PREVALENCE AND PATTERNS OF PSYCHIATRIC DISORDER IN HIV INFECTED CHILDREN AGED 10-15 YEARS AT KENYATTA NATIONAL HOSPITAL

A THESIS SUBMITTED IN PART FULFILMENT OF THE DEGREE OF MASTERS IN MEDICINE (PAEDIATRICS) AT THE UNIVERSITY OF NAIROBI

BY

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2010

DECLARATION

I declare this study is my original work and has not been presented to any University or forum before.

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LIST OF ABBREVIATIONS

KNH	Kenyatta National Hospital
CCC	Comprehensive Care Centre
HIV	Human immunodeficiency virus
HAART	Highly active antiretroviral therapy
ARVs	Antiretroviral drugs
MTCT	Mother to child transmission
AIDS	Acquired Immunodeficiency syndrome
AZT	Zidovudine
NVP	Nevirapine
EFV	Efavirenz
ABC	Abacavir
D4T	Stavudine
TDF	Tenofovir
LPV/r	Liponavir/Ritonavir
IND	Indinavir
3TC	Lamivudine
DDI	Didanosine
NASCOP	National HIV/AIDS and STI Control Programme
WHO	World Health Organization
KDHS	Kenya Demographic Health Survey
HOPA	Hand book on Paediatric AIDS in Africa
UON	University of Nairobi
OR	Odds ration
CD4	Cluster of Differentiation Subset 4
SPSS	Statistical Package for the Social Sciences
KSADS	Kiddie Scale for Affective Disorders and Schizophrenia
DSM-IV	Diagnostic and Statistical Manual Of Mental Disorder 4th Edition
NACC	National Aids Control Council

ABSTRACT

Background

Psychiatric disorders frequently occur in HIV infected patients. Multiple factors are associated with psychiatric disorders including substance abuse, poverty; side effects of antiretroviral drugs and HIV disease. Psychiatric disorders affect the well-being of the HIV infected individuals and may result in poor adherence to medication.

Objectives

To determine prevalence, pattern and correlates of psychiatric disorders in HIV infected adolescents aged 10-15 yrs at Kenyatta National Hospital.

Study Methods

This was a cross sectional study conducted at Kenyatta National Hospital Comprehensive Care Centre (CCC) from January to June 2009. Care givers and children recruited into the study were interviewed using a modified Kiddie-SAD tool and scored for psychiatric disorders. HIV clinical information was obtained from the medical records. Factors associated with psychiatric disorders were analyzed using the chi square test and odds ratio and p values computed.

Results

The study enrolled 94 adolescents who were predominantly male 51 (54%). The median age of the study participants was 13 years (range 10- 15 years) .The prevalence of psychiatric disorder was 55.3%. The commonest psychiatric disorders were anxiety disorder (26%) and post traumatic stress disorder (17%). There was a trend towards children with CD4 <200 having a higher risk of developing psychiatric disorders OR 2.5, 95% CI 0.9-6.4 (p=0.06).

Conclusion

Mental disorders are a common among adolescents at the KNH CCC and need to be addressed both from the human resource and management point of view.

Recommendations

The number of trained counselors in the CCC should be increased to facilitate early detection and management of psychiatric disorders.

INTRODUCTION AND LITERATURE

Africa with a population of about 600 million (approximately 10% of the world total) has the biggest burden of HIV infection. Sub-Saharan Africa accounts for over two-thirds of the worlds HIV-infected persons with (22.5 millions). Majority of the infected people are women and children (80%) (*1*).Women account for 68% of HIV infected people. Children in Africa account for 90% of HIV Children worldwide (2). In Sub Saharan Africa HIV infection and mortality rates are high because of high poverty levels, social cultural factors and less accessibility of antiretroviral drugs. Opportunistic infections are a major source of morbidity and mortality in both adults and children infected with HIV. (3). In addition the high mortality rate in adults has resulted in an increased number of orphans, currently estimated to be 15 million (*2*).

UNAID 2007 report showed that prevalence of HIV infection in Kenya was 6.1%, with 2.0 million Kenyans living with HIV. There were 100,000 children infected with HIV and 150,000 AIDS related deaths both in adults and children. *(2, 4, 7, 5,)*. NASCOP 2005 report showed that 650,000 children under 17 years had lost one or both parents, where 9% had lost their fathers, 4% had lost their mothers, and 2% both biological parents. Overall the number of orphans had increased from 9% in 1998 to 11% in 2003 (*4, 5*).

Children with HIV/AIDS in developing countries experience high rates of morbidity and mortality relatively early in their lives with up to 75% mortality by 5 years of age (*6*). KDHS 2003 report showed that Infant and under five mortality had increased by 30% attributed to the HIV/AIDS epidemic. However the introduction of ARVS has resulted in the reduction of morbidity and mortality. As children and adolescents infected with HIV continue to live longer, normal developmental milestones and educational needs will take on new significance.

Psychiatric disorders

Psychiatric disorders frequently occur in HIV-infected patients but the reported prevalence rates differ considerably between studies, depending on the stage of infection and study population. Multiple factors that are associated with psychiatric disorders, including substance abuse, poverty, loss of parents, inadequate medical services and lack of social support (39.

Some drugs used in the treatment of HIV infected patients have been associated with neuropsychiatric manifestations. The commonest ARV causing neuropsychiatric manifestation is efavirenz. Reports indicate that some forms of CNS symptoms are present in as many as 40-70% of patients who initiate treatment with an efavirenz-containing regimen (40). Some studies have shown that Zidovudine monotherapy was associated with mania [41].This drug accounts for 5% of psychiatric manifestation. Abacavir also has been associated with CNS side effects (42, 43). The patients present with depression, migraines and mood changes. This drug accounts for 2% of the psychiatric manifestations. Nevirapine has been associated with delirium and organic psychosis (44). Protease inhibitors especially ritonavir is associated with less 2% psychiatric disorders (43). HIV patients may also use other drugs such as clarithromycin which have been associated with psychiatric manifestations (45, 46).

HIV infection itself has also been associated with neuropsychiatric manifestation (*8*,33). Apart from the affection of the patient's well-being; psychiatric disorders may result in poor adherence to medication (37). Therefore, early diagnosis and therapy of psychiatric disorders are of vital importance for HIV positive individuals (38).

Psychiatric disorders (Mental disorder) are a pervasive pattern of instability of interpersonal relationships, self-image, and mood changes, and marked impulsivity beginning at any stage in life. The disorder is characterized by psychological or behavioral patterns that occur in an individual and often causes distress or disability that is not expected as part of normal development or culture.

Classification of Psychiatric Disorders

Psychiatric disorders are classified by the use of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) (*28*).This manual was first published in 1994 by the American Psychiatric Association. The classification includes the following:-mood disorders, anxiety disorders, psychotic disorders, elimination disorders, eating disorders, developmental disorders, learning Disorders(28)

Anxiety Disorders

People with anxiety disorders respond to certain objects or situations with fear and dread, as well as with physical signs of anxiety or nervousness, such as a rapid heartbeat and sweating. Studies have shown that the prevalence of anxiety disorders in HIV infected patients' ranges between 35 and 38 %.(9)

Mood Disorders.

These disorders, also called affective disorders, involve persistent feelings of sadness or periods of feeling overly happy, or fluctuations from extreme happiness to extreme sadness. (10)

Psychotic Disorders

Psychotic disorders involve distorted awareness and thinking. Two of the most common symptoms of psychotic disorders are hallucinations which is the experience of images or sounds that are not real, such as hearing voices and delusions which are false beliefs (10).

Adjustment Disorder

Adjustment disorder occurs when a person develops emotional or behavioral symptoms in response to a stressful event or situation. The stressors may include natural disasters, such as an earthquake or tornado; events or crises, such as a car accident or the diagnosis of a major illness; or interpersonal problems, such as a divorce, death of a loved one, loss of a job or a problem with substance abuse. Adjustment disorder usually begins within three months of the event or situation and ends within six months after the stressor stops or is eliminated.

Obsessive Compulsive Disorders /Attention Deficit Hyperactive Disorder

The patients with obsessive compulsive disorders have constant thoughts coming in their minds and are compelled to act on their thoughts.

The patients with attention deficit hyperactive disorders are unable to sustain attention in class or at home, inability to follow given instruction in details, are restless, have difficult waiting for their turn and move as if driven by a machine.

Oppositional Defiant Disorder/ Pervasive Development Disorder

The patients with oppositional defiant disorders argue a lot with adults and refuse to comply with instructions given by adults, intimidate others.

The patients with pervasive development disorders have self harming behavior and unable to communicate

Somatoform disorder/ Evacuation Disorder

The patients with somatoform disorder complain of pains involving many systems of the body with no physical illness.

The patients with evacuation disorder urinate in bed, or pass stool in places other than the toilet at the age when they are not supposed.

Psychiatric Disorders in Children with HIV

Psychiatric disorders are common in HIV infected children but little research has been published. Psychiatric disorders can manifest at any stage of the HIV disease. Studies in HIV positive adults have shown prevalence ranging between 71-82 %(11, 12, 13). Psychiatric disorders in HIV infected children are equally high, a published study done in India showed that the prevalence of psychiatric disorders in children was 80%, (14).The prevalence of psychiatric disorders in HIV positive children is higher compared to other chronic illnesses such as sickle cell 30%, asthma 25% and acute myeloid leukemia 20%(15,16).

Adolescents with HIV infection have been shown to have abnormities that are behavioral and environmental more than the organic, suggesting psychiatric disorder (17).Such behavioral symptoms include social withdrawal, apathy, sleep disturbances, fatigue, headaches anger, frustration, and anxiety. They may also present with loss of independence; physical, social, and emotional isolation, uncertainty concerning the timing and nature of treatment and disease progression; and uncertainty in their personal and social lives. Additionally, coping with grief from already having lost loved ones is a factor contributing to psychiatric disorder AIDS (*18*)

A South African study on orphans found that stigma and secrecy surrounding AIDS resulted in social isolation, bullying, shame, and lack of opportunity to openly discuss their fears. A study in Tanzania found increased internalizing of problems and suicidal ideation in orphans (*19*), while study in Mozambique (*20*) found that the infected orphans were more likely to be bullied, depressed and lacked trusted adults or friend compared to non infected orphan. Loss of parents by the HIV infected children is a factor contributing to psychiatric disorders. HIV infected children without parents are unhappy and more worried than the HIV infected children with parents. (*21, 22, 23, 36,38*).

Although, many HIV infected children may be asymptomatic many studies have documented the occurrence of some cognitive and language delays as the result of HIV infection, these may be quite subtle. The mechanism of brain impairment due to HIV infection is not completely understood. Autopsy studies of patients with progressive encephalopathy (PE) include decreased brain weight, inflammatory changes, calcification of basal ganglia vessels, white matter degeneration and atrocytosis (*8*).

STUDY JUSTIFICATION

Psychiatric disorders are common cause of morbidity in HIV infected children which may also result in poor adherence to treatment. There is limited knowledge on the scope of psychiatric disease in HIV infected Kenyan children. The results of this study will help to quantify the magnitude of the problem and will provide information that will help in the development of programs to address the psychiatric diseases in HIV infected children. (*14, 12, 11*)

STUDY OBJECTIVES

Main Objective

To determine the prevalence and pattern of psychiatric disorders in HIV infected adolescents aged 10-15 yrs at Kenyatta National Hospital.

Secondary Objective

To determine the correlates of psychiatric disorders in HIV infected adolescents.

METHODOLOGY

Study Design:

Cross sectional descriptive study area

The study was carried out at the Comprehensive HIV Care Centre (CCC) Kenyatta National Hospital (KNH)

Kenyatta National Hospital is a teaching hospital of the University of Nairobi and a national referral hospital in the country. HIV accounts for 6% for admission in KNH. (*35*). The CCC provides outpatient comprehensive HIV care to adults and children. The services offered include psychosocial counseling, nutrition support, opportunistic Infection treatment and prevention, and antiretroviral therapy (HAART).The KNH CCC runs daily from Monday-Friday.

Study Population

The sample included HIV positive adolescents aged 10-15 years, attending KNH CC clinic, between January to June 2009. Currently there are about 162 children aged between 10-15 years being followed up at KNH CCC.

Sample Size Determination

The sample size was calculated using the standard Fishers formulae.

Assumptions: at 95% confidence interval, with a proportion with psychiatric disorders, at 80% among HIV/AIDS adolescents aged between 10-15 years (14)

$$n_1 = z^2 \frac{pq}{D^2}$$

$$n_1 = \frac{(1.96^2) \times 0.8 \times 0.2}{(0.05^2)} = 245$$

Since the population at risk is less than 10,000 the following formulae was used to calculate the proportion of the sample size from this population.

$$n = \frac{n_1}{1 \pm \frac{(n_1 - 1)}{N}}$$

Where N is equal 162 as with the reference to 2007 data available at the CCC KNH.

Therefore:

The final sample size = $n = \frac{245}{1 + \frac{(245 - 1)}{162}} = 97$ adjusting for 95% CI = $\pm$ 5%

X 97 = 92

n=92-97

Where $_{nl}$ = to the minimum sample size when the population at risk is more than ten thousands.

Z^2 = the abscissa of the normal curve that cuts off an area at the tails (1 - equals the desired confidence level, e.g., 95%)[1], the value for Z is found in statistical tables which contain the area under the normal curve.

D^2 = the desired level of precision at 0.05

p = the estimated prevalence of psychiatric disorders present in the population,

q = 1-p.

N = is the total population at risk.

n = is the final sample size where the population at risk is less than 10,000

Recruitment

Research assistants were recruited from among the counselors and psychologist who have long working experience at the KNH CCC. They were oriented on the research objective and were trained on the research tool for one week to ensure they were familiar with the procedures involved.

Inclusion criteria

Children included in the study were those who were:

1. HIV positive children aged 10-15 years attending KNH CCC.
2. Child who gave assent.
3. Parent/guardian who gave consent.

Exclusion criteria

Excluded from the study were:

1. Children with severe mental retardation prior to the diagnosis of HIV

Procedure

1. All HIV infected children aged 10-15yrs attending KNH CCC were screened for psychiatric disorder using a modified Kiddie-Sads-PL questionnaire consecutively until the required sample size was achieved.
2. Kiddie- SADS-Present and lifetime Version (Kiddie-SADS-PL) Version 1.0 of October 1996(27,)
3. Components of the tool include.
    - Demographic data
    - Vegetative symptoms
    - Psychiatric symptoms/disorders
    - Scoring was used to determine those who had psychiatric disorder and those who did not have
    - Global assessment of function was done.
4. The modified KIDDIE tool questionnaire was administered by the principal investigator assisted by psychologists and counselors who were given orientation on the tool.
5. Medical records of each case were reviewed for CD4 count, WHO HIV staging *(32)*
6. All children were screened for vegetative symptoms and symptoms for various specific psychiatric disorders. All the children were rated and scored for

various disorders using the rate shown below except the evacuation disorder which any score was significant.

4=those with symptoms all the time

3=those symptoms most of the time

2=those with symptoms some of the time

1=those with symptoms now and then

0=those with no symptoms

Those who scored 1/3 rd of the total score for that particular disorder were considered to have the disorder and those who scored less than 1/3 rd of the total score were considered not to have the disorder (*27*).

ETHICAL CONSIDERATION

Approval from Kenyatta Hospital's Ethical and Research Committee was obtained. Confidentiality of the data obtained from the patient was maintained at all times, No extra cost was incurred by the patients. Patients who declined to participate in the study were not denied the services in the CCC. Patients found to have psychiatric symptoms were referred to the psychiatric clinic.

DATA MANAGEMENT

A pre-structured questionnaire was used for data collection. Data was checked for consistency and entered into a computer using SPSS data entry program. Data was then analyzed using SPSS software version 14.0. The analysis included running frequencies and assessing correlations. The results were presented in tables, charts and graphs. The OR and P value were calculated

RESULTS

There were 99 children screened for the study, 5 children were excluded because there was no parent or guardian accompanying the child to give consent. The table represents the summary of study population.

Table 1: **Characteristic of the Study Population (n=94)**

Factor	**Frequency**	**Percentage**
Sex		
Male	51	54.3
Female	43	45.7
Ages(yrs)		
10-11	42	44.7
12-13	18	19.1
14-15	34	36.2
Education of the child		
Primary	86	91.5
Secondary	8	8.5
Orphan hood	**56**	**60%**

Table 1 showed that 94 adolescents were recruited for the study. Males were more with 54.3% and females were 45.7%. The median age of the study subjects was13 years with a range of 10-15 years. More than 90% of the children participated in the study were in primary school. There was high prevalence of orphan hood with (n=56) 60% of children having lost one or both parents.

Table 2: Social Economic Status of Caregivers of Children in the Study

Factor	Frequency	Percentage
Employment Status		
Casual	15	16.0
Permanent	42	44.7
Self-employed	22	23.4
Not Employed	15	16.0
Average Income (KES)		
< 5,000	28	29.8
5,000-10,000	26	27.7
10,001 – 20,000	23	24.5
> 20,000	17	18.1

Table 2 showed that the majority of the caregivers of children enrolled in the study were in some form of employment. The majority of the caregivers had permanent form of employment, with 40 (44%) of the caregivers earning more than 10,000 Kshs/month.

Figure 1: Primary Care Givers of the Study Subjects

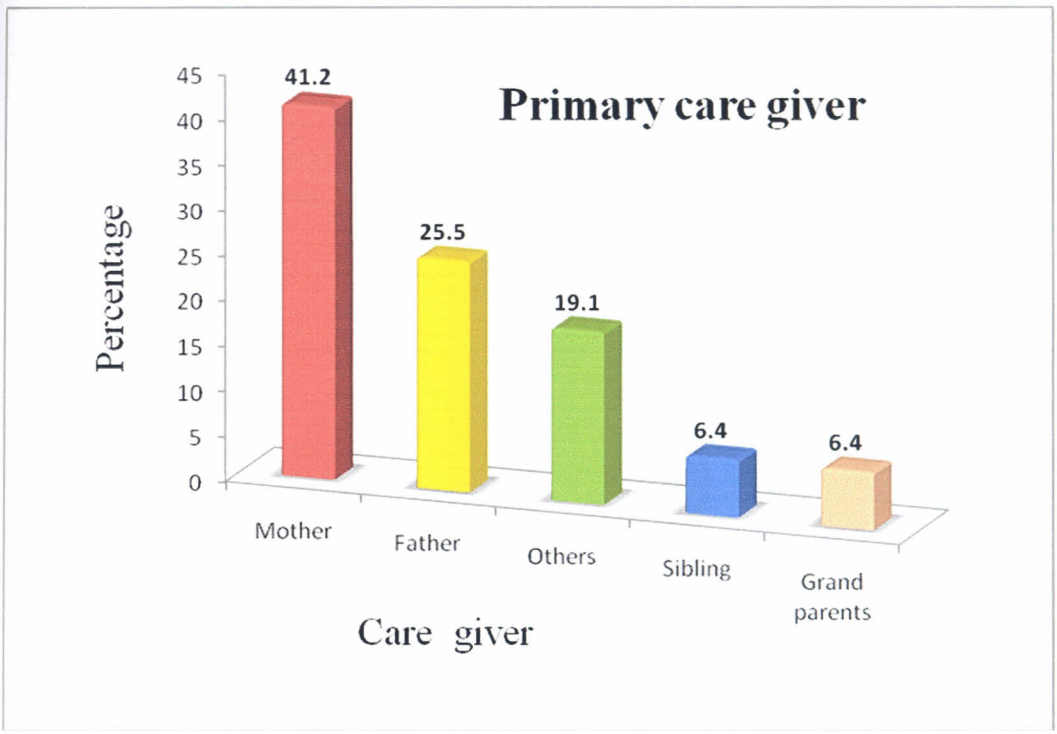

Figure 1showed that two thirds of the care-givers were parents, with mothers being the majority (41%). Other categories of caregivers were siblings and grandparents each at 6.4%. Other caregivers (19%) included aunts, uncles, house-helps, and step-mothers.

Figure 2: **Past History of Abuse among Study Population**

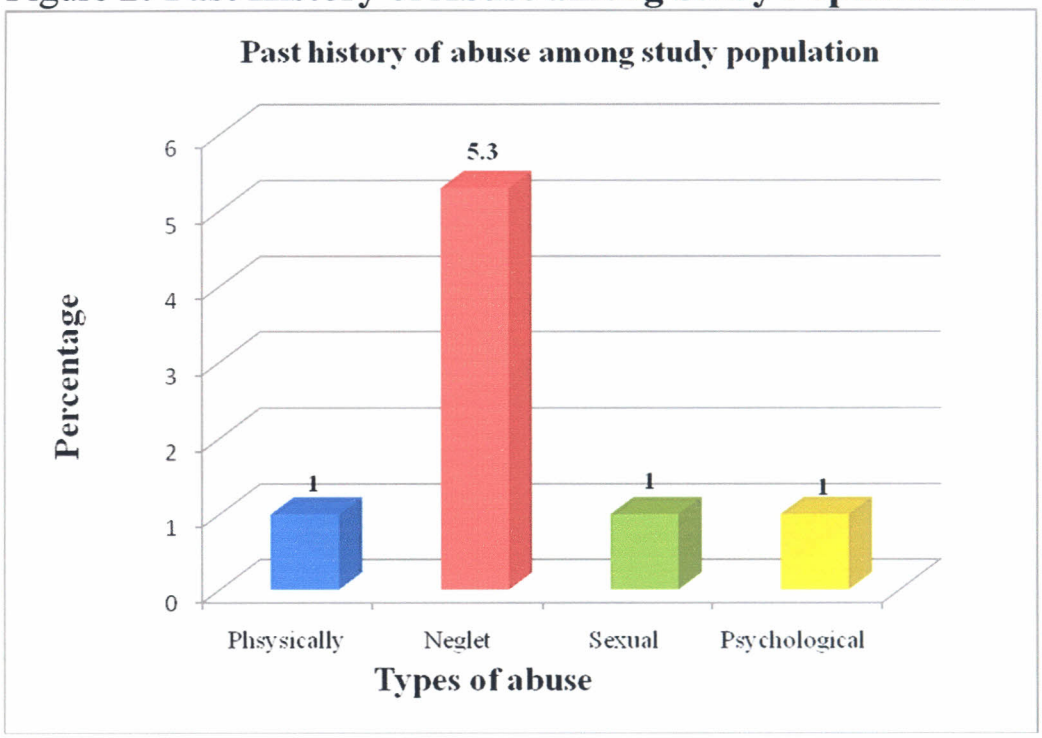

Figure 2 showed past history of abuse in (n=8) adolescents recruited for the study. The most common type of abuse was neglect.

Table 3: WHO HIV Staging of Study Participants

WHO stage	Frequency	Percentage
I	9	9.6
II	27	28.7
III	41	43.6
IV	17	18.1
Totals	**94**	**100**

Table 3 showed that the majority of the children in the study (n=58) 61.7% had advanced HIV disease (Stage III and IV)

Figure 3: Disclosure of HIV Status in the Study Population

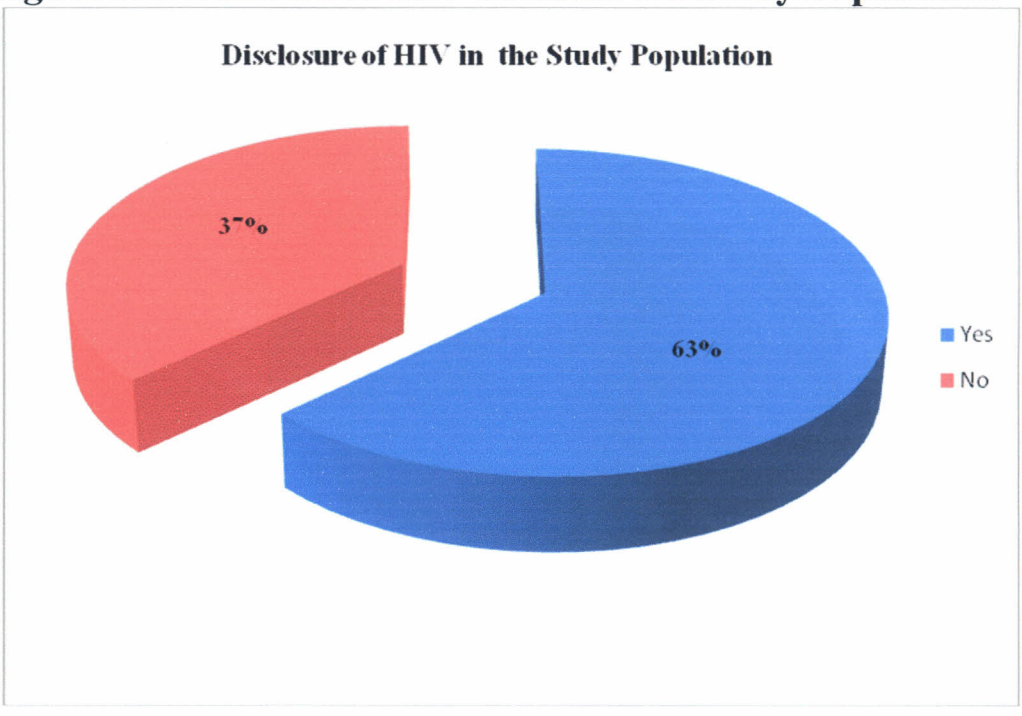

Figure 3 showed that he HIV disclosure rate among the children in the study was (n=59) 62.7%. The median age of disclosure was 14 years and it ranged between 10 and 15 year.

Figure 4: The number of children on ARVs

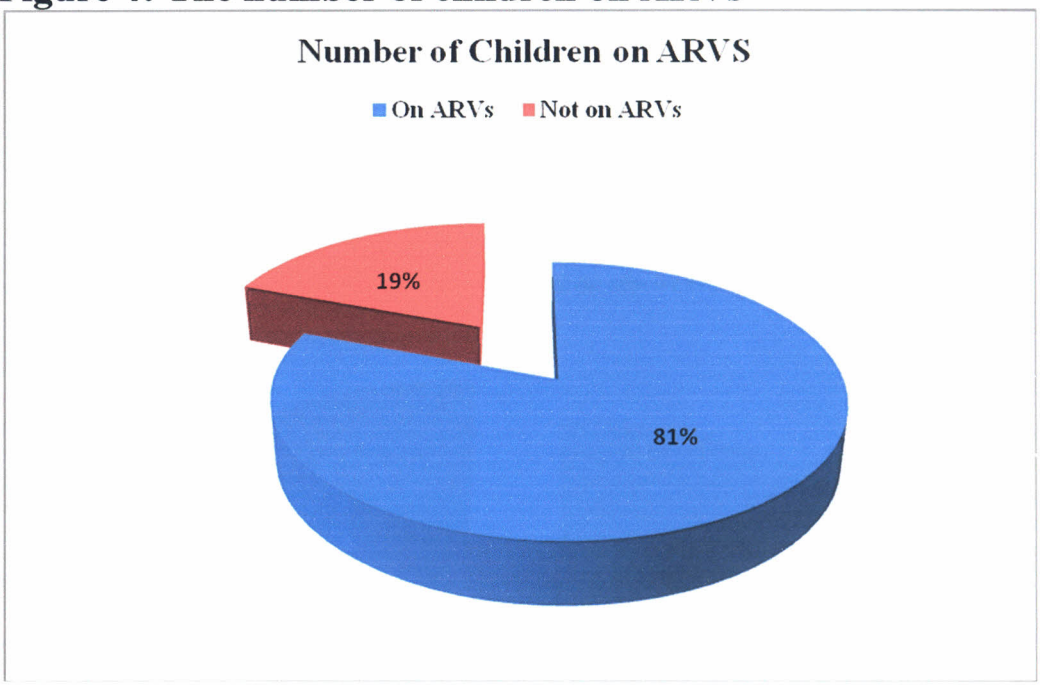

Figure 4 showed that 81% of the adolescents recruited for the study were on ARVs.

Table 4: ARVs drug regimen

Regimen	Count
AZT+3TC+EFV	46
ABC 3TC+EFV	6
ABC+DDI+LPV/r	7
AZT+3TC+NVP	6
D4T +3TC+EFV	6
D4T+3TC+NVP	4
DDI+3TC+ +LPV/r	1
Total	**76**

Table 4 showed that majority of the adolescents were on efavirenz based regimen .There were 58 adolescents on efavirenz out of 76 on ARVs. Eighty eight percent of the adolescents had been on ARVs for more than 6 months and only 12 % had been on ARVs for less than 6 months. Efavirenz drug combinations were, AZT+ 3TC+EFV, ABC+3TC+EFV, D4T+3TC+EFV.Non efavirenz based ARVs drugs combinations were ABC+DDI+LPV/r, AZT+3TC+NVP, D4T+3TC+NVP, DDI+3TC +LPV/r.

Figure 5: The Number of children on Efavirenz based ARVs regimen

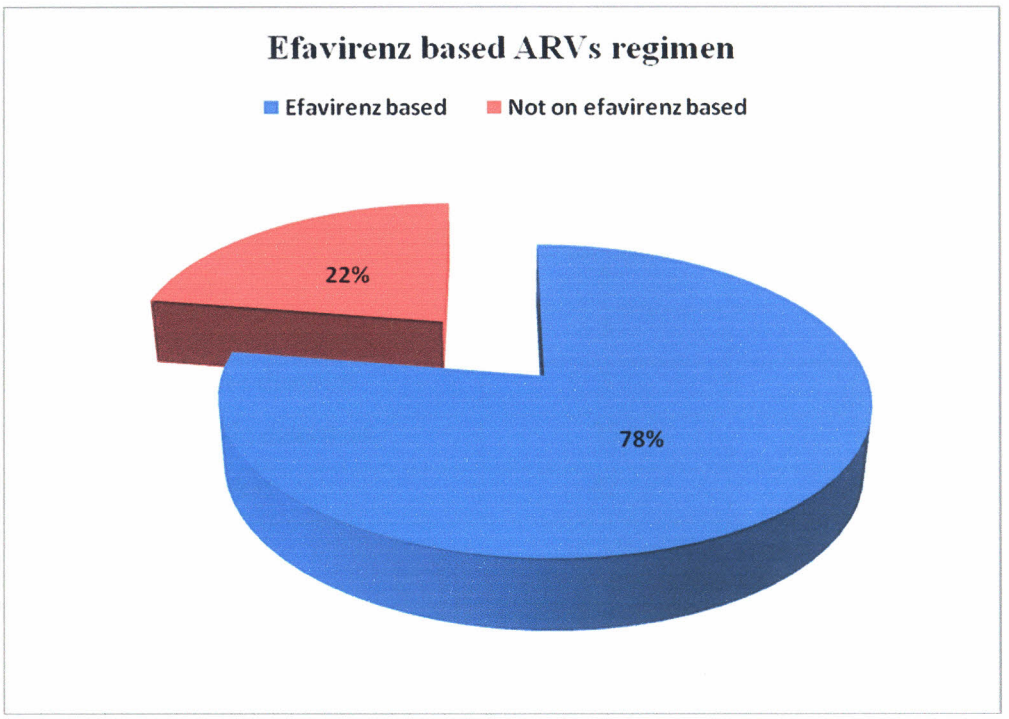

Figure 5 showed that about three quarters of adolescents recruited for the study were on efavirenz based regimen.

Table 5: Distribution of Psychiatric Disorders (n=94)

Disorder	Frequency	Percentage (%)
Anxiety disorder	25	26
Post Traumatic stress disorder	16	17
Somatisation disorder	15	16
Adjustment disorder	15	16
Evacuation(Enuresis/Oncoparesis) disorder	12	13
Oppositional defiant disorder	6	6
Mood disorder	5	5
Attention deficit hyperactive disorder	3	3
Obsessive compulsive disorder	3	3
Co-morbid psychiatric disorders.	25	48
No psychiatric disorders	42	44

Table 5 showed the common psychiatric disorders in HIV infected adolescents. Fifty two adolescents (n=52) 55.3% had psychiatric disorders. Twenty five children (48) % had co morbid psychiatric disorders.

The psychiatric disorders observed in the study population were, anxiety disorder 26%, post traumatic stress disorder 17%, and somatisation disorder 16%.

Table 6: The Correlates of Psychiatric Disorders

Characteristics	Psychiatric condition No(%) or Median (IQR)		OR(95% CI)	p-value
	Yes 52	No 42		
Male Female[1]	32(61) 20 (39)	19(45) 23 (55)	1.9	0.11
Age ≤ 12 yrs	33(63)	27(64)	1.0(0.7-2.3)	0.94
WHO stage 3-4	30 (58)	28(68)	0.7(0.2-1.6	0.375
Education performance <200 marks last exam (<40%)	3(5.7)	1(2.3)	2.5(1.3-25.1)	0.418
Income>10,000ksh/month	7(14)	12(28)	0.5(0.2-1.4	0.32
CD4 < 200 cells/mm3	19 (37)	8 (19)	2.5 (0.9-6.4)	0.06
Primary care giver mother	22(42)	20(47)	1.0(0.4-2-2)	0.195
Parent loss	33(63)	23(55)	1.4(0.6-3.3	0.396
Past history of abuse	8(15.3)	0	-	**0.008***
Past medical history	29(56)	15(36)	2.3(1.0-5.2)	0.053
Disclosure done	32(61)	27(64)	0.9(0.4-2.1)	0.784
Adherence to ARVs <95	12(30)	5(14)	0.4(0.1-1.2)	0.092
On ARV with Efavirenz	32(80)	28(78)	1.1(0.4-3.4)	0.812

Table 6 looked at the correlation between mental disorders and socio- demographic factors as well as HIV disease stage.

There was a trend towards children with CD4 <200 having a higher risk of developing psychiatric disorders OR 2.5, 95% CI 0.9-6.4 (p=0.06). There was also a trend towards mental disorder with children who reported poor adherence to ARV (OR 0.4, 95% CI 0.1-1.2) and p value 0.092). There was a statistically significant association between past medical illness and psychiatric disorder OR=2.3, 95% CI 1.0-5.2 and p=0.053

[1] This forms the reference category. (other omitted categories are considered the reference groups)
* For cases where the cells were less than 5, fisher exact statistic was used.

DISCUSSION

The study objectives was to determine the prevalence and pattern of psychiatric disorders and determine the correlates of HIV infection and psychiatric disorders in children and adolescents aged 10-15 years attending CCC at KNH. The prevalence of psychiatric disorder was 55.3% with anxiety disorders being the commonest disorder. This is lower than the prevalence documented in a study in India that found a prevalence of psychiatric disorders in HIV infected children aged between 12-16 years of 80 % (14). A possible explanation for these differences in prevalence could be could be due to differences in perceptions related to HIV, differing rates of stigmatization of HIV or cultural differences between the two countries.

The prevalence of psychiatric disorders in HIV has been found to be higher than in other chronic illnesses. Studies done in Uganda, Zimbabwe, and India (*11,12 ,14*) showed that patients with HIV/AIDS both children and adults had higher prevalence of psychiatric disorders (70-80%) compared to other chronic illnesses like sickle cell 30% asthma 25% and acute myeloid leukemia 20% .

The commonest types of psychiatric disorder seen in our study were anxiety (26%), and behavioural disorders. The prevalence of anxiety seen in our study is four fold higher than in the general pediatric population which was 6% (*24*). The common behavioral disorder among the boys were somatazition and compulsive disorder with p value <0.0001 and somatazition among the girls with p value <0.001(*14*). A study conducted in the Dominican Republic which looked into behavioral problems of 43 HIV infected children age between 2-8 years documented similar findings to ours. The children were divided into 2 groups, those below 5 years and those above 6 years. They found a prevalence of psychiatric disorders of 40% for children below 5 years and 46% for children above 6 years. Both groups had a prevalence of 40% of internalizing (anxiety, withdrawn depression and somatic complains. Those above 6 years had 46% prevalence of externalizing problem like aggressive behavior (25).

HIV infected children who are also orphans are extremely vulnerable to adverse health outcomes. In our study, orphaned children had a higher likelihood of psychiatric disorders compared to non-orphaned with OR 1.4(0.6-3.3). A similar study done in Dar-Es-salaam, Tanzania involved 41 orphans age between10-14 years who had lost one or both parents to AIDS and were living in poor suburbs. They were

compared with 41 matched non-orphans from the same neighborhood. The orphans had marked internalizing problems compared to non-orphans p<0.0001 and 34% contemplated suicide in the past year (*19*). In our study suicidal attempt was less than 1% compared to the Tanzanian study in which 34% contemplated suicide in the past year. The Tanzanian study showed that problems were more common in girls compared to boys. It is important to counselors and psychologists working in the CCC clinic to be vigilant on the trends so that they avert any possible disaster. A study in rural Uganda also found significant association between orphan hood and psychiatric disorders with OR 6.4 for anxiety, OR 6.6 for depression, OR 5.1 anger. The study which involved 123 HIV orphaned children age 11-15 years who had lost one or both parents to AIDS and 110 non-orphaned children of similar age and gender showed that those children had high level of psychological distress compared to non-orphans. Orphans had high risk for anxiety (OR 6.4), depression (OR 6.6), and anger (OR 5.1). Multivariate analysis showed orphan status was the only significant predictor (*29, 30*).

There was significant association between history of prior medical illness and psychiatric disorders with p=0.053. Twenty nine (56%) out of 52 children who had psychiatric disorders had suffered medical illness in the past. Past medical illness included diseases like meningitis, pneumonia, T.B.

Our study showed that 61% of adolescents who had psychiatric disorders were male with OR 1.9, although with no significant p=value. Majority of the adolescents with psychiatric disorders were below 12 years of age with OR 1 95% CI 0.7-2.3.Disclosure was done in 61 % of adolescents who had psychiatric disorders with OR 0.9 CI 0.4-2.1.Eighty percent of the adolescents who had psychiatric disorders were in efavirenz based regimen ARVs with OR 1.1 CI 0.4-3.4.

The relatively high prevalence of mental illness documented in this study points to a need for ART programmes to include mental health services. To date there has been minimal emphasis on mental health interventions within Antiretroviral Therapy (ART) programmes. Strategies and systems must be put in place to provide essential mental health survives within ART programmes to improve the quality of care for HIV infected children. (*26*). It was observed that the numbers of counsellors giving psychosocial support at the CCC is small. The ratio of patients to counsellors is 1179:1

Strengths and limitations of the study.

The main strength of our study was our ability to document the various types of psychiatric disorders using a standard tool. Additionally all adolescents with psychiatric symptoms were reviewed by psychiatrist to confirm their diagnosis which further improved the quality of diagnosis. The study limitation was that the study design did not allow follow up of the patients in the study.

CONCLUSION

1. The prevalence of psychiatric disorder in patients attending KNH CCC is 55.3%.
2. Common types of disorders were anxiety 26%, post traumatic stress disorder 17%, somatisation disorder 16%, adjustment disorder 16%, and evacuation disorder 13%.

RECOMMENDATION

1. Psychologists and counsellors at the CCC should be equipped with adequate knowledge in mental health to allow the diagnosis and management of psychiatric disorders in HIV infected children.
2. The number of trained counselors in the CCC should be increased to facilitate early detection of psychiatric disorders by use of simple psychiatric sympto matology tool and promote referral to psychiatrist for treatment.

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APPENDIX I: WHO HIV CLINICAL STAGING

WHO Clinical Staging of HIV/AIDS for Children with Confirmed HIV Infection

Clinical stage 1

Asymptomatic
Persistent generalized lymphadenopathy

Clinical stage 2

Unexplained persistent hepatosplenomegaly
Papular pruritic eruptions
Fungal nail infection
Angular cheilitis
Lineal gingival erythema
Extensive wart virus infection
Extensive moll scum contagiosum
Recurrent oral ulcerations
Unexplained persistent parotid enlargement
Herpes zoster
Recurrent or chronic upper respiratory tract infections
(otitis media, otorrhoea, sinusitis or tonsillitis)

Clinical stage 3

Unexplained moderate malnutrition or wasting not adequately responding to standard therapy
Unexplained persistent diarrhoea (14 days or more)
Unexplained persistent fever (above 37.5°C intermittent or constant, for longer than one month)
Persistent oral candidiasis (after first 6–8 weeks of life)
Oral hairy leukoplakia

Acute necrotizing ulcerative gingivitis or periodontitis

Lymph node tuberculosis

Pulmonary tuberculosis

Severe recurrent bacterial pneumonia

Symptomatic lymphoid interstitial pneumonitis

Chronic HIV-associated lung disease including brochiectasis

Unexplained anaemia (<8 g/dl), neutropaenia (<0.5 × 109 per litre) and or chronic thrombocytopaenia (<50 × 109 per litre)

Clinical stage 4

Unexplained severe wasting, stunting or severe malnutrition not responding to standard therapy

Pneumocystis pneumonia

Recurrent severe bacterial infections (such as empyema, pyomyositis, bone or joint infection or meningitis but excluding pneumonia)

Chronic herpes simplex infection (orolabial or cutaneous of more than one month's duration or visceral at any site)

Oesophageal candidiasis (or candidiasis of trachea, bronchi or lungs)

Extra pulmonary tuberculosis

Kaposi sarcoma

Cytomegalovirus infection: retinitis or cytomegalovirus infection affecting another organ,

with onset at age older than one month

Central nervous system toxoplasmosis (after one month of life)

Extra pulmonary cryptococcosis (including meningitis)

HIV encephalopathy

Disseminated endemic mycosis (coccidiomycosis or histoplasmosis)

Disseminated non-tuberculous mycobacterium infection

Chronic cryptosporidiosis (with diarrhoea)

Chronic isosporiasis

Cerebral or B-cell non-Hodgkin lymphoma

Progressive multifocal leukoencephalopathy

Symptomatic HIV-associated nephropathy or HIV-associated cardiomyopathy

APPENDIX II:MODIFIED KIDDIE TOOL

Prevalence of psychiatric disorders in HIV infected children aged 10-15 years at Kenyatta National Hospital

Questionnaire for modified kiddie tool and demographic data

Date .....

1) Study number.....
2) Patient/file number.....
3) Age.....
4) Sex ☐ Male ☐ female
5) Residence.....
6) level of education ☐ N☐ ☐Jursery ☐ Primary Secondary

Performance in school:

a) Primary School
b) marks obtained in the last examination Below 200 200-300 300-400 Above 400
c) Secondary School
d) Grade obtained in the last examination E D C B A

Describe any problems at school (reading, learning, spelling and writing, concentrating and remembering)

.....

.....

7) Primary care giver

a) ☐ Mother age ..... Level of education.....
b) ☐ Father age ..... Level of education.....
c) ☐ Sibling age ..... level of education .....
d) ☐ Grandparent age ..... Level of education.....
e) ☐ Others
f) ☐
g) (specify).....

8) Have you lost a parent? 1) Yes ☐ 2) No ☐

If yes which one..... When.....

9 How many brothers and sisters do you have?

Position Age

..... Age

..... Age

..... Age

.....Age

..... Age

10 How do you relate with the care giver?

☐ Always good

☐ Most times good

Sometimes good

☐ Rarely good

☐ Almost never good

11 What are your hobbies.....

12 family source of income ☐ casual ☐ Permanent Self employed not employed

13 Average income per month

☐ Below Kshs. 5000.....

☐ Between Kshs. 5000 and 10,000

☐ Between Kshs. 10000 and 20000

☐ Above 20000

14 Past medical history (include illness, operation, fits , meningitis, head injury, frequent ear infections or problem with sight).....

Past psychiatric history.....

Past history of abuse yes no

If yes what kind(s) of abuse a) physical b) neglect c) sexual d) psychological

And at which age.....

Developmental history

15 Complication during pregnancy, labour and delivery yes no

If yes explain.....

16 Drugs and alcohol use during pregnancy yes no

If yes explain.....

17 Developmental milestones within normal limits yes no

If no explain.....

Family medical history: Any significant psychiatry, medical or school problem.....

18 When was the HIV/AIDS diagnosis made.....

19 WHO disease staging

a. Stage I b. Stage II

c. Stage III d. Stage IV

20. CD4 absolute count.....

21. Has disclosure been done? 1) Yes 2) No

If yes when was it done.....

Any significant reaction when disclosure was done Yes No

If Yes, what were the reactions.....

If not why.....

22. Is the patient on ARV? 1) Yes 2) No

If Yes,when were they started.....

23. Which drugs are you on? 1 AZT 3TC NVP EFV D4T ABC DDI TDF LPV/r IND

24 .Adherence to ARV

How many doses of ARVs have you missed in the last one week?

1)None 2)one time 3)Three times 4)More than three times

1) above 95%

2) below 95%

other medications.....

25 Have you been sleeping well 1) yes 2) No?

If no is it

1) Initial insomnia 2) Middle insomnia

3) Terminal insomnia

How long.....

Do you experience bad dreams Yes No

If yes, for how long.....

26. Do you feel tired? 1) Yes 2) no

If yes how often

1) All the time 2) most of the time

3) Some of the time 4) now and then

27 How is you appetite 1) normal 2) increased

3) Decrease

28 Have you lost significant weight? Yes No

Psychotic disorder

29 Do you hear any voices or music that others cannot hear? Yes No

If Yes, 1) All the time 2) most of the time

3) Some of the time 4) now and then

30 Do you see things that other children don't yes No

If Yes, 1) All the time 2) most of the time

3) Some of the time 4) now and then

31 Do you feel like that someone or something is touching you? Yes No

If Yes, 1) All the time 2) most of the time

3) Some of the time 4) now and the

For how long?.....

32 Do you ever smell things that other children don't Yes No

If Yes 1) All the time 2) most of the time

3) Some of the time 4) now and the

For how long?.....

33 Have you ever seen things around your room that you thought are something else?

Yes No

If Yes 1) All the time 2) most of the time

3) Some of the time 4) now and then

34 Do you feel that you are very special person? Yes No

If Yes 1) All the time 2) most of the time

3) Some of the time 4) now and the

35 Do you feel guilty of your self most of the time? Yes No

If Yes, 1) All the time 2) most of the time

3) Some of the time 4) now and the

For how long?.....

36 Do you ever feel that are you controlled by special power outside your self?

Yes No

If Yes how often 1) All the time 2) most of the time

3) Some of the time 4) now and then

For how long?.....

37 Do you feel that you can see things clearly? Yes No

If no 1) All the time 2) most of the time

3) Some of the time 4) now and the

Anxiety disorder

38 Do you feel that your heart is beating fast than normal? Yes No

If Yes, how often 1) All the time 2) most of the time

3) Some of the time 4) now and then

39 Do you ever feel dyspnoeic or breathlessness Yes No

If Yes, how often 1) All the time 2) most of the time

3) Some of the time 4) now and then

40 Do you sweat a lot? Yes No

If Yes, how often 1) All the time 2) most of the time

3) Some of the time 4) now and then

41 Do you ever feel freighted in a situation where other children will not?

Yes No

If Yes, 1) All the time 2) most of the time

3) Some of the time 4) now and then

42 Are you afraid of being away from a person very close to you? Yes No

If Yes, , 1) All the time 2) most of the time

3) Some of the time 4) now and then

43 Do you feel afraid or embarrassed when others watch you talking? Yes No

If Yes, 1) All the time 2) most of the time

3) Some of the time 4) now and then

Post traumatic stress disorder

44 Have experienced significant trauma that almost caused your life or life of somebody close to you?

Yes No

If Yes, what trauma?.....

45 Do you feel intense fear, hopeless or horrified about the bad incident?

Yes No

If Yes, 1) All the time 2) most of the time

3) Some of the time 4) now and then

46 Do you experience memory of the bad incident? Yes No

If Yes, 1) All the time 2) most of the time

3) Some of the time 4) now and then

Adjustment disorders

47 Are you stressed out about something that makes your behavior worse? Yes No

If Yes, 1) All the time 2) most of the time

3) Some of the time 4) now and then

Obsessive compulsive disorder

48 Do you ever feel constant thought coming in your mind? Yes No

If Yes

1) All the time 2) most of the time

3) Some of the time 4) now and then

49 Do you feel compelled to act on the thoughts Yes No

If Yes,

1)All the time 2) most of the time

3) Some of the time 4) now and then

Attention deficit hyperactive disorder

50 Is the child able to pay sustained attention in class or at home? Yes No

If No 1)All the time 2) most of the time

3) Some of the time 4) now and then

51 Does your child able to follow given instruction in details Yes No

If No 1)All the time 2) most of the time

3) Some of the time 4) now and then

52 Is your child easily destructed? Yes No

If Yes 1)All the time 2) most of the time

3) Some of the time 4) now and then

53 Is your child restless? Yes No

If Yes 1) All the time 2) most of the time

3) Some of the time 4) now and then

54 Is your child on the move as if driven by a machine? Yes No

If Yes 1) All the time 2) most of the time

3) Some of the time 4) now and then

55 Does your child have difficult waiting for his turn? Yes No

If Yes 1) All the time 2) most of the time

3) Some of the time 4) now and then

56 Does your child intrude or interrupt other children? Yes No

If Yes 1) All the time 2) most of the time

3) Some of the time 4) now and then

Oppositional defiant disorder

57 Does your child argue alot with adults? Yes No

If Yes 1) All the time 2) most of the time

3) Some of the time 4) now and then

58 Does your child defy or refuse to comply with instruction given by adults?

Yes No

If Yes 1) All the time 2) most of the time

3) Some of the time 4) now and then

59 Is your child touchy or easily annoyed by others? Yes No

If Yes 1) All the time 2) most of the time

3) Some of the time 4) now and then

60 Does your child bully or intimidate others? Yes No

If Yes 1) All the time 2) most of the time

3) Some of the time 4) now and then

61 Does your child lie or still from other children? Yes No

If Yes 1) All the time 2) most of the time

3) Some of the time 4) now and then

62 Can your child set things on fire easily? Yes No

If Yes 1) All the time 2) most of the time

3) Some of the time 4) now and then

63 Does your child miss school often? Yes No

If Yes, 1) All the time 2) most of the time

3) Some of the time 4) now and then

Somatozation disorder

64 Does your child complain of pains involving many parts of the body?

(a) Headache (b) Chest pain (c) Abdominal pains (d) Limb pains

Yes No

If Yes 1) All the time 2) most of the time

3) Some of the time 4) now and then

65 Sudden weakness with no medical explanation?

Yes No

If Yes 1) All the time 2) most of the time

3) Some of the time 4) now and then

Mood disorder

66 Is you child happy? Yes No

If No 1)All the time 2) most of the time

3) Some of the time 4) now and then

67 Is your child sad? Yes No

If Yes 1) All the time 2) most of the time

3) Some of the time 4) now and then

68 Angry Yes No

If Yes 1) All the time 2) most of the time

3) Some of the time 4) now and then

69 confident Yes No

If Yes 1) All the time 2) most of the time

3) Some of the time 4) now and then

70 Does your child cry excessively or easily? Yes No

If Yes 1) All the time 2) most of the time

3) Some of the time 4) now and then

71 Is your child exerted? Yes No

If Yes 1) All the time 2) most of the time

3) Some of the time 4) now and then

72 Does your child get angry easily? Yes No

If Yes 1) All the time 2) most of the time

3) Some of the time 4) now and then

Evacuation disorder

73 Do you wet your bed Yes No

If Yes 1) All the time 2) most of the time

3) Some of the time 4) now and then

74 Do you pass stool in other places other than the toilet? Yes No

If Yes 1) All the time 2) most of the time

3) Some of the time 4) now and then

Substance abuse

75 Do you take drug of abuse? Yes No

If Yes, which ones (a) cigarettes (b) cannabis (c) Heroin (d) Cocaine

(e)Alcohol (f) Khat (g) Inhaler (h) Others

76 Is the child behavior dangerous to self Yes No

If Yes 1) most of the time 2) Some of the time

3) Occasional 4) No

77 Attempted suicide Yes No

If Yes, 1) Many times 2) Sometimes

3) Occasional 4) No attempt

explain when?.....How?

78 self harm Yes No

If Yes, 1) Many times 2) Sometimes

3) Occasional 4) No attempt

If Yes, explain when.....How.....

79 Any thought about suicide? Yes No

If Yes 1) Many times 2) Sometimes

3) Occasional 4) No attempt

80 Is the child behavior dangerous to others Yes No

If Yes, Has child attempted to harm anybody? Yes No

If so explain when? ..... How?

.....

Pervasive development disorders

81 Does your child behave as if he/she cannot hear? Yes No

Does your child have self harming behavior like heating the wall, bite himself/herself? Yes No

82 Is your child able to communicate well most of the time? Yes No

83 Does your child enjoy playing alone most of the time? Yes No

84 Does your child exhibit odd behavior like body rocking, spinning, hand flapping?

Yes No

85 Screaming without provocation most of the time? Yes No

86 Other behavioral problems not mentioned Yes No

If, Yes, as mentioned below

Tics Clumsiness Hating others Speech problem Mental retardation,Others

87. Global Assessment of Functions

100-91: Very good functioning in all areas.

90-81: Good functioning in all areas.

80-71: Slight impairment in functioning

70-61: Some difficulty in a single area.

60-51: Mild impairment in functioning.

50-41: Moderate impairment in functioning.

40-31: Major impairment in functioning in several areas.

30-21: Unable to function in almost all areas.

20-11: Needs considerable supervision.

10-1: Needs constant supervision

Rating and scoring

4=Symptoms present all the time

3=Symptoms present most of the time.

2=Symptoms present some of the time

1=Symptoms present now and then

0=No symptoms present

Score less than 1/3 of the total score is not significant for that particular disorder

Score greater than 1/3 of the total score is significant for that particular disorder

APPENDIX III: CONSENT FORM

CONSENT FORM

FILE NO: _____

STUDY NO_____

I Dr. Twaha of the Department of Pediatrics and Child Health, University of Nairobi, wish to carry out a study on the prevalence of psychiatric disorders of HIV infected children at the KNH CCC.

The study involves interviewing parents/guardian and children and going through the patients medical record which will help in identifying children with psychiatric disorders.

The information and results obtained will be treated confidentially and used for improving mental health care.

I do hereby voluntarily agree to participate in the study, having been informed and understood the benefit of the study.

Name

.....Sign.....

(Parent/Guardian)

Name ....Sign.....

(Witness)

Date.....

APPENDIX IV: ASSENT FORM

ASSENT FORM

FILE NO: _____

STUDY NO_____

I Dr. Twaha of the Department of Pediatrics and Child Health, University of Nairobi, wish to carry out a study on the prevalence of psychiatric disorders of HIV infected children at the KNH CCC.

The study involves interviewing parents/guardian and children and going through the patients medical record which will help in identifying children with psychiatric disorders.

The information and results obtained will be treated confidentially and used for improving mental health care.

I do hereby voluntarily agree to participate in the study, having been informed and understood the benefit of the study.

Name

.....Sign.....

(Child)

Name ....Sign.....

(Witness)

Date.....