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A Comparative Study of Health Related-Quality of Life Among HIV Patients on Pre-HAART and HAART in Uyo South-South Nigeria

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Abstract

Assessing health related quality of life (HR-QOL) in people living with HIV/AIDS (PLWHA) has the potential to give an insight into the patients' perception of the burden of the disease and assess the effect of management. The aim of this study was to assess the HR-QOL in HIV patients who present for treatment in Uyo. The study is a prospective longitudinal study of PLWHA attending HIV clinics. One hundred and sixty-one newly diagnosed HIV patients were recruited by systematic sampling technique proportionately to the two public hospitals in Uyo. The patients were classified into Pre-HAART and HAART groups based on their eligibility to commence HAART. WHOQOL-HIV Bref was the instrument used at recruitment and at four months. Data was analyzed using STATA 10 statistical package. At recruitment, the HR-QOL of the Pre-HAART respondents was better than the HAART respondents across the domains, except for spirituality. While at four months both groups became similar except at social and environmental domains where Pre HAART fared better. Both groups showed improvement after four months. Provision of appropriate HIV care to an infected person within a short term is associated with improvement in their HR-QOL.

Keywords: Health related quality of life; Human immunodeficiency virus; Highly active antiretroviral therapy; Pre- Highly active antiretroviral therapy

Introduction

Human immunodeficiency virus (HIV) and acquired immune disease syndrome (AIDS) have been of a great concern to the global community in the last three decades. It is estimated that over 34 million people are infected worldwide and this group of people continue to suffer from the disease with deterioration on their quality of life (QOL) [1]. The world health organization (WHO) defines quality of life as individual perceptions of his/her position in life in the context of the culture and value system in which he/she lives and in relation to his/her goals, expectations, standards and concerns. It is also said to be the perceived physical and mental health over time [2,3].

Health related quality of life (HR-QOL) has been widely applied in evaluating the effects of treatment on different populations and as such has become an important measurable outcome of treatment in the era of highly active antiretroviral treatment (HAART), rather than the traditional outcomes of mortality, number of survival, occurrence of opportunistic infections CD4 count and viral load [4-6]. With the advent of HAART in 1996 [7], people living with HIV/AIDS (PLWHA) now live a longer life due to the effectiveness of HAART in suppressing viral load and reducing HIV related morbidity and mortality, they now have to cope with living with a chronic disease [8]. Both the disease and its treatment affect the QOL of the patients, and up to 50% of patients on HAART may experience adverse effects of the medication and this may interfere with individual's ability to adhere to the regimen [9,10].

Cluster of differentiation antigen 4 (CD4) has been found to be associated with QOL especially in the physical and psychological domains [11]. The CD4 serves as a co- receptor for HIV and CD^+ T cells decline over time with a commiserate reduction in the immune response integrity, which is limited by the use of HAART [12]. Studies have also shown that QOL also declined with increased in clinical staging and with increased number of symptoms at presentation [13]. Fatigue which is a common symptom associated with HIV especially at the late stage of the disease is associated with poor QOL [12].

Comorbidities had been demonstrated in various studies to have negative impact on HRQOL especially the physical domain [14,15]; socio demographic characteristics are other determinants of QOL among others [14].

Nigeria has the second highest burden of HIV/AIDS globally with a prevalence of 4.1% and about 3.1 million people living with the virus [16] with over 400,000 people on HAART. This study therefore compared the HRQOL experiences of PLWHA on HAART and those yet to commence HAART over a four-month period, and also provided specific information about QOL.

Materials and Methods

Study setting

Uyo is the capital city of Akwa Ibom state in the south-south geopolitical region of Nigeria. Akwa Ibom is one of the oil producing states of the Niger Delta with a population of 3,095.021 and Uyo has a population of 305,961 based on 2006 population census [17]; majority of the people depend on farming and fishing for their livelihood.

The state had HIV sero-prevalence of 10.9% as at the year 2010 [16]. There are two hospitals in the city that offer comprehensive antiretroviral services; University of Uyo teaching hospital (UUTH) and St Luke's hospital Anua (SLHA) with several health centres providing HIV counseling and testing and prevention of mother to child transmission (PMTCT) services.

Study design

This was a four month prospective longitudinal study of HIV infected persons enrolled into care at UUTH and SLHA in Uyo.

Study population

Study population was newly enrolled HAART naïve HIV patients attending ART clinics of UUTH and SLHA for the first time. These eligible respondents were however classified as belonging to Pre-HAART or HAART groups depending on their eligibility to commence HAART or otherwise as follows:

HAART group were eligible respondents with CD4 count of less than 350 count/ml and or WHO clinical staging of 4.

Pre-HAART group were eligible respondents with CD4 counts greater than 350/ml and clinical staging of 1, 2 or 3.

Eligible patients who declined, or were less than 18 years of age were excluded from the study, as well as those on treatment for other chronic disease conditions.

Sample size determination

A pilot study was previously done in a neighboring town Ukaniba to determine the proportions of HIV naïve individuals (HAART and Pre-HAART) who had good QOL at the end of four months in care. The result showed that 60% of HAART and 83% of Pre HAART had good overall QOL.

A minimum sample size of 65 per group was obtained using formula for two independents proportions.

$$n = \frac{1.96\times\sqrt{(2\times0.715\times0.285)}+0.84\times\sqrt{(0.83\times0.17+0.6\times0.4)}}{(0.23)^2}$$

$$n = \frac{1.96\times0.638+0.84\times0.6173}{0.0529}$$

$$n = 1.3386+0.5186 = \frac{(1.7696)^2}{0.0529}$$

$$n = \frac{3.4503}{0.0529} = 65.29$$

The computed sample size was proportionally allocated to the two hospitals to reflect the load of new cases seen per month. The respondents were recruited into the study by serial selection of every other new patient who presented to the hospital until the allotted sample sizes were attained.

Data collection

The quality of life was assessed using the bref version of World Health Organization's disease specific instrument (WHOQOL-HIV Bref). The items are grouped into 6 domains, (physical, psychological, level of independence, social, environmental and spirituality). And in addition, is an item on the overall quality of life [18,19]. The attending doctor determined eligibility to HAART using clinical staging and CD4 count after which the above instrument was interviewer-administered, other information like CD4 and staging of the disease was obtained from the patients' records.

Data analysis

Data was cleared, entered and analyzed using STATA version 10 statistical package. The overall QOL was dichotomized into good (score of 4 and 5) and poor (scores of 1, 2, 3), the domains scores were also dichotomized into good (score of 12 and above) and poor (scores below 12). QOL along with other categorical variables were summarized using simple proportions, chi squared was used to test for association between variables. Mean and standard deviation were used to summarize variables that are normally distributed like CD4 count and age, while t test was used as test of association. Significant level was set at 5%.

Ethical considerations

The research was granted ethical clearance and approval by the Ethical Review Committee of the University of Teaching Hospital, an approved consent form was signed by the respondents.

Results

A total 161 participants were successfully followed up for the four months period. Sixty-eight were Pre HAART and 93 were HAART group.

Table 1 shows that socio demographic characteristics were similar in both groups, the mean age of the respondents was 32.1 years and 66.5% of them are female, about 70% of the respondents had at least secondary education and about 60% of them lived as single. Most of the respondents presented at a late clinical stage (stages 3 and4).

Socio-demographic and clinical variables	Groups n (%)		Total (n=161)	Statistical indices
	Pre-HAART (n=68)	HAART (n=93)		
Age (Years)				
<20	2 (2.9)	1 (1.1)	3 (1.9)	χ^2=8.006 Df=4 P value=0.075*
20-29	32 (47.1)	33 (35.5)	65 (40.4)	
30-39	16 (23.5)	37 (39.8)	53 (32.9)	
40-49	18 (26.5)	19 (20.4)	37 (23.0)	

50 and above	0 (0)	3 (3.2)	3 (1.9)	
Mean (SD)	31.7 (9.5)	32.45 (8.5)	32.1 (8.9)	0.707
Sex				
Male	21 (30.9)	33 (35.5)	54 (33.5)	χ^2=0.3731
Female	47 (69.1)	60 (64.5)	107 (66.5)	Df=1 P value=0.541
Level of Education				
No formal education	0 (0)	1 (1.1)	1 (0.6)	
Primary	24 (35.3)	24 (25.8)	48 (29.8)	χ^2=3.4542
Secondary	20 (29.4)	38 (40.9)	58 (36.0)	Df=3
Tertiary	24 (35.3)	30 (32.3)	54 (33.5)	P value=0.303*
Marital Status				
Single	27 (39.7)	47 (50.5)	74 (46.0)	
Married	31 (45.6)	33 (35.5)	64 (39.8)	χ^2=8.6117
Cohabiting	4 (5.9)	0 (0)	4 (2.5)	Df=4
Separated	2 (2.9)	6 (6.5)	8 (5.0)	P value=0.076*
Widowed	4 (5.9)	7 (7.5)	11 (6.8)	
CD4 Count				
Mean	488.03			t-test
SD	141.66	95.29	201.76	P value=0.0001+ Df=159
Disease stage				
Early (stage 1&2)	33 (48.53)	14 (15.05)	47 (29.19)	χ^2=21.2948
Late (stage 3&4)	35 (51.46)	79 (84.95)	114 (70.8)	Df=1 P value=0.0001+
Center				
SLHA	59 (86.8)	86 (92.5)	145 (90.1)	χ^2=1.43018
UUTH	9 (13.2)	7 (7.5)	16 (9.9)	Df=1 P value=0.232
*Fischer's exact test; +significant p value				

Table 1: Socio-demographic characteristics of the respondents who were successfully followed up in Uyo.

Table 2 shows the HR-QOL of respondents at baseline. There were significant differences at the overall QOL and in all the domains except the spirituality domains. Table 3 shows the HR-QOL of the respondents at 4 months in care. The domains were similar in both groups though social and environmental domains showed significant difference.

Quality of life domains	**Group n (%)**		**Total (n=161)**	**Statistical indices**
	Pre HAART (n=68)	**HAART (n=93)**		
Physical				

Good Poor	51 (75.0) 17 (25.0)	53 (57.0) 40 (43.0)	104 (64.6) 57 (35.4)	χ^2=5.5715 Df=1 P value=0.018+
Psychological				
Good Poor	45 (66.2) 23 (33.8)	32 (34.4) 61 (65.6)	77 (47.8) 84 (52.2)	χ^2=15.8863 Df=1 P value=0.0001+
Level of independence				
Good Poor	56 (82.4) 12 (17.6)	58 (62.4) 35 (37.6)	114 (70.8) 47 (29.2)	χ^2=7.5915 Df=1 P value=0.006+
Social relationship				
Good Poor	55 (80.8) 13 (19.2)	62 (66.7) 31 (33.3)	117 (72.7) 44 (27.3)	χ^2=3.9968 Df=1 P value=0.046+
Environment				
Good Poor	47 (69.1) 21 (30.9)	46 (49.5) 47 (50.5)	93 (57.8) 68 (42.2)	χ^2=6.2199 Df=1 P value=0.013+
Spirituality				
Good Poor	47 (69.1) 21 (30.9)	62 (66.7) 31 (33.3)	109 (67.7) 52 (32.3)	χ^2= 0.1079 Df=1 P value=0.743
Overall QOL				
Good Poor	38 (55.9) 30 (44.1)	20 (21.5) 73 (78.5)	58 (36.0) 103 (64.0)	χ^2=20.1413 Df=1 P value=0.0001+
+significant p value				

Table 2: HR-QOL of the respondents at recruitment (baseline) in Uyo.

Quality of life domains	**Groups n (%)**		**Total (n=161)**	**Statistical indices**
	Pre HAART (n=68)	**HAART (n=93)**		
Physical				
Good Poor	57 (83.8) 11 (16.2)	86 (92.5) 7 (7.5)	143 (88.8) 18 (11.2)	χ^2=2.96 Df=1 P value=0.085
Psychological				
Good Poor	53 (77.9) 15 (22.1)	70 (75.3) 23 (24.7)	123 (76.4) 38 (23.6)	χ^2=0.16 Df=1 P value=0.693

Level of independence				
Good Poor	60 (88.2) 8 (11.8)	84 (90.3) 9 (9.7)	144 (89.4) 17 (10.6)	χ^2=0.18 Df=1 P value=0.67
Social relationship				
Good Poor	63 (92.7) 5 (7.4)	70 (75.3) 23 (24.7)	133 (82.6) 28 (17.4)	χ^2=3.26 Df=1 P value=0.004$^+$
Environment				
Good Poor	37 (54.4) 31 (45.6)	36 (38.7) 57 (61.3)	73 (45.4) 88 (54.7)	χ^2=3.91 Df=1 P value=0.048$^+$
Spirituality				
Good Poor	58 (85.3) 10 (14.7)	81 (87.1) 12 (12.9)	139 (86.3) 22 (13.7)	χ^2=0.11 Df=1 P value=0.74
Overall QOL				
Good Poor	58 (85.3) 10 (14.7)	69 (74.2) 24 (25.8)	127 (78.9) 34 (21.1)	χ^2=2.91 Df=1 P value=0.08

Table 3: HR-QOL of Pre HAART and HAART respondents at 4 months in Uyo.

After 4 months in care the pre-HAART respondents had better QOL in all the domains except the environmental domain, however significant changes were only observed in respect to psychological, social and spirituality domains and the overall QOL (Table 4). For the HAART respondents, significant proportion has better QOL in the physical psychological, level of independence, spirituality and the overall QOL at four month (Table 5).

Quality of life	**Time**		**Statistical indices**
	Baseline (n=68)	**4 month (n=68)**	
Physical			
Good Poor	51 (75.0) 17 (25.0)	57 (83.8) 11 (16.2)	χ^2=1.6190 Df=1 P value=0.23
Psychological			
Good Poor	45 (66.2) 23 (33.8)	53 (77.9) 15 (22.1)	χ^2=4.7715 Df=1 P value=0.029$^+$
Level of independence			
Good Poor	56 (82.4) 12 (17.6)	60 (88.2) 8 (11.8)	χ^2=0.9379 Df=1 P value=0.333
Social relationship			
Good	55 (80.9)	63 (92.7)	χ^2=4.0979

Poor	13 (19.1)	5 (7.3)	Df=1 P value=0.043^{+}
Environment			
Good Poor	47 (69.1) 21 (30.9)	37 (54.4) 31 (45.6)	χ^2=3.1136 Df=1 P value=0.078
Spirituality			
Good Poor	47 (60.3) 21 (30.9)	58 (85.3) 10 (14.7)	χ^2=5.0556 Df=1 P value=0.025^{+}
Overall QOL			
Good Poor	38 (39.6) 30 (75.0)	58 (60.4) 10 (25.0)	χ^2=14.1667 Df=1 P value=0.0001^{+}
$^{+}$significant p value			

Table 4: HR-QOL of Pre- HAART respondents at baseline and 4 months in Uyo.

Quality of life	**Time n (%)**		**Statistical indices**
	Baseline (n=93)	**4 months (n=93)**	
Physical			
Good Poor	53 (57.0) 40 (43.0)	86 (92.5) 7 (7.5)	χ^2=31.0047 Df=1 P value =0.0001^{+}
Psychological			
Good Poor	32 (34.4) 61 (65.6)	70 (75.3) 23 (24.7)	χ^2=31.3473 Df=1 P value =0.0001^{+}
Level of independence			
Good Poor	58 (62.4) 35 (37.6)	84 (90.3) 9 (9.7)	χ^2=20.1242 Df=1 P value=0.0001^{+}
Social relationship			
Good Poor	62 (66.7) 31 (33.3)	70 (75.3) 23 (24.7)	χ^2=1.6700 Df=1 P value=0.196
Environment			
Good Poor	46 (49.5) 47 (50.5)	36 (38.7) 57 (61.3)	χ^2=2.1811 Df=1 P value=0.140
Spirituality			

Good Poor	62 (66.7) 31 (33.3)	81 (87.1) 12 (12.9)	χ^2=10.9198 Df=1 P value=0.001[+]
Overall QOL			
Good Poor	20 (21.5) 73 (78.5)	69 (74.2) 24 (25.8)	χ^2=51.7301 Df=1 P value=0.0001[+]
[*]Fischer's exact test; [+]Significant P value			

Table 5: Health related quality of life of HAART respondents at baseline and 4 months in Uyo.

Table 6 showed the overall QOL of all the patients after four months, patient who presented as early stage were more likely to have good QOL than those who presented late, there was significant relationship between the QOL and marital status, however the was no significant difference and between the pre HAART and HAART overall QOL.

Characteristics	Overall QOL		Total (n=161)	Statistical indices
	Good (n=127)	Poor (n=34)		
Age (Years)				
<20 20-29 30-39 40-49 50 and above **Mean (SD)**	3 (100.0) 47 (72.3) 44 (83.0) 32 (86.5) 1 (33.3) 32.3 (8.3)	0 (0.0) 18 (27.7) 9 (17.0) 5 (13.5) 2 (66.7) 31.3 (8.3)	3 (100.0) 65 (100.0) 53 (100.0) 37 (100.0) 3 (100.0) 32.1 (8.9)	χ^2=3.2438 Df=1 P value=0.072[*] Df=159 Tt=-0.6299 P value=0.530
Sex				
Male Female	47 (87.0) 80 (74.8)	7 (13.0) 27 (25.2)	54 (100.0) 107 (100.0)	χ^2=3.0549 Df=1 P value=0.104
Level of Education				
No formal education Primary Secondary Tertiary	1 (100.0) 33 (68.8) 46 (79.3) 47 (87.0)	0 (0.0) 15 (31.3) 12 (20.7) 7 (13.0)	1 (100.0) 48 (29.8) 58 (100.0) 54 (33.5)	χ^2=5.3880 Df=1 P value=0.132[*]
Marital status				
Single Married Cohabiting Separated Divorced	56 (75.7) 55 (85.9) 4 (100.0) 3 (37.5) 9 (81.8)	18 (24.3) 9 (14.1) 0 (0.0) 5 (62.5) 2 (18.2)	74 (100.0) 64 (100.0) 4 (100.0) 8 (100.0) 11 (100.0)	χ^2=11.7210 Df=4 P value=0.030[*+]
Disease stage				
Early stage Late stage	101 (84.9 26 (61.9)	18 (15.1) 16 (38.1)	119 (100.0) 42 (100.0)	χ^2=9.8317 Df=1 P value=0.002[+]
Health facilities				

SLHA UUTH	113 (77.9) 14 (87.5)	32 (22.1) 2 (12.5)	145 (100.0) 16 (100.0)	χ^2=0.7921 Df=1 P value=0.526*
Regimen				
Pre HAART HAART	58 (85.3) 69 (74.2)	10 (14.7) 24 (25.8)	68 (100.0) 93 (100.0)	χ^2=2.9055 Df=1 P value=0.088
*Fischer's exact test; +Significant P value				

Table 6: Health related quality of life and socio demographic characteristics of the respondents at the end of four months in care.

Discussion

The highest proportion (40%) of the total respondents in this study was within age group 20-29 years, with the mean age of 32.12 (± 8.8), 20-39 years, the age range with the highest proportion of HIV nationally [16,20]. This suggests that age group (20-29) is an important risk group in HIV epidemic in Uyo. Over 60% of the respondents were female; this is similar to the finding of a study done in Kogi state [21], WHO also stated that over 50% of the PLWHA are women and young girls. Women and young girls are vulnerable both biologically and socially, most times they cannot bargain for safe sex because they are not empowered [22]. High prevalence of HIV among women has an additional implication in mother to child transmission, especially for those who are not aware of their status. This study also showed that 71% of the patients presented at the late stage of the disease, this showed that people wait till they start having symptoms before they screened for HIV, this reflects poor voluntary counselling and testing (VCT) uptake in our setting, and this contributes to the spread of the disease.

Studies have shown that patients with low CD4 count have low mean scores in Physical domain, daily activities and social activities [13]. This study demonstrated similar pattern, HR QOL of the pre HAART group was better across all the domains compared to the HAART group except in the spirituality domains at baseline. The level of spirituality is high in both groups this may be due to the fact that most people become more religious when they suffer from chronic disease, because of their hope for divine intervention and as a way of coping with the disease condition [23]. A study in India showed that early stage of HIV and better social support has a positive influence on all the domains of QOL [24].

The physical domain assesses the impact of the disease on the individuals in terms of pain and discomfort, lack of energy and sleep; it is also the domain of most symptoms. It has been documented that presence and severity of symptoms are associated with lower physical domain score and overall QOL [25]. The psychological domain which assesses the individual's thought about body image and appearance, negative or positive feelings and self-esteem worsened with advanced disease. In Asia that patients with HIV related stigma have low psychological scores [26,27]. A study in India reported better daily routine activities (level of independence) and social activities in asymptomatic patients compared to those with AIDS defining symptoms [27]. In a study in Bangladesh, it was observed that asymptomatic patients have better QOL in the level of independence domain; they can still perform their normal activity [26].

At the end of four months, the QOL of the social relationship and environmental domains of the Pre HAART were better than the HAART group, the differences in other domains and the overall QOL were not significant. The use of HAART must have caused a considerable improvement in HR QOL over four months, similar to what is obtainable in other studies [28,29]. A cross sectional study done in Kogi state among PLWHA who were already on ARVs, revealed that the QOL of both social relationship and environment were poor[21]. ARVs may not have been able to show any significant impact on social relationship and environment. Social relationship domain assesses personal relationship, social support and sexual activity of the patients. Family support has been demonstrated to have positive effect on most domains especially social and environmental domains [28-30] in this study about 65% of respondents in HAART group were single, separated or widowed, this may explain why they have poor QOL in those domains. Social support for these patients has been documented to influence HR QOL positively [31].

The Pre HAART group showed considerable improvement over four months, in the overall quality of life and in the psychological, social relationship and spirituality domains, despite the fact that, this group of patients were not on antiretroviral drugs. This improvement might be as a result of constant counselling sessions and health education at the clinics, as well as the treatment of concomitant infections. Physical, level of independence and environment domains did not show any significant difference. The improvement seen in Pre HAART group emphasizes the importance of non-pharmacological interventions for PLWHA. This is worth noting in order to sustain the social support given to HIV patients in form of home visit, support groups and given of food items occasionally [32].

This study showed that the use of HAART for four months is associated with significant improvement in the overall quality of life and across four of the domains. A study in Uganda showed significant improvement in HR QOL at the third month of therapy [28,33]. In South Africa, patients on HAART showed improvement in three of the five domains of the Euro-Qol 5D instrument, when compared to patients awaiting HAART [34]. At the end of the four month the HR QOL of both HAART and Pre HAART became similar, while factors like marital status and clinical stage at presentation were significantly associated with the overall HRQOL of the patients, socio demographic characteristics like age and sex showed no relationship.

Conclusion

This study showed that being in care improves the HR QOL of PLWHA for both Pre HAART and HAART groups. The importance

of early diagnosis of HIV became very apparent in this study. Other non-pharmacological interventions like counselling, care and support should be emphasized in the management of HIV. The assessment of HR QOL of patients should be included in the routine care as a measure of outcome of disease management rather than depending entirely on clinical or laboratory outcomes.

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