ANALYSIS OF COMMON CHILDHOOD MENTAL HEALTH SYMPTOMS AND THE EFFECTIVENESS OF MENTAL HEALTH INTERVENTIONS IN CHILDREN ADMITTED AT THE UNIVERSITY TEACHING HOSPITAL (UTH) CHILDREN'S HOSPITAL

BY

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A Dissertation submitted to the University of Zambia in partial fulfilment of the requirements of the degree of Master of Medicine in Psychiatry and Mental Health.

THE UNIVERSITY OF ZAMBIA

LUSAKA

2021

DECLARATION

I, **Dr. Angel B. Chirwa**, hereby declare that the submitted thesis entitled "Analysis of common childhood mental disorders and the effectiveness of mental health interventions university teaching hospitals-children's hospital in Lusaka, Zambia" is based on my original work except for those quotations and citations mentioned throughout the thesis, which have been duly acknowledged. I declare that this dissertation herein presented for the degree of Master of Medicine in Psychiatry has not been before submitted either in whole or in part for any other degree at this or any other university, nor is not being currently submitted for any other degree

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CERTIFICATE OF APPROVAL

The dissertation of Dr. Angel B. Chirwa is approved as fulfilling part of the requirement for the award of the degree of Master of Medicine in Psychiatry by the University of Zambia.

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DEDICATION

To My Late Mother Mrs Rhoda Mukonde Chirwa whose strength, resilience and love has inspired me. My children Ben and Vian who define life.

ACKNOWLEDGEMENTS

I am grateful to God, for the abundant grace and favour. Thank you to my amazing family and friends for the constant support. Thank you to my siblings, Suzyo, Mwali and Kamkota for the technical support and my friends Kafula, Kondwelani and Luchenga for pushing me so tactfully. Special thanks to Mr. James Mwanza, for the constant supervision and encouragement

To Dr Ravi Paul, my research assistants, students, nurses, doctors in paediatrics and Psychiatry UTH and the whole University Teaching Hospital management, I appreciate you.

ABSTRACT

10 to 20% of children around the world have mental health problems. When left unattended, these problems impair the child's development therefore interfering with their potential to live productive lives. Depression is among the top 10 leading causes of illness and disability in adolescent while suicide is the third leading cause of death in Children 15 to 19. It is important to identify and treat mental health problems early to improve outcomes. It is equally important to provide easy access to the right services.

The aim of the study was to analyse the childhood mental health problems at UTH CH and to establish whether introducing a screening tool would improve the referral rate to specialized care.

134 children were enrolled. They were assessed using the Strengths and Difficulties questionnaire.21.6% had emotional stress, 20.6% had peer problems, 14.2% had conduct problems and 1.5% had child hyperactivity and concentration difficulties. 87.3% had prosocial behaviour. Overall, 9% of children had a high total difficulty score that required referral and further assesement.12 patients were referred and only 5 were seen in the Psychiatric department despite appointments being given for the next children's clinic.

Parental employment status influenced the child's emotional stress and peer problems. While marital status of the parents also had an effect on the child's emotional stress.

Keywords: *Childhood mental health disorders, childhood mental health screening*

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ABBREVIATIONS

ADHD	Attention Deficit Hyperactivity disorder
CBCL	Child Behaviour Checklist
CBT	Cognitive Behavioural Therapy
DABWA	Development and well-being Assessment
DSM IVTR	Diagnostic and Statistical Manual for 4th Edition Text revised
DSM V	Diagnostic and Statistical Manual for 5th edition
GAD	Generalized Anxiety Disorder
MDD	Major Depressive Disorder
SDQ	Strengths and Difficulties Questionnaire
UTH CH	University Teaching Hospital Children's Hospital
UTH	University Teaching Hospital
WHO	World health Organisation

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CHAPTER ONE

INTRODUCTION

Mental health problems account for the highest burden of diseases among child and adolescents. Depressive disorders, conduct disorder, and anxiety disorders are among the most common causes of years lived with disability among children and adolescents and Suicide is the second most common cause of injury related deaths among adolescents.(Keiling C, et al)

Mental and substance use disorders contribute more than half of all suicide disability adjusted life years in the world. As part of suicide prevention strategies it is important that that problems are detected early so that effective management is insituited. (Vos Et al 2011)Low- and middle-income countries (LMICs) are home to three- quarters of the people with mental health problems and more than the same fraction of the world's children and adolescents(Hoosen et al 2018) (Mendehall 2014). 75–85% of those with severe mental health problems receive inadequate or no treatment.

Generally, emotional disorders in childhood are not followed significant similar disorders in adulthood but rather a frequent onset of neurotic disorders. This means that no real emphasis is made on emotional childhool disorders which are taken as being exaggerated reactions normal for age and when they could be strong indicators for progression to neurotic diseases for which interventions can be made. (Mendehall 2018)

The ICD 10 classifies mental illness of childhood as being either disorders of psychological development which includes conditions with impairment in speech and language and encompasses Pervasive developmental disorders and Autism. It also classifies behavioural and emotional disorders with onset usually occurring in childhood and adolescence and these includes hyperkinetic disorders such as Attention Deficit Hyperactivity disorder, Conduct disorder, and Oppositional defiant disorder. Disorders of social functioning with onset specific to childhood and adolescence and other behavioural and emotional disorders with onset usually occurring in childhood and adolescence are classified. The SDQ questionarie identifies specific symptoms that can then be used to aid diagnosis. (ICD 10)

There is a growing importance of mental health problems in children. The World Health Organisation (WHO) predicted that the burden of internalizing problems such as depression will exceed those of HIV/AIDS by the year 2030 (Belfer, 2008). Mental health problems are often chronic (Biederman et al., 1993). One of the objectives of WHO includes providing comprehensive, integrated, and responsive services in the community for early identification and treatment of childhood mental disorders (WHO Mental Health Action Plan 2013 - 2020). Left untreated, approximately half of preschool children will show a natural reduction in behavioural problems. The other half may go on to develop long term consequences that can lead to break down in family functionality and disruption to their education. Additionally, they may then abuse alcohol and drugs, which can further complicate into depression and subsequent reduction in productivity (Bayer et al., 2008).

The initial onset of mental illness often occurs in childhood or adolescence (Kessler et al., 2007). By adolescence, 40% of children would have had at least once met the criteria for a psychiatric condition, and the rates increase when children with subthreshold symptoms are included (Costello, 2011). Many of the children with subthreshold symptoms are significantly impaired, which is often the origin of adult psychiatric disorders. (Roza et al., 2003).

In Norway, the prevalence of mental illness in children aged 3 to 18 years was estimated at 8% (Mathiesen 2009). A review of the prevalence of psychiatric disorders noted an increase in children and adolescents in community surveys from 10000 in studies published between 1980 and 1993 to almost 40000 in studies published between 1993 and 2002 (Costello et al., 2004). A study done in China showed a prevalence of 9.49% of DSM IV disorders among 6 to 17-year-olds (Yang Xialo et al., 2014).

An easy to administer screening tool introduced as part of the initial assessment in Children has been shown to increase the rate of early identification of mental disorders and subsequent early referral and management. The Strengths and Difficulties Questionnaire (SDQ) is a commonly used tool that screens for children's emotional and behavioural problems. It comprises 25 questions grouped into five subscales that assess for problems with emotions, hyperactivity/inattention, conduct, peer relationships, and sociability. It has been used in clinical settings, schools, and in research for initial assessments, follow up, assessment of outcome, and screening. A review of

several studies done across Africa using the SDQ was carried out to understand the scope of applying the SDQ as well as its validation in Africa and concluded that the tool is useful but researchers did not follow the guidelines and that the psychometric properties of the SQD are not well known in the African setup. (Hoosen et al., 2018). One of the challenges of using the tool was the interpretation of the questions into local languages. However, it has the advantage of a high sensitivity identifying mental health symptoms.

The University Teaching Hospital is the largest referral hospital in the country. The hospital currently has no guidelines or protocol for screening, assessing and management of mental health disorders in children. The hospital has a Psychiatric department in the adult section that attends to children referred by the paediatricians. This study will provide data that can then be used to formulate a structured approach to screening and management of children and adolescents who present with mental health symptoms. It will provides evidence for a fixed linkage and referral system between the Department of Psychiatry and Children's' Hospital. It will inform policy-makers of the prevalence and factors associated with childhood mental disorders in Lusaka.

This study aimed to analyse the common childhood mental health symptoms and the effectiveness of mental health interventions in children admitted to the UTH children's Hospital

1.1 Statement of the Problem

There is currently limited data on the burden of childhood mental health diseases in Zambia. Despite WHO prioritizing policy that promotes child and adolescent mental health, there is no policy, or guidelines for the screening and treatment of mental health conditions for Zambian Children. Zambian children are not routinely screened for mental health symptoms and as a result, many children with disorders or at high risk of developing mental disorders are left unrecognized, undiagnosed, and unmanaged. This subsequently increases the chances of the development or progression of mental disorders that are difficult to manage. Children referred to the psychiatric clinic from the Children's Hospital at the University Teaching Hospital usually present with moderate to severe symptoms, while children with behavioural and emotional problems are not often referred.

1.2 Study Justification

Only 10% of all child and adolescent mental health (CAMH) research has been conducted in LMICs (keiling C et al) The magnitude of mental health problems among children in Zambia is unknown. The study has provided data on the prevalence of mental health problems and associated factors at the Children's Hospital. Clinicians currently working in the Children's Hospital have a low index of suspicion for mental health disorders. Only children with overt mental health disorders are usually identified and referred to the psychiatric department. Referral to the psychiatric unit is primarily for children who require assessment for certification and enrolment into special education. This study has provided evidence that there is a need for a formal screening programme at the Children's Hospital. The WHO has an objective to provide integrated and responsive mental health services in the community for early identification and management of childhood mental disorders by 2020. This has provided the necessary information to facilitate that mandate.

1.3 Research Question

What are childhood mental symptoms and associated factors among children admitted at the Children's Hospital?

1.4 Objectives

1.4.1 Main Objective

To analyse childhood mental health symptoms and the associated factors among children admitted at the University Teaching Hospital Children's Hospital in Lusaka, Zambia.

1.4.2 Specific Objective

i. To establish the common childhood mental symptoms in children admitted at the UTH
ii. To determine factors associated with childhood mental problems
iii. To determine the effectiveness of mental health interventions

CHAPTER TWO

REVIEW OF LITERATURE

Studies were reviewed from Psych info, PubMed, Blackwell, and Cochrane.

The lifetime prevalence of age-of-onset distribution of DSM IV disorders in the National comorbidity Survey Replication study shows that about half of Americans will meet the criteria for a DSM IV disorder at some time in their lifetime, and the initial episode is usually in childhood and adolescence (Kessler et al., 2005). A review of the prevalence of psychiatric disorders (Costello et al., 2004) showed an increase in the number of children and adolescents in community surveys from 10000 in studies published between 1980 and 1993 to almost 40000 in studies published between 1993 and 2002 (Costello E et al., 2005).

A study done among children and adolescents in China to describe the prevalence of psychiatric disorders among 6 to 17-year-old school-going children found that the prevalence of DSM IV disorders was 9.49%. This was a two-phase cross-sectional study on 9806 children of which mothers and teachers were interviewed using the SDQ questionnaire. Of the 8848 screened, 1129 tested positive and 804 randomly selected of the ones who tested negative were assessed using Development and well-being Assessment (DABWA). Anxiety disorders were the most prevalent (6.06%), followed by disruptive disorders (1.63%) depression (1.32%) and attention deficit hyperactivity disorder (0.84%). Although it showed that 1 in 10 children had a disorder that warranted intervention, it may have been lower than in the general population. Children with already existing mental illness or had poor academic performance had left school and were therefore not included in the study. Another limitation was that the teachers who did the rating may not have had adequate time to thoroughly analyse the children's responses objectively. (Yang Xialo et al., 2014).

Noriko et al., 2015 reviewed literature on the prevalence of children's health problems and the effectiveness of population-level family Interventions and found a prevalence rate of 10 to 20%. Different assessment tools were utilized in several studies, including the SDQ questionnaire that showed similar prevalence. However, it was revealed that only 25% of children in the reviewed studies found with behavioural problems were referred to medical services implying that most of

the children were left untreated. This highlights the importance of a structured referral system in addition to correct and timely assessments.

In 1983, the Child Behaviour Checklist for Children and adolescents 4 to 16 years was used by parents as part of a study to report behavioural or emotional problems in the Dutch province of Zuid. A random sample of 2600 children and adolescents was drawn, of which 2447 were reached, and 2076 consented to participate. The child behaviour checklist scored eight syndromes, which included withdrawal, somatic, anxious/depressed, social problems, thought problems, attention problems, delinquent behaviour, and aggressive behaviour. The first three syndromes were grouped into internalizing, while the last three are into externalizing scales. The follow up was done after 14 years, at which time the DSM IV interview (Composite International Diagnostic Interview) was used to obtain a diagnosis for 1580 subjects. The diagnoses were grouped into two groups. Generalized Anxiety disorder, obsessive-compulsive disorder, agoraphobia, panic disorder, social phobia, specific phobia, post-traumatic stress disorder, or a combination represented the first group. In contrast, major depressive episode, bipolar disorder, dysthymia represented the mood disorders. This study showed that emotional and behavioural problems reported by the parents in childhood predicted the onset of DSM IV mood and anxiety disorders across the 14 years. Age and sex at initial assessment were predictive. Anxiety disorders were noted to start in childhood and early adolescence, while depressive illness started in adolescence and early adulthood. (Roza JS et al. 2003).

A cross-sectional study on the reliability and validity of the self-report version of the SDQ (SDQ Y) was conducted in 2005 among Zambian adolescents aged 11 to 15. (Menon 2014) The study aimed to determine whether the SDQ Y was a feasible tool to assess emotional and behavioural well-being among Zambian adolescents. Four hundred thirty-eight adolescents were recruited from 5 basic schools in Lusaka. The total SDQ scores showed no significant differences between males and females. However, the males had a higher prosocial scale score, which meant that they had increased positive social behaviour, while the females scored higher on youth conduct problem scale. The study showed that the occupation of the parents was unrelated to mental health, but the socioeconomic status of the family was related, in that the young people from the homes without regular stable income had higher overall SDQ scores, lower prosocial subscale scores, and higher hyperactivity and peer problem subscale scores. 97% of the participants lived with a least one

parent, while the few children who did not live with a family member scored higher on the hyperactivity subscale. Children who reported health problems had a higher SDQ score, reporting increased emotional and hyperactivity problems. The study suggested that overall, the SDQ youth report is reliable and valid for Zambian adolescents. Internal consistency was satisfactory for total difficulties, emotional and prosocial behaviours but was inadequate for hyperactivity and very poor for peer and conduct problems. (Menon 2014).

CHAPTER THREE

METHODOLOGY

3.1 Study Design

This was a mixed methods cross-sectional study. It was a qualitative and quantitative study that aimed at analysing the common childhood mental health symptoms and an interventional study that aimed at assessing the effectiveness of introducing a screening tool in paediatrics in improving the referral to the psychiatric department.

The study utilized the Strengths and difficulties questionnaires (SDQ) which was administered to parents/guardian. (Appendix 4) The SDQ is a commonly used questionnaire in clinical settings, schools, and in research for initial assessments, follow up, assessment of outcome, and screening. It comprises 25 questions grouped into five subscales that assess for problems with emotions, hyperactivity/inattention, conduct, peer relationships, and sociability. These symptoms represent the most common clusters of symptoms for childhood mental disorders. It has been used.

3.2 Study Setting

The study was conducted at the UTHs Children's Hospital. UTH is the highest tertiary institution in Zambia, receiving many referrals from many of the clinics and first level hospitals in the country.

3.3 Study Population

The study population consisted of children aged 4 to 15 years that were admitted to the UTH Children's Hospital with any ailment and with care giver present. The criteria for patients seen at the UTHs Children's hospital includes all children up to the age of 15 years old, which represent the upper age limit for the study.

3.3.1 Selection Criteria

3.3.1.1 Inclusion criteria

Children

- Admitted to the UTHs Children Hospital
- Aged between 4 and 15 years
- Who had an adult care giver present

3.3.1.2 Exclusion criteria

Children or adolescents who

- Were critically ill,
- Already being attended to for any psychiatric disorder those with
- Had an intellectual disability
- Had any neurological impairment,
- Had HIV/AIDS
- Were known to reside on the streets.

3.4 Ethical Considerations

Research ethical approval was obtained from ERES. (Appendix 1) Permission to conduct the study was then granted by the University Teaching Children Hospital (Appendix 2). Permission was also obtained from the Department of Psychiatry at UTH. The study and its objectives were explained, and informed consent was requested. (Appendix 5)

The study did not have any financial or material incentive. The advantage was potentially early identification and expedited referral and subsequent review for those participants who required further intervention.

The participants were informed that the study was voluntary and that they are at liberty to discontinue participation at any time and that such a decision would not have any consequences.

Names and study identification codes were used but kept separately for the purposes of data evaluation. Codes were used on the questionnaire. The names were used for referral.

In the event that psychological distress occurred, which is least expected, special care in the form of psychotherapy was planned for both the child and the caregiver. There was minimal or no risk to the participant.

The data was highly confidential and secured in a password encrypted computer by the principal investigator.

3.5 Sampling Procedure

The patients were sampled from the wards at the UTHs Children's' Hospital. The research assistant identified the children meeting the inclusion criteria. Serial numbers were allocated to the files and every 5th patient was enrolled.

A list of eligible patients on made→Every 5^{th} patient selected→Parents and Patients approach→study design and goal explained to the Guardian and child→informed consent obtained by either signature or thumb print→assent in children above 13 obtained→study staff administer questionnaire for no more than 10 minutes→those with high scores referred to Clinic 6 for an earlier than standard appointment.

The sample size was calculated using the **CDC** Epi Info statistic calculator. The sample calculation was based on the number of admissions to UTHs Children's hospital in the year 2017.

3.6 Sample Size

$$N = \frac{Z^2 \times P (1-P)}{E^2}$$

Where N = sample required
Z = 1.96 (95% C I)
P= expected prevalence 10 % (WHO Mental Health Action Plan 2013 to 2020)
E= margin of error 0.01

Therefore, $N = \frac{(1.96)^2 \times (1-0.1)}{(0.05)^2}$

$= \mathbf{138}$

3.7 Data Collection Procedures

Permission was obtained from the Children's Hospital to conduct the study. The Staff on the wards were informed and introduced to the study. Systematic sampling was used. The files were then be collected and assigned serial numbers. As per sampling criteria, the potential participants were approached, given the information sheet and told about the study. The consent and assent were administered, and an appointment made for the following day.

The next day, the file was reviewed and the SDQ administered to the parent or guardian. The SDQ for parents of children 4 to 10 was administered as well as the SDQ for parents aged 10 to 17 years will be administered. The interview was carried out by the research assistants who were either a trained psychologist or mental health nurse. The screening was done in approximately less than 20 minutes. The questionnaire was scored using the Youthinmind SDQ scoring which is a web-based scoring system. Upon completion of inputting the questionnaire, the Youthinmind SDQ scoring system generated a report, which was then entered into a data collection sheet on excel. The participants who scored high for the likelihood of a mental disorder were then given a referral to the psychiatric department at UTH.

3.8 Statistical Analysis

Data were entered into Microsoft Excel 2010. This data was then transferred and analysed using SSPS version 25 for data analysis. Descriptive, analytical statistics were used to provide simple summaries about the common childhood mental disorders in children and descriptions thereof. The summaries formed the basis of the description of the data. Continuous and categorical variables were expressed as percentages and actual numbers. Descriptive statistics were shown by graphical representation. To establish, the common childhood mental disorders we planned to use percentages and means and to determine the factors associated and effectiveness of mental health interventions standard deviation, paired T test, chi squared test will be used depending on the normality of the data. Odds ratios will be used to indicate the strengths of associations and correlating factors with disorders.

3.8.1 Study Variables

The variables used in conducting this study are summarized in Table 3.1

VARIABLE	CHARACTERISTIC	SCALE OF MEASUREMENT
Age	Independent	Mean
Sex	Independent	Percentage
Performance in class	Dependent	Scale
Presence of bullying	Dependent	Percentage
Parents level of Education	Dependent	Scale
Parents Marital status	Dependent	Scale
History of psychiatric illness in family	Dependent	Percentage

CHAPTER FOUR

RESULTS

4.1 Demographic Profile of Children and Parents

4.1.1 Children's Characteristics

A total of 134 participants were enrolled in the study. The characteristics of children in this study are presented in **Table 1**. Males and females were equally distributed, with 59% of them being 10 years and above. The majority of the children (76.1%) had not repeated grades, and more than half (59.7%) placed in the top 10 for academic performance.

Table 1: Frequency distribution of child characteristics

Characteristic	Frequency (n = 134)	Percent
Age Categories		
10 years and above	79	59.0
Below 10 years	55	41.0
Repeated Grades		
No	102	76.1
Yes	32	23.9
Performance		
Bottom 10	11	8.2
Average	32	23.9
Top 10	83	61.9
Never Been to School	8	6.0
Sex		
Male	67	50.0
Female	67	50.0

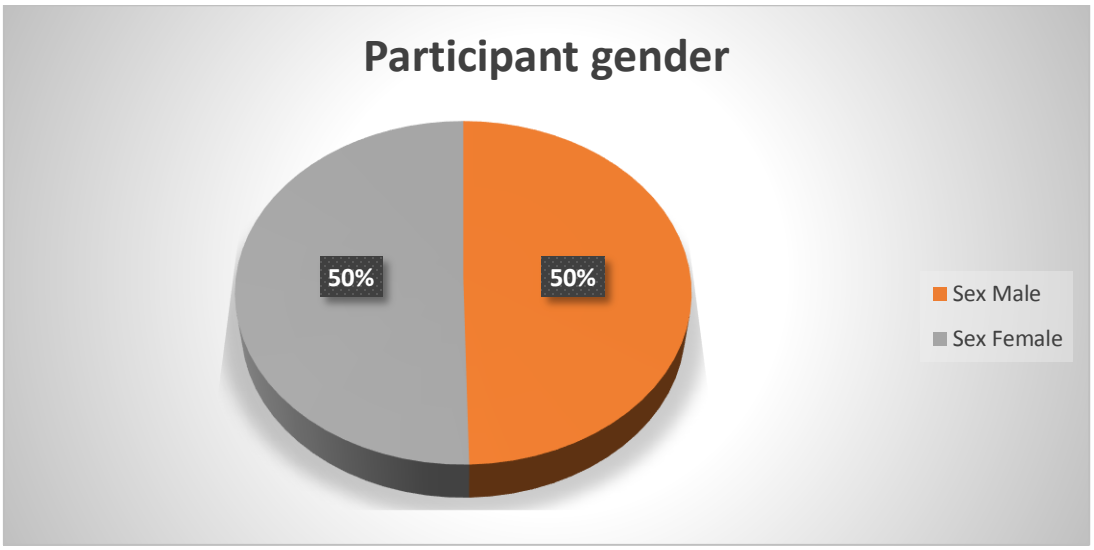

Figure 1: Participant gender

Males and females were equally distributed

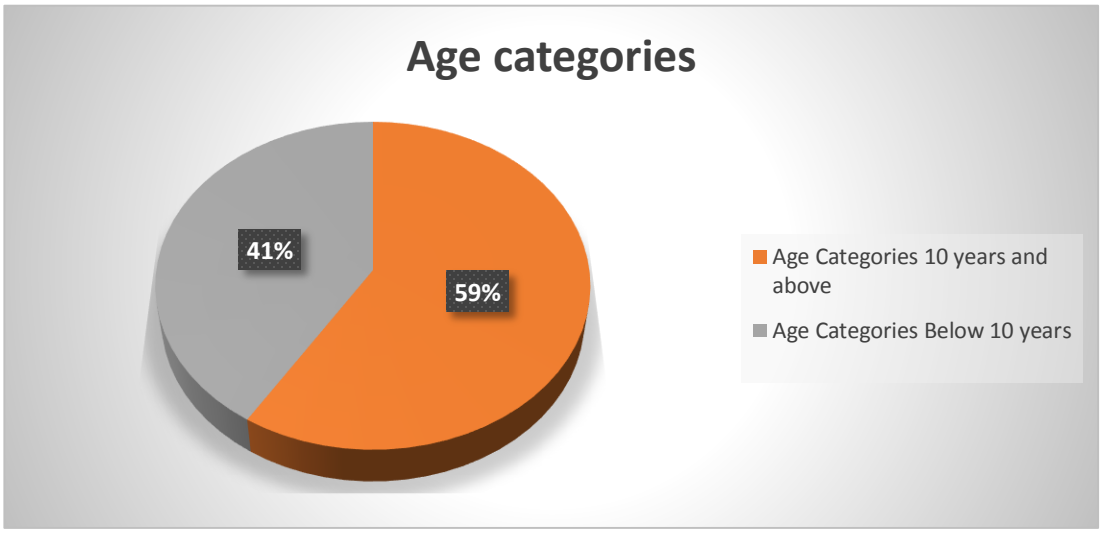

Figure 2: Participant age categories

The majority of the participants were 10year old and above

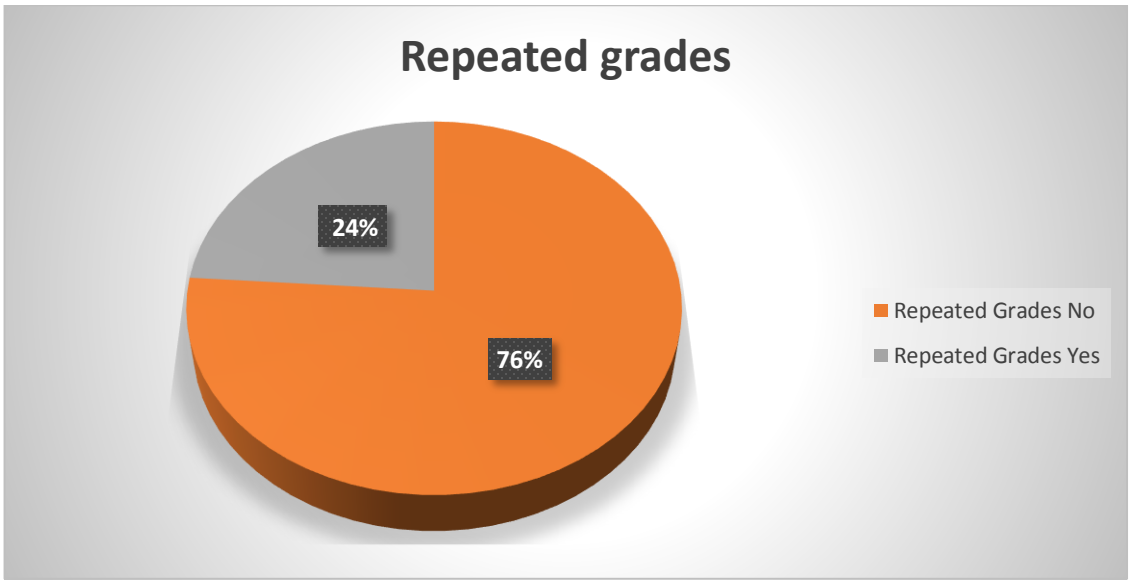

Figure 3: Proportion of participants who repeated grades

More than three quarters of participants had not repeated a grade

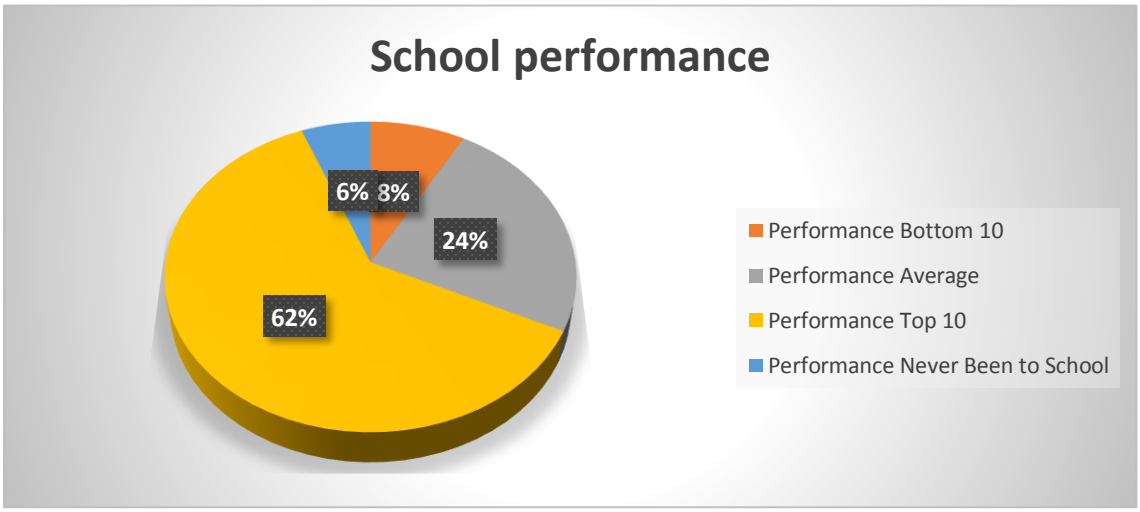

Figure 4: Participant school performance

62% of parents reported that their children were top performers in class

4.1.2 Parental characteristics

Table 2 Parental/guardian characteristics.

A total of 134 guardians took part in this study. Most of the guardians (73.9%) were married. Fifty-three percent (53%) had children four or more children. Approximately, thirty-seven percent (37.3%) were in formal employment, while 23.9% had attained tertiary education. About 32% earned less than 1000 kwacha. Only 12.7% of guardians consumed alcohol.

Details are further depicted in **Table 2** below.

Table 2: Frequency distribution of Parental Characteristics

Characteristic	Frequency (n = 134)	Percent
Number of children		
4 children and above	71	53.0
Below 4 children	63	47.0
Parental Alcohol/Smoke Intake		
No	117	87.31
Yes	17	12.69
Parental Employment Status		
Unemployed	32	23.9
Self-employed	52	38.8

	Employed	50	37.3
	Parental Level of Education		
	None	6	4.5
	Primary	45	33.6
	Secondary	51	38.1
	Tertiary	32	23.9
	Household Income		
	<1000	43	32.0
	1000 - 3000	44	33.0
	>3000	47	35.0
	Parents' Marital Status		
	Single	8	6.0
	Married	99	73.9
	Other	27	20.1

4.2 Common Mental Symptoms among Children

Figure 5 shows an overview of the mental health symptoms as reported by their parents. Over twenty-one percent (21%) were reported to have emotional stress and 14.2% had behavioural difficulties. The majority of parents reported that their children had kind and helpful behaviour (87.3%) and 79.1% had no problems getting along with other people. Only 1.5% of child had hyperactivity and concentration difficulty

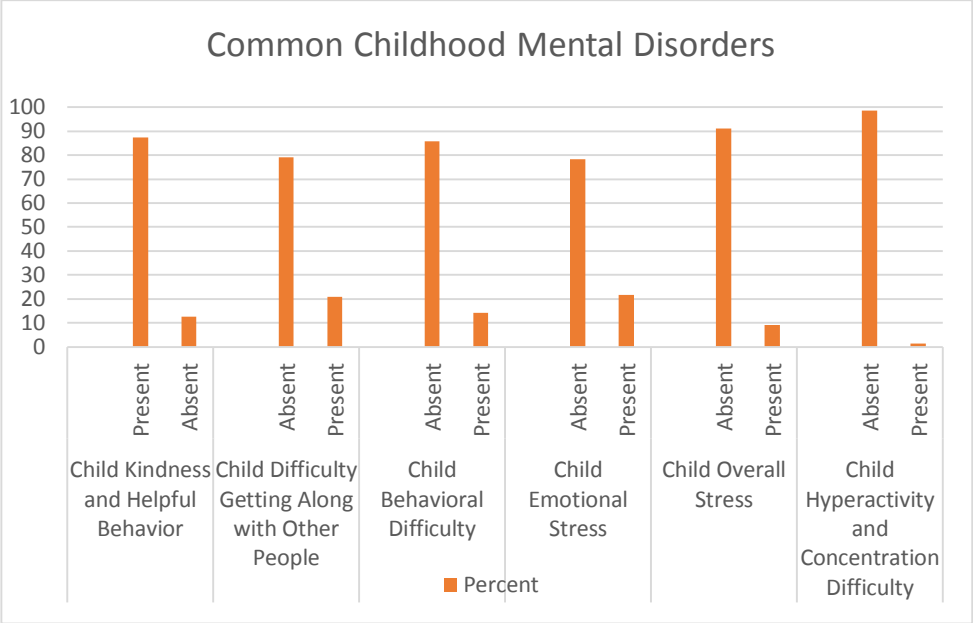

Figure 5: Frequency distribution of common Childhood Mental Disorders

4.3 Factors associated with Common Mental Disorders among Children

To identify factors that are associated with the observed mental disorders among children we performed both bivariate and multivariate analyses.

4.3.1 Bivariate analyses using Fisher's Exact Test

To determine factors associated with 3 most prevailing mental disorders among children namely behavioural difficulty, emotional stress and difficulty in getting along with others we performed fisher's exact test with several other variables associated with the children. We now present results obtained on each mental illness and associated factors.

4.3.1.1 Factors associated with Child Overall Stress

It is important to note here that only one factor, that is parent's employment status was significantly associated with the child's overall stress (p value=0.013) whilst the other variables were not significantly associated with it (p value>0.05).

Table 3: Fisher's exact output Results for Selected Variables and Child's Overall Stress.

		Child's Overall Stress		
	Factor	Absent	Present	P value
Parental Alcohol/Smoke Intake	No	104	10	0.690
		91.2%	8.8%	
	Yes	15	2	
		88.2%	11.8%	
Sex	Male	57	8	0.210
		87.7%	12.3%	
	Female	63	4	
		94.0%	6.0%	
Parental Level of Education	None	6	0	0.082
		100.0%	0.0%	
	Primary	37	7	
		84.1%	15.9%	
	Secondary	50	1	

		98.0%	2.0%	
	Tertiary	28	4	
		87.5%	12.5%	
Parental Employment Status	Unemployed	32	0	0.013
		100.0%	0.0%	
	Self-employed	48	3	
		94.1%	5.9%	
	Employed	41	9	
		82.0%	18.0%	
Bullying	No	80	8	0.796
		90.91%	9.09%	
	Yes	36	3	
		92.31%	7.69%	

4.3.1.2 Factors associated with Child behavioural difficulty

It is important to note here that none of the socio-demographic factors had a significant association with the outcome child behavioural difficulty (p value > 0.05).

Table 4: Fisher's exact output Results for Selected Variables and Child's Behavioural Difficulty

		Child Behavioural Difficulty		
	Factor	Absent	Present	P value
Parental Alcohol/Smoke Intake	No	101	16	0.661
		86.3%	13.7%	
	Yes	14	3	
		82.4%	17.6%	
Sex	Male	58	9	0.804
		86.6%	13.4%	
	Female	57	10	
		85.1%	14.9%	
Parental Level of Education	None	6	0	0.902
		100.0%	0.0%	
	Primary	38	7	
		84.4%	15.6%	
	Secondary	43	8	
		84.3%	15.6%	

	Tertiary	28	4	
		87.5%	12.5%	
Parental Employment Status	Unemployed	29	3	0.569
		90.6%	9.4%	
	Self-employed	45	7	
		86.5%	13.5%	
	Employed	41	9	
		82.0%	18.0%	
Bullying	No	81	14	0.773
		85.3%	14.7%	
	Yes	34	5	
		87.8%	14.2%	

4.3.1.3 Factors Associated with Child's Emotional Stress

Two factors namely parent's marital status and employment status had a significant association with the child's emotional stress. The other variables had no such association. Details in **Table 5** below.

Table 5: Fisher's exact output Results for Selected Variables and Child's Emotional Stress

		Child's Emotional Stress		
	Factor	Absent	Present	P value
Repeated Grades	No	78	24	0.343
		76.5%	23.5%	
	Yes/Never Been to School	27	5	
		84.4%	15.6%	
Parental Marital Status	Single	6	2	0.040
		75.0%	25.0%	
	Married	73	26	
		73.7%	26.3%	
	Other	26	1	
		96.3%	3.7%	
Parental Employment Status	Unemployed	27	5	0.027
		84.4%	15.6%	
	Self-employed	45	7	
		86.5%	13.5%	
	Employed	33	17	
		66.0%	34.0%	

Bullying at School	No	71	24	0.110
		74.7%	25.3%	
	Yes	34	5	
		87.18%	12.82%	
Sex	Male	52	15	0.834
		77.6%	22.4%	
	Female	53	14	
		79.1%	20.90%	

4.3.1.4 Factors Associated with Child's Difficulty Getting along with others

The study revealed that only one variable had a significant association with child's difficulty getting along with others (p value = 0.05).

The rest of the variable had no significant association (p value>0.05) with the variable child's difficulty getting along with others. Details are depicted in **Table 6**.

Table 6: Fisher's exact output Results for Selected Variables and Child's Difficulty Getting along with others

		Child's Difficulty Getting along with others		
	Factor	Absent	Present	P value
Bullying at School	No	72	23	0.141
		75.8%	24.2%	
	Yes	34	5	
		87.2%	12.8%	
Parental Employment Status	Unemployed	28	4	0.049
		87.5%	12.5%	
	Self-employed	44	8	
		84.6%	15.4%	
	Employed	34	16	
		68.0%	32.0%	
Family Psychiatric History	No	94	27	0.218
		77.7%	22.3%	
	Yes	12	1	
		92.3%	7.7%	
Sex	Male	52	15	0.671
		77.6%	22.4%	
	Female	54	13	
		80.6%	19.4%	

CHAPTER FIVE

DISCUSSION

5.1 Overview

The study sought to identify the common mental health problems among children admitted at the UTH children's hospital and whether the introduction of a screening tool would improve identification and referral to mental health services.

5.2 Demographic Characteristics

5.2.1 Demographic Characteristics of Children

134 children were enrolled in the study, with an equal distribution between males and females. The age range was between 4 and 15 years, with the median age being 10.12years and the mode 10years. 53% of the children came from homes with more than 4 children in the household.

5.2.2 Parental Demographic Characteristics

73.9% were married of the Parents were married. 23.9% were not employed. 87.3% of parents did not report any alcohol or smoke intake. 62% of the parents had attained secondary or tertiary education. 32% of parents earned less than 1000 kwacha per month. Mental health problems are not equally distributed among all social economic groups. In this study, the employment status, level of education and monthly income were used to gauge the social economic status of the family. A review 52 of 56 studies done on mental health in children and adolescents showed that SES was inversely related with children with mental health problems. (Reiss et al 2013). A Norwegian study also showed an inverse relationship for all SES indicators that were used with all mental health symptoms (Boe et al 2012)

5.3 Overall prevalence

The prevalence of mental disorders in this study was 9%. This was determined using the overall difficulty score which is represented as the overall stress score. The strengths and difficulty questionnaire asks 25 questions divided into 5 scales that score for prosocial behaviour, peer

behaviour, behavioural difficulty, emotional problems and hyperactivity/concentration problems. The overall stress is calculated by the sum of all subscales, except the pro social scale. A review study done reviewing the databases of prevalence of mental disorders showed an average global prevalence of 6.7% mental disorders in children aged 5 -17 years. However, the study also highlighted that there was very limited representation from low- and middle-income countries. (Erskine 2017) Lower social economic status has been associated with mental health disorders this could explain why the prevalence was seen to be higher in this study. However, the study was done in a hospital setting and involved inpatients and it is known that chronic illness does have an impact on a child's social development and can lead to an increase in the rate of mental illness.(Brady et al 2020) We could however argue that the prevalence in the hospital should have been much higher as studies have shown prevalence of up to 21% the general population.(Georgiades 2014)

5.4 Prosocial Behaviour

Prosocial behaviour is determined by the child kindness and helpful behavior score was present in 87.3% of the children. Prosocial behaviour is a marker of social competence children and represents an important developmental milestone in children. It was seen from early childhood that externalizing symptoms are associated with deficits in prosocial behaviour and internalizing symptoms may be associated with either low or very high prosocial behaviour.(Huber et al 2019)

5.5 Child Peer Difficulty

20.9% of the children sampled had difficulty getting along with other people and 21.6% of the children had emotional stress. These subscales represent internalizing problems and it is logical that both symptoms were high in study sample.

5.6 Behavioural difficulty

Behavioural difficulty was seen in 14.2% of the children while a study done in Iran reported 2.4% when using DSM criteria, but 32.9% by the SDQ.

5.7 Child Emotional Stress

A study done in Kenya reported that 27% of 1022 children sampled reported emotional symptoms while 17% reporting behavioural symptoms. Girls scored higher for emotional problems than boys. (magai et al 2018). In this study 21.6% of children reported emotional stress

5.8 Child hyperactivity and concentration difficulties

Child hyperactivity and concentration difficulties were only present in 1.5% of the children. Children with a known diagnosis of attention deficit hyperactivity disorder were excluded from the study, as were children below the age of 4 years. A Ugandan study showed a prevalence of 11% of ADHD in children who attended neurology and psychiatric clinics. The associated factors included male gender, age less than 10 and presence of maternal vaginal discharge at birth. (wamulungwa 2017) This study was done among inpatients not specific to neurology or psychiatry and very young children were excluded. This could explain why only 1.5% of the study population had symptoms associated with ADHD. A review and met analysis of the prevalence of ADHD in Africa showed a prevalence of 7.47% and affected males more than females. (Ayano 2020)

5.9 Factors Associated with mental health problems among Children

Having a chronic condition is a risk factor to developing a mental health disorder. Children who suffer from chronic physical diseases are more likely to have mental conditions such as depression, anxiety, PTSD and are also more likely have sleep problems and feel isolated. (Hoster 2019)

Though 14.2% of the children had Behavioural difficulties, there was no significant association seen with any of the socio-demographic factors analysed.

Parental marital status and employment status had a significant association with the child's emotional stress. Parental employment status had a significant association with the child's difficulty getting along with others. This is comparable to other studies that found that lower SES was associated with higher mental health problems, but that parental income or education was a stronger determinant than parental occupation. (Reiss 2013). In the Norwegian study, it was found that parental education predicted more of externalizing problems than for internalizing problems

(Boe 2012) A study done in Japan showed that low family income and low maternal education were predictive of mental health disorders after enrolling in elemental school. (hosokawa 2018)

5.10 Effectiveness of Intervention

The number of children referred to the psychiatric Clinic was 12, which represented 9% of the total participants. These children would require further assessment by a psychiatrist. UTH department of Psychiatry received an average of three patient consultations per month, and the number of referrals more than doubled after the screening tool was introduced. This showed that the introduction of a screening tool would increase the number of referrals and subsequent detection of mental health disorders in children. However only 5 of those referred followed up with the appointment that was made. It is more than likely that only children with obviously disturbing symptoms would be refereed while those with more subtle symptoms like the internalizing symptoms that were seen commonly in this study would be missed. Given the available data that most mental health disorders start in childhood, the paediatric department provides an opportunity for early identification and subsequent referral and intervention.

In conclusion, the study proves that implementation of a simple, low cost mental health screening tool has the ability to detect possible mental health problems that can be referred for specialist evaluation and linked to the right services. The study found that 9% of children had a high difficulty score, meaning 12 of the 134 children required further screening and evaluation. The department of paediatrics refers three patient a month on average to psychiatric department and by comparison the introduction of a screening tool led to more referrals. 20.9% of the children had peer problems, 21.6% had emotional symptoms, 14.7% had conduct problems, 1.5% had hyperactivity/inattention problems and 12.7% had limited social behaviour. The employment status was the only variable seen to be associated with overall stress and was seen to affect prosocial behaviour and emotional symptoms. Parent's marital status was also seen to be associated with emotional symptoms in the children.

Limitations identified during the conduct of the study included challenges with appropriate language interpretation. The use of the website to analyse the results was expensive and would create a challenge in resource limited area as manual interpretation is tedious and has a bigger margin of error. A bigger study that includes younger children and also analyses for self-report

questionnaire for the children older than eleven years responses would be helpful to understand the true gravity of the burden.

The following recommendations are made

Association between chronic conditions and risk of developing a mental health disorder should be studied

A brief screening tool not dependent on mental health should be introduced in the department of paediatrics

A screening tool for mental health related symptoms should be introduced in schools

The children's hospital may benefit from the services of a child and adolescent psychologist

Children should be able to complete questionnaire to study for discrepancies and similarities in which they perceive their symptoms in comparison to how parents interpret them.

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APPENDICES

Appendix 1: Approval to Conduct Study

THE UNIVERSITY OF ZAMBIA

SCHOOL OF MEDICINE
Department of Paediatrics and Child Health
Internal Memorandum

TO: Heads of Units

FROM: Acting Head, Department of Paediatrics and Child Health

DATE: April 04, 2019

SUBJ: **PERMISSION TO CONDUCT RESEARCH: Dr. Angel B. Chirwa**

The above mentioned is an MMED Postgraduate student in the department of Psychiatry. Dr Chirwa is conducting a research entiltled "**Analysis of common childhood mental disorders and the effectiveness of Mental Health Interventions in Children admitted at the Lusaka Children's Hospital'** in partial fulfilment of her award of the Master of Medicine in Psychiatry degree. The student have been attached to our Department for 6 months starting from 1st April to 31st September 2019. Professor Mpabalwani will co-supervise the undertaking and by this minute is hereby informed.
Thank you.

Dr J Namushi
ACTING HEAD
DEPARTMENT OF PAEDIATRICS AND CHIL HEALTH

Appendix 2: Ethical Approval

33 Joseph Mwilwa Road
Rhodes Park, Lusaka
Tel: +260 955 155 633
+260 955 155 634
Cell: +260 966 765 503
Email: eresconverge@yahoo.co.uk

I.R.B. No. 00005948
F.W.A. No. 00011697

19th March, 2019

Ref. No. 2019-Jan-017

The Principal Investigator
Dr. Angel Buchizya Chirwa
University of Zambia school of Medicine
Dept. of Psychiatry
P.O. Box 50110,
LUSAKA.

Dear Dr. Chirwa,

RE: ANALYSIS OF COMMON CHILDHOOD MENTAL DISORDERS AND THE EFFECTIVENESS OF MENTAL HEALTH INTERVENTIONS IN CHILDREN ADMITTED AT LUSAKA CHILDREN'S HOSPITAL.

Reference is made to your corrections dated 11th March, 2019. The IRB resolved to approve this study and your participation as Principal Investigator for a period of one year.

Review Type	**Ordinary**	Approval No. **2019-Jan-017**
Approval and Expiry Date	Approval Date: 19th March, 2019	Expiry Date: 18th March, 2020
Protocol Version and Date	Version - Nil.	18th March, 2020
Information Sheet, Consent Forms and Dates	• English.	18th March, 2020
Consent form ID and Date	Version - Nil	18th March, 2020
Recruitment Materials	Nil	18th March, 2020
Other Study Documents	Questionnaire, Data Collection Sheet.	18th March, 2020
Number of participants approved for study	138	18th March, 2020

Specific conditions will apply to this approval. As Principal Investigator it is your responsibility to ensure that the contents of this letter are adhered to. If these are not adhered to, the approval may be suspended. Should the study be suspended, study sponsors and other regulatory authorities will be informed.

Conditions of Approval

- No participant may be involved in any study procedure prior to the study approval or after the expiration date.
- All unanticipated or Serious Adverse Events (SAEs) must be reported to the IRB within 5 days.
- All protocol modifications must be IRB approved prior to implementation unless they are intended to reduce risk (but must still be reported for approval). Modifications will include any change of investigator/s or site address.
- All protocol deviations must be reported to the IRB within 5 working days.
- All recruitment materials must be approved by the IRB prior to being used.
- Principal investigators are responsible for initiating Continuing Review proceedings. Documents must be received by the IRB at least 30 days before the expiry date. This is for the purpose of facilitating the review process. Any documents received less than 30 days before expiry will be labelled "late submissions" and will incur a penalty.
- Every 6 (six) months a progress report form supplied by ERES IRB must be filled in and submitted to us.
- A reprint of this letter shall be done at a fee.

Should you have any questions regarding anything indicated in this letter, please do not hesitate to get in touch with us at the above indicated address.

On behalf of ERES Converge IRB, we would like to wish you all the success as you carry out your study.

Yours faithfully,
ERES CONVERGE IRB

Prof. E. Munalula-Nkandu
BSc (Hons), MSc, MA Bioethics, PgD R/Ethics, PhD
CHAIRPERSON

Appendix 3: Demographic Data Collection Sheet

5.5 DEMOGRAPHIC DATA COLLECTION SHEET

CODE: [ ] [ ] [ ]

Date of interview:.../...../.....

Age [ ] **Sex: M** [ ] **F** [ ] **Residence** [ ]

Religion: Grade:

Performance: Top 10[ ] **Average** [ ] **Bottom 10** [ ]

Repeated grades: Y [ ] **N** [ ]

Bullying at school: Y [ ] **N** [ ]

Number of children in the home [ ]

Complaint(s): [ ]

Past medical history: Asthma [ ] **Epilepsy** [ ] **HIV** [ ] **SCD** [ ]

Diabetes Mellitus [ ] **Other,** (Specify) [ ]

Past psychiatric history: Y [ ] **N** [ ]

History of Psychiatric condition in Family: Y [ ] **N** [ ]

Parent's occupation: Employed [ ] Not Employed [ ] Self Employed [ ]

Parent's level of Education :(tick)

- No education... [ ]
- Lower primary.... [ ]
- Upper primary.... [ ]
- Secondary..... [ ]
- Tertiary..... [ ]

Total monthly household income (ZMW): Below 1000 [ ] 1000-3000 [ ] Above 3000 [ ]

Parent's marital status: Single [ ] Married [ ] Widowed [ ] Divorced [ ] Separated [ ]

Do you drink alcohol and/or smoke? Y [ ] **N** [ ]

If Yes, Type: Alcohol [ ] Smoke [ ]

Appendix 4: Strengths and Difficulty Questionnaire

Strengths and Difficulties Questionnaire

For each item, please mark the box for Not True, Somewhat True or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain or the item seems daft! Please give your answers on the basis of how things have been for you over the last six months.

Code Number ☐ ☐ ☐ Male/Female

Date of Birth.....

	Not True	Somewhat True	Certainly True
I try to be nice to other people. I care about their feelings	☐	☐	☐
I am restless, I cannot stay still for long	☐	☐	☐
I get a lot of headaches, stomach-aches or sickness	☐	☐	☐
I usually share with others (food, games, pens etc.)	☐	☐	☐
I get very angry and often lose my temper	☐	☐	☐
I am usually on my own. I generally play alone or keep to myself	☐	☐	☐
I usually do as I am told	☐	☐	☐
I worry a lot	☐	☐	☐
I am helpful if someone is hurt, upset or feeling ill	☐	☐	☐
I am constantly fidgeting or squirming	☐	☐	☐
I have one good friend or more	☐	☐	☐
I fight a lot. I can make other people do what I want	☐	☐	☐
I am often unhappy, down-hearted or tearful	☐	☐	☐
Other people my age generally like me	☐	☐	☐
I am easily distracted, I find it difficult to concentrate	☐	☐	☐
I am nervous in new situations. I easily lose confidence	☐	☐	☐
I am kind to younger children	☐	☐	☐
I am often accused of lying or cheating	☐	☐	☐
Other children or young people pick on me or bully me	☐	☐	☐
I often volunteer to help others (parents, teachers, children)	☐	☐	☐
I think before I do things	☐	☐	☐
I take things that are not mine from home, school or elsewhere	☐	☐	☐
I get on better with adults than with people my own age	☐	☐	☐
I have many fears, I am easily scared	☐	☐	☐
I finish the work I'm doing. My attention is good	☐	☐	☐

Your signature ..... Today's date .....

APPROVED
19 MAR 2019
ERES CONVERGE
P/BAG 125, LUSAKA

Thank you very much for your help

Appendix 5: Information Sheet and Informed Consent

5.4 INFORMATION SHEET AND INFORMED CONSENT FOR PARTICIPANTS

My name is Angel Chirwa. My team and I are trying to learn about mental health problems among children and adolescents in Zambia, and ways to identify such problems early. Mental health disorders present in different ways and can be triggered or made worse by life situations. If you are agreeable, I would like you to participate in this study.

Please read the document carefully. If you agree to participate and for your child to participate, have fully understood the study, as well as your rights, you may sign your name. A copy of the consent form is available and your signature is a requirement for participation.

Study Description

You are being asked to take part in a study to analyse the burden of mental health conditions among children and factors associated with mental illness in children who come to the University Teaching Hospital (UTH). You will be required to answer a questionnaire with the help of a psychologist or mental health nurse and depending on the results, you may be referred to the mental health department at UTH for further assessment and consultation.

The Initial interview will take about 10 minutes

Benefits of the study

There are no monetary benefits to this study. You will be reimbursed for transport in clinic 6.

The study will facilitate a better understanding of the prevalence of mental illness in children, will encourage early detection and facilitate an easier and more convenient referral system, which will then ensure early intervention in the management of psychiatric conditions.

Risks

There are no obvious risks to the study except that it will require some of your time.

Rights of the Participants

Participation in the study is on a voluntary basis. You are free to withdraw at any time during the study and there will be no consequences for withdrawal.

Signatures

I,..... have read and understood the above information. I understand the study and its process.

Signatures of research participants.....
Date.....

Name and Signature of witness..... Thumb .....

Date.....

Name and signature of researcher.....
Date.....

APPROVED
19 MAR 2019
ERES CONVERGE
P/BAG 125, LUSAKA

Appendix 6: Assent Form

ASSENT FORM

Good day. My name is Angel Chirwa. My team and I are trying to learn about mental health problems among children and adolescents in Zambia, and ways to identify such problems early. Mental health disorders present in different ways and can be triggered or made worse by life situations. If you are agreeable, I would like you to participate in this study.

If you agree to take part, we will administer a questionnaire to you as well as your parent/guardian. We encourage you to be as honest as possible. We will not use or refer to your name. Depending on the score you may be asked to see a mental health practitioner in Clinic 6 at UTH, department of psychiatry, where further questionnaires and assessments will be made.

This study offers no direct benefit to you but the information we get will be able to help us screen and detect mental disorders in children early and more efficiently. There will be no physical pain caused during the study.

Your parents/guardian will have to agree for you to take part in the study. You will then decide whether or not you want to be a part of the study. If you choose not to take part, that is ok. If you decide to take part and stop later that is also ok. You are free to stop at any time. Your information will be confidential and others will not know that you are taking part in the study. To ensure this, your name will not be used. Only the information that is collected from the questionnaires and interviews will be used. You can contact me if you have questions about the study or decide you don't want to be a part of the study anymore.

You will be provided a copy of this form, just in case you have questions later.