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Correlates of the Quality of life of Adolescents in families affected by HIV/AIDS in Benue State, Nigeria

Onoja Matthew Akpa^{1,*} and Elijah Afolabi Bamgboye¹

¹Department of Epidemiology and Medical Statistics, College of Medicine, University of Ibadan

Abstract

It was estimated that over 260,000 children are living with HIV/AIDS while close to 2 million are directly or indirectly affected by the disease in Nigeria. Improvements in treatments for infected children have been documented in the literature but there is a gross knowledge gap on the impact of HIV/AIDS on the quality of life and psychosocial functioning (PSF) of affected children in Nigeria. We comparatively explored the association of quality of life with PSF and other factors among adolescents in families affected by HIV/AIDS (FAHA) and in families not affected by HIV/AIDS (FNAHA). Data was extracted for 960 adolescents from a State wide cross-sectional study in which participants were selected through multistage sampling techniques. Data was collected using questionnaires consisting of demographic information, adapted WHO-QOL BREF and the Strength & Difficulty Questionnaire (SDQ). The quality of life scores were categorized into Poor, Moderate and High based on the amount of standard deviation away from the mean while the SDQ scores were categorized into normal, borderline and abnormal based on the SDQ scoring systems. Chi-square test and independent t-test were used for bivariate analyses while logistic regression was used for multivariate analyses at 5% level of significance. Proportion with poor quality of life (27.0%) was significantly higher among adolescents in FAHA than in FNAHA ($p=0.0001$). Adolescents in FAHA (OR:2.32; 95%CI:1.67-4.09) were twice more likely to have poor quality of life than those in FNAHA. In FAHA, adolescents on the borderline of PSF (OR: 2.19; 95%CI:1.23-3.89) were twice more likely to have poor quality of life than those with normal PSF. Adolescents in FAHA have poorer quality of life than those in FNAHA and also face additional burdens of psychosocial dysfunctions. Interventions focusing on functional social support and economic empowerment will benefit adolescents in FAHA in the studied location.

Keywords

Quality of life; HIV/AIDS; Adolescents; Families affected by HIV/AIDS; Psychosocial functioning

Introduction

Quality of life (QOL) is considered an individuals' perception of their position in life in the context of the culture and values systems in which they live and in relation to their goals,

*Corresponding author: Onoja Matthew AKPA, onojamattew@yahoo.co.uk.

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expectations, standards, and concerns (WHO, 1997a; TWG, 1998; Das et al., 2010; Issa and Baiyewu, 2006). Viewed as a multidimensional construct from the evaluation of multiple needs and experiences on the individual, community, national, and global levels (Costanza, 2007), the concept of QOL has been used by several authors to assess the satisfaction of needs determined by the perceived discrepancy between aspirations and achievements of individuals (Smith et al., 2004; Netuveli and Blane, 2008; Fajemilehin, 2011).

Selected studies in developing countries and other parts of the world have explored the effects of HIV/AIDS on the quality of life and psychosocial functioning of children infected with HIV (Atwine et al., 2005; Germann, 2006; Bele et al., 2011; Oberdorfer et al., 2008; Banerjee et al., 2010; Das et al., 2010) and children living in Families affected by HIV and AIDS (FAHA) (Germann, 2006; Mason et al., 2014; Ji et al., 2012; Xu et al., 2010; Muhaimin, 2010; Blais et al., 2014). For instance, in a study conducted among children orphans by AIDS in a high HIV-prevalent community in Zimbabwe (Germann, 2006), quality of life of participants appeared to be better only in older established townships with better-developed community child care capacities. However, due to lack of sustained support mechanisms, quality of life related to economic factors was generally poor among children in child-headed households (Germann, 2006). Also, at the Health research center of the University of Indonesia, Muhaimin (2010) reported that the odds of poor quality of life were almost twice as high among children in HIV affected families. In a study of quality of life of children living in HIV/AIDS affected families in rural area of China, Xu et al. (2010) reported that children from HIV/AIDS affected families had poor health related quality of life (HRQL), than those from unaffected families. Affected children also had significantly lower scores on their psychosocial, emotional and schooling functioning as well as the overall HRQL (Xu et al., 2010).

Furthermore, among adolescents in FAHA, there is an increased risk of developmental, social, economic, and psychological problems (King et al., 2008; Murphya et al., 2012; Makame 2002; Atwine 2005). They are more vulnerable and face greater challenges to their quality of life and psychosocial functioning compared to other children of the same age (King et. al, 2008). Many of them have had to face the loss of their childhood due to the responsibilities of caring for younger siblings (Germann, 2006) and parents who are sick with HIV and AIDS, reduced access to social programmes such as schooling, and socioeconomic stress due to the loss of one or both parents as financial providers etc. (King et al., 2008; Bhargava, 2005; Foster, 2002; Makame, 2002; Nyamukapa, 2005)

Though past studies have reported poor quality of life among adolescents in FAHA it is unclear whether some behavioural (mental health) attributes of adolescence are capable of affecting QOL among adolescents in these groups. Also, Information on the quality of life of Adolescents living in families affected by HIV/AIDS in Nigeria is completely unavailable in the literature. This makes obscure the true state of the QOL of adolescents in FAHA relative to those in families not affected by HIV and AIDS (FNAHA) in Nigeria.

In the present study, we comparatively assessed QOL among adolescents living in families affected by HIV and AIDS and adolescents living in families not affected by HIV and AIDS. We also compared background and psychosocial characteristics associated with poor

quality of life among adolescents in the two groups. Our intention was to provide comprehensive information that could inform planning of intervention programmes (targeted on critical issues in the area) in this vulnerable group as no functional programme is currently in existence in the studied area.

Methods

Data extraction and Participants

The present report is a part of a wider study on the quality of life and psychosocial functioning of adolescents living in families affected by HIV/AIDS (FAHA) compared to adolescents living in families not affected by HIV/AIDS (FNAHA) in Benue state, Nigeria. The main study was a cross sectional study conducted in the specified population in four local government areas (LGAs) purposively selected from Benue state, Nigeria.

Originally, a total of 1,546 adolescents from the two LGAs participated in survey. Some of the participants (586 adolescents) did not provide information about whether their families are affected with HIV/AIDS or not. Consequently, for the present analyses, data on a total of 960 adolescents (FAHA – 47.81% and FNAHA – 52.19) were extracted from two LGAs (with the most viable data) covered in the study. Participants were drawn from three secondary schools purposefully selected (for their characteristics and large number of students) from each of the two LGAs. The selected schools consisted of Girls-only School (GOS), Boys-only School (BOS) and Gender-mixed School (GMS). The school characteristics provided opportunities to assess adolescents from diverse backgrounds capable of informing disparities in the quality of life of adolescents in the setting. In a chosen school, every consenting student in a randomly selected class who gave verbal consent or agreed to sign the consent form after reading through the contents was given a self-administered questionnaire to fill in the English language.

Procedures

The University of Ibadan Institutional Review Board (IRB) gave approval for this study with the ethics approval number UI/EC/12/0235. Also, we obtained approval from the Benue state Ministry of Health's ethical committee with the reference number MED/261/VOL.1/56. Permission to conduct the study was also obtained from the authorities of the selected schools that participated in the study. While individual participants were required to sign the consent form and to make their filling of the questionnaires private, the school principals or designated officers of the institutions stood in as guardians for the participants. Also, participation in the study was made voluntary and participants were free to withdraw from the study at any time without any consequence.

In addition to a standby research personnel to offer assistance in case of clarifications required by the participant, students were sited in a manner that each student had adequate privacy. It was ensured that no assistance offered to the participants influenced their responses and each participant completed the questionnaire on their own.

Instruments/Measures

Demographic information—Socio-demographic information of participants was obtained using a brief section of the questionnaires used for the study. Selected Information in the socio-demographic section of the questionnaire included age of participants, sex, place of residence, occupation and level of education of mothers etc.

The WHO-QOL BREF—Quality of life of participants was measured using an adapted version of the shortened WHO quality of life scale (WHO-QOL BREF - WHO, 1997b). Originally validated among participants age 12-97 years, the WHO-QOL BREF consists of 26 items with the first two assessing how the participants view their general quality of life (Skevington et al., 2004). The remaining 24 items were structured into four domains each measuring different facets of human functioning: Physical domain (PHD), Psychological domain (PSD), Social relationship domain (SRD) and Environment domain (END). Originally, all items on the WHO-QOL BREF were scored on a 5-point Likert-scale (such as “Not at all”, “a little”, “a moderate amount”, “very much” and “an extreme amount”). But, because of the envisaged difficulties among study participants in understanding the differences between points on this scoring scale, all items were slightly modified without losing the original meaning of the item. For instance, items such as “To what extent do you feel that physical pain prevents you from doing what you need to do?” was modified to read “Do you feel that physical pain prevents you from doing what you need to do?” was modified to read “Do you feel that physical pain prevents you from doing what you need to do?” Items were then scored on a 3-point scale (“Not at all”, “Sometimes” and “Always”).

The Strength and Difficulty Questionnaire (SDQ)—The Strengths and Difficulties Questionnaire (SDQ) (Goodman, 1997) is widely used in resource poor countries for measuring behaviour and emotional problems among children and adolescents (Mullick & Goodman, 2001; Doku, 2009; Bakare et. al, 2010; CAMH, 2009). It has also been used in several countries (including Nigeria) to assess children's psychosocial outcomes in clinical and epidemiological contexts (Doku 2009; Bakare et. al, 2010; CAMH, 2009).

The SDQ has 25 items rated on a 3-point Likert scale (Not True, Somewhat True, and Certainly True) and are divided into five subscales (each having five items) assessing different aspects of adolescents' psychosocial issues: Emotional Symptoms Scale (ESS), Conduct problems Scale (CPS), Hyperactivity Scale (HAS), Peer Problems Scale (PPS) and Prosocial Behaviour Scale (PBS). The Total Difficulty (or problems) Score of the SDQ (TDS) was computed as the sum of scores on the ESS, CPS, HAS and the PPS subscales of the SDQ (YIM, 2005).

Data management and statistical techniques

All filled questionnaires were preliminarily checked (by the investigator and research assistants) for completeness. Respondents' identities were removed and participants' responses were coded and entered into the computer system for data editing and validation. Frequency tables and cross tabulations were initially used for data exploration to check for inconsistencies or outrageous observation due to responses or data entry errors. Total raw scores for each domain of the QOL were transformed into scores ranging from 0-100 as

described in previous studies (WHO, 1996; TWG, 1998; Issa & Baiyewu, 2006). Domains scores were aggregated and averaged over the number of Domains to yield the Overall QOL (OQOL) score for each respondent. For the purpose of univariate and bivariate analyses, domains' and the OQOL scores were categorized into three using the mean (\bar{X}) and standard deviation (SD) of the control group: Poor (if $score < \bar{X} - SD$), Moderate (if $\bar{X} - SD \leq score < \bar{X} + SD$) and High (if $score \geq \bar{X} + SD$) (Issa & Baiyewu, 2006). And for the purpose of multivariate analysis, domains' and the OQOL scores were further dichotomized using the mean (\bar{X}) and standard deviation (SD) of the control group as poor (if $score < \bar{X} - SD$) and good (if $score \geq \bar{X} - SD$). Raw scores on each domain of the SDQ as well as the total difficulty score (TDS) were categorized into "normal", "borderline" and "abnormal" based on the scoring details of the SDQ (Mullick & Goodman 2001, Doku 2009). In addition to frequency tables and percentages, Chi-square test was used to assess whether poor QOL was associated with sociodemographic and psychosocial characteristics of adolescents in each group and in the combined samples. Independent t-test was used to examine the disparities in the quality of life and psychosocial (mental health or behavioural) functioning of adolescents between the FAHA and the FNAHA group.

Furthermore, factors found to be significantly associated with poor quality of life (in the Chi-square analyses) were used in adjusted (binary) logistic regression analyses. All analyses were performed at 5% level of significance using SPSS version 15.

Results

Sociodemographic and background characteristics of participants

More than half (51.4%) of the adolescents living in FAHA were male while 52.8% of the adolescents living FNAHA were female. Majority of the participants in FAHA (71.2%) and those in FNAHA (83.5%) were in their mid-adolescence age (13-17 years) while only 11.5% (in FAHA) and 6.3% (in FNAHA) were in their late-adolescence (18-19 years). Apart from that, while 59.1% of the adolescents in the affected group reside in the rural areas, while 60.3% of those in FNAHA reside in the urban areas (Table 1).

Furthermore, close to 10% of the adolescents in FAHA reported abnormal emotional symptoms while 6.4% of adolescents in FNAHA reported emotional symptoms. While more than half (55.5%) of the adolescents in FAHA had borderline and abnormal peer problems, 49.5% of adolescents in FNAHA reported borderline and abnormal peer problems. Also, 20.7% and 13.2% of the adolescents reported abnormal total difficulties in FAHA and FNAHA respectively. Apart from that, there was a considerable poor physical health in 16.8% (FAHA) and 9.8% (FNAHA) of adolescents from both groups that participated in the study. On overall, 27.0% and 13.8% had poor quality of life in the FAHA and FNAHA group respectively (Table 1).

Factors associated with poor quality of life of adolescents

The proportion of adolescents with poor QOL (FAHA: 44.0% combined sample: 32.8%) was higher in early adolescence (<13 years) than in other age group (Table 2). Also, the proportion of adolescents with poor QOL (FAHA: 34.7% combined sample: 27.1%) was

significantly higher in the rural than in the urban areas and among adolescents with divorced or separated parents (FAHA: 46.7%; combined sample: 35.9%) than in other family status (Table 1).

The proportion of adolescents with poor QOL (FAHA: 37.8%) was higher among those with emotional symptoms only in the HIV-affected group. In addition, while the proportion of adolescents with poor QOL (FAHA: 34.2%; FNAHA: 32.8%; combined sample: 33.6%) was significantly higher among those with abnormal prosocial behaviours, poor QOL was associated with borderline total difficulties (FAHA: 31.7%; FNAHA: 20.8%; combined sample: 26.1%) in each and the combined sample (Table 2).

Reliability of measures and disparities in the QOL and PSF of the study participants

In Table 3, the reliability estimates (α : 0.50 - 0.87) for all the domains of the adapted QOL instruments ranged from moderate to excellent except for the Psychological symptoms domain with poor reliability ($\alpha=0.38$). Similarly, the reliability estimates (α : 0.52 - 0.71) for all the domains of the SDQ were moderate to excellent except for the Peer Problem Scale (PPS) with poor reliability ($\alpha=0.44$).

Average scores on the Physical Domain (PHD) of the adapted WHO QOL-BREF were significantly lower among adolescents in FAHA (35.71 ± 12.20) than in FNAHA (38.90 ± 11.90). Also, average scores on the OQOL were significantly lower among adolescents in FAHA ($4s4.37 \pm 15.67$) than in FNAHA ($48.7613.69$) (Table 3).

On the other hand, average scores on the Conduct Problem Scale (CPS) of the SDQ were significantly higher among adolescents in FAHA (3.30 ± 2.08) than in FNAHA (2.98 ± 1.82). And on overall, average Total difficulty scores (TDS) were significantly higher among adolescents in FAHA (14.49 ± 6.06) than in FNAHA (13.12 ± 5.55).

Comparative likelihood of poor quality of life among study participants

The results of the adjusted logistic regression analyses are presented as odd ratios (OR) and their respective 95% confidence interval (CI) in Table 4. Among adolescents living in FAHA, the odds of having poor QOL was almost 3 times more likely for adolescents with divorced or separated parents (OR: 2.85; 95%CI: 1.19-6.79) than those with parents living together. Also, adolescents whose mothers had completed tertiary education (OR: 0.10; 95%CI: 0.03-0.37) or other forms of education such as vocational trainings etc. (OR: 0.16; 95%CI: 0.04-0.63) were less likely to have poor QOL than those whose mothers had no formal level of education.

Similarly, among adolescents in FNAHA, participants whose mothers had completed up to secondary school (OR: 0.38; 95%CI: 0.15-0.96), tertiary education (OR: 0.27; 95%CI: 0.09-0.76) or other forms of education such as vocational trainings etc. (OR: 0.18; 95%CI: 0.05-0.61) were less likely to have poor QOL than those whose mothers have no formal level of education. But, adolescents with abnormal prosocial behaviours (OR: 3.26; 95%CI: 1.59-6.69) were more likely to have poor QOL than those with normal prosocial behaviours (Table 4).

In the combined sample, adolescents living in the rural areas (OR: 1.60; 95%CI: 1.03-2.49) were almost twice as likely to have poor QOL as those in the urban areas while those with divorced or separated parents (OR: 2.19; 95%CI: 1.7-4.09) were twice more likely to have poor QOL than those with both parents living together. Similarly, adolescents with abnormal prosocial behaviours (OR: 1.98; 95%CI: 1.16-3.39), were almost twice more likely to have poor QOL than those with normal prosocial behaviours while those on the borderline of total difficulty scores (OR: 2.19; 95%CI: 1.23-3.89) were twice more likely to have poor QOL than those with normal total difficulty scores. On overall, adolescents living in FAHA (OR: 2.32; 95%CI: 1.67-4.09) were twice more likely to have poor QOL than those in FNAHA.

Discussion

In this cross-sectional study, we report comparative results for the quality of life of adolescents living in families affected by HIV and AIDS (FAHA) and adolescents in families not affected by HIV and AIDS (FNAHA). Based on the results of our literature search and to the best of our knowledge, the present study is the first comprehensive attempt to understand how the quality of life of adolescents living in families affected by HIV/AIDS compare with the quality of life of adolescents from families not affected by the disease in Nigeria. Our intention was to compare the disparities of QOL in the two groups and also assess sociodemographic/socioeconomic and psychosocial (mental health) factors that may inform such disparities in the two groups.

Quality of life is generally low among adolescents in FAHA compared to those in FNAHA in the studied area. Also, most factors that were associated with poor quality of life of adolescents in FAHA are actually not related to the quality of life of adolescents in FNAHA. One explanation is quickly obvious; the impacts of HIV/AIDS infection on the affected group have not only lowered their QOL, it has also made them so vulnerable that any variable around them has a significant implication on their quality of life. This is not surprising as previous studies in China and Indonesia have reported that children from AIDS-affected families have worse health related quality of life than those from unaffected families (Xu et al., 2010; Muhaimin, 2010). In the study conducted in Yunnan, China; almost all variables studied had significant consequences on the quality of life of children in families affected by HIV/AIDS (Xu et al., 2010) while Muhaimin (2010) reported higher proportion of children with poor quality of life among FAHA in Indonesia. Specifically, the odds of poor quality of life were almost twice as high for children from FAHA compared to children from FNAHA in Indonesia (Muhaimin, 2010).

It is also evident from the present study that the impact of HIV/AIDS is higher in the rural than the urban areas of the studied location. Higher proportion of adolescents in FAHA was reported among study participants living in the rural areas. Also, higher proportion of adolescents in the FAHA group reported significantly poor quality of life due to very poor socio-economic background as evident in the educational and occupational background of their mothers. Most Parents in the rural and suburban areas in the studied location have poor level of formal education with a considerable number not having any formal level of education at all. This makes it difficult for many of them to have better occupation that could improve the quality of life of their family members. Parents are predominantly peasant

or subsistence farmers with very low capital and output and are unable to adequately provide for the needs of their family members (Duru and Mernan, 2011). With an added burden of HIV/AIDS infection in the family, most of them are overwhelmed and are unable to cater for the basic needs of their family members. One way to enhance the QOL of these affected children may be to devise measures for identifying them and frankly empower their parents or financial providers (whether irrespective of their HIV status). Parental characteristics; especially mothers' characteristics such as mother's HIV status, level of education, physical functioning, etc. have been implicated in low quality of life for family members (Blais et al., 2014).

Nevertheless, as adolescents advance in age, they are able to overcome the direct effect of their family background on their quality of life. In the present study, the early or pre-teen adolescents age (<13 years) are the most affected with poor quality of life. And the situation is worse particularly among those living in families affected by HIV/AIDS. This was corroborated by reports from a previous study conducted among children in families affected by HIV/AIDS in Indonesia (Muhaimin, 2010). In the study, younger children in FAHA were found to be at higher odds of poor quality of life than older children. Specifically, there was a significant correlation between low score on quality of life and younger age (more than 86% of children at younger age were at odds of poor quality of life compared to older participants in the study) (Muhaimin, 2010).

It is not unlikely that adolescents in families affected by HIV/AIDS have poor quality of life due to emotional problems arising from direct and indirect impacts of the disease on their families. Divorce and separation (among married couple) for instance have been reported as direct consequences of HIV infection in families in this setting (Okhreh et.al, 2013). The consequences of divorce on the formative stage and quality of life of children and adolescents are enormous. In addition to painful lifestyle adjustment, there is interpersonal loss, social dislocation, and emotional upheaval to cope with (Pickhardt, 2014). It has been reported that adolescents receive parental divorce with intensified grievances due to a feeling of betrayal and loss of trust (Pickhardt, 2014). These factors combined with environmental issues cause decline in the quality of life of affected adolescents. In the present study for instance, adolescents in FAHA group with divorced or separated parents were three times more likely to have poor quality of life than those with their parents living together. Also, adolescents with abnormal prosocial behaviours and those at the borderline of total difficulties scores were generally more likely to have poor quality of life than those with normal manifestations of these traits. Indeed, most adolescents with broken homes in the studied area often prefer to live with their grandparent as their grievances and lack of trust prevent them from a healthy relationship with either of their parents (Joslin & Harrison, 2002; Juma, Okeyo, & Kidenda, 2004). In fact, past studies in the area have shown that many children from FAHA are under the care of desperately poor relatives, including infirm grandparents who are often struggling to cope with the burden of caring for the AIDS patients as well as their own children (Ogbuagu et al., 2010; Apata et. al, 2010; Ilebani and Fabusoro, 2011). As a result, many of the affected children have not been able to pay their school fees (thereby dropping out of school), others have given in to antisocial behaviours ranging from prostitution to substance use and abuse (Ji et al., 2012; Bhargava, 2005).

Having lost hope on any means of survivorship, others have become depressed, frustrated and psychologically affected.

An important contribution of the present study lies in its potentials to inform intervention activities in this vulnerable group. Though we did not set out for an intervention study, the results of the present study have provided some relevant baseline information that could be used for planning intervention projects/programmes in this vulnerable group in Nigeria. For instance, it is evident from the present study that quality of life (irrespective of the domain) is especially poor among children in families affected by HIV/AIDS in the rural areas and those with psychosocial problems. Intervention activities focusing on the population of children in FAHA in rural areas could improve their quality of life and psychosocial functioning. Past studies on the social, psychological, economical and physical conditions and experience of vulnerable children in these settings have been used to define intervention activities among them (Rusakaniko et al., 2006; King et al., 2009).

Limitation

A major limitation of this study is the cross-sectional nature which prevents any causal conclusion. Also, there may be some uncounted biases in this study due to the self-administration of the interview instruments. The modification of the questions and scoring scale of the QOL instrument as well as the low Cronbach's alpha for one of the domains of the QOL and SDQ instruments, may have affected the accuracy of the information obtained on the affected domains. Additionally, the WHO-QOL BREF was originally validated for individuals aged 12 to 97 years and although it has been used in different population and disease settings, the present study population may pose further limitations. For instance, our study population included adolescents aged 10 to 19 years. Also, we could not locate any study describing its use among adolescents living in families affected by HIV/AIDS in our setting.

Conclusion

Quality of life of adolescents living in families affected by HIV/AIDS was significantly lower compared to their unaffected counterparts and adolescents in HIV/AIDS-affected families may also face additional burdens of psychosocial dysfunctions. Although a number of factors may be responsible for poor quality of life in adolescence, family background, psychosocial functioning and the HIV status of parents were found to be critical to quality of life of adolescents in the study area. Quality of life was generally poor among adolescents living in families affected by HIV/AIDS in this part of the world. Presence of HIV infection in a family has been implicated in poor quality of life and poor psychosocial adjustments in children (living in such families) in other part of the world as well (Muhaimin, 2010; Cluver & Gardner, 2007; Xu et al., 2010). Programmes directed at improving the psychosocial adjustments and quality of life of adolescents living in families affected by HI/AIDS in the studied area would greatly benefit the affected children.

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Table 1
Sociodemographic and psychosocial characteristics of respondents

Demographic characteristics	Family affected by HIV/AIDS infection	Family not affected by HIV/AIDS infection
Sex		
<i>Male</i>	236 (51.4)	236 (47.2)
<i>Female</i>	223 (48.6)	264 (52.8)
Age of participants		
<i><13</i>	75 (17.3)	47 (9.7)
<i>13-17</i>	309 (71.2)	404 (83.5)
<i>18-19</i>	50 (11.5)	33 (6.3)
Area of residence		
<i>Rural area</i>	251 (59.1)	188 (39.7)
<i>Urban area</i>	174 (40.9)	286 (60.3)
Ethnicity		
<i>TIV</i>	361 (79.7)	330 (66.5)
<i>Idoma/Igede</i>	34 (7.5)	59 (11.9)
<i>Others</i>	58 (12.8)	107 (21.6)
Family type		
<i>Monogamy</i>	285 (64.3)	355 (72.3)
<i>Polygamy</i>	158 (35.7)	136 (27.7)
Family status		
<i>Parents are together</i>	297 (67.3)	401 (81.5)
<i>Divorced/separated Parents</i>	45 (10.2)	33 (6.7)
<i>Single Parent</i>	99 (22.4)	58 (11.8)
Mother's highest level of education		
<i>No formal education</i>	81 (18.4)	28 (5.8)
<i>Up to secondary education</i>	214 (48.6)	187 (38.7)
<i>Tertiary education</i>	92 (20.9)	172 (35.6)
<i>Others</i>	53 (12.0)	96 (19.9)
Mother's occupation		
<i>Farming</i>	196 (43.9)	111 (22.5)
<i>Trading</i>	98 (22.0)	145 (29.4)
<i>Public employment</i>	28 (6.3)	39 (7.9)
<i>Private employment</i>	124 (27.8)	199 (40.3)
Number of siblings		
<i><4</i>	185 (42.1)	195 (39.6)
<i>4</i>	254 (57.9)	298 (60.4)
Emotion symptoms scale (ESS)		
<i>Normal</i>	374 (81.5)	427 (85.2)
<i>Borderline</i>	40 (8.7)	42 (8.4)
<i>Abnormal</i>	45 (9.8)	32 (6.4)
Conduct problem Scale (CPS)		

Demographic characteristics	Family affected by HIV/AIDS infection	Family not affected by HIV/AIDS infection
<i>Normal</i>	259 (56.4)	310 (61.9)
<i>Borderline</i>	75 (16.3)	89 (17.8)
<i>Abnormal</i>	125 (27.2)	102 (20.4)
Hyperactivities scale (HAS)		
<i>Normal</i>	372 (81.0)	441 (88.0)
<i>Borderline</i>	51 (11.1)	32 (6.4)
<i>Abnormal</i>	36 (7.8)	28 (5.6)
Peer problem scale (PPS)		
<i>Normal</i>	204 (44.4)	253 (50.5)
<i>Borderline</i>	163 (35.5)	187 (37.3)
<i>Abnormal</i>	92 (20.0)	61 (12.2)
Prosocial scale (PSS)		
<i>Normal</i>	319 (69.5)	358 (71.5)
<i>Borderline</i>	64 (13.9)	85 (17.0)
<i>Abnormal</i>	76 (16.6)	58 (11.6)
Total difficulty score (TDS)		
<i>Normal</i>	263 (57.3)	329 (65.7)
<i>Borderline</i>	101 (22.0)	106 (21.2)
<i>Abnormal</i>	95 (20.7)	66 (13.2)
Physical Health Domain (PHD)		
<i>Low</i>	77 (16.8)	49 (9.8)
<i>Moderate</i>	333 (72.5)	374 (74.7)
<i>High</i>	49 (10.7)	78 (15.6)
Psychological Domain (PSD)		
<i>Low</i>	131 (28.5)	97 (19.4)
<i>Moderate</i>	250 (54.5)	319 (61.9)
<i>High</i>	78 (17.0)	94 (18.8)
Social Relationship Domain (SRD)		
<i>Low</i>	66 (14.4)	56 (11.2)
<i>Moderate</i>	310 (67.5)	366 (73.1)
<i>High</i>	83 (18.1)	79 (15.8)
Environment Domain (END)		
<i>Low</i>	159 (34.6)	76 (15.2)
<i>Moderate</i>	241 (52.5)	321 (64.1)
<i>High</i>	59 (12.9)	104 (20.8)
Overall Quality of life (OQOL)		
<i>Low</i>	124 (27.0)	69 (13.8)
<i>Moderate</i>	268 (58.4)	354 (70.7)
<i>High</i>	67 (14.6)	78 (15.6)

Not: none reported cases were excluded from each analysis

Table 2
Socio demographic and psychosocial factors associated with low quality of life of participants

Participants' characteristics	Family affected by HIV/AIDS			Family not affected by HIV/AIDS			Combined sample		
	Low OQOL (%)	χ^2	p	Low OQOL (%)	χ^2	p	Low OQOL (%)	χ^2	p
Family HIV and AIDS status									
<i>FAHA</i>							124 (27.0)	26.61	<0.001
<i>FNAHA</i>							69 (13.8)		
Sex									
<i>Male</i>	66 (28.0)	2.09	0.35	28 (11.9)	1.28	0.53	94 (19.9)	1.46	0.48
<i>Female</i>	58 (26.0)			40 (15.2)			98 (20.1)		
Age of participants									
<13	33 (44.0)	14.84	0.005	7 (14.9)	1.73	0.79	40 (32.8)	14.52	0.006
13-17	75 (24.3)			53 (13.1)			128 (18.0)		
18-19	11 (22.0)			5 (15.2)			16 (19.3)		
Area of residence									
<i>Rural area</i>	87 (34.7)	23.57	<0.001	32 (17.0)	3.73	0.16	119 (27.1)	31.86	<0.001
<i>Urban area</i>	26 (14.9)			33 (11.5)			59 (12.8)		
Ethnicity									
<i>TIV</i>	108 (29.9)	15.01	0.005	44 (13.3)	2.85	0.58	152 (22.0)	11.07	0.03
<i>Idoma/Igede</i>	3 (8.8)			11 (18.6)			14 (15.1)		
<i>Others</i>	11 (19.0)			12 (11.2)			23 (13.9)		
Family type									
<i>Monogamy</i>	72 (25.3)	2.51	0.29	46 (13.0)	1.54	0.46	118 (18.4)	5.76	0.06
<i>Polygamy</i>	51 (32.3)			23 (16.9)			74 (25.2)		
Family status									
<i>Parents are together</i>	61 (20.5)	26.29	<0.001	53 (13.2)	2.74	0.60	114 (16.3)	31.48	<0.001
<i>Divorced/separated Parents</i>	21 (46.7)			7 (21.2)			28 (35.9)		
<i>Single Parent</i>	39 (39.4)			8 (13.8)			47 (29.9)		
Mother's highest level of education									
<i>No formal education</i>	37 (45.7)	47.26	<0.001	10 (35.7)	18.63	0.01	47 (43.1)	75.41	<0.001
<i>Up to secondary education</i>	71 (33.2)			29 (15.5)			100 (24.9)		

Participants' characteristics	Family affected by HIV/AIDS			Family not affected by HIV/AIDS			Combined sample		
	Low OQOL (%)	χ^2	p	Low OQOL (%)	χ^2	p	Low OQOL (%)	χ^2	p
<i>Tertiary education</i>	6 (6.5)			20 (11.6)			26 (9.8)		
<i>Others</i>	6 (11.3)			7 (7.3)			13 (8.7)		
Mother's occupation									
<i>Farming</i>	84 (42.9)	52.91	<0.001	24 (21.6)	12.63	0.05	108 (35.2)	73.47	<0.001
<i>Trading</i>	16 (16.3)			15 (10.3)			31 (12.8)		
<i>Public employment</i>	2 (7.1)			7 (17.9)			9 (13.4)		
<i>Private employment</i>	22 (17.7)			21 (10.6)			43 (13.3)		
Emotion symptoms scale (ESS)									
<i>Normal</i>	98 (26.2)	14.52	0.006	57 (13.3)	4.73	0.32	155 (19.4)	8.92	0.06
<i>Borderline</i>	9 (22.5)			8 (19.0)			17 (20.7)		
<i>Abnormal</i>	17 (37.8)			4 (12.5)			21 (27.3)		
Conduct problem Scale (CPS)									
<i>Normal</i>	82 (31.7)	7.88	0.10	40 (12.9)	14.07	0.01	122 (21.4)	13.67	0.008
<i>Borderline</i>	16 (21.3)			14 (15.7)			30 (18.3)		
<i>Abnormal</i>	26 (20.8)			15 (14.7)			41 (18.1)		
Hyperactivities scale (HAS)									
<i>Normal</i>	97 (26.1)	5.47	0.24	58 (13.2)	4.27	0.37	155 (19.1)	5.00	0.29
<i>Borderline</i>	19 (37.3)			4 (12.5)			23 (27.7)		
<i>Abnormal</i>	8 (22.2)			7 (25.0)			15 (23.4)		
Peer problem scale (PPS)									
<i>Normal</i>	52 (25.5)	3.30	0.51	27 (10.7)	13.79	0.01	79 (17.3)	15.00	0.005
<i>Borderline</i>	49 (30.1)			34 (18.2)			83 (23.7)		
<i>Abnormal</i>	23 (25.0)			8 (13.1)			31 (20.3)		
Prosocial scale (PSS)									
<i>Normal</i>	79 (24.8)	10.68	0.03	40 (11.2)	44.64	<0.001	119 (17.6)	46.68	<0.001
<i>Borderline</i>	19 (29.7)			10 (11.8)			29 (19.5)		
<i>Abnormal</i>	26 (34.2)			19 (32.8)			45 (33.6)		
Total difficulty score (TDS)									
<i>Normal</i>	70 (26.6)	12.17	0.02	40 (12.2)	22.65	<0.001	110 (18.6)	32.50	<0.001
<i>Borderline</i>	32 (31.7)			22 (20.8)			54 (26.1)		

Table 3
Disparities in the quality of life and psychosocial functioning of participants

Quality of life & Psychosocial Characteristics	Family affected by HIV/AIDS <i>n=459</i>	Family not affected by HIV/AIDS <i>n=501</i>	t	P	Cronbach's alpha
<i>Domains of QOL</i>					
PHD	35.72 ± 12.20	38.90 ± 11.90	-4.08	<0.001	0.65
PSD	40.63 ± 13.05	43.35 ± 11.49	-3.44	0.001	0.38
SRD	50.60 ± 25.28	53.36 ± 23.10	-1.77	0.08	0.50
END	50.52 ± 24.00	59.42 ± 20.96	-6.13	<0.001	0.81
OQOL	44.37 ± 15.67	48.76 ± 13.69	-4.63	<0.001	0.87
<i>Strength and difficulties (SDQ)</i>					
ESS	3.67 ± 2.25	3.46 ± 2.06	1.40	0.16	0.65
CPS	3.30 ± 2.08	2.98 ± 1.82	2.51	0.01	0.52
HAS	3.66 ± 2.04	3.27 ± 1.97	3.05	0.002	0.53
PPS	3.88 ± 1.96	3.43 ± 1.91	3.61	<0.001	0.44
PSS	6.67 ± 2.21	6.88 ± 2.16	-1.50	0.14	0.69
TDS	14.49 ± 6.06	13.12 ± 5.55	3.66	<0.001	0.71

**- P < 0.01

Note: Table does not show non-response category

Table 4
Adjusted logistic regression of factors associated with low quality of life of HIV/AIDS among participants

Participants' Characteristics	Family affected by HIV/AIDS		Family not affected by HIV/AIDS		Combined sample	
	Odds of poor OQOL OR (95%CI)	p	Odds of poor OQOL OR (95%CI)	p	Odds of poor OQOL OR (95%CI)	p
Family HIV and AIDS status	++		++			P<0.001
<i>FAHA</i>					2.32 (1.67-3.21)	
<i>FNAHA</i>						
Age of participants			++			
<13	1.63 (0.58-4.54)	0.35			1.52 (0.69-3.33)	0.30
13-17	1.25 (0.54-2.88)	0.61			1.01 (0.52-1.94)	0.99
18-19	-				-	
Area of residence			++			
<i>Rural area</i>	1.75 (0.91-3.35)	0.09			1.60 (1.03-2.49)	0.04
<i>Urban area</i>	-				-	
Ethnicity			++			
<i>TIV</i>	1.49 (0.53-4.18)	0.45			1.37 (0.72-2.63)	0.34
<i>Idoma/Igede</i>	0.54 (0.09-3.17)	0.49			1.86 (0.76-4.54)	0.17
<i>Others</i>	-				-	
Family status			++			
<i>Divorced/separated Parents</i>	2.85 (1.19-6.79)	0.02			2.19 (1.17-4.09)	0.01
<i>Single Parent</i>	1.14 (0.58-2.23)	0.71			1.09 (0.65-1.82)	0.75
<i>Parents are together</i>	-				-	
Mother's highest level of education						
<i>Up to secondary education</i>	0.78 (0.41-1.48)	0.44		0.38 (0.15-0.96)	0.57 (0.33-0.98)	0.04
<i>Tertiary education</i>	0.10 (0.03-0.37)	0.001		0.27 (0.09-0.76)	0.16 (0.07-0.35)	<0.001
<i>Others</i>	0.16 (0.042-0.63)	0.01		0.18 (0.05-0.61)	0.20 (0.08-0.47)	<0.001
<i>No formal education</i>	-				-	
Mother's occupation						
<i>Trading</i>	1.11 (0.42-2.89)	0.84		0.75 (0.31-1.81)	0.88 (0.45-1.70)	0.70
<i>Public employment</i>	0.43 (0.08-2.34)	0.33		1.20 (0.41-3.51)	0.82 (0.32-2.13)	0.69
<i>Private employment</i>	0.48 (0.21-1.07)	0.07		0.59 (0.29-1.21)	0.47 (0.27-0.80)	0.01

Participants' Characteristics	Family affected by HIV/AIDS			Family not affected by HIV/AIDS			Combined sample		
	Odds of poor OQOL OR (95%CI)	p		Odds of poor OQOL OR (95%CI)	p		Odds of poor OQOL OR (95%CI)	p	
<i>Farming</i>									
Emotion symptoms scale (ESS)									
<i>Abnormal</i>	1.91 (0.78-4.66)	0.16		++			++		
<i>Borderline</i>	0.76 (0.27-2.16)	0.60							
<i>Normal</i>	-								
Conduct problem Scale (CPS)									
<i>Abnormal</i>			++	0.82 (0.34-1.95)	0.65		0.35 (0.19-0.70)	0.001	
<i>Borderline</i>				0.81 (0.37-1.79)	0.61		0.52 (0.29-0.94)	0.03	
<i>Normal</i>				-			-		
Peer problem scale (PPS)									
<i>Abnormal</i>			++	0.99 (0.36-2.68)	0.98		0.74 (0.36-1.50)	0.40	
<i>Borderline</i>				1.45 (0.76-2.77)	0.27		1.05 (0.65-1.69)	0.84	
<i>Normal</i>				-			-		
Prosocial scale (PSS)									
<i>Abnormal</i>	1.42 (0.69-2.93)	0.34		3.26 (1.59-6.69)	0.001		1.98 (1.16-3.39)	0.01	
<i>Borderline</i>	1.05 (0.48-2.30)	0.91		0.88 (0.39-1.99)	0.77		0.78 (0.43-1.39)	0.40	
<i>Normal</i>				-			-		
Total difficulty score (TDS)									
<i>Abnormal</i>	0.59 (0.26-1.34)	0.20		0.78 (0.27-2.47)	0.67		1.80 (0.82-3.93)	0.14	
<i>Borderline</i>	1.12 (0.57-2.21)	0.74		1.83 (0.85-3.96)	0.13		2.19 (1.23-3.89)	0.01	
<i>Normal</i>				-			-		

++: Variable not used in the adjusted analysis for this outcome

Note: Outcome variable in each model is the (dichotomized) Overall quality of life (OQOL)