome at follow-up. This association was expected since it has been reported in numerous studies of both day-patient and inpatient units. For example, in studies of day treatment programmes, a positive outcome was more likely with "parental involvement" (LaVietes et al., 1965), with "families with a high motivation for treatment" (Prentice-Dunn et al., 1981) and "parental cooperation" (Grizenko, 1997). Although one study of an inpatient child psychiatric unit did not demonstrate that parental involvement during admission was associated with a positive outcome (Mayes et al., 2001), many others did. Generally, the literature indicates that inpatient psychiatric treatment of children is more effective when families are actively involved in the treatment process and when an effective therapeutic alliance is established between staff, patient and parents (Gavidia-Payne et al., 2003; Green, et al., 2001; Pfeiffer & Strzelecki, 1990).

5.2.2.4 Follow-up at DCAP/TLC

Having had follow-up at the DCAP/TLC was a predictor of positive outcome in this study. This resonates with the international literature that reports outpatient treatment following discharge from inpatient units considerably increases the chances of ongoing improvement in children's functioning and behaviour (Ney et al., 1988; Sourander, Heikkila, Leijala, Heinisuo, Helenius, & Piha, 1994; Gavidia-Payne et al., 2003) and that post-discharge outcome is improved in those children who received adequate aftercare (Blotcky et al., 1984).

Similar outcomes have been found for children discharged from day treatment programmes (Winsberg et al., 1980). The TLC follow-up clinic was established in 2001 and provides a dedicated out-patient follow-up clinic for discharged patients, run by staff members who are well-acquainted with the patients and families and are thus able to provide a relatively seamless transition from inpatient/day-patient to outpatient care. Previous studies have suggested that a good therapeutic alliance correlated with a favourable outcome following inpatient psychiatric treatment. This also held for good outpatient therapy post-discharge, which served to solidify treatment gains and minimise regressive behaviours (Pfeiffer & Strzelecki, 1990). The absence of antisocial features has been found to be a positive predictor of outcome in the literature (Blanz & Schmidt, 2000). In our study, the aforementioned positive correlates of outcome (improved therapeutic alliance, optimal aftercare and the absence of antisocial features) were more firmly entrenched in the TLC's treatment philosophy during more recent years.

5.2.2.5 Lower occupational grade

In this study lower occupational grade correlated with a positive outcome at follow-up. Occupational grade was used as a measure for socioeconomic status since this was the most easily accessible variable retrospectively, when compared with other frequently used measures such as parents' income or highest level of education. The correlation between lower occupational grade and a positive outcome at follow-up is somewhat surprising given that chronic adversities such as poverty are associated with poorer physical, cognitive and social outcomes for children generally (Friedman & Chase-Lansdale, 2002). Furthermore, factors more associated with lower socioeconomic status (serious parental psychopathology, parental conflict with the law, antisocial parent in the home, multiple parenting figures) have been shown to affect post-discharge outcome adversely (Blotcky et al., 1984). This finding may be explained by the fact that parents in this study with higher occupational grades were often those who had consulted more clinicians, usually in private practice, prior to admission to the TLC. They, thus, tended to question or compare their treatment plan with what they had previously received or with what they had read in books or on the Internet. Lastly, patients in this group were more often followed up by practitioners in private practice following discharge, and not by the DCAP/TLC clinic.

Parental employment was not significantly related to admission progress or follow-up outcome in the Mayes et al. (2001) study of inpatient hospitalisation. Sheerin et al. (1999) report that due to their small study numbers (n=26), they were unable to

determine whether or not social class or financial hardship were correlated with outcome following inpatient child psychiatric hospitalisation, although there was a trend for no correlation. Socioeconomic status is a difficult to measure multidimensional construct and occupational grade may not capture all the potentially relevant aspects, such as economic resources, power, prestige, race/ethnicity, educational level, and neighbourhood socioeconomic circumstances (Braveman, Cubbin, Egerter, Chideya, Marchi, & Metzler, 2005).

5.2.3 Comparing Predictors Of Outcome In This Study With Other Studies

Aspects of family functioning such as family structure and family history of psychiatric illness were not significantly associated with outcome in this study. There are conflicting reports in the literature regarding the effect of these two variables on outcome following inpatient psychiatric treatment. This is perhaps not surprising given the complexity of characterising and measuring family functioning (Blotcky et al., 1984; Pfeiffer & Strzelecki, 1990).

Consistent with many previous studies, age and gender had no impact on outcome (Pfeiffer & Strzelecki, 1990; Sourander, Helenius, & Leijala, 1996) and neither did race (Mayes et al., 2001). There were differing findings in earlier studies examining the association between intelligence and outcome (Pfeiffer & Strzelecki, 1990), but in this study IQ was not significantly associated with outcome.

Unlike the strong association reported between “CNS dysfunction” (neurological disorders) and poorer outcome (Pfeiffer & Strzelecki, 1990), there was no correlation between a positive medical history and outcome in this study. This could possibly be explained by the fact that medical disorders present in the TLC sample were generally well-controlled.

Although there was a high prevalence of child abuse in this sample, no significant association with outcome was demonstrated which is in contrast to a number of previous studies (Gabel, Swanson & Shindledecker, 1990; Kolko, 1992), but in keeping with that of Lewis, Lewis, & Shanok (1980). Possible explanations are that child abuse in this sample included all forms of abuse including neglect, whereas the study by Kolko (1992) for example focussed on physical abuse only.

While previous studies found that a positive outcome was linked to absence of organic, psychotic or antisocial features (Blotcky et al., 1984), it was not possible to

assess statistically the link between diagnosis and outcome in this study due to the large number of diagnoses present in the sample.

There are contradictory reports in the literature regarding length of hospital admission and outcome. This study did not find a significant relationship between length of admission and outcome, in keeping with numerous earlier studies (Kolko, 1992; Sourander, Helenius, & Leijala, 1996).

5.3 LIMITATIONS OF THE STUDY

Unfortunately, there are several limitations to this study, which could not be avoided due to its retrospective nature.

Despite considerable efforts to include all admissions between 1992 and 2008, 28 patients were excluded from the sample due to insufficient or missing data.

Since this retrospective study spanned sixteen years, the file notes had been recorded by various clinicians and its quality could therefore not be standardised. A measure of uniformity was, however, achieved since the researcher alone collected all the data.

Similarly, diagnoses would have been made by various clinicians over the years and were thus not standardised. Those diagnoses made according to the DSM-III-R, were changed to the most likely DSM-IV diagnosis using concurring decisions of the researcher and her supervisor (AJF). This presented few difficulties since there is a good degree of diagnostic continuity between the two classification systems, particularly with ADHD (Biederman, Faraone, Weber, Russel, Rater, & Park, 1997).

Some diagnostic groups were conflated into a larger group where there was a low case-prevalence. The effect of conflating groups may result in some effects being dissipated. For example, DBD may be hypothesised to result in poorer long-term outcomes, while ADHD is more amenable to treatment. By adding ADHD to the DBD group for example, one might create a category of responders with no impact on outcomes.

This study is based on a single unit in SA and given the array of variables involved and the diversity seen in child inpatient and day-patient units, the findings of this study may not be generalisable to other centres with differing treatment approaches or dissimilar patient populations.

Due to its retrospective design, validated assessment instruments could not be used in this study to measure outcomes and other variables such as level of functioning, degree of impairment, family participation, and family functioning. This is a significant methodological limitation.

There was considerable attrition of the sample and in some cases the clinical notes contained insufficient information to assess outcome at follow-up. The outcome at follow-up was thus "unknown" in 43% of the sample.

Lastly, this study has no comparison group. However, even when studies of inpatient or day-patient units are done prospectively, it is difficult to justify the implementation of a comparison group since children referred for this type of treatment are often among the most disturbed requiring urgent care.

There are some positive elements in the design of this study. This includes a relatively large sample size for this patient population. The largest sample size found in the literature review was that of 112 (Ney et al., 1988). The current study furthermore, has a suitable follow-up period (ranging from 12-24 months), which is longer than many previous similar studies.

5.4 POSSIBILTIES FOR FUTURE STUDIES IN THIS AREA

This study highlights the need for additional investigations of more robust design to further explore the treatment effectiveness of psychiatric day and inpatient programmes for children in SA. It would be valuable to carry out a prospective study of patients at the TLC, using structured interviews and rating scales to measure patient and family characteristics, treatment variables and outcome in a more objective manner. A prospective study would potentially result in more data being available for post-discharge follow-up measures as investigators could contact defaulting patients and encourage their return to the clinic or at least conduct telephonic interviews.

Predictor variables of greater interest could be measured in a more detailed manner, for example, the treatment variable could include measures such as patient and parents' attitude to treatment, therapeutic engagement, ward milieu, and interpersonal dynamics on the ward. Family functioning could be expanded to include marital discord, frequency of separations or disrupted attachments, and multiple parenting figures. Similarly, those variables that were found to be predictive

of a positive outcome in this study could be explored in more detail in order to inform current and future practice in the TLC.

Striking findings in the descriptive analysis were the high prevalence of parental psychopathology (56.9%) and child abuse (30.9%); these areas of interest would be worth further exploration.

This study spanned 16 years and it has been noted incidentally that practices at the TLC (as in child and adolescent psychiatry generally) have changed with time. It may prove beneficial to explore trends that have developed over time, particularly with regard to the prescription of medication, the use of special investigations and length of admission.

5.5 CONCLUSION

The TLC is unique in that it is the only psychiatric inpatient and/or day-patient unit for children in SA. While a limited review of patient and treatment variables of service users of the TLC between 1992 and 1998 was carried out in 1998, this current study was undertaken to provide a descriptive analysis of an expanded array of demographic and clinical variables from the time of the establishment of the TLC in 1992. It further sets out to identify predictors of positive outcome in order to review treatment programmes at the TLC and to inform current and future practice within the TLC and the DCAP.

The most striking aspects of this study's descriptive analysis are the high prevalence rates of parental psychopathology and child abuse. These findings together with the high levels of comorbidity highlight the complexity of the clinical presentations of patients admitted to the TLC, and the need for a specialist inpatient/day-patient unit.

As with previous follow-up studies of child psychiatric inpatient and day-patient hospitalization, this study has demonstrated the effectiveness of this treatment modality with 77.7% of patients having shown varying degrees of improvement at discharge and 47.8% demonstrating improvement at follow-up (this despite outcome at follow-up being "unknown" in 43% of the sample).

While inpatient care is the most expensive component of mental health services, these findings provide an evidence base which supports inpatient and day-patient treatment for those children with the most complex psychiatric disorders, particularly when specific aspects of treatment are fulfilled, such as adequate levels of family

participation, a dedicated follow-up service and use of psychotropic medications when indicated.

This study also demonstrates that the number of positive treatment outcomes at both discharge and follow-up have increased over the period 1992-2008, which provides encouragement for staff who have witnessed the evolution of the TLC's treatment paradigm over the years.

As a result of this study, a comprehensive patient database has been established and it is hoped that this will continue to be utilised for ongoing clinical and research purposes. Similarly, it is hoped that this study will highlight the need for the routine use of structured assessment tools and outcome measures in order to inform clinical practice critically, and to facilitate future research within this unit.

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APPENDIX

Letter of Approval from the Ethics Committee

UNIVERSITY OF CAPE TOWN

Health Sciences Faculty
Research Ethics Committee
Room E52-24 Groote Schuur Hospital Old Main Building
Observatory 7925
Telephone [021] 406 6626 • **Facsimile** [021] 406 6411
e-mail: shuretta.thomas@uct.ac.za

09 April 2009

REC REF: 513/2007

Dr Y Dhansay
Division of Child & Adolescent Psychiatry

Dear Dr Dhansay

PROJECT TITLE: CHARACTERISTICS AND PREDICTORS OF TREATMENT EFFECTIVENESS OF CHILDREN SEEN AT THE THERAPEUTIC LEARNING CENTRE, DIVISION OF CHILD AND ADOLESCENT PSYCHIATRY, RED CROSS WAR MEMORIAL CHILDREN'S HOSPITAL DURING THE PERIOD 1992-2006.

Thank you for submitting your study to the Research Ethics Committee for review.

It is a pleasure to inform you that the Ethics Committee has **formally approved** the above-mentioned study.

Approval is granted for one year till the 15th April 2010.

Please submit an annual progress report if the research continues beyond the expiry date. Please submit a brief summary of findings if you complete the study within the approval period so that we can close our file.

Please note that the ongoing ethical conduct of the study remains the responsibility of the principal investigator.

Please quote the REC. REF in all your correspondence.

Yours sincerely

PROFESSOR M BLOCKMAN
CHAIRPERSON, HSF HUMAN ETHICS

Federal Wide Assurance Number: FWA00001637.
Institutional Review Board (IRB) number: IRB00001938

S Thomas

This serves to confirm that the University of Cape Town Research Ethics Committee complies to the Ethics Standards for Clinical Research with a new drug in patients, based on the Medical Research Council (MRC-SA), Food and Drug Administration (FDA-USA), International Convention on Harmonisation Good Clinical Practice (ICH GCP) and Declaration of Helsinki guidelines.

The Research Ethics Committee granting this approval is in compliance with the ICH Harmonised Tripartite Guidelines E6: Note for Guidance on Good Clinical Practice (CPMP/ICH/135/95) and FDA Code Federal Regulation Part 50, 56 and 312.

S Thomas