CHAPTER ONE

1.0 INTRODUCTION AND LITERATURE REVEW

1.1 Epidemiology and the course of HIV/AIDS in children with treatments

Human Immunodeficiency Virus (HIV) and Acquired Immunodeficiency Syndrome (AIDS) constitute a global health threat and continue to pose a great public health challenge. In 2010, 3.4 million under15 years children were living with HIV worldwide. The vast majority, 3.1million of these children were in Sub Saharan African countries[1]. In Tanzania, about 160,000 under 15 years children were living with HIV in the same year[1]. With advances in HIV counseling, testing and the wide availability of antiretroviral therapy (ART), the majority of children reported to be living with HIV now live longer and healthier lives[2]. To them HIV is a chronic disease requiring lifetime continuous treatment, care, and support to ensure their physical and mental development, as well as their emotional and psychological well-being.

1.2 Depression in HIV infected children

Depression is a serious health problem that can affect anyone. It is generally defined as a persistent experience of a sad or irritable mood as well as anhedonia[3]. It includes a range of other symptoms such as change in appetite, disrupted sleep patterns, increased or diminished activity level, impaired attention and concentration, and markedly decreased feelings of self-worth[3].

On the whole depression is a recurrent mental illness[3]. It is associated with suicidal ideation [3,] and substance abuse[4]. It is important to identify children with depressive symptoms and provide them with appropriate care, as failure to do so may lead to high social costs as well as impairment of the victim's school performance[6].

In particular HIV infected children are prone to develop depression and poor mental health [7-10].The inherent risks for these children has been reported to be about twice that of their non HIV infected peers [11].Depressive symptoms in HIV infected children has been associated with impaired adherence to antiretroviral therapy (ART) [12], high plasma viral loads, mortality[13], less social support[14], worse quality of life [15], as well as psychological stress which can foster HIV progression[16]. Despite the growing body of knowledge on the care of HIV infected children, only few studies address the mental health issues such as depression in these children, particularly in many African countries such as Tanzania.

1.2.1 Symptoms of depression in children

In order to recognise depression in children, clinicians should be familiar with the signs and symptoms to look for. Children are not as articulate as adults in expressing their emotions and problems afflicting them. Hence clinicians dealing with children shoulder the responsibility of looking for symptoms of depression to help them. The warning signs of depression in children fall basically in four categories: emotional experiences, cognitive signs, physical complaints, and behavioral changes [17-18]. Not every child, who is depressed, will experience all these signs and symptoms.

1.2.2 Moods and emotional experience

Children suffering from depression can experience typical moods and emotion. One of those moods and emotions is sadness. A child may feel despondent and hopeless, crying easily and some children may hide their tears by becoming withdrawn. Another moods and emotions is loss of pleasure or interest. In this case a child can reject to participate in activities which he/she used to enjoy in the past. Thirdly a child may develop excessive worries to minor things and some may be irritable instead of sadness [17-18].

1.2.3 Cognitive signs and symptoms

Cognitive signs and symptoms are also common in children with depression. If not detected early and addressed accordingly, these symptoms can be devastating to children's daily life. Cognitive sign and symptoms include; problems of concentration or remembering things, deterioration in school performance or an inability to complete the tasks assigned to. A child can also presents with negative view of his/her owns life, pessimism, negative self perception, sense of worthless, helplessness, hopelessness and suicidal ideation or act [17-18].

1.2.4 Physical signs and symptoms

Depression in children is not just an illness of the mind. It can cause physical changes as well. The physical change include; changes in appetite, weight changes (weight loss or failure to rich the expected weight), sleep disturbances which could present as early or late insomnia, sluggishness, where a child can become less active or less playful than usual[17].

1.2.5 Behavioral signs and symptoms

These signs and symptoms are the most obvious and can easily be detected. They include, avoidance and withdrawal, here a child may avoid all the enjoyable activities and responsibilities that he/she often enjoyed before. Some may be withdrawn from friends and family members. Also a child may turn to be more dependent on some relationships and behave with an exaggerated sense of insecurity. Moreover, some children may present with activities in excess such as being out of control to certain activities, Restlessness and even reckless behaviors[17].

1.2.6 Diagnosing depression in HIV infected children

High index of suspicion is needed to diagnose depression in HIV infected children. This is because depression symptoms such as fatigue, weight loss and insomnia may be either due to

depression or physical illness attributed to HIV infection itself. A clinical interview with the child and adults familiar with the child remains to be the gold standard for the diagnosis of depression in children[3]. There are no biologic tests specific for diagnosing depression in children; neither there is no any test which has sufficient sensitivity or specificity to assist in the diagnostic assessment. Various tools for interview do exist, including Children's Depression Inventory (CDI), Children's Depression Scale (CDS), Depression Self-Rating Scale (DSRS), and Centre for Epidemiological Studies (CES). Depression Scale has all been shown to be helpful to clinicians for diagnosing depression in children [3, 17, 18].

1.2.7 Treatment of depression in HIV infected children

Treatment of depression is important for patients on antiretroviral therapy (ART). Indeed, for sustained suppression of HIV viral load, highly active antiretroviral therapy regimen must be adhered to. Adherence of less than 95% is associated with the development of resistance[19]. Such high degree of commitment requires patients to be mentally fit. Since depression is associated with less than 95% self-reported adherence [12, 20], in that case treating depression in HIV infected patients may help to improve adherence to ART [21]. Therefore, emphasis should be placed on the need for both diagnosis and treatment of depression for better outcome of these children.

Both behavioural therapy and pharmacotherapy interventions have been shown to be beneficial in treating depression among HIV infected children. Specific treatment in a particular individual should be guided by symptom severity, pharmacological interactions with HAART and other co morbidities. Cognitive-behavioural therapy (12–16 weeks) is effective to control depression in children. About 40–50% of depressed children tend to respond well [22]. If the patient does not respond, then combination therapy with antidepressant can be used.

1.2.8 Prevention of depression in HIV infected children

Counseling and psychosocial support (PSS) are important when caring for HIV infected children. When it is provided along with other components recommended for comprehensive

care of HIV infected children, the burden of depression and other mental illness can be lessened or reduced [23].

Counselling and PSS can be provided to an individual, in groups, in a family set up and in a community. It helps children to cope with multiple HIV related stressors, such as illness, death of parent(s), disclosure, stigma and discrimination, isolation, loneliness, and family conflict or uncertainty which can lead to development of depression when not properly addressed [23, 24].

1.3 Epidemiology of depression symptoms in HIV infected children

Generally, HIV infected patients, are more likely to suffer from major depression than those in the general population. One study in India reported that 60% of the HIV infected patients tended to experience major depression at some point during their illness [25]. In fact depression is found at higher levels in HIV infected children than it occurs in adults who suffer from the same illness.

A study done in the United States of America among HIV infected children and adolescents; found that 40% of the participants had depression symptoms [26]. Another study done in France to establish the type of psychiatric disorders in adolescents infected with HIV, reported a prevalence of 47% for major depressive disorder [27]. In England, a review of eight studies on psychiatric disorders among HIV infected adolescents, reported that depression accounted for 25% [28].

Although the majority of the world's HIV infected children live in Sub Saharan Africa, few studies have assessed the burden of depression these children suffers, such research was recently assessed as a priority for action by the WHO Secretariate[29]. And yet the knowledge of depression in HIV infected people from Africa comes from studies which were done in adults[20, 30, 31].

The prevalence of depression among adolescents attending HIV Care and Treatment Clinic (CTC) in South Africa was reported to be 44%[32]. The majority of the participants reported irritable mood, poor concentration and poor school performance. In Ethiopia, a cross-section study on behavioural and emotion al problems children aged 6-14 years on ART face, reported a prevalence of 34% [33]. And in Uganda, a descriptive cross-sectional study on psychosocial distress among HIV infected children, found that 40.8% had depression symptoms [34], while a study done in Kenya among HIV infected children and adolescents, who were attending care and treatment clinic, documented the prevalence of 17.8 %[4].

1.4 Factors associated with depression symptoms in HIV infected children

Several factors have been associated with the development of depression symptoms in HIV infected children. They range from sociodemographic factors, HIV related factors, genetic factor and environmental factor. Studies have reported varying degrees of these associated factors in different regions.

A cross-sectional study done in the USA to assess psychiatric morbidity among HIV infected children aged 6-16 years, found that psychiatry morbidity, including depression was significantly more likely to occur in children aged 13-16 years than those who were younger[35]. A similar finding was reported from study conducted in Oman and Ethiopia [33, 36].

The rate of depression symptoms before puberty is the same between female and male children. However, after puberty depression among children is associated with a twofold higher risk in female children than in male children[37]. Some inconsistent results have been obtained for HIV infected children. A study conducted in Sweden to assess depression symptoms in children, using CDI, found that female children were more likely to score higher for clinical depression than male children [38]. However, a study conducted in Tanzania among HIV orphans reported an equal proportion of depression among boys and girls for clinical depression[39]. A study in Kenya, reported that psychiatric disorders, depression inclusive, to be more in male children than in female children[4].

Studies which have been done among HIV infected adults population, reported that, there is an association between the occurrences of depressive symptoms and WHO HIV clinical stage. A study done in Uganda to examine clinical features of depression in HIV-positive and HIV-negative patients, found that depression symptoms were more likely to occur in HIV positive patients with clinical stages II and III of their illness[40]. Similar findings were obtained from study done in Tanzania among HIV infected women[41]. While a systematic review done in England, revealed different result from that observed in adults, where depression in HIV infected children was more likely to occur in children with asymptomatic infection that is stage I and II [28].

On the whole studies have shown that HIV infected children living with relatives other than their biological parents are more likely to develop depressions than those living with their biological parents [42-43]. The majority of the former children were orphans. In facts study done in Uganda and Tanzania, provide growing evidence that orphaned children experience more depression symptoms than non orphaned children [44- 45].

1.5 PROBLEM STATEMENT

Depression is a common mental health disorder that affects mood. Patients with depressive symptoms tend to feel a sense of sadness and guilt, and may find it difficult to get any satisfaction from life. Such depression symptoms are common among HIV infected children accounting for a worldwide prevalence of 23-45%. In Sub Saharan Africa, the prevalence of depression ranges from 17.8- 44%. In Tanzania the burden is not well known.

On the whole, mental wellbeing of HIV infected people is crucial for them to adhere better to their prescribed ART. Indeed, being mentally unwell has been linked to poor treatment outcome as it tends to impair adherence to ART[12], decrease in the CD4 count and increase viral load[18]. Moreover, depression has been associated with high risk behaviours such as engaging in unsafe sex[3] and drug abuse[5]. Such reckless behaviours may fuel further HIV transmission and interfere with HIV prevention effort.

A high prevalence of depression symptoms among HIV infected children has been confirmed by studies conducted from other countries mainly European[24, 27] and some African countries[4, 33, 34]. In Tanzania on the other hand limited information exists on depression symptoms in children benefiting from HIV care and treatment. Therefore this study intended to determine the magnitude of depressive symptoms in terms of proportion among HIV infected children attending CTC at PASADA in Dar es Salaam.

1.6 RATIONALE OF THE STUDY

With the introduction of Highly Active Anti-Retroviral Therapy (HAART), the course of HIV infection has been transformed from an acute to a chronic illness, with more children surviving to ages once thought impossible. Like in other chronic illness, HIV infected children are also prone to develop psychiatric symptoms such as symptoms of depression. Such symptoms can interfere with their treatment plan and overall quality of life.

Although several researches have been conducted on psychiatric morbidity such as depression in HIV infected adults, who are in care and treatment clinics, such researches have hardly been done in children with similar illness particularly from Tanzania. The majority of studies undertaken on HIV infected children have focused mainly on the immunological, medical, and neurological consequences of the disease. The aspect of psychiatric morbidity such as depression among such children has largely been neglected.

Thus this study's findings were expected to highlight the magnitude and extent of depression symptoms among HIV infected children in Tanzania to narrow the existing knowledge gap. Moreover, the findings can be used as a launch pad to sensitise stake holders to incorporate routine screening of depression symptoms in HIV care and treatment services so as to improve children's physical and mental health.The current study's findings can also be used as a reference point and provide an insight to other researchers interested in undertaking research in this area.

1.7 Research questions

1. What is the proportion of HIV infected children aged 9-17 years with depression symptoms among those attending Care and Treatment Clinic at PASADA in Dar es Salaam?

2. Is there any significant difference in term of proportion of children with depressive symptoms by age and sex, WHO HIV clinical stage, by relationship of a person living with the child?

1. 8 RESEARCH OBJECTIVES

1.8.1 Broad objective

To determine the proportion of HIV infected children with depression symptoms aged 9-17 years, attending Care and Treatment Clinic at PASADA in Dar es Salaam.

1.8.2 Specific objectives

1. To determine the proportion of HIV infected children with depression symptoms by age and sex.
2. To determine the proportion of HIV infected children with symptoms of depression by WHO HIV clinical stage.
3. To determine the proportion of HIV infected children with symptoms of depression by the relationship of a person who lives with the child.

CHAPTER TWO

2.0 METHODOLOGY

2.1 Study Design

This was a descriptive health facility- based cross-sectional study.

2.2 Study area

The study was done at Upendano Health Centre which is located in Temeke Municipality of Dar es Salaam. It is one of the 11 centres of Pastoral Activities and Services to People living with HIV/ AIDS in Dar es Salaam Archdiocese, whose acronym is PASADA. PASADA provide outpatient HIV care and treatment to children and adults. Of the 1,500 children attending at PASADA, 1000 children attend at Upendano CTC. More than half (600) of the children who attend Upendano age 9-17 years. The clinics for children were conducted on Tuesdays and Fridays of the first two weeks of every month from 8.00 am-3.30pm. Patients attending this centre come from all the three municipalities of Dar-es Salaam, including Ilala and Kinondoni. Other services offered at the centre include; Voluntary Counselling and Testing (VCT), Home Based Palliative Care (HBPC). HBPC services include visiting patients who are in terminal stage of their illness to provide them with ARVs and other medication, counselling and psychosocial support to individual patient and members of the families. The centre provides economic, social and spiritual support services to orphans and vulnerable children (OVC) who attends the clinic.

2.3 Study population

The study recruited the HIV infected children aged 9 -17 years.

2.4 Study duration

The study was conducted within in six months, from June to November, 2011.

2.5 Inclusion and exclusion criteria

2.5.1 Inclusion criteria

Children were included in the study if:

- they were aged 9 - 17years
- their HIV status had been disclosed to them for more than two weeks
- their caretaker had provided a written informed consent; and the children had given a written assent to participate in the study

2.5.2 Exclusion criteria

- Children, who were on Efavirenz based regime, as the medication is associated with mood swings and psychiatric symptoms, hence likely to compromise the study findings.

2.6 Sample size estimation

Sample size (n) was obtained using the following formula:

$$n = \frac{Z^2 p (1 - p)}{\varepsilon^2}$$

Where:

n = Minimum sample size

Z = Standard normal deviation of 1.96 corresponding to 95% of the confidence interval.

P= is the estimated proportion of children with depression in Uganda, which was 40.8%[34].

ε= Is a margin error, which is 0.05

$$n = \frac{(1.96)^2 \times p (1-p)}{(0.05)^2} = \frac{3.84 \times 0.408 \times 0.592}{0.0025}$$

Sample size was 371 Children. However, 10% of the obtained sample size (n=37) was added to cover for no responses. Thus a number of 408 children were enrolled to participate in the study.

2.7 Sampling technique

A convenient sampling method was used to recruit all the eligible children until the sample size of 408 was reached.

2.8 Data collection tools

2.8.1 Participant general information questionnaire

A questionnaire with closed ended questions was used to obtain data from participants. The information obtained was on sociodemographic characteristic, ARV status, WHO HIV clinical stage (See Annex I for English version and II for Kiswahili version)

2.8.2 Assessment of depression symptoms

CDI [45] was used to assess children's depression symptoms. The CDI was selected because it is validated in our setting to assess depression in children [38].The questionnaire was available in both English and Kiswahili the national language understood by almost every Tanzanian. (See Annex III and IV). CDI is a standardized tool which is widely used as self-reporting measures of depression symptoms in children and adolescents. It was designed to detect and evaluate major depression in children and adolescents; it can distinguish between children with this disorder from those without. It is a 27-item self-rating scale designed to assess cognitive, affective and behavioural symptoms of depression in children. The presence of each item within two weeks prior to the interview is scored on a three-point scale (0 absent; 1 moderate; 2 severe) according to symptom severity. The total possible scores on the CDI range from 0 to 54. A cut-off point of 12 has been established as an ideal threshold to discriminate children with depression from non-depressed ones, when the tool is used in clinical settings [46-47]. The CDI has been used in several studies to assess depression in children [36,37, 46, 48], and studies

have proven CDI to be a reliable depression symptoms measuring tool with good internal consistency and reliability with cronbach's alpha of 0.80 to 0.88 for the total score[36,37, 48].

2.8.3 Pre-testing of the study instruments

Pilot testing of the questionnaire was done by the principle investigator (PI), at the Muhimbili National Hospital (MNH)'s paediatric HIV Care and Treatments Clinic in
Dar es Salaam, prior to commencement of the study. Ten percent of the calculated sample size was used in the pilot test. This was undertaken to test the data collection tools, approximate the time used to fill the questionnaire and assess the field procedure.

2.9 Recruiting and training of research assistants

Two research assistants with prior experience in data collection, who were fluent in both Kiswahili and English, were trained for two days. They were familiarised with the questionnaire to be administered in the field, and taught how to handle the respondent during the data collection process, especially considering that they were to deal with children on a sensitive issue.

2.10 Data collection procedure

On each given day of the clinic (four days in a month), children and their parent(s)/relative(s) were invited by the PI, or research assistant to participate in the study. A written informed consent and assent was obtained in a private conference room at the centre selected for the purpose, the interview was also conducted there. All the eligible children were subsequently interviewed alone as their parent(s)/relative(s) waited outside.Children who came alone were asked to come with their parent(s)/relative(s) during the next appointment for the necessary consent to be obtained.

During the interview both the participant general information questionnaire and the tool for assessing of depression symptoms were administered by either the PI or the research assistants. This arrangement also helped children who could not read properly.

The general information questionnaire obtained information on the participant age, sex, district of residence, education status (whether he/she was enrolled in school or not), whether the child lived with the biological parent(s) or not and last reason for not staying with the biological parent(s) was asked for.

The participants were asked on the use of ARV and their response was confirmed by the PI or research assistant through checking the patient's treatment identification card number one (CTC- 1).

The client's corresponding file was used to obtain their WHO HIV clinical stage.

The depression symptoms were assessed after the participants' general information questionnaire was filled. The introductory part of the CDI was readout to the participant, who was then asked whether he/she had understood the CDI requirements. Further clarifications were given and where necessary the introductory part was repeated if the participant was not clear. After the participant had understood the introductory part of the CDI, the PI or the research assistant proceeded to read all the 27 items of CDI. The same procedure was repeated to every interviewed child.

Data quality was assured by counterchecking the consistency of the responses during the interview. To avoid double recruitments, a list of participants' names and their CTC identification numbers were used to cross-check the participants before they were interviewed. It took about 40 minutes for the questionnaire to be completed. On average, about 15-17 participants were interviewed per day.

The questionnaires handled by the research assistants were submitted to the PI on the same day of data collection. A debriefing meeting between the PI and research assistants was held to clarify any necessary and relevant issues.

2.11 Data management and analysis

Data was coded and entered into the computer database on daily basis, using the Statistical Package for Social Sciences (SPSS) program version 17.0 (SPS Inc., Chicago, IL, USA). Data was also cleaned and checked for consistency before analysis. The total CDI score was computed by the PI and the research assistants in the field. Descriptive statistic was used to summarise the data. The proportions for categorical variables and mean, with their respective measures of dispersion for continuous variables were noted.

The Chi-square test (χ^2test) and Fisher's exact test (when applicable) were used to compare group (categorical data) and determine the association between independent and dependent variables. The P value of ≤ 0.05 was considered as statistically significant.

2.12 Ethical clearance

Ethical clearance to conduct the study was procedurally obtained from the Muhimbili University of Health and Allied Sciences (MUHAS) Research and Publication Committee. Permission to collect data at PASADA was obtained from Temeke District Medical Officer (DMO) and the PASADA medical director respectively.

2.13 Ethical consideration

A written informed consent from the child's parent(s)/relative(s) and assent from the participants were sought before the administration of the questionnaires. The consent/assent form provided the purpose of the study, details of what will happen if they participated or otherwise in the study. It explained that participation in the study was voluntary and had no consequences on the child's right and benefits. Furthermore it was made clear that participants were free not to answer any question they were uncomfortable with or traumatized by. In short participants were fully informed about the nature of the study and questions.

Confidentiality was guaranteed and the questionnaires were coded by numbers to ensure that the participants remained acronyms. Benefit and risks were stated clearly on the consent/assent form. Contact details for the PI, supervisors and the director of Research and

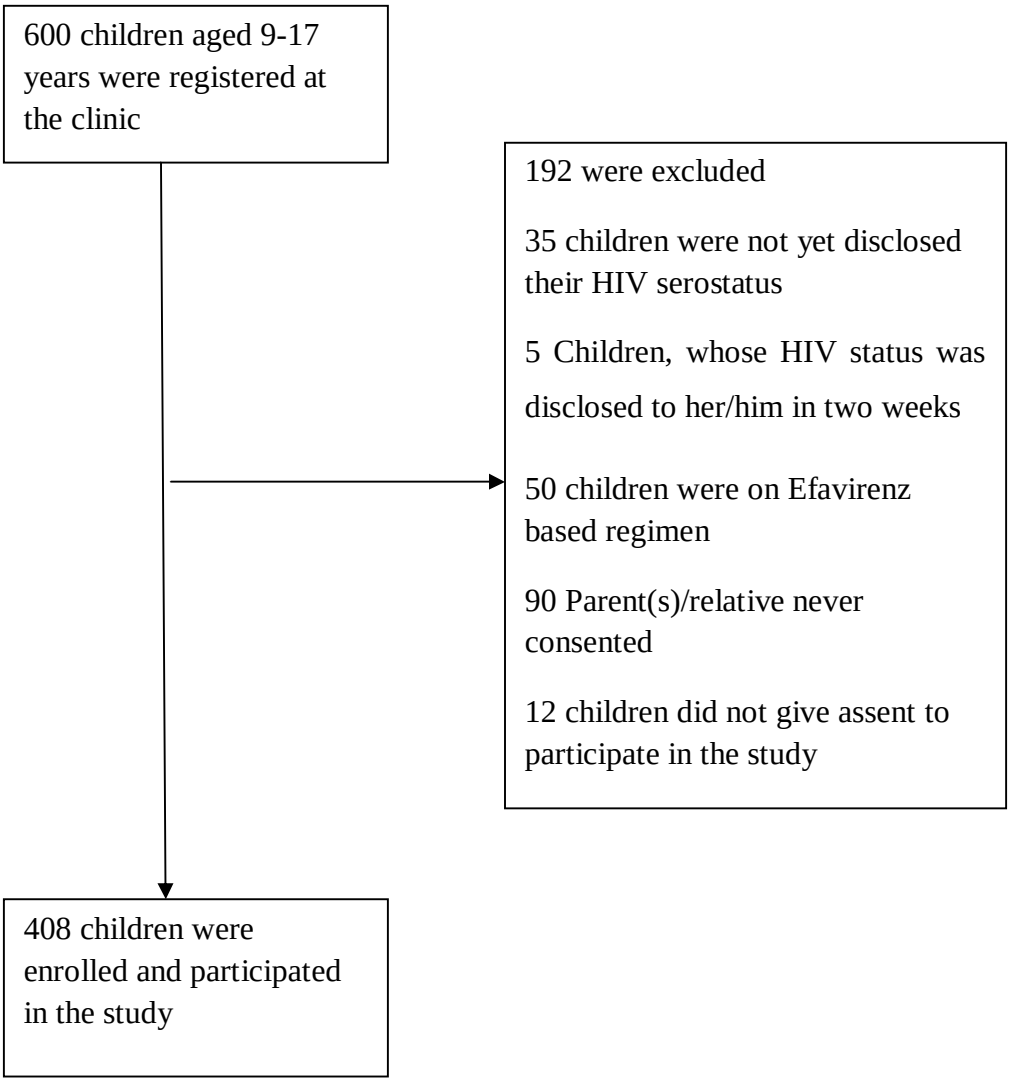
Publication Committee from MUHAS were available to the participants. (See Annexe V for the English version &VI for the Kiswahili version).

Children, who were identified to have depression symptoms, were referred to counsellor(s) who provided them with an initial management at the clinic and they subsequently made local arrangement for them to be seen by psychiatrist who visited the clinic once a month. Those who had suicidal ideas were right away sent to the MNH Psychiatry Department for proper immediate management. (Here the PI was also involved in counseling and treatment of these children).

CHAPTER THREE

3.0 RESULTS

Figure 1: Study profile



3.1 Description characteristics of the study participants

A total of 408 HIV infected children aged from 9-17 years were enrolled in the study. The mean age was 13.3 (±2.2) years. Most of them, 267(64.4%) were aged from 13-17 years. Female participants contributed 56.9% of the study sample. About fifty percent (49.2%) of the study participants were coming from Temeke Municipality, more than half (63%) of the participants were enrolled in primary school, and the majority, 363 (89%) were on ARV. A greater number of these children were in WHO HIV clinical stage II and III. More than fifty three percent (53.2%) were living with relative(s) apart from their biological parent(s). Table 1

Table1: Characteristics of the study population (N=408)

Variable	Mean ± SD (Range)	Frequency (N)	Percentage (%)
Sex			
Male		176	43.1
Female		232	56.9
Age			
9- 12	13.3 ± 2.2 (9-17)	141	34.6
13-17		267	64.4
Area of Residence			
Temeke		201	49.3
Ilala		101	24.3
Kinondoni		116	26
School enrollment			
Primary school		257	63
Secondary school		151	37
HIV clinical stage			
Stage I		58	14.2
Stage II		173	42.4
Stage III		160	39.2
Stage IV		17	4.2
ARV status			
On ARV		363	89
Not on ARV		45	11
Living with			
Biological parent		191	46.8
Relative*		217	53.2
Orphan hood status			
Not orphan		244	59.8
Orphan		164	40.2

Relative; Grandparent(s), Aunt/Uncle, Sister/Brother, Orphanage center

About Fifty one percent (50.7%) of the children lived with their grandparent(s); only 1.4% lived in an orphanage centre.

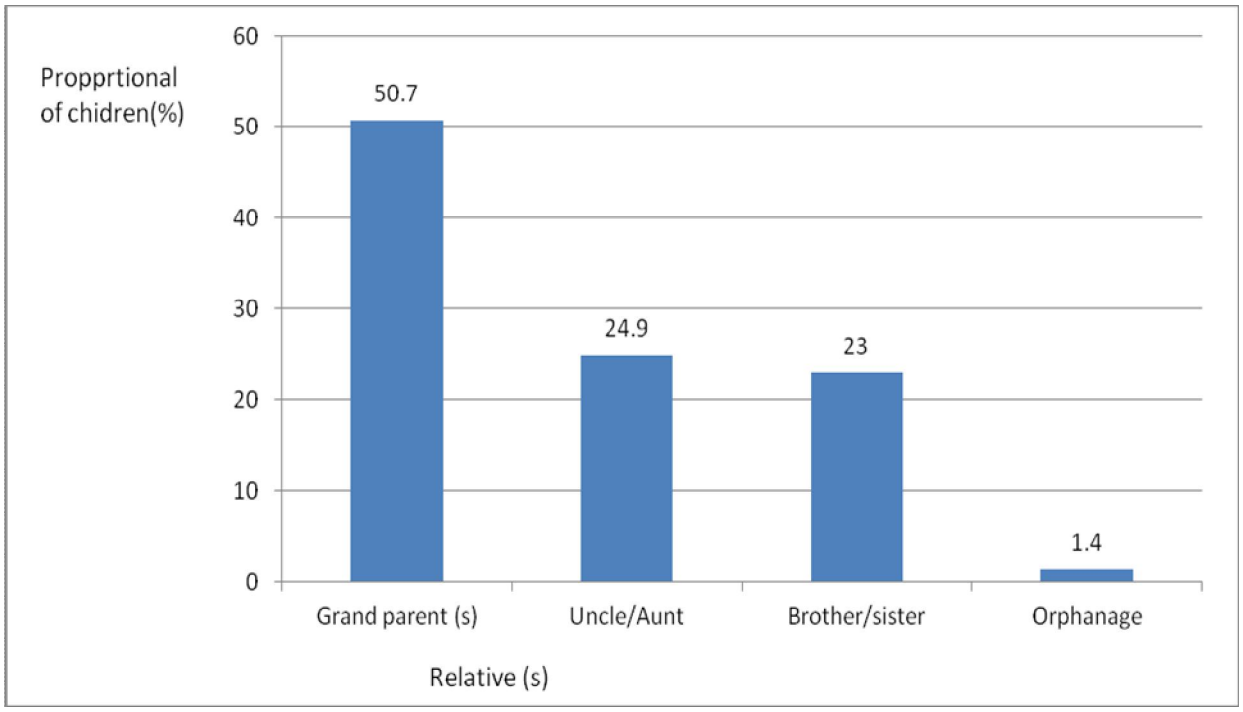


Figure 2: Distribution of relative(s) who were living with children

Of the 408 children, who participated in this study, 136 (33.3%) were found to have depression symptoms. Of these, 10 children (7.5%) had suicidal ideas.

About three quarters of the children(74.3%) aged 13-17 years had depression symptoms compared to those aged 9-12 years (25.7%).These results was statistically significant (P=0.000). A greater proportion of male children (55.1%) were found to have depression symptoms than the female children (44.9%). However, the observation was not statistical significant (P=0.621). Table 2.

Table 2: HIV infected children with depression symptoms by Age and Sex

Variable	**Depression Symptoms**		P– value
	Presence	**Absence**	
	No (%)	**No (%)**	
Age(years):			
9-12	35 (25.7)	106 (38.9)	
13-17	101 (74.3)	166 (61.1)	0.000
Sex:			
Female	61 (44.9)	115 (42.3)	
Male	75 (55.1)	157 (57.7)	0.621

Children who were in WHO HIV clinical stage I and IV were less likely to have depression symptoms compared to those who were in WHO HIV clinical stage 1I and III. Table 3

Table 3: HIV infected children with depression symptoms by WHO HIV clinical stage

Variable	**Depression Symptoms**		**OR(95%CI)**
	Presence	**Absence**	
	No. (%)	**No. (%)**	
WHO HIV clinical stage:			
Stage I	13(9.6)	45(16.5)	
			0.42 (0.2- 0.86)
Stage II	71(52.2)	102(37.5)	
			0.29(0.14-0.59)
Stage III	111 (40.8)	111(36.0)	
Stage IV	3 (2.2)	14(5.1)	1.35(0.29-6.96)*

*Fisher exact test used

More than sixty two percent (62.5%) of children who were living with relative(s) had depression symptoms compared to their counterparts (37.5%) who were living with their biological parent(s).This observation was statically significant (P=0.011). Table 4

Table 4: HIV infected children with depression symptoms by relationship of the person living with the child

Variable	Depression Symptoms		P-Value
	Presence	Absence	
	No. (%)	No. (%)	
Living with:			
Parent(s)	51(37.5)	140 (51.5)	
Relative(s)	85(62.5)	132(48.5)	0.011

CHAPTER FOUR

4.0 DISCUSSION

The main finding from this study revealed one third (33.3%) of the under study participants had depression symptoms. This finding could be indicating that, children who attend HIV Care and Treatment Clinics suffer from depression as a comorbid condition. And yet the health care workers, who provide them with services, do not recognize them. The observation is similar to other documented studies, which have reported that paediatric depression tends to go unrecognised[3, 17, 18, 50] and hence undertreated [17-25]. The proportion of children with depression symptoms observed among those attending HIV Care and Treatment Clinic might also indicate that children's psychosocial needs are either not well or are only partially addressed.

The current study finding is also similar to those studies done on children living under similar disease condition in America[26], France[27] and some African countries [4, 32, 34], where, the proportion of depression symptoms reported range from 17.8-47%. The discrepancy in the proportions reported might be attributed to the different tools used to assess depression symptoms, or the difference in the characteristics of the sample such as age, sex and availability of psychosocial support services which have been found to be significantly associated with occurrences of depression in HIV infected children [14, 28, 35-36,3-39].

Our study findings are also similar to those of other studies, which have been conducted in children living with other chronic illnesses, such as rheumatoid arthritis, asthma and seizure disorders. Those studies also revealed a high proportion of psychiatric disorders, including depression [52-53].

The proportion of children with depression symptoms observed in our study is lower than that observed in a study done in Idweli Village in Mbeya region which reported the proportion of 47% [39], despite using a similar tool and methodology to determine the depression symptoms. One possible explanation is their study was conducted in a community setting as opposed to

the current study which was held in a hospital setting. Second, the study in Idweli Village used a smaller sample size than the one used in the current study. On the other hand, the proportion of depression symptoms in this study (33.3%) was higher than that reported from Kenya (17.8%) [4].The study in Kenya had more younger aged children (more than three quarters aged below 11 years) in the study sample than the ones who took part in our study where majority of the participants were aged 13-17 years. This observation is in line with the documented evidence on childhood depression, where it tends to be less common before 12 years[3, 33, 35-36]. In addition, the study in Kenya used different tool from ours to assess depressive disorder, the International Neuropsychiatric Interview for Children and Adolescents (MINI Kid), also could be another explanation behind the observed difference in proportion.

The proportion of 33.3% obtained in this study is also lower than the one reported from France (47%) [26] and USA (44%) [27]. Culturally children from Europe and USA are freer when it comes to express their feeling and ideas than children in an African setting such as Tanzania. Secondly, their study had small sample size (17 and 34 participants respectively), compared to the one used in this study.

Majority of the children aged 13 - 17 years had depression symptoms (74.3%) than those aged 9 to12 years (25.7%). This was consistent with a cross-sectional study which was done in US among HIV infected children aged 6-16 years. In that study they found that psychiatry morbidity, including depression, was significantly more likely to occur in children of 13-16 years than those who were younger[35]. A similar observation was made in England[26] and Ethiopia [31].This was an expected finding from a cognitive development point of view, as 13-17year hold children will have developed abstract thinking, logical reasoning; they understand what it means to live with a lifelong HIV infection. They can make inferences from the available information[3].

It is commonly expected that after twelve years of age, depression symptoms to be two times more in female children compared to male children [37], but our result differ to the expectation

as the proportion of male children with depression symptoms was slightly higher at 55.1% than in female children 44.9% .Even though the observed difference was not statistically significant. This observation was consistent with finding observed in Kenya[4], Ethiopia[33] and Idweli village in Tanzania[39]. A possible explanation could be, both male and female children in this study faced the challenge of living and growing up with HIV as a chronic illness. The stressors of living with a chronic illness could be more challenging for a growing child and could lead to poor psychological outcome if not well addressed.

On the whole, a great number of children who were in WHO HIV clinical stage II and III Had depression symptoms compared to children who were in WHO HIV clinical stage 1 and IV. This finding is consistent with the finding of a systematic review of eight studies, which were conducted among HIV infected children to assess their psychiatric morbidity including depression. The review highlighted that physically asymptomatic HIV-positive children were more likely to have symptoms of depression than those with advanced infection[28].However, studies conducted in adult patients living with a similar disease condition. For these adults the findings have been consistently showed that depression symptoms to be more prevalent in patients with advanced HIV infection[40-41].

In this study, it was found that depressive symptoms were more common in children who were living with relative (62.5%) than those who were living with their biological parent(s).The finding was consistent with that of a study done in US[42]. Reasons reported by participants not being able to stay with their biological parent(s) were; parents death, parents divorce, abandoned by father/mother and parents being poor. Similar reasons were also given by participants from US study. Child separations from parent(s) have been implicated in the development of depression in children [3, 17, 18]. In the current study orphans accounted for more than 40.1% of all the children who lived with their relative(s) as a primary guardian. And there is documented evidence from studies which confirms a high prevalence of depression symptoms among orphans [6, 44, 45]. In case of children who lived with their biological parent(s)

few of them had depression symptoms. This observation was similar to a study done in Uganda[34], which reported psychosocial distress, including depression to be less common in children living with biological parent(s). These findings are expected because biological parents tend to be more protective and nurturing with their children's which can be protective from developing mental health problems such as depression.

This study, also noted that more than seven percent (7.5%) of children among those with depressive symptoms had suicidal idea. Suicidal ideation was noted to increase with age, as the proportion was higher (70%) in older children and lower in young aged children (30%). This observation is in line the observation made in a study which was conducted in Kenya[4], where the proportion was low in younger children (4.6%) and high (25%) in the older aged. Those children with suicidal ideation reported either to be abandoned by their father or their parents were separated. This underscores the need of comprehensive care for HIV infected children to identify all children with family problems, and help them to go through by providing appropriate counseling and PSS.

4. 1 STUDY LIMITATIONS AND STRENGTH

4.1.1 Study limitations

- This study's outcome could suffer from under-reporting or over-reporting of the responses from the participants depending on the socio-cultural acceptance of the questions by the respondents. However, this was minimised by using a tool which was validated in our setting.
- The study being a cross sectional study, only association between different variables could be demonstrated. In reality, it was not possible to study the causal relationships.

4.1.2 Strength of the study

- So far, there is no published epidemiological study done in our setting to assess the depression symptoms in HIV infected children who are in enrolled in CTCs program. For that reason, this cross section study can be used as a baseline data.