

Health-related quality of life of HIV patients with and without tuberculosis registered in a Tertiary Hospital in Port Harcourt, Nigeria

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Abstract

Introduction: Little is known about health-related quality of life (HRQOL) of patients who suffer from human immunodeficiency virus (HIV)/tuberculosis (TB) in Nigeria. This study was carried out to measure and compare the HRQOL of HIV patients with and without TB at the HIV Clinic of University of Port Harcourt Teaching Hospital, Port Harcourt, Nigeria.

Material and methods: A comparative cross-sectional study design and simple random sampling was used to recruit 144 HIV patients with TB and 144 HIV patients without TB. Information were collected on socio-demographic and socioeconomic variables, while their HRQOL was measured using the 26-item World Health Organization Quality of Life instrument. Univariate and bivariate analysis was carried out in Epi-info 7.

Results: Females constituted 52% and 56% of HIV-only and HIV/TB co-infected groups, respectively. Their mean ages were 36.03 ± 10.92 and 35.69 ± 10.28 years, respectively ($p = 0.532$). HRQOL score ranged from 61.9 to 78.5 for HIV patients, and 61.6 to 75.8 for the co-infected patients. Co-infected patients had lower HRQOL in the physical ($p = 0.016$), psychological ($p = 0.006$), and global ($p = 0.029$) domains of HRQOL than HIV-only patients. The two groups did not differ significantly in the social and environmental domains ($p > 0.05$).

Conclusions: The co-morbidity condition of HIV/TB significantly lowers the quality of life of sufferers. Attention should be focused on the medical and psychological management of HIV/TB co-infected patients in order to enhance their QOL.

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Key words: HIV, Nigeria, health-related quality of life, HIV/TB, Port Harcourt.

Introduction

The human immunodeficiency virus (HIV) infection causes a chronic and debilitating disease of global public health concern. The pandemic has caused millions of deaths

worldwide and has crippled the lives of many more [1, 2]. Sub-Saharan Africa is the most affected region, with nearly sixty-nine percent of all people living with HIV inhabiting the region [3]. Nigeria bears a huge burden of the epidemic, with an estimated 3.1 million people living with HIV in 2011 [4].

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**HIV & AIDS
Review**

It ranks as one of the countries with the highest burden of HIV infection in the world, next to India and South Africa [4]. Almost 28 years after the first acquired immune deficiency syndrome (AIDS) case reported in Nigeria, the country still faces epidemics, and the majority of HIV/AIDS patients continue to suffer with the debilitating effect of the disease, with a serious impact on their quality of life [5]. The impact of tuberculosis (TB) on the lives of HIV patients cannot be overemphasized. TB remains the leading cause of death among people living with HIV [2, 6]. People living with HIV and infected with TB are 30 times more likely to develop active TB disease than people without HIV. At least a third of people living with HIV worldwide are infected with the tuberculosis bacteria [7], with HIV and TB forming a lethal combination, each speeding the other's progress. The World Health Organization's Quality of Life (WHOQOL) group has defined quality of life (QOL) as individuals' perception of their position in life in the context of the culture and value systems, in which they live and in relation to their goals, expectations, standards, and concerns [8]. The term 'health-related quality of life' (HRQOL) is a multi-dimensional construct referring to patients' perceptions of the impact of disease and treatment on their physical, psychological, social function, and wellbeing. QOL encompasses the concept of HRQOL and other domains such as environment, family, and work. When quality of life is considered in the context of health and disease, it is commonly referred to as health-related quality of life. The effect of HIV and AIDS on an individual goes beyond the physical symptoms and signs. It is a disease that is highly associated with stigma and discrimination, and is known to also affect the psychological, social, spiritual life as well as other aspects of the patients' life [9, 10]. It thus impairs the quality of life. Many HIV patients battle numerous social problems such as stigma and depression, which affect their quality of life, in terms of their physical, mental, and social health [1, 5]. HIV and HIV/TB co-infection are associated with stigma, resulting in patients being rejected by their families, their communities, at their places of work, and are seen as unfit for work. In addition, health workers' attitude could lead to mental stress and reduction in QOL [11].

One of the aims of HIV/AIDS therapy is to improve the wellbeing and quality of life of affected people. The introduction of highly active antiretroviral therapy (HAART) has led to a marked reduction in AIDS-related morbidity and mortality [12]. Although the patients live longer, their quality of life is usually severely compromised. HIV and HIV/TB co-infected patients often suffer from intense social stigma, which forces them to change jobs or places of living, putting further stress on the already weak economic situation [13]. They experience discrimination and/or misunderstanding, tend to become isolated and lose social support from persons significant to them [14]. These often compromise their quality of life. With the appreciable rise in longevity of people living with HIV and AIDS (PLWHA), it is important to improve their quality of life [15]. HIV/AIDS and tuberculosis have such serious repercussions on psychic, social,

and physical well-being of the infected, that the assessment of their HRQOL will help in measuring how these people are re-integrated into the society after the initial health crisis they faced on diagnosis of the disease. There is limited evidence in Nigeria on how PLWHA perceive their quality of life in the face of HIV/TB co-infection. Therefore, it is imperative to understand these issues in order to evaluate the impact of the disease on patients' health outcomes.

The aim of this study was to measure and compare health-related quality of life of adult patients with HIV/AIDS with those with HIV/TB co-infection. This was to provide information on the management of these two conditions for better treatment adherence and outcomes. It was also aimed at contributing to health systems strengthening by having patient centered healthcare services.

Material and methods

Study area

The study was carried out in the HIV clinic of the University of Port Harcourt Teaching Hospital (UPTH), Rivers state, Nigeria. Rivers state has one of the highest prevalence rates of HIV/AIDS in Nigeria, with a prevalence of 15.2% [16]. The state has a total population of 5.18 million, with an annual growth rate of 3.0%. The state is cosmopolitan and is home to all ethnic groups in Nigeria and foreigners. It is also an economic hub in Nigeria because of its abundant natural resources of oil and gas. The economic importance of the state makes it attractive to people from all works of life, searching for economic opportunities. Rivers state has a health care system at tertiary, secondary, and primary levels. The health care system is a combination of public and private sector. There are two tertiary hospitals, and several secondary and primary centers fairly distributed all over the state. Nevertheless, the health care system is generally weak and plagued by acute shortage of essential medicines and supplies, poor infrastructure, and human resources.

Study setting

The University of Port Harcourt Teaching Hospital is 800 bed tertiary institution, owned and managed by the Federal government of Nigeria. It serves as a referral hospital to all secondary and primary health facilities in Rivers State and neighbouring Abia, Akwa Ibom, Bayelsa, and Imo states. The HIV clinic has close to 12,000 registered HIV/AIDS patients, out of which about 5,300 are on antiretroviral treatment (ART). It is one of the six health facilities caring for HIV/AIDS patients in the state. The clinic attends to an average of 60-100 HIV patients daily, with over 50% of these patients co-infected with TB. The ARV Clinic is supported by a grant from the Family Health International (FHI-360) under the American President's Emergency Plan for AIDS Relief (PEPFAR) Initiative to implement its diverse activities. All HIV-positive patients received in the ARV

clinic are screened for TB, and those diagnosed with active TB are enrolled in the directly observed treatment short course (DOTS) programme for the management of TB. Similarly, all TB suspects/patients are offered HIV counselling and testing, and if confirmed positive, they receive HIV/AIDS care. This two-way referral is in accordance with the Nigeria National Tuberculosis and Leprosy Control Program (NTBLCP) guidelines for treatment and control of HIV/TB in Nigeria [6].

Study design and population

The study was a comparative, cross-sectional investigation of health-related quality of life of HIV/AIDS patients, and those with HIV/AIDS and TB co-infection, carried out among adult patients 18 years and above, diagnosed with HIV/AIDS, with or without TB co-infection, attending the HIV clinic in the University of Port Harcourt Teaching Hospital, Rivers state.

Inclusion and exclusion criteria

All adult HIV patients 18 years and above with or without TB co-infection and patients with confirmed HIV-positive status who had received antiretroviral drugs for at least a month prior to the study (this was to allow adequate time for patients to adapt to the drugs) were included in the study. HIV-positive patients who were yet to commence ART or had been on therapy for less than 1 month before the study were excluded due to possibility of not adequately adapted to the antiretroviral drugs. Pregnant women, terminally ill/debilitated patients, including patients on admission as well as patients with other co-morbidities were also excluded, except for the comparison group of HIV/AIDS and TB co-infection.

Sample size determination

The formula for calculating sample size to determine the difference between 2 proportions was employed as follows:

$$n = (u + v) 2[(p_1(100 - p_1) + p_2(100 - p_2))/(p_1 - p_2)],$$

where n – minimum sample size for each group; u – power at 90% = 1.28; v – significance level at 5% = 1.96; p_1 – proportions of HIV/AIDS patient assumed to have good HRQOL = 50.38% (derived from a previous study) [17]; p_2 – proportions of patients with HIV/AIDS and TB co-infection with good HRQOL = 30.97% (derived from the same study) [17]; non-response rate of 10%. Minimum sample size (n) was 144 patients per group.

Sampling technique

Recruitment of participants was by simple random sampling. The list of registered HIV patients presenting daily for

treatment in the clinic was obtained from the medical records staff. Numbers were assigned to each patient. Using a table of random numbers, 3 HIV patients and 3 HIV/TB co-infected patients were randomly selected and interviewed daily in order to broaden the scope of the sample.

Study instruments

A structured interviewer-administered questionnaire with the WHOQOL-BREF was adapted from WHOQOL group and used to collect information from the respondents. The questionnaire consisted of questions of socio-demographic details, socio-economic characteristics, and WHO quality of life (WHOQOL-BREF) assessment [18]. The WHOQOL-BREF is a 26-item generic questionnaire, a short version of the WHOQOL-100 assessment [19]. It measures four broad domains such as: physical health, psychological well-being, social relations, and environment [8]. Physical health domain comprises of 7 items that assess areas such as the presence of pain and discomfort, dependence on substances or treatments, energy and fatigue, mobility, sleep and rest, activities of daily living, and perceived working capacity. Psychological well-being comprises of 6 items that assess areas such as patient's affect, both positive and negative, self-concept, higher cognitive functions, body image and spirituality. Social relationship assesses areas such as social contacts, family support, ability to care for family, and sexual activity. Environmental domain comprises of 8 items that assess aspects such as freedom, quality of home environment, physical safety, security and financial status, involvement in recreational activity, health and social care as applicable to the quality and accessibility thereof. There are two other items that were measured separately: (1) patient's overall perception of QOL, and (2) overall perception of his/her health. Each item was categorized into a five-point Likert's scale ranging from 1-5, with 1 being the lowest possible state and 5 being the highest. Domain scores are scaled in a positive direction; higher scores denote higher QOL. The mean score of items within each domain was used to calculate the domain scores compatible with the scores used in WHOQOL-100 and subsequently transformed into a 0-100 scale [20]. This instrument has been reported to be convenient, reliable, and valid for the use in large research studies. It has also been translated into different languages, including indigenous languages like Hausa and Yoruba, and used in different cultural settings yielding comparable scores across different languages and cultures [21, 22]. The WHOQOL-BREF has been well validated for measuring quality of life in people living with AIDS elsewhere in Nigeria and abroad with satisfactory results [15, 23-25].

Data collection methods

Three research assistants were trained to administer the questionnaires to the patients daily over a period of 3 months.

Table 1. Socio-demographic characteristics of study participants

Variables	HIV, n = 144 (%)	HIV/TB, n = 144 (%)	χ^2	p-value
Age group (years)				
≤ 24	12 (8.3)	18 (12.5)	3.157	0.532
25-34	66 (45.8)	54 (37.5)		
35-44	37 (25.7)	41 (28.5)		
45-54	22 (15.3)	21 (15.6)		
≥ 55	7 (4.9)	10 (6.9)		
Mean age	35.69 ± 10.28	36.03 ± 10.92		
Sex				
Male	69 (47.9)	63 (43.8)	0.503	0.478
Female	75 (52.1)	81 (56.3)		
Marital status				
Single	66 (45.8)	70 (48.6)	0.488	0.922*
Married	62 (43.1)	58 (40.3)		
Separated/divorced	3 (2.1)	2 (1.4)		
Widowed	13 (9.0)	14 (9.7)		
Ethnicity				
Igbo	52 (36.1)	68 (47.2)	8.229	0.144*
Ikwere	24 (16.7)	23 (16.0)		
Ijaw	19 (13.2)	14 (9.7)		
Yoruba	9 (6.3)	2 (1.4)		
Hausa	3 (2.1)	5 (3.5)		
Others	37 (25.7)	32 (22.2)		
Religion				
Christianity	133 (92.4)	136 (94.4)	3.033	0.386*
Islam	10 (6.9)	5 (3.5)		
Traditional religion	1 (0.7)	2 (1.4)		
Family type				
Monogamous	114 (79.2)	111 (77.1)	0.183	0.183
Polygamous	30 (20.8)	33 (22.9)		
Household size				
≤ 4	53 (36.8)	61 (42.4)	0.929	0.335
> 4	91 (63.2)	83 (57.6)		
Mean household size	5.96 ± 4.0	5.88 ± 3.93		0.16**

HIV – human immunodeficiency virus, TB – tuberculosis

*Fisher's exact p-value, **t-test

Data analysis

Data were analyzed using SPSS version 19 statistical software. Demographic and socioeconomic factors were presented with frequency tables. Domain scores were manually calculated, entered, and cross-checked for accuracy with a computer. The HRQOL was interpreted using the mean values as the cut off for data that were normally distributed and the median values for data that were skewed. Values below the mean/median scores were graded as poor, while those above the mean or median were graded as good [20]. Means and standard de-

viations were calculated for continuous variables, the independent student's *t*-test was used to compare differences between mean scores. The c^2 test was used to examine the associations between quality of life and HIV status. A *p*-value of 0.05 was considered statistically significant.

Ethical consideration

Ethical approval for the study was obtained from the Research Ethics Committee of the University of Port Harcourt Teaching Hospital; UPTH/ADM/90/SJI/VOL.XI/34.

Table 2. Mean score of health-related quality of life (HRQOL) dimensions of participants

HRQOL dimensions	HIV Mean \pm SD	HIV/TB Mean \pm SD	t-test	Students t-test p-value
Self-rated QOL	78.47 \pm 17.39	75.83 \pm 18.15	1.26	0.209
Satisfaction with health	76.67 \pm 19.50	75.56 \pm 17.45	0.51	0.611
Physical health	74.82 \pm 16.19	70.01 \pm 17.52	2.42	0.016*
Psychological health	71.09 \pm 11.97	67.13 \pm 12.15	2.79	0.006*
Social relationship	65.28 \pm 24.40	61.63 \pm 27.19	1.20	0.232
Environmental	61.89 \pm 14.28	60.20 \pm 14.31	1.00	0.316
Global domain	68.27 \pm 12.99	64.74 \pm 14.36	2.19	0.029*

HIV – human immunodeficiency virus, TB – tuberculosis

*Statistically significant

The aim and objectives of the study were explained to the members of staff of the ARV clinic, and written informed consent was obtained from each participant before the interview. All study participants were informed of the benefits of the study and assured of their confidentiality.

Results

Socio-demographic characteristics of study participants

A total of 144 HIV/AIDS patients without TB and 144 HIV/AIDS co-infected with TB were recruited for the study. The study consisted of 156 (54.2%) females and 132 (45.8%) males. The mean age of patients without TB was 35.69 \pm 10.28 years and those co-infected with TB was 36.03 \pm 10.92 years. The majority of the patients, 66 (45.8%) fell within the age category of 25-34 years among those HIV only and 54 (37.5%) among those co-infected with TB. The patients with HIV-only were mainly single 66 (45.8%), of the Igbo ethnic group 52 (36.1%), and live in large households above 4 members 91 (63.2%). Those with TB co-infection had similar characteristics with the majority also single, 70 (48.6%), Igbo 68 (47.2%), and living in large family settings 83 (57.6%). There was no significant difference in demographic characteristics in both groups (Table 1).

Health-related quality of life of HIV-only and HIV/TB co-infected patients

The highest mean score for HRQOL among HIV-only patients was self-rated health (78.47 \pm 17.39), while the lowest score was in the environmental (61.89 \pm 14.28) domains. The highest and lowest mean scores for HRQOL among co-infected patients followed similar pattern of self-rated health (75.83 \pm 18.15), and environmental health (60.20 \pm 14.31), respectively (Table 2).

The global mean rating of QOL for HIV patients without TB (68.27 \pm 12.99) and those co-infected with TB (64.74 \pm 14.36) were significantly different (t -test = 2.19; p = 0.029). The co-infected patients had poorer mean scores of QOL

in their physical health (t -test = 2.42; p = 0.016) and in their psychological health (t -test = 2.79; p = 0.006) than the HIV-only patients. Other dimensions of quality of life, like the self-rated health, satisfaction with health, social relationship and environmental health were similar in both groups (p > 0.05) (Table 2).

The relationship between HIV, tuberculosis, and quality of life of patients

Three quarters, 109 (75.7%) of HIV patients (without TB) were satisfied with their health, and 104 (72.2%) rated their health status as good. In all, more than half of them had good QOL in the physical, psychological, environmental, social relationship, and global domains. Similarly, 106 (73.6%) of the HIV patients co-infected with TB were also satisfied with their health, and 100 (69.4%) rated their health as good. Nevertheless, less than half of the patients co-infected with TB had good QOL in the physical 68 (47.2%), psychological 71 (49.3%), social relationship 66 (48.5%), environment 68 (47.2%), and global aspects 69 (48.9%). The proportion of patients with good QOL was significantly higher in the HIV group than in the group co-infected with TB. This was also more pronounced in the physical health (χ^2 = 4.030; p = 0.045) and psychological health domains (χ^2 = 5.644; p = 0.018) (Table 3).

Discussion

The overall mean score of QOL of the HIV patients with and without TB co-infection was appreciable, which is a good sign for case management and treatment outcomes. The result might signify a general sense of well-being among the patients, including aspects of happiness and satisfaction with life as a whole, and services received at the facility. The highest scores were in the physical and psychological health domains, and slightly lower scores were seen in social relationship and environmental health. These findings were similar to results obtained in comparable studies carried out in Kogi [23], Kwara [24], and South West Nigeria [25] but

Table 3. The relationship between human immunodeficiency virus (HIV), tuberculosis (TB), and quality of life (QOL) of patients

	Health-related quality of life		χ^2	<i>p</i> -value
	Good, <i>n</i> (%)	Poor, <i>n</i> (%)		
Self-rated QOL				
HIV	104 (72.2)	40 (27.8)	0.269	0.604
HIV/TB	100 (69.4)	44 (30.6)		
Satisfaction with health				
HIV	109 (75.7)	35 (24.3)	0.165	0.684
HIV/TB	106 (73.6)	38 (26.4)		
Physical health				
HIV	85 (59.0)	59 (41.0)	4.030	0.045*
HIV/TB	68 (47.2)	76 (52.8)		
Psychological health				
HIV	91 (63.2)	53 (36.8)	5.644	0.018*
HIV/TB	71 (49.3)	73 (50.7)		
Social relationship				
HIV	69 (51.9)	65 (48.1)	0.308	0.579
HIV/TB	66 (48.5)	74 (51.5)		
Environmental				
HIV	80 (55.6)	64 (44.4)	2.002	0.157
HIV/TB	68 (47.2)	76 (52.8)		
Global domain				
HIV	86 (59.0)	58 (41.0)	2.349	0.091
HIV/TB	69 (48.9)	75 (51.1)		

*Statistically significant

significantly at variance from what was obtained in Ghana [26] and Nepal [27], where the lowest scores were in the psychological domain. The good scores in the physical and psychological health in this study may be partially linked with health workers' comprehensive and consistent counseling on medication adherence as well as patients' overall education on the nature and course of the diseases. It may also be a sign that the various intervention efforts aimed at dispelling myths and misconceptions about HIV and TB as well as discouraging stigma and discrimination are beginning to yield expected tangible results.

On the other hand, the lower mean score in the social relationship domain could be attributed to persisting pockets of social stigma and discrimination, including self-stigmatization, which is a predominant feature among PLWHA. Stigma and discrimination have been shown to be major barriers to treatment uptake and adherence, and can significantly reduce patient's QOL [28]. In a Northern Ethiopian study, high perceived stigma was strongly associated with poor psychological quality of life [29]. The aftermath of such result is a negative impact on patients' family and personal lives, including sexual relationships. This finding corroborates the results of similar studies in Ibadan, Nigeria [15] but disagrees with results from India [13] and

Sao Paulo, Brazil [30], where the mean score was highest in the social relationship. This latter result may be suggestive of better societal support and care for PLWHA in these communities.

In comparing the Global mean rating of QOL for HIV patients with and without co-infection, significant differences were observed. These were also in relation to the physical and psychological health of the patients, but no difference was found between the two groups in social relationship and environmental health domains. HIV patients without TB had significantly higher QOL mean scores than those co-infected with TB in the physical, psychological, and overall QOL. The result is in agreement with that of a study conducted in South-West Nigeria, which reported that participants with HIV/TB co-infected patients had significantly lower QOL in the physical, psychological, and independence domains, when compared with HIV patients without TB [25]. The finding is also in agreement with another study conducted in Ethiopia, which found that HIV/TB co-infected patients had a lower quality of life in all aspects as compared to HIV-infected patients without active TB [17]. However, there was no significant differences in mean scores in the social relationship and environment domains between HIV patients and HIV/TB co-infected

ed patients, unlike the report by the Ethiopian study [17]. It is believed that the occurrence of two stigmatizing diseases like HIV and TB can synergistically impact negatively on the QOL of the patients. Such patients are more likely to be depressed, and less likely to have close partner support and sexual relationships. Recent studies have shown that high proportion of HIV patients tend to suffer depression, and the diagnosis of depression is a significant predictor of poor QOL [31, 32]. The duo of depression and lack of family support have also been found to be associated with poor QOL among co-infected patients [17]. According to Akpa *et al.* [33], people from families affected by HIV/AIDS had significantly poorer quality of life than those from families not affected by HIV. Family and social support may therefore play a role in improving QOL of HIV sufferers.

The mean scores for self-rated health and satisfaction with health in both groups were high, which may be attributed to their positive outlook to life as a result of frequent and consistent counseling programme under the elaborate HIV control programme in the facility. The programme strategy also includes counseling on the effects of diagnosis and treatment, quality and length of life, and positive living, so that patients are able to adjust better psychologically and socially.

Limitations

Using client self-report as a measure of QOL is limited by recall bias and an increased likelihood that study participants may overestimate or underestimate their QOL. Nevertheless, it has been shown that self-assessed health status provides a more powerful predictor of mortality and morbidity than many objective measures of health [34]. To minimize this limitation, the study participants were had enough time to respond to questions and to refresh their memories. Where questions were not clearly understood, they were explained in Pidgin English, which is widely understood and spoken in Rivers state.

Conclusions

The co-infection of HIV and TB impacts negatively on the health and well-being of the sufferers, significantly lowering their quality of life. Therefore, more attention should be devoted to the medical management of such co-morbid patients to improve their physical health. There is also a need to incorporate mental health services and scale up psycho-social support for such patients and their treatment supporters, in order to minimize their stigmatization and rejection as well as to improve their self-worth and positive attitude outlook to life.

Conflict of interest

The authors declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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