Changing Patterns of Inpatient Care for Children and Adolescents at a Local Psychiatric Inpatient Unit (1992-2007).

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ABSTRACT

The prevalence of mental disorder in South African children and adolescents is thought to be at 1 in 5. Moreover, the capacity for the mental health system to adequately care for these patients is under severe pressure. Mental disorder is also believed to manifest in particular ways in South Africa because of psychosocial stressors precipitated in the wake of Apartheid. Consequently, there are unique treatment demands placed on under-resourced service providers to meet these needs. This study documents changing patterns of admission and care at a specialised child psychiatry unit that is equipped to deal with patients needing inpatient care – the Therapeutic Learning Centre (TLC), a branch of the Red Cross Children's Hospital, over a 16 year period, 1992-2007. Changes in the admission characteristics of patients imply that mental health service delivery in the Western Cape is not as freely available to patients who have working parents but cannot afford medical aid, than those who qualify for state subsidies or can afford private medical insurance. The study also highlights the under-representation of children of colour, which is more a reflection of the inaccessibility of resources in primary care than the lack of psychopathology. It also notes the rapid decline in co-morbid learning disorders, and the increase in PDD (Pervasive Developmental Disorders). The study also identifies patient characteristics that predict their length of stay. This informs both the TLC and the larger community interested in childhood mental health of the types of patients that they need to cater for, and consequent directions for treatment. It also identifies the needs of specialised psychiatric services for children and adolescents. In general, the study opens the floor for future research into the broader availability of specialised mental health delivery for children and adolescents in the Western Cape.

Keywords: adolescent; child; diagnosis; inpatient; psychiatry; treatment; trend.

Prevalence statistics suggest that one in five South African children (aged between 0-19 years) has a mental disorder (Kleintjes et al., 2006). The mental health service is also under extreme pressure to satisfy the high treatment demand – balancing budget and staff-skill shortages within a unique local context that manifests mental disorder in particular ways (Vogel & Holford, 1999). Moreover, despite service providers working at maximum capacity, not much is known about the patient population or what is being done to assist them. Even if funding for child psychiatric care were infinite, an evaluation of the current state of treatment would be beneficial for future growth and direction. Hence, this study aimed to gain a better understanding of trends in the patient population at a local child and adolescent psychiatric inpatient unit, the Therapeutic Learning Centre, Red Cross Hospital, over a 16-year period (1992-2007).

Residential care and containment of children with mental disorder has varied greatly since the early 18th century. Asylums, workhouses, and educational boarding institutions have been means to control society's wayward young. However, in response to acute mental disorder that is believed to be untreatable through outpatient visitation, came the emergence of specialised child psychiatry in the 1920s. Very soon residential (inpatient) treatment took over from the more archaic forms of institutionalisation. Because of the complexity and idiosyncrasy of the nature of child and adolescent mental disorder, there has since been much debate, especially in Western nations in the first half of the 20th century, as to what is the best way to care for mentally ill youth (Parry-Jones, 1998).

Child and adolescent psychiatry units have since varied greatly in size, location and character, but there is global consensus that they are intended for *the short term, emergency response and treatment of acute mental disorder* (Green & Jacobs, 2004). Over a period of 25 years (1975-2000) studies unanimously conclude that despite differences, treatment in inpatient settings is generally effective in improving patients' health (see Appendix A)

That said, Kessler (2005) calls for evaluative child and adolescent psychiatric research to be of urgent importance, giving priority to early intervention. This is because 50.8% of all mental disorders are believed to have lifetime prevalence, with half having an onset age of below 14, and 75% being below 24. The world-wide prevalence of mental disorder, and demand for effective treatment, is similar in South Africa. International prevalence studies indicate that on average, child and adolescent mental disorder is at 20%, with South African childhood equivalents believed to be around 21% (World Health Organisation [WHO], 2005) and the Western Cape beginning at 17% (Kleintjes et al., 2006).

Vogel and Holford (1999) suspect that child mental disorder in South Africa is a result of particular psychosocial stressors stemming from Apartheid, although this phenomena is not always evenly distributed across demographics. These include general family disintegration and dysfunction (poor parenting and multiple caregivers), crime, violence, illiteracy, unemployment and substance abuse. WHO (2003) and others confirm these speculations in reported high associations between poverty and mental disorder, particularly those at high risk because of low level education, high exposure to violence, and rapid social change (Patel & Kleinman, 2003). Further, Volkmar (2001) notes the long-term impact that childhood trauma has on clinical disorder pathogenesis. WHO (2005) reports that two-thirds of South African children have experienced a traumatic situation, with 8.4% qualifying for Post Traumatic Stress Disorder. In light of the links between poverty and trauma with mental disorder, and the high levels of poverty, violence and crime in post-Apartheid South Africa, it is not surprising that there is great demand for child psychiatric services.

The South African mental health service has obvious resource limitations in dealing with the high treatment demand. WHO (2005) reports that mental health is discriminated against in South Africa by medical aids and state funded health systems, but do not have expenditure details available. There are only 4 psychologists, 1.2 psychiatrists and 7.5 psychiatric nurses to every 100 000 people. Further, there are only 0.038 psychiatric beds to service every 100 000 South Africans – indicating that the treatment capacity for mental health in South Africa is extremely under-resourced.

In addition, child and adolescent inpatient psychiatric care is expensive to run (estimated at half the annual youth mental health budget in the US), and so it is to the benefit of the patient community that they operate optimally within budget constraints (Pottick, McAlpine, & Andelman, 2000). The changing patterns of these costs cannot be considered without exploring intrinsically related variables of medication use, length of stay (LOS), admission rates, diagnosis and other patient characteristics. A trend evaluation of five foreign studies shows the following (see Appendix B): All studies reveal trends of increasing admissions into child and adolescent units, with two studies showing increases in child (rather than adolescent) admissions. South African comparisons are unavailable, yet changing numbers of admissions will influence local staff skill requirements and treatment plans at the least.

Demographically, none of the studies contradict one another, but show varying shifts in the definitive diagnoses. Jemerin and Philips (1988) find that increased conduct disorder, impulsivity and aggression as well as psychosocial stressors as a result of increased

environmental neglect and abuse, single-parent or homosexual care-givers. These diagnostic shifts will have both direct and indirect effects on the treatments employed.

There is also a significant general decline in the mean length of stay (LOS) of patients (Pottick et al., 2000), and a substantial increase in the use and cost of psychotropic medications at units in the United States over an eight year period. Three other studies in the US, the UK and the Netherlands (Najjar et al., 2004; Safer, 1997; Sourander, Ellilä, Välimäki, & Aronen, 2002) all point out the significant increase in the use of psychopharmacotherapy in child and adolescent psychiatry in the 1990's. Martin and Leslie (2003) argue that not only have medication costs risen by 12.1% in the US from 1997-2000, but that they amount to 36% of the overall cost of inpatient care.

The abovementioned trends suggest that the rapid increase in the cost of inpatient care has forced state-funded clinics to increase patient turnover due to increased demand. This has resulted in general decreased mean LOS. There is an obvious correlation between increased psychopharmacotherapy and decreased LOS, but it is not clear as to whether medication use hastens treatment, or if the added cost of medication necessitates shorter inpatient stays (Martin & Leslie, 2003).

Romeo (2005) makes comment on these (and other) economic evaluations, by mentioning that they are simply reflections of evolving market forces, and that whether privately or state funded, society's resources for child mental health are finite. He suggests, as does Beecham (1998), that while we must continue to evaluate the efficiency of psychiatric service provision, adaptation to the contextual limitations of service provision is essential.

The South African Picture

Placing the findings of foreign trend studies in the South African context is difficult because of the distinct absence of knowledge and research on the treatment of child and adolescent psychopathology (Harvey, 1996; Vitello & Jensen, 1996). There is only one South African trend study exploring the admission patterns to a child psychiatric unit in Natal. It found under-representations of children of colour, an overwhelming dominance of behavioural problems (82%) and V-code diagnoses (24%), while only 2% showed poor school progress. The majority of children were referred by welfare agencies. Behaviour modification (87%) and parental therapy (92%) were the two dominant treatment modalities (Moodley & Pillay, 1992).

Vogel and Holford (1999) present a recent descriptive study of two child and adolescent psychiatric outpatient-clinics in Gauteng. The study revealed a normal distribution

of age across admission, ranging from 0-19 years old, with non-significant differences between genders. Even though the majority of patients admitted were black (52%), they were under-represented in terms of total population demographics. They were followed by whites (37%), Coloureds (6%) and Indians (3%). The study found that the following were the main diagnostic categories: behavioural complaints (82%), ADHD (Attention Deficit Hyperactivity Disorder) (70%), learning difficulties (48%), mood disorders (37%), abuse (31%), developmental disorders (25%), elimination disorders (17%) and psychoses (2%). These diagnoses are of particular interest in light of the fact that more than half of the patients had not received *any* intervention, or had any contact with social services prior to admission. This is because primary and secondary facilities at schools and clinics are not in place to deal with early containment. Vogel and Holford (1999) suggested that while most mental disorder around the world is precipitated by some sort of psychosocial stress, the post-Apartheid South African context provides a unique set of stressors that may precipitate childhood mental disorder in particular ways, especially behavioural and anxiety disorders. These stressors include poor parenting (88%), multiple care-givers (35%), exposure to violence/abuse (29%), poverty (21%) and frequent moves (18%). They suggested that the Welfare Department has been ineffectual in their interventions with these psychosocial stressors, and that the Education Department has worsened the burden of child psychiatric service due to the absence of correct referral and intervention. The study concluded by encouraging the use of similar databases (to that used in the data collection of the Vogel and Holford study) to highlight future treatment directions and research requirements, and to identify larger societal weaknesses.

The Therapeutic Learning Centre as a Local Study in Response to This Call

The purpose and functioning of the Therapeutic Learning Centre. The TLC is a unique child and adolescent psychiatric inpatient unit. It began formally in 1992 as an inpatient unit for children and adolescents needing psychiatric assessment and therapy. It provides an intensive therapeutic environment for those who do not respond well to other treatment settings. Prior to 1992, two separately functioning units, the Day Care Centre at the Child and Family Unit, and the Inpatient Unit based at the Red Cross Hospital catered for the differing needs of the patient population. The two were merged in 1992 to provide one full-time therapeutic environment. Children attend from Monday to Friday, and go home to their families on weekends. Currently, the unit accepts children who are unable to function in their community school programs, require comprehensive multi-disciplinary management and have

academic and/or behavioural difficulties. The unit aims to provide an all-inclusive program that deals with a child holistically, to relieve anxiety, promote the development of adaptive skills, improve interpersonal relationships, increase motivation to learn and to improve academic skills. The unit is unique in comparison with other inpatient units, in that while it is part of the hospital, it operates like a 'home' with all-day treatment in a relatively normal social setting.

The treatment paradigm of the unit has shifted over the years, but currently has a strong behavioural focus that encourages other types of interventions (occupational therapy (OT), speech therapy, music therapy, psychotherapy, family therapy, psychopharmacotherapy). Patient treatment is centred around a structured behaviour modification program where individual patient goals and behaviour are regulated throughout the day by hourly reward systems.

The unit has a built-in classroom and functions as a school from 8am to 1pm on weekdays for children in Grade R to Grade 7. Children are taught essential subjects (mathematics and language) at their level of functioning. The patients are taught by a remedial teacher who has a specialisation in special-needs education. After school, treatment is centred around rigid routines of homework periods, daily exercise, play-time and daily-living tasks like hygiene, eating, chores etc.

The unit is staffed by a full-time multidisciplinary team. Seven full-time psychiatric nurses assist in treatment on a 24-hour basis. They also facilitate in the classroom and are primarily responsible for the behaviour modification program. Each patient is allocated to a particular nurse who has been trained in play-therapy who provides daily individual sessions. There is an occupational therapist who facilitates development in group sessions, and treats children with specific perceptual and coordination problems individually. Private individual psychotherapy, speech therapy and music therapy were previously offered by the TLC, but were removed gradually over the last few years due to decreased government funding.

The psychological assessment of patients, treatment planning and staff supervision is done by the clinical psychologist. The medication is facilitated by a child psychiatrist, and family and parental therapy is provided by the social worker.

The influence of patient and treatment characteristics for study .It is necessary to have a thorough understanding of *why* the TLC places importance on certain elements. The influence of behaviour modification programmes, the use of family and parental therapy and the benefit of group therapeutic settings were considered in deciding what should be studied.

Secondary factors such as age, socioeconomic status (SES), race and language were also viewed as influencing the therapeutic progress and deserved attention.

Within inpatient settings, the therapeutic relationship (with the entire multi-disciplinary team) plays a critical role and has been found to be more important in child therapy than in adult treatment (Shirk & Karver, 2003). The TLC is mindful of this and encourage diverse therapeutic modalities.

Child psychopathology can also be very stressful for the family. Life-time prevalence means that coping rather than cure is a more viable option for many disorders (consider PDD), and giving parents correct information as to the pathogenesis of the disorder is essential for effective management (Masters, 2005). Hence, it is good to incorporate family and parental therapy. Axis I disorders are usually enmeshed in family-structure dynamics, and usually require whole-family therapy for effective holistic treatment (Martin, 1995; Sanders & Markie-Dadds, 1996; Eyberg et al., 2001).

Tuma (1989) highlights the effectiveness of therapeutic *group* settings, especially in a behaviourist model. Social learning and behaviour modelling is most evident in the group setting and is robust across diverse symptoms, emotional and social deficits, ages and skill levels. The TLC has adopted this concept and encourages creative, interactive play as a mode of therapy.

The age of the patient has particular implications for the type of therapy used. Younger children require greater care and attention, with a more specialised skill level and patient to nurse ratio. Younger children, with less acute psychosis, benefit from being in an educational therapeutic milieu (i.e. inpatient school) as it makes it easier for them to integrate back into LSEN (Learners with Special Education Needs) or mainstream schooling after discharge. Younger children are also not capable of self-reflective cognition and therefore require different types of treatment. To this end, the schooling environment provides a group setting through which vicarious experience, social learning and behaviour modelling can be effective in treatment (Shirk & Karver, 2003). The use of psychopharmacology in younger children is less researched (Lekhwani, Nair, Nikhinson, & Ambrosini, 2000), and requires a different type of specialised management (Vitiello & Hoagwood, 1997).

Cuffe, Cuccaro, Garrison, Pumariega, and Waller (1995) make comment on the under-representation of people of different race and gender in inpatient settings. In a USA study, African-Americans had higher symptom severity and reacted more negatively to psychological distress than Caucasians. The researchers found that treatment differences were correlated with a lower SES, cultural accessibility to professional help, explanations of

pathology, understandings of help-seeking behaviour, referral bias, and high rates of speedy termination. The SES of a patient, their ethnicity, social class and level of education were found to profoundly influence a child's development, the quality of the child-parent interaction, the child's cognition, personality and motivations (Shirk & Karver, 2003; Richter, 1994). Although research has shown that these deficits do not *cause* child psychopathology, they do put children at risk of pathology. Causality aside, severely disadvantaged families have been shown to engage in inpatient therapy a lot less - making the investigation of SES and family structure an important variable in the social support capacity for patients (Tuma, 1989). Also, families living in higher SES brackets tend to have more social support and resource to deal with psychopathology, and hence knowing a patient's SES assists practitioners in realistic treatment planning if they know what the family can provide (Kiser, et al., 1996). Because of the segregationist legacy of South African history, race, language and SES are highly associated with each other. Further, these associations predispose children to develop psychopathology because they are at high risk to deprivation, malnutrition, inadequate child-rearing, disease, education and other essential services (Robertson & Berger, 1994; Kvalsig & Connolly, 1994).

Aims and Rationale

The interactive nature of patient characteristics and appropriate treatment hangs in a delicate balance for inpatient care to be optimally effective. Mental disorder might shift across demographic groups in different ways because of our socio-political and cultural circumstances. Hence, treatment expectation and capacity to deliver appropriate services are unique within our Third World environment, which make foreign trend comparisons particularly interesting. For this reason, it would be beneficial to consider these two factors – patient characteristics and treatment responses at the TLC. A local trend study on the admission and treatment trends of the Therapeutic Learning Centre benefits the unit because it identifies patterns of in-patient characteristics and treatment responses over the years. The identification of patient characteristics that predict LOS also aids in highlighting the cost-to-benefit balances of appropriate treatment outcomes. This highlights to the unit possible directions for growth and attention. Further, it shows the larger community invested in child and adolescent mental health the treatment expectations of specialised units, and identifies the changing characteristics of the patient population. It also highlights the need for this specialised service, particularly within the localised social climate of post-Apartheid South Africa. These aims took the form of four hypotheses:

1. There will be shifts in patients' age, gender, race, SES bracket, reason for admission, diagnosis, family structure and child abuse.
2. There will be shifts in the treatment responses employed by the TLC over time.
3. Decreased mean LOS will be predicted by the increasing use of psychopharmacology.
4. Interactions of general admission characteristics, diagnostic categories and treatment responses can significantly predict LOS.

DESIGN AND METHODOLOGY

Design and Setting

For the purposes of this study, a database was developed by the Medical Research Council in which TLC patient records were captured. This quantitative study is a descriptive, analytical, retrospective review of 206 clinical case-files of all the children admitted to the TLC as either day and/or in-patients from 1992-2007.

Participants

All patients with closed files in the specified time-period were included. Patients whose discharge summaries have been misplaced, and with which there is not enough data to comprehensively assess a patient, as well as those patients who had a length of stay of less than one week were excluded from the study. This is because the first week is very unsettling for the children, and so little observation or treatment is done in so short a time-period. If a patient was re-admitted to the unit twice in one year, the second admission was excluded from the study to prevent inflated data. If the same patient was admitted twice in two years, then it was considered as two separate cases. This is because the diagnosis could have changed, the child could have had different treatment modalities, and would require separate funding, and draw on different staff skills.

Materials

The database was created in MSAccess to capture participant details as an ongoing means to record patient details. It begins with an opening contact information form which requires basic patient contact and demographic details, parent's contact details and hospital tracking numbers. The file then has the capacity to open up numerous interactions that record the details of a particular admission. Provision is made for re-admissions. These interactions specify the type of admission (therapeutic, diagnostic, crisis, or a combination thereof), dates of admission and discharge, and automatically calculate length of stay and patient admission-age.

The database then allows for the capture of other information, which is categorised under the following groups: Admission, History, Clinical Investigations, Diagnosis, Treatment, Discharge Information and Medication. Admission details include the reason for admission, the patients' presenting problems and the details of the referrer. The history tab captures the psychiatric and medical history of both the patient and their family, as well as

recorded child abuse and family structure. The database caters for the recording of blood tests, EEG's, imaging, psychometry and intelligence testing under the clinical investigative options. Further, diagnosis is categorised according to the Diagnostic and Statistical Manual of Mental Disorders (4th Ed), Revised (American Psychiatric Association (2000)) and treatment plans can be noted in another two drop-down tabs. A thorough evaluation of the patient's outcome, the family's compliance to treatment, and future referrals upon follow-up, is covered under the discharge information. The day-to day, and discharge medications are also recorded.

For the sake of this study, the following variables were studied.

- Year of Admission
- Reason for Admission (presenting problem)
- DSM IV-TR Diagnosis (Axes I, II & IV)
- Age at admission
- Race
- Gender
- Patient Language
- Family Structure
- SES (Socio-Economic Status)
- Child Abuse
- Use of Medication
- Length of Stay
- Treatment Modality
    - Family Therapy
    - Music Therapy
    - Occupational Therapy (Group or Individual)
    - Parent Psycho-Education
    - Psychotherapy (Group or Individual)

Procedure

The study received ethical approval from the Department of Psychology Ethics Committee, Faulty of Humanities, UCT (see Appendices D, E, & F for ethical approval and permission). The data collection involved no contact with human subjects, and the confidentiality of clients was contractually agreed upon by the unit and the researcher. The clinical files are not removed from the premises, and the database was password-protected. The data was recorded from the admission and discharge summaries, nurses' and clinicians notes, class registers, and

from reports done by doctors, teachers, and various therapists that are found in individual clinical files. Decisions on subjective interpretations of clinical notes required the agreement of a team of experienced mental health professionals who work full-time at the TLC - these being two psychologists, two psychiatrists, the head psychiatric nurse and the social worker. DSM III diagnoses from older files were transformed to DSM IV-R classifications using concurring decisions of this team.

Data Analysis

Analytic Strategy and Preparation. The study attempted to, as far as possible, eradicate the methodological weaknesses found in foreign trend studies of psychiatric units. All but one of the studies in Pottick's meta-analytic review failed to show whether trend fluctuations reached statistical significance. None of the studies specified whether the documented admissions were *re*-admissions, or did they account for the misrepresentation of increased medication use as a consequence of heightened admission rates (Pottick et al., 2000).

For that reason, same-year re-admissions have been excluded from the study. The variables are also weighted to ensure fair across-variable comparisons. For example, to consider the number of admissions for PDD (Pervasive Developmental Disorder) in a year in relation to others, the numerator is the number of patients diagnosed with PDD for that year, and the denominator is the total number of admissions to the TLC for that year.

The diagnostic data was categorised according to those groups found in Appendix C, and was cleaned, with the intention of comparing categorical trends across time. The variable 'Year of Admission' was categorised into groups of 4 years (1992-1995; 1996-1999; 2000-2003; 2004-2007). This was done to preserve the statistical power of the chi-squared tests done later, which required that there be frequency counts of greater than 5 within each category (Field, 2005). It was also ensured that each chi-squared test used only independent observations (i.e. a patient could not exist in two sub-categories simultaneously, as both 'male' and 'female' in the category of 'gender') (Lachenicht, 2002). The various diagnoses were grouped according to a diagnostic scheme developed by Pottick and colleagues, which is based loosely on the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM). However, learning disorders were *not* classified under intellectual impairment (as suggested by Pottick's scheme), but categorised in their own category. This is because learning disorders are of particularly high prevalence in the South African context due to early childhood deprivation (Donald, 1994; Vogel & Holford, 1999).

The variable 'Length of Stay' (LOS) was tested for normality to satisfy the criteria for later regression tests. It was found to be non-normal, and was normalised by its conversion to its square-root (Tabashnik & Fidell, 2001). The variable of age remained a continuous variable despite its conversion. The variables 'Reason for admission', Referrer', 'Race', 'Gender', 'Language', 'SES', Family Structure', 'Treatment Type', 'Diagnosis' and 'Child Abuse' were all categorical variables and were converted to dummy variables to be used in later analyses. This bivariate distinction (either present or not) did not allow for values greater than one. Hence, in the diagnostic categories (particularly learning disorders, disruptive behaviour disorders and V-codes), where a patient may have two diagnoses on the same axis, these categories were therefore collapsed.

In order to develop a model for use in the hierarchical regression, where various independent variables were used to predict LOS, chi-squared tests of association were used to see if there was considerable overlap between similar variables showing high inter-correlation. This overlap would potentially misattribute variance to one variable rather than another. These tests found that 'family structure' and 'child abuse' were significantly correlated ($\chi^2(4) = 19.90$, $p < 0.01$), but it was decided that they would be included in the regression as they are different constructs. 'Race' and 'SES' were found to have significant overlap ($\chi^2(18) = 47.66$, $p < 0.01$). Initially, 'race' was thought to be the preferred variable, as the measure of SES is weak. However, the large majority of the sample population are white, and so it is believed that there is sufficient variance within 'SES' to further striate the dominant race within the population ($M = 3.55$; $SD = 1.47$). Therefore, both race and SES are included. Incidentally, two separate models, each containing either SES or race, were also tested to predict LOS. It was found that neither model found SES or race to be a significant predictor in any case. According to regression modelling stipulations, the analysis ensured that there were at least 10 cases per independent predictor variable (Pallant, 2007).

Data Analysis. Firstly, all the independent variables (age, race, SES, gender, reason for admission, referrer, family structure, child abuse, treatment type and diagnosis) were compared against the four categorised time periods using chi-squared tests of independent association. Cramer's V (Φ_c) (the effect size for categorical data) was also calculated.

Secondly, a simple, linear regression was used to predict LOS (DV) from the use of psychopharmacological medication (IV).

Lastly, a model for hierarchical regression used to predict LOS (DV) from various other variables was developed. Variables were added in the chronological order in which a

child experienced them. It is expected that children inherit their age, race and gender from elements completely out of the control of their parents. They then develop language in response to contextual stimulation. Children's SES and family structure is possibly next to influence their developmental trajectory. Upon the development of maladaptive behaviour, they are seen by a professional and referred to the TLC. The TLC receives them and determines their reason of admission. Children are then given a diagnosis by TLC staff, and receive various treatments from the unit.

Hence, inherent characteristics of the child (age, race, gender) were entered as a block, then language was added, then SES and family structure added as a block, then referrer, reason for admission, diagnosis and finally treatment (see Table G1. in Appendix G).

RESULTS

General descriptive statistics are found below in Table 1 and Table 2. Table 1 documents changes in LOS and age at admission across the four-year categories from 1992-2007. It shows that there is an increase (although not significant) in LOS from 1996-1999 through 2004-2007, and mean age increased by almost a year (9.21 to 10.09). The SD and range is large, indicating that there is a lot of variance across the sample. Sample sizes and percentage of the total sample are provided for other categorical variables in Table 2. Comment on these are made later with regard to their significance.

Table 1
Descriptive Table of Continuous Variables Across the Four Time Periods

		1992-1995	1996-1999	2000-2003	2004-2007
LOS					
	n	59	48	38	41
	Mean	111.04	111.65	129.71	149.2
	SD	96.39	75.11	92.22	93.26
	Mode	197	192	5; 52; 199	110; 191
	Median	83	123	133	155
	Range	5-361	5-230	5-392	7-475
Age					
	n	57	49	39	46
	Mean	9.21	9.64	10.17	10.09
	SD	2.08	2.12	1.76	2.03
	Median	9.08	9.75	10.17	10.21
	Range	5-12.83	6.03-13.67	7.08-14.25	5.58-13.74

Table 2
Percentage Comparison of Categorical Variables Across the Four Time Periods % (n)

	1992-1995	1996-1999	2000-2003	2004-2007
Gender				
Male	34.21 (39)	24.56 (28)	19.30 (22)	21.93 (25)
Female	22.67 (17)	26.67 (20)	22.67 (17)	28.00 (21)
Race				
Black	33.33 (6)	33.33 (6)	16.67 (3)	16.67 (3)
White	24.24 (24)	25.25 (25)	22.22 (22)	28.28 (28)
Coloured	40.98 (25)	21.31 (13)	14.75 (9)	22.95 (14)
SES				
Unemployed	16.00 (4)	24.00 (6)	24.00 (6)	36.00 (9)
Manual Labour	66.67 (16)	12.50 (3)	12.50 (3)	8.33 (2)
Artisan	29.17 (7)	29.17 (7)	20.83 (5)	20.83 (5)
Clerical	37.84 (14)	29.73 (11)	18.92 (7)	13.51 (5)
Professional	16.13 (10)	27.42 (17)	25.81 (16)	30.64 (19)
Language				
English	53.70 (29)	68.18 (30)	71.05 (27)	71.11 (32)
Afrikaans	35.19 (19)	18.18 (8)	21.05 (8)	26.67 (12)
isiXhosa	11.11 (6)	13.64 (6)	13.64 (3)	2.22 (1)
Family Structure				
Lives with one parent	23.91 (11)	26.19 (11)	30.77 (12)	41.30 (19)
Lives with both parents	41.30 (19)	50.00 (21)	38.46 (15)	30.43 (14)
Lives with relatives	10.87 (5)	23.81 (10)	12.82 (5)	17.39 (8)
Lives in Children's Home	23.91 (11)	0.00 (0)	17.95 (7)	10.87 (5)
Child Abuse	28.18 (17)	23.73 (14)	22.03 (13)	25.42 (14)
Diagnosis				
Disruptive Behaviour Disorder	29.31 (34)	21.55 (25)	22.41 (26)	26.72 (31)
Learning Disorder	44.74 (17)	10.53 (4)	21.05 (8)	23.68 (9)
Mood Disorder	20.00 (4)	20.00 (4)	20.00 (4)	40.00 (8)
Psychotic Disorder	40.00 (4)	10.00 (1)	30.00 (3)	20.00 (2)
PDD	15.38 (4)	19.23 (5)	19.23 (5)	46.15 (12)
Intellectual Impairment	42.31 (11)	19.23 (5)	23.08 (6)	15.38 (4)
V-Codes	20.24 (17)	29.76 (25)	22.62 (17)	27.38 (23)
Other	19.44 (7)	33.33 (12)	25.00 (9)	22.22 (8)
Treatment				
Individual Psychotherapy	20.51 (8)	48.72 (19)	10.26 (4)	20.51 (9)
Group Psychotherapy	16.67 (3)	50.00 (3)	16.67 (1)	16.67 (1)
Psycopharmacology	16.81 (20)	23.53 (28)	25.21 (30)	34.45 (41)
Individual OT	33.33 (7)	28.57 (6)	23.81 (5)	14.29 (3)
Group OT	27.91 (48)	26.74 (46)	21.51 (37)	23.84 (41)
Family Therapy	13.21 (7)	33.96 (18)	24.53 (13)	28.30 (15)
Parental Therapy	21.24 (24)	30.97 (35)	22.12 (25)	25.66 (29)
Music Therapy	71.43 (11)	14.29 (2)	0.00 (0)	14.29 (2)

Hypothesis 1 and Hypothesis 2

Table 3 below outlines the results of the analyses relevant to Hypothesis 1 (that there will be shifts in the general admission characteristics and diagnoses of patients) and Hypothesis 2 (that be shifts in the varying treatment types used in response to the patient needs). It highlights the significant changes between the four-yearly categories in general admission characteristics, diagnostic categories and treatment responses.

Table 3

Significant Changes in Categorical Variables

						Percentage in Time Period % (*n*)			
	X^2	*P*	*df*	Φ_c	Direction	1992-1995	1996-1999	2000-2003	2004-2007
SES	37.87	0.004	18	0.26					
Unemployed					Increase	16 (4)	24 (6)	24 (6)	36 (9)
Manual Labour					Decrease	66.67 (16)	12.59 (3)	12.50 (3)	8.33 (2)
Clerical					Decrease	25.64 (14)	17.95 (11)	22.22 (7)	34.19 (5)
Professional					Increase	16.13 (10)	27 .42 (17)	25.81(16)	30.65 (19)
Family Structure	25.08	0.01	12	0.20					
Single Parents					Increase	20.75 (11)	20.75 (11)	22.64 (12)	35.85 (19)
Both Parents					Decrease	28.57 (20)	30.00 (21)	21.43 (15)	20.00 (14)
Children's Home					Decrease	47.83 (11)	0.00 (0)	30.43 (7)	21.74 (5)
Referrer	42.39	0.01	24	0.26					
Paediatrician					Decrease	28.10 (8)	33.33 (7)	9.52 (2)	19.05 (4)
Psychiatrists					Increase	14.71 (5)	20.59 (7)	20.59 (7)	44.12 (15)
Social Workers					Increase	28.57 (4)	14.28 (2)	14.28 (2)	42.85 (6)
Children's Home					Decrease	50.00 (1)	50.00 (1)	0.00 (0)	0.00 (0)
Reason for Admission	53.83	< 0.001	12	0.30					
Diagnostic					Decrease	42.11 (16)	34.21 (13)	13.16 (5)	10.53 (4)
Therapeutic					Increase	15.00 (3)	65.00 (13)	20.00 (4)	0.00 (0)
Diagnostic/Therapeutic					Increase	25.64 (30)	17.95 (21)	22.22 (26)	34.19 (40)
Diagnosis									
Learning Disorders	8.37	0.04	3	0.20	Decrease	44.74 (17)	10.53 (4)	21.05 (8)	23.68 (9)
PDD	8.05	0.04	3	0.21	Increase	15.38 (4)	19.23 (5)	19.23 (5)	46.15 (12)
Treatment Types									
Psychopharmacology	32.26	< 0.001	3	0.41	Increase	16.18 (20)	23.53 (28)	25.21 (30)	34.45 (41)
Family Therapy	8.18	0.04	3	0.21	Increase	13.00 (7)	33.96 (18)	24.53 (13)	28.3 (15)
Individual Psychotherapy	15.21	0.01	6	0.21	Decrease	20.51 (8)	48.72 (19)	10.26 (4)	20.51 (8)
Music Therapy	19.17	0.004	6	0.23	Decrease	71.43 (10)	14.29 (2)	0.00 (0)	14.29 (2)

General admission characteristics. Significant changes are seen in the SES of patients. These are seen in the increase in patients coming from parents who are both unemployed, a decline in patients coming from parents doing lower-paid work (manual labour, clerical), and increases in patients coming from homes provided for by professionals.

The family structures of patients also show changes, with increases in single parent homes, and declines in the numbers of patients living with both parents, and coming from children's homes.

There is a stark increase in the number of patients referred to the TLC from psychiatrists and social workers, while declines are seen by those referred by paediatricians and children's homes.

There are also significant changes in the reason for admission, with fewer patients needing only a diagnosis, and increases in patients needing therapeutic input, and the combinatory service of both diagnosis and therapy.

Age, race, gender and language show no significant changes over time. However, there is a tendency towards declines in Afrikaans and isiXhosa speaking patients, while the English complement remains consistent. Noticeable (yet not significant) declines exist in the coloured and black populations, while the white population remains consistent over the sixteen years.

No significant changes are seen in the incidence of child abuse across time, although one in five children are believed to have been abused across the sample. This supports evidence from Spila et al. (2008) that child abuse predicts psychopathology.

Diagnostic Shifts. There are significant declines in the incidence of learning disorders, and increases in PDD being treated in the unit. All other diagnostic categories showed no noteworthy changes over time.

*Treatment Types.*Significant shifts are found in the increased use of psychopharmacology and family therapy, while declines are noted in the use of individual psychotherapy and music therapy. Group psychotherapy, group OT, individual OT and the use of parental psycho-education show no significant changes.

Hypothesis 3

The linear regression is contrary to the expectation of hypothesis 3, which anticipated LOS to decrease in response to increasing use of psychopharmacology. The use of psychopharmacology as a treatment type in isolation significantly predicts an *increase* in the LOS of patients at the TLC ($F(1,161) = 4.64$, $p < 0.05$). While the model reaches statistical

significance, the standard error of estimates ($S_{x.y}$ = 4.00) is not less that the mean of the dependent variable, LOS (M = 3.97), and so is possibly not the best predictor of LOS available. The prediction of LOS by medication use is given, LOS = 9.03 + 1.42*(use of medication), $p < 0.05$, $\beta = 0.17$.

Hypothesis 4

A more comprehensive model for the significant prediction of LOS was found ($F(6,141)$ = 39.66; $p < 0.001$) by the building a hierarchical model. The standard error of estimate ($S_{x.y}$ = 2.44) was less than the mean LOS (M = 10.41), confirming the goodness of fit of the model. It has an overall correlation of R = 0.79, and an overall effect size of R^2 = 0.63 (See Table G2. in Appendix G for final model).

Table 4
Hierarchical Regression Predicting LOS

	Unstandardised		Standardised				
	B	Std. Error of *B*	*B*	Std Error of *β*	*F*	*df*	*ΔR²*
Intercept	1.02	1.04					
Language					37.97	1,161	
English	1.68**	0.45	0.21	0.05			
Reason for Admission					52.33	4,155	0.38*
Diagnostic	2.86*	1.1	0.29	0.11			
Therapeutic	6.40**	1.18	0.54	0.1			
Combination	8.05**	1.05	0.99	0.13			
Diagnostic Category					44.27	5,153	0.02*
Disruptive Behaviours	1.46**	0.43	0.18	0.05			
Treatment Type					39.65	6,141	0.04*
Parental Coding	1.26**	0.43	0.15	0.05			

Note. * $p < 0.05$, ** $p < 0.01$

DISCUSSION

Conclusions drawn from the integration of changes across various categories is a complex thing to do, even in homogenous populations. This poses an even more complex dilemma in the context of not only a highly heterogeneous population, but one that has lived though a political transition (peri- and post-Apartheid). It is expected that the dawn of democracy would bring an increased accessibility of previously exclusive medical services to people who had been denied them in the past.

Shifts in Admission, Diagnosis and Treatment Response

SES. From 1996 onwards the study shows a decline in the patients coming from lower SES brackets (manual labour and clerical work), and an increase in the number of patients coming from homes where both parents are unemployed, or are provided for by professionals. Units like the TLC are expensive to run, because of the high-skill levels and low patient-to-staff member ratios (Romeo, 2005). In the interests of equal access to this specialised psychiatric service, the Red Cross Hospital operates on a sliding scale system of payment, whereby patients are charged in proportion to the SES bracket in which their parents lie. Of the three lower SES brackets (unemployed, manual labour, and clerical workers) to which the sliding-scale payment plan applies, there are probably fewer patients from the upper two brackets. This could be because unemployed parents are expected to contribute less in proportion to the salaries of those paid to manual labours and clerical workers. These parents have limited access to this specialised service, because the amount expected from lower SES earners is beyond what they can afford. Secondly, over the period of study, 40.99% of the patients came from households in these lower SES brackets – implying that more patients have subsidised payment from the state which increases the financial burden of the health system to provide adequate services with less resources. The financial expense that its costs parents to send their children to the TLC could explain the increasing percentage of patients with professional parents who can afford care through private medical insurance.

Family Structure. Beginning to change in the late 1990's, declines are noted in the number of patients living with both parents, and those coming from children's homes. There is an increase in the incidence of patients coming from single parent families. This could be a reflection of the general decline in two-parent nuclear families as a result of migrant labour and urbanisation (Barbarin & Richter, 2001;Sluzki, 1991).It is assumed that single parent families have a lowered earning capacity, and are thus less likely to afford as much care as a family where both parents are earning. This increase in single-parent families could explain the high rate of state subsidies for TLC admissions.

Referral. The unit notes increases in the incidence of patients referred by psychiatrists and social workers, and declines in those referred by paediatricians and children's homes. The increase in referrals from psychiatrists is most likely because many of the recent clients have been referred to the TLC from professionals working in the private arena.

When the TLC first started in 1992, nurses and clinicians were each allocated to a different children's home in the wider area to consult with. Holiday in-service training and workshops were facilitated with staff members. However due to budget constraints, staff

shortages, and the loss of staff to private practice, the staff at the TLC can no longer afford to do this. Consultation with children's homes is now concentrated in areas where there is greatest need, which explains the sudden decrease (Sr. Obaray, personal communication, October 14, 2009).

The increase in social worker referrals has possibly more to do with the broader condition of child psychiatric service provision in the Western Cape than the management of the TLC itself. Vogel and Holford (1999) point out that less than half of the referrals to the clinics in their study had not received any prior intervention at all, and that the layered systems of referral from primary to tertiary care are simply not existent. They also highlight that there is no inter-sectoral liaison, which complexifies and overloads the case burden given to child psychiatric units. Reasons for these changes in referral to the TLC and their underlying causes need further investigation, and then action to resolve the weak infrastructure feeding into these units.

Age, Race, Gender & Language. There is also a lot to be said for those variables that show enduring *consistency* throughout the time period. The regularity of gender is consistent with similar local and international trends, with higher rates of mental disorder in boys than in girls (Moodley & Pillay, 1992; Moreno et al., 2007; Blanz & Schmidt, 2000).

Despite the consistency in age of admission across time, the increase in mean length of stay and the dominance of children over 10 are also consistent with a similar local study (Moodley & Pillay, 1992). They attribute this skewed age distribution to an increase in psychiatric disorder in older children, and that more children *over* the age of 6 are identified later in life because of the role of formalised schooling..

The differences in the language and race of patients failed to differ significantly from each other. This may have been due to the relatively small between-category sample sizes. There was however a decline in the proportion of coloured and black patients, as well as in the number of Afrikaans and isiXhosa speakers. Following the political transition of 1994, one would expect that a greater portion of the national population had *increased* access to resources and specialised services. It seems that the opposite has actually happened. Declines in the admission of non-English speaking children of colour, again suggest that specialised psychiatric services are becoming a privilege affordable to only those who can pay for it. This is evident in the increasing numbers of patients coming from referrers in private practice. It is also possible that the large 'coloured' areas fall under the catchment area of the Tygerberg, Lentegeur and Stikland units (Sr. Obaray, personal communication, 14 October, 2009). These trends also suggest, that to its credit, the TLC made positive gains in catering equitably for the wider patient population during Apartheid (admitting more children of colour than they do

now). The fact that these numbers are declining makes a more general point about the accessibility of specialised services to the disadvantaged members of society. These children are often dealt with by teachers and school counsellors, and are incorrectly referred to already over-burdened welfare services for problems of psychopathology (Sr. Obaray, personal communication, 14 October, 2009)

Diagnoses. The increase in the incidence of PDD climbs steeply only within the last five years or so. South Africa, and the international community, have seen 'rocketing' increases in the prevalence of PDD – owed to increased media fascination, social education and awareness, and unstructured systems of classification (Dr. B. Schlegel, personal communication, 12 October, 2009; Chakrabarti & Fombonne, 2005).

There is also a sharp decline in patients with learning disorders which occurs in the early to mid 1990's, despite showing the second highest predominance across the sample. Vogel and Holford (1999) comment that learning disorders are of particularly high incidence in the South African climate, because of the severe early childhood deprivation within critical periods of development. This is a result of the reproduction of special education needs caused by interacting cycles of poverty, health-care, education and unemployment that are exacerbated by Apartheid segregation (Donald, 1994).

Ideally, a decline in learning disorders *should* be because of their efficient and early identification in primary care – hence not reaching the point where it can be classified under severe psychopathology, but fed into a system of remedial support and prevention as soon as possible. Vogel and Holford (1999), however, make the point that specialised services in South Africa are overloaded, and that few of these admissions had had any prior health professional contact. The current service delivery model (problem identified by teacher or parents, referred on an individual basis to educational psychologist, who then recommends a special-school placement) is also only existent on more advantaged areas, and is inappropriate for the population need in the large educationally-deprived population (Donald, 1994). Despite problems being identified by primary school teachers, these educators are not equipped to deal with remedial needs in a main-stream classroom without appropriate support. The education system is also pro-inclusion, and so many children with learning disorders land up in mainstream classrooms by default – giving them a disadvantage as there is simply no auxiliary support for their educational needs (Donald, 1994).

When the special education needs of children are not met, they tend to become anxious, depressed, truant or get involved in criminal activity (Vogel & Holford, 1999). This could explain why learning disorders were often co-morbidly associated with a disruptive behaviour disorder in the TLC study. Petersen (2004) argues that the psychometric

assessment of scholastic problems and learning disorders are one of the greatest needs in primary mental health service delivery in South Africa. When these are overlooked, they develop into pathologies that are difficult to recover from. Future research should therefore explore whether the decline in learning disorders is because they are possibly not being picked up due to case-overloading, weak resource provision and poor infrastructure in pre- and primary schools. The problem calls for a re-working of the special education service delivery model, as it seems that this deficiency exists within an educational system which actually *creates* special education need.

Surprisingly, while many South African children grow up in environments where exposure to violence is commonplace (Barabarin & Richter, 2001), only 3 of the 206 cases presented with PTSD (most having either a generalised or separation anxiety disorder). This is mirrored in other South African research showing that PTSD is under-diagnosed in tertiary therapeutic units that treat co-morbid anxiety- and mood-disorders (Van Zyl, Oosthuizen & Seedat, 2008).

Therapeutic Response. The TLC patient population shows increases in those needing only therapeutic intervention, and in those needing a combined response of both diagnostic and therapeutic intervention. These changes occur around the mid to late 1990's (1996-1999), at the same time that the unit experienced a decline in those patients needing only a diagnosis. These shifts in the reason for patient admission are an accolade to the TLC as being a unit that functions effectively in providing appropriate treatment responses to its patients. It is esteemed as a unit specialising in the diagnosis *and* treatment of child mental illness. Effective management has capacitated the staff to make accurate therapeutic choices about whether children require treatment at the TLC, or whether they can be referred to another institution for treatment. The high therapeutic demand suggests that there are insufficient centres to contain the patient population – explaining the long waiting list at the TLC (Sr. Obaray, personal communication, 14 October 2009). This case-load might be lightened if specialised units like the TLC were used to only diagnose problems, and then refer to secondary care for appropriate treatment.

Treatment Modalities. A sharp increase in the use of family therapy is possibly a reflection on the therapeutic beliefs of the TLC, which encourages holistic, systemic involvement. It is also possibly a consequence of the dominant diagnostic categories that the TLC specialises in treating – these being disruptive behaviour disorders (33% of total admissions across time period). These (consider conduct disorders, adjustment disorders, anxiety disorders) are often rooted within familial relationship, and treatment is most effective

when these multiple dyads are involved in the therapeutic process (Martin, 1995; Sanders & Markie-Dadds, 1996; Eyberg et al., 2001).

The rapid decrease in individual psychotherapy (sometimes privately funded) and music therapy in the mid-to-late 1990's result most likely from the lack of internal funding, and the changing economic capacities of the patient population.

The increases in the use of psychopharmacology occur gradually over the time period of the study. This is a natural result of the direction of modern medicine (Gadow, 1997; Connor, Ozbayrak, Harrison, & Melloni, 1998; Sourander et al., 2002; Najjar et al., 2004). The increased specialisation, availability and effectiveness of medication make it a helpful assistant to holistic treatment. Contrary to the hypothetical expectation of this study, however, the increased use of psychopharmacology predicts a *longer* LOS by patients. In studies comparing this linear relationship overseas, it was found that the use of psychotropic medication significantly predicted the *decrease* of LOS. It was not clear whether the increased cost of medication necessitated shorter LOS, or that the medication was effective in the quicker treatment of patients – inducing earlier discharge. In the case of the TLC, possible reasons for this reversal are offered. It is possibly a co-incidental linear relationship due to Type I error in significance testing. Alternatively, staff shortages, complexity of diagnosis, and parental, family and welfare involvement in therapy still determine that there is an increasing pattern of LOS (not significant however), despite increased use of psychopharmacology.

Prediction of LOS. LOS was predicted by the patient's reason for admission, their home language being English, the presentation of a diagnosis in the Disruptive Behaviours diagnostic group (predominantly Axis I disorders), and the use of parental therapy in treatment. There is great variety in the predictors of LOS in foreign studies. These include race, age, gender, parental alcohol abuse, degree of pathology, the use of psychotropic medication, the use of psychoanalytic therapy, community placement characteristics, place of residence and diagnosis (Jiminez, Lam, Marot & Delgado, 2004; Heflinger, Simpkins & Foster, 2002; Hussey & Guo, 2005; Hoger et al., 2002). Reasons for the differences found in the TLC population are given below.

We assume that the language prediction of LOS is based more on associated SES, than actual language. This is probably more a reflection of the economic power of this stratum of society, who can afford treatment for a longer period of time. The presence of a disruptive behaviour disorder and the necessity of parental therapy go hand in hand. Because Axis I disorders are so rooted in complex inter-personal and behavioural patterns of pathology, they are most effectively dealt with systemically. For that reason, the treatment of the child is

sometimes given second priority, as the team aims to contain the parents, and then later, the family in general (Sr. Obaray, personal communication, 14 October 2009). As the unit has experienced increases in the numbers of patients needing therapeutic and combined-response interventions, so this has contributed to an increased length of stay for many.

Locating These in the Local Context: Suggestions for the Future

Changes in the TLC patient population over the 16 years of study have been some what similar to those found in the only other similar study in South Africa, done by Vogel and Holford (1999). Similarities between studies occur in the dominance of learning disorders, and disruptive behaviour disorders (ADHD, anxiety disorders and conduct disorder) presenting at the unit. Vogel and Holford (1999) locate these within the presence of existing psychosocial stressors such as poor parenting, exposure to violence, parental separation, multiple caretakers and poverty. Although the existence of these psychosocial stressors was not investigated in *this* study, certain trends point to the existence of a wider societal context that is a breeding ground for mental ill-health. These trends include a decrease in the unit's services being accessible to poorer parents, the increase in single-parent families, the increasing involvement of social welfare and the increased use of family therapy.

Changes in the unit itself. The TLC's response to the changing needs of its patient population has been noble, but limited by a weak underlying health support system. Regarding the changes noted through this study, the unit could possibly lobby for a full-time family-therapist, or a second social worker to deal the problems systemically. It is also suggested that this research be replicated at similar units, along with the development of case-management databases, to gain better understandings of tertiary child-psychiatric services in the country and the contextual limitations that mental health service provision needs to adapt to (Romeo, 2005). These findings should also identify the efficiency and contribution that units like this make to mental health, and highlight their needs so as to ensure increased government funding where available.

Changes in the broader Western Cape. Shifts in the treatment responses of the TLC have come predominantly from outside its functioning and management. The challenges of budget limitations and staff shortages are most likely the tip of the iceberg if one were to consider the state of child mental health service delivery in the Western Cape. The long waiting lists, the patterns in referral, and weak systems of secondary support given to families in similar circumstances suggest that there is a serious lack of mental health service delivery for children (in the family context) in the Western Cape.

The Department of Social Development is over-burdened with the complex case-load that it is expected to carry. Despite recently increasing the availability of social workers in schools, there are still not enough to contain the population need – allowing children to 'slip through the net' and develop more acute psychopathology (Ms. R. Kraus, personal communication, 14 October 2009). The Education Department, despite its ethos on the *inclusion* of disability, is not equipped to optimise the human-resource of teachers to deal with special educational needs (Vogel & Holford, 1999; Donald, 1994). This over-expectation spills over into child psychiatry, resulting in their being too many children needing psychological intervention, and not enough help to provide recovery.

Vogel and Holford (1999) make the point that the places of primary and secondary care are either inadequate or non-existent, which causes tertiary institutions like the TLC to deal with complex cases of varying severity. Secondly, systems of referral and inter-sectoral liaison are very limited at present. Considering this more broadly, the efficient practice of primary care and prevention seems paramount if we are to encourage the growth of a society that is not only capacitated to deal effectively with child mental health, but moreover one that actively works to *prevent* it in the first place. Two meta-analytic reviews in the USA demonstrate that preventative interventions significantly enhance child development, especially for those already at risk for mental disorder. These preventative interventions took place in primary environments of school-going children (home, school, child-welfare initiatives in the wider community) (Kiselica, 2001; Burns et al., 2004). While the barriers to effective primary care existent in the USA might be somewhat different to South Africa, there is certainly some overlap. These include the high treatment demand which focuses efforts on *reactive* remediation, instead of *primary* prevention. There is also a professional devotion to individual counselling in which practitioners are bound in rigid professional roles. Very little compensation and funding is available to practitioners who provide preventative services to people at risk of mental disorder, but do not yet meet diagnostic criteria. In the local context there are additional complications around the training of practitioners who are culturally competent and able to communicate in traditional languages, and the general lack of infrastructure that facilitates primary care development and prevention.

Despite that, possible applications in light of these findings occur at various levels within inter-sectoral service delivery. Within specialised mental health service delivery, illness-specific units and schools should be orchestrated within existing administrations. This would allow highly-skilled units like the TLC to use their resources for diagnosis, and then hasty referral. As suggested by Romeo (2005), this should increase efficiency, and decrease the general cost of mental health service delivery.

Romeo (2005) also necessitates the adaptation of service delivery within contextual limitations. Hence, within primary care, priority needs to be given to the skill specialisation and support of primary health care services in local clinics and welfare agencies to pick up on 'red flags' when they are in their early stages of development, and prevent the high case-loads of preventable psychopathology in tertiary places of care. Many children seeking psychiatric assistance need efficient and appropriate intervention from the welfare department. Non-professional, non-governmental agents that offer psychosocial support could be trained and utilised to assist the over-burdened Departments of Welfare and Social Development in containing the therapeutic demand prior to psychiatric referral. The education department should be involved in the liaison, training and management of learning disorders within schools, that capacitates early identification, and swift remedial assistance before it reaches a stage needing psychiatric intervention. Petersen (2004) suggests that within the restructuring of primary mental health in South Africa, priority needs to be given to psychometric evaluation of scholastic problems. Further, pro-active steps should be made to improve the accessibility of LSEN schools in disadvantaged communities.

Limitations

The study made use of secondary data analysis and inherited a weak measure of SES, which classifies SES according to parental occupation. This categorisation could have been done according to the suburb where they patient lived. However, the study includes years both before and after the South African transition to democracy, and there is therefore is too much variation and reification in this process – possibly making it a weaker measure than occupation. A recent Australian study indicated that in a school-going population, parental occupation was the most accurate indicator of SES (McMillan & Western, 2000).

The sample was only 206 cases strong. The use of categorical dummy variables further decreased the statistical power of the analyses. The small sample size also determined that diagnoses were grouped in categories belonging to DSM-IV-TR Axes. A more thorough study would have broken this down to identify the exact diagnoses that were associated with other variables or prediction. The methods of statistical analysis only allowed for the bivariate distinction between the presence of a disorder on a particular axis, or not. Hence, in cases where patients had two diagnoses on the same axis, this was reduced to one. This has obvious implications for understating the incidence of certain diagnostic groups – particularly V-codes.

The database itself does not allow for the capturing of a detailed history of the client. Future databases should elaborate on the case-history to identify the presence of particular psychosocial stressors that predict psychopathology.

CONCLUSION

Kleintjes et al. (2006) estimate the prevalence of child psychopathology in the Western Cape to be around 17%. The South African context and its psycho-social stressors are bound to cause this psychopathology to manifest in particular ways. The local context also determines that child psychopathology, its precipitators and treatment modalities are dealt with in equally particular ways (Vogel & Holford, 1999). Limitations on funding and resources, staff-skill shortages, the lack of skill-infrastructure at primary health care level and inadequacies within sectors other than health (welfare, education, social safety) dictate that child psychopathology is an under-resourced problem in the local context. Some of these are seen in the TLC study. The trends in the patient population and their referrers suggest that children with parents who work, but cannot afford medical aid, have limited access to specialised psychiatric services. Rapid declines in co-morbid learning disorders are also disproportionate to their national prevalence (believed to be well over current epidemiological estimates due to the lack of skilled assessment and inflated prevalence in peri-urban populations (Pillay, Naidoo & Fochmant, 1999)), suggesting that these children are slipping through the reach of appropriate care in critical periods. Findings from this study possibly provide more questions than answers. The changes within the TLC are more an adaptive reaction to external influences than management decisions. The effects of these external forces raise issues around the general inaccessibility of specialised psychiatric care to the working poor. It also raises questions around the practicality of reformed funding models for national health insurance, and the complications this could add to an already weak administration. In general, it highlights the necessity of adequate and accessible service delivery in primary care to re-direct trajectories of psychopathology, and prevent it from escalating to the point where such high burdens are placed on the few specialised units like that of the TLC.

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APPENDIX A

Outcome of Effectiveness Evaluation

Table A1.

Cross-Study Comparisons of Study Characteristics

Title of Study	*Author; Year*	*Sample Size*	*Population*	*Location*
Practitioner Review: Preconditions and Outcome of Inpatient Treatment in CAP care.	Blanz, B & Schmidt, M.H.; 2000	34	Studies published 1975-1991 focusing on outcomes of inpatient treatment.	Meta-analysis; numerous in the United States
Do inpatient an adolescent units recover? A study of outcome and acceptability of treatment.	Jaffa, T. & Stott, C. 1999	50	Adolescents admitted to Douglas House, who met the criteria for significant psychiatric illness.	Douglas House, Cambridge, England
The Effectiveness of Child Psychiatric Inpatient Care.	Ney, P.G., Mulvihill, D. & Hanna, 1984.	102	All admissions aged 4-15 years at the Royal Jubilee Hospital, psychiatric unit, 2 week period.	Royal Jubilee Hospital, Victoria, Vancouver Island
Inpatient Psychiatric Treatment of Children and Adolescents: A review of outcome studies.	Pfeiffer, S.I. & Strzelecki, B.A.; 1990	34	Studies published since 1975 regarding outcomes of CAP units.	Meta-analysis; inclusion criteria not state
Three-year follow-up of child psychiatric inpatient treatment.	Sourander, A. & Piha, J.; 1998.	80	Child adolescent admissions to Turku University Child Psychiatry: 1/1991-2/1993 and 1/1992-12/1992.	Turku University Chld Psychiatruc Inpatient Unit; Child Psychiatric Units of Satkunta and Seinäjoki in Finland

Note. CAP = Child and Adolescent Psychiatry

Table A2.

Method and Outcome Comparison

Title of Study	*Method*	*Outcome*
Practitioner Review: Preconditions and Outcome of Inpatient Treatment in CAP.	Archival review. Development of statistical procedures to integrate findings of 10 weighted variables related to outcome.	Overall, inpatient treatment is beneficial – subject to completion, cognitive-based programmes and skilled staffing.
Do Inpatient an Adolescent Units Recover? A Study of Outcome and Acceptability of Treatment	Prospective Study, - pre and post testing. Unit staff provided progress measures (the Children's Global Assessment Scale- CGAS); self-report progress measures by patients, and 18 month follow up by referral.	The treatment at the unit is effective, acceptable and provide considerable benefit and improvement, which is maintained over the 18 month follow up period.
The Effectiveness of Child Psychiatric Inpatient Care.	Prospective Study – pre and post-testing. Peterson Quay Inventory of Child Behaviour given at admission and discharge, and 12 month follow up. Clinician also gauged improvement upon follow-up.	The unit yields beneficial results, particularly in those patients who have a pre-determined period of stay and have parental commitment to treatment.
Inpatient Psychiatric Treatment of Children and Adolescents: A Review of Outcome Studies.	Retrospective record review. Studies assessed across 22 weighted variables and 10 predictor variables, outcome coding used by reviewers, and evaluation done by formulae re: sample size, scientific rigour etc.	CAP inpatient units are often beneficial, especially if treatment programmes are specialised and after-treatment care is consistent.
Three-year Follow-Up of Child Psychiatric Inpatient Treatment	Prospective Study. Various measures at admission, 4,5,6, 36 month follow up. Measures used: Diagnostic groups, Rutter Parent's Questionnaire, Teacher's Repost Form, Child Behaviour Checklist, CGAS.	Majority of children significantly improved in functioning and maintained it over a 3-year follow-up period.

APPENDIX B

Trend Study Evaluation

Table B1.

Cross-Study Comparison of Characteristics

Title; (Author; Year)	*Sample Size*	*Population; Location*	*Method*
Changes in Inpatient Child Psychiatry: Consequences and Recommendations(Jemerin, J. M. & Philips, I.; 1988)	Not stated	Reported observations made at the Langley Porter Neuropsychiatric Institute (urban psychiatric facility for children < 12 yrs); North America (incl. Canada)	Simple analysis of variables through descriptive statistics; qualitative vignettes.
Changing Patterns of Psychiatric Inpatient Care for Children & Adolescents in General Hospitals, 1988-1995. (Pottick, K. J., McAlpine, D. D. & Andelman, R. B.; 2000)	Nationally representative data from a national discharge database.	Sampling: computerised random samples drawn at discharge – thousands of participants; USA	Weighted, least squares regression on computerised categorisation of variables.
Psychiatric Inpatient, Outpatient and Medication Utilization Costs Among Privately Insured Youths, 1997-2000 (Martin, A. & Leslie, D.; 2003)	Database of 1.7 million privately insured youth; < 17 yrs.	MEDSTATS MarketScan (gains access from private health insurance plans); USA	Regression analysis across constructed variables; significance of $p < 0.01$.
Child Psychiatry in Johannesburg, South Africa. A descriptive account of cases presenting at two clinics in 1997 (Vogel, W. & Holford, L.)	1154	Records of all new cases at 4 clinics in Johannesburg in 1997; RSA	Prospective Study. Collateral report; SSAIS-R, Griffiths Developmental Assessment, Conner's Teaching & Rating Scale (ADHD), and Yale-Brown OCD Rating Scale.

Table B2.

Cross-Study Comparison of Results

Title	*Demographics*	*Admissions*	*Length of Stay*	*Medication Use*
Changes in Inpatient Child Psychiatry: Consequences and Recommendations	Increases in conduct disorder, high impulsivity & aggression; Higher incidence of environmental abuse and neglect; single-parent, homosexual parenting.	Not stated	Funding is at a premium, resulting in decreased LOS	Marked increase (as a result of increased knowledge, and the sinister need to control acute psycho-pathology)
Changing Patterns of Psychiatric Inpatient Care for Children & Adolescents in General Hospitals, 1988-1995.	Increased psychoses, major depressive disorders and disruptive behaviour disorders.	General: increase 7%, Child (<12yrs) increase: 36%, Private hospital: nearly doubled, Public hospital: declined 29%.	General: Decline 23%., Private hospitals: increased, Public hospitals: decreased.	
Psychiatric Inpatient, Outpatient and Medictaion Utilization Costs Among Privately Insured Youths, 1997-2000	Increase in Bipolar Mood Disorder, Schizophrenia and Anxiety Disorders.	Not studied	Not studied	Increase in medication costs – 12.1%., Contributes to 36% of total inpatient care
Child Psychiatry in Johannesburg, South Africa. A descriptive account of cases presenting at two clinics in 1997	Under-representative of black children. High prevalence of learning disorders, ADHD and PDD, Anxiety and sexual abuse in females.	Included in demographics	Not studied	Not studied
Two Years of admissions to Natal's first inpatient child mental health centre.	Most patients under 12 years, 80% increase in behavioural and anti-social behaviours.	Not studied	Slightly declining (16%)	Increase in usage by 57%

APPENDIX C

Diagnostic Categorisation

Table C.

Diagnostic Categories

Diagnostic Category	*Type*	*Sub-type*
Disruptive Behaviour Disorder	ADHD/ADD	
	Adjustment disorder	With anxiety
		With depressed mood
		With disturbance of emotions & conduct
		With disturbed conduct
		With mixed anxiety & depressed mood
	Anxiety Disorder	Acute stress disorder
		Generalised anxiety disorder
		NOS
		OCD
		Panic disorder
		PTSD
		Secondary to GMC
		Separation
		Social
		Specific phobia
		Substance-induced
	Conduct disorder	
	Disruptive behaviour disorder NOS	
	Impulse control disorder	
	Oppositional Defiant disorder	
	Selective Mutism	
Learning Disorder	Mathematics	
	NOS	
	Reading	
	Spelling	
	Written expression	
Mood Disorder	Mood Disorder	MDD
		Bipolar
		Cyclothymia
		Dysthymia
		NOS
		Secondary to GMC
		Substance-induced
	Dissociative disorder	
Other Disorder	Eating Disorder	Anorexia nervosa
		Bulimia nervosa

		NOS
	Elimination disorder	Encopresis
		Enuresis
	Communication disorder	
	Disorder of childhood NOS	
	Factitious disorder	
	Gender identity disorder	
	Reactive attachment disorder	
	Sexual Disorder	
	Sleep Disorder	
	Somatoform disorder	Somatisation disorder
		Conversion disorder
		Body dysmorphic disorder
		Somatoform disorder NOS
	Stereotypic movement disorder	
	Substance-related disorder	
PDD or Mental Retardation	Pervasive developmental disorder	Asperger's disorder
		Autistic disorder
		NOS
	Mental Retardation	Mild
		Moderate
		Severe
Psychotic Disorder	Delirium	NOS
		Secondary to GMC
		Substance-related
	Psychotic disorder	NOS
		Brief
		Secondary to GMC
		Substance-induced
	Mental disorder due to GMC	
	Mental disorder NOS due to GMC	
	Personality change due to GMC	
	Schizoaffective disorder	
	Schizophrenia	
Tic Disorders	Tourette's	
	NOS	
V code	Abuse	Emotional
		Neglect
		Physical
		Sexual
	Academic problem	
	Bereavement	

No diagnosis on Axis I	
Relational Problems	NOS
	Parent-child
	Sibling

Note. NOS = Not otherwise specified; OCD = Obsessive Compulsive Disorder; PTSD = Post Traumatic Stress Disorder; GMC = General Medical Condition; MDD = Major Depressive Disorder;

APPENDIX D

Ethical Approval for Study

UNIVERSITY OF CAPE TOWN

Department of Psychology
Research Ethics Committee
Rondebosch, 7701
Tel: 27 21 6504608 Fax: 27 21 6504104
E-mail: kevin.thomas@uct.ac.za

June 8, 2009

REFERENCE NUMBER: 2009010

Ms. Robyn Baynes
Department of Psychology
University of Cape Town

Dear Ms. Baynes:

PROJECT TITLE: Changing Patterns of Inpatient Care for Children and Adolescents at the Therapeutic Learning Centre, Division of Child and Adolescent Psychiatry, Red Cross War Memorial Children's Hospital (1992-2008)

Thank you for your submission to the Department of Psychology Research Ethics Committee.

It is a pleasure to inform you that the Committee has **granted approval** for you to conduct the study.

Please note that the ongoing ethical conduct of the study remains the responsibility of the principal investigator and/or research supervisor.

Please quote your REFERENCE NUMBER in all future correspondence with the committee.

Yours sincerely,

Johann Louw, Ph.D.
Professor
Chairman, Department of Psychology Research Ethics Committee

APPENDIX E

Written Permission for Access to Clinical Data at the TLC

NAVRAE:
ENQUIRIES: Division of Child and Adolescent Psychiatry
IMIBUZO:

TELEFOON:
TELEPHONE: (021) 685-4103
IFOWUNI:

FAKS:
FAX: (021) 685-4107
IFAX:

VERWYSING:
REFERENCE: WdJ/
ISALATHISO:

DATE: 15 / 5 / 09

3

PROVINCIAL ADMINISTRATION: WESTERN CAPE
Department of Health

PROVINSIALE ADMINISTRASIE: WES-KAAP
Department van Gesondheid

ULAWULO LWEPHONDO: INTSHONA KOLONI
Isebe Lezempilo

CONFIDENTIAL

To Whom it May Concern:

This letter serves as written notice that Robyn Baynes is a research assistant to a researcher, Dr. Y. Dhansay, at the Therapeutic Learning Centre (TLC). As the clinical lead clinician of this unit, I have given her permission to access the clinical files of the patients attending the unit from 1992-2008. As a registered volunteer at the TLC, Robyn has signed a contract of confidentiality. She is bound by this in her involvement with the current patients, as well as with regard to information in closed files.
Thank you.

Wde Jager
[Sen Clin Psych]
HEAD: TLC

Red Cross War Memorial Children's Hospital
Private Bag X5
Rondebosch
7701

Rooikruis Oorlogsgedenk Hospitaal vir Kinders
Privaatsak X5
Rondebosch
7701

APPENDIX F

Confidentiality Contract with Friends of the Red Cross Hospital

CONTRACT BETWEEN THE FRIENDS OF THE CHILDREN''S HOSPITAL ASSOCIATION (FOCHA)
AND

ROBYN RAYNES
(Name of Volunteer)

FOCHA is committed to the principle of volunteering. We are also committed to providing volunteers with a support environment and the opportunity to develop skills and knowledge.

In order to ensure that the patients receive the quality service, the organisation has a number of expectations of its voluntary staff. This contract aims to clarify those expectations and forms the agreement between yourself and FOCHA.

WHAT WE ASK OF YOU	WHAT YOU SHOULD EXPECT OF US
Hours and days of work Your hours and days set out in your attached job description. Inform us in advance whether you will be able/unable to come in on the specified day, and if you come in late or leave early.	Where possible, we will try to accommodate your day and time constraints.
Tasks Your tasks are set out in your attached job description. Perform your tasks to the best of your ability.	Clear job description that is up to date. In-service training to assist you in performing your tasks.
Confidentiality FOCHA's information regarding patients and their families must be kept confidential. No information regarding the patient and family should be shared with anyone without consent or authority by the Board of Management of FOCHA. You must consult the volunteer manager or Director if you think you have breached confidentiality.	The Director and the volunteer manager will take responsibility for deciding how the breach of confidentiality should be handled.
Travel expenses To use the most economical form of transport. In some cases receipts may have to be produced.	You may be paid on the basis of not being out of pocket, and a contribution might be made towards your travel expenses. This will be at the discretion of the Director.

Copyright We encourage the usage of all material we produce. Please ensure that we are credited at all times.	Copyright in all materials produced by the volunteer at the request of FOCHA and whilst working for the organisation shall belong to the FOCHA
Problems We would like you to feel free to express your views and share any work related problems openly and honestly with us. You can discuss these with your volunteer manager or programme's manager	If we have any problems or concerns these will also be raised with you in a fair and open manner.
Support & Supervision Please consult volunteer manager and or programme's manger if you feel unsure of your ability to deal with a specific task.	We aim to provide adequate support to voluntary staff and your manager will advise or coach you.
Assessment (joint progress reviews) In order to maintain a quality service and to ensure that you receive feedback regarding your contribution to the organisation, we will have progress reviews. Part of this process also involves you assessing your own strengths and areas of development.	Joint progress reviews will be held with the volunteer manager and programme's manager. This is one of the few formal opportunities we have in order to thank you for your contribution to THE FRIENDS OF THE CHILDREN'S HOSPITAL ASSOCIATION (FOCHA).
Leaving FOCHA Please try give notice as required so that we can make other arrangements. If you are leaving because you are dissatisfied in any way, we ask you to discuss this with us before you leave.	We will also give you as much notice as possible if there are any changes in our volunteer programme. The volunteer manager will set a date with you for your exit interview. We will provide you with a reference letter indicating the skills and knowledge you have acquired as well as qualities observed.

This contract is valid for one year from the date of being signed.
The volunteer and the volunteer manager reserve the right to terminate the contract with immediate effect if necessary.

VOLUNTEER _____ PROGRAMME MANAGER _____

DATE 11 May 2009

APPENDIX G

Hierarchical Regression Figures

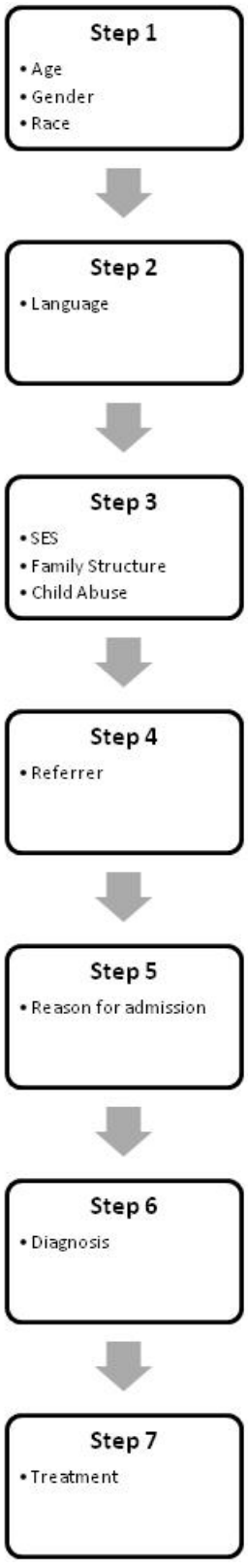

Figure G1. Stepped Hierarchical Regression Model for the Prediction of LOS Prior to Analysis.

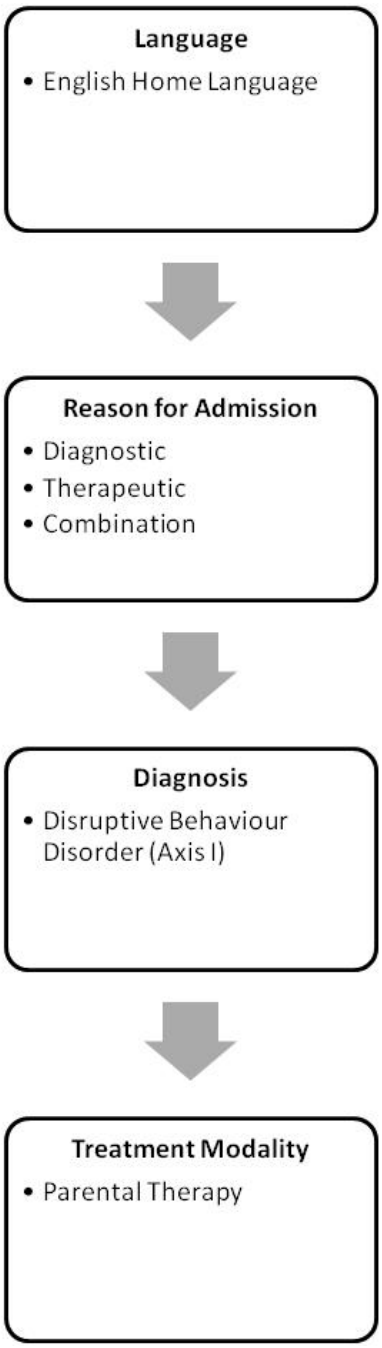

Figure G2. Hierarchical Regression Model for the Variables that Significantly Predicted of LOS After Analysis ($p < 0.05$).