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RESEARCH ARTICLE

PREDICTORS OF QUALITY OF LIFE AMONG HIV POSITIVE SUPPORT GROUP AND NON-SUPPORT GROUP MEMBERS AT A TERTIARY HOSPITAL IN A SOUTH-EASTERN STATE IN NIGERIA

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ABSTRACT

Background: HIVAIDS clients now have prolonged survival due to advances in antiretroviral management. Traditional health indicators like mortality and morbidity, used in measuring impact of disease burden and outcome of intervention are quantitative in approach. This study compared HIV positive support and non-support group memberships for predictors of quality of life (QoL) in a tertiary hospital in a South-eastern State in Nigeria.

Methods: This was an institution based comparative study of 482 HIV positive clients selected using a two -stage sampling. Data collection was by interview using WHOQOLHIV-Bref and semi-structured questionnaire, while analysis was with statistical package for social sciences version 22.0 and considered p values < 0.05 as statistically significant.

Results: Predictors of QoL varied with domain thus: age 30 -39 years (OR=2.678), males (OR= 2.175); the employed (OR=1.864) family support (OR=1.671), the asymptomatic (OR=3.986), good adherence (OR=3.114).in physical domain; Support group membership (OR=1.851), age 30 =39 years (OR=2.445), males (OR=3.639), family support (OR=2.555), tested positive >14 years (OR=4.945), asymptomatic (OR=1.938), good adherence (OR=2.884), in psychological domain. Support group membership (OR=3.303) the asymptomatic (OR=2.907), at most primary education (OR=0.454) in level of independence domain; the married (OR=1.833), family support (OR=2.202) in social relationships domain; the employed (OR=2.332), family support (OR =1.727), the asymptomatic (OR=3.065), good adherence (OR=1.926) in environment domain; age 30-49 years, married (OR=1.605), family support (OR=2.331), the asymptomatic (OR=2.012), good adherence (OR=2.335) in spirituality domain.

Conclusions: Some sociodemographic, individual and clinical factors are predictors of QoL, depending on domain assessed. These findings should be put in perspective in designing interventions tailored to the unique needs of these clients.

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INTRODUCTION

Quality of Life (QoL) is the clients' personal feelings about their position in life in the context of the prevailing culture and value systems and in relation to their goals, standards, expectations and concerns. (Swindells *et al*., 1999) Health is a unique factor that affectsQoL more than other factors. Health Related Quality of Life (HRQoL) is also a client reported outcome that employs carefully designed and validated instruments. (Fallowfield, 2009) Itquantifies the degree to which medical conditions or treatment/interventions impact clients' lives in a valid and reproducible way. (International Society for Quality of Life Research (ISOQOL) 2014) The discovery of Human Immunodeficiency Virus (HIV)/ Acquired Immune Deficiency Syndrome (AIDS), has opened a window into a significant contributor to global health burden. In Nigeria, the United Nations Programme on HIV and AIDS (UNAIDS) estimates the prevalence of HIV as 3.1% (though with wide variations within the country). (Federal Ministry of Health, 2010) This constitutes serious challenges to global development and social progress. Recent advances in HIV/AIDS management gave led to increase in survival of these clients. (Clayson *et al*., 2006) Societal attitudes also adversely affect clients' QoL from the physical, physiological, social and emotional health points of view. (United Nations Programme on HIV/AIDS (UNAIDS), 2012; Aranda-Naranjo, 2004) Hence peer support is increasingly adopted by healthcare providers and managers as a key social support strategy for dealing with chronic diseases in resource poor settings such as ours. (Doull *et al*., 2005) MaximizingQoL of persons living with HIV/AIDS (PLWHA) while prolonging their survival has

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thus become a key area of research, (Clayson *et al*., 2006; Saunders and Burgoyne, 2002; Campbell *et al*., 2004) In light of the limited literature examining the predictors of QoLand how peer support memberships affect the QoL of HIV positive clients in our study area, it is expected that the findings of the index study can bridge the knowledge gap that currently exists thereina. It will contribute timely data that could form an evidence base for the formulation and implementation of policies on use of peer support groups in the management of HIV/AIDS. This study determines and compares the predictors of QoL among HIV positive support group and non-support group members in a tertiary hospital in a South-eastern state in Nigeria.

MATERIALS AND METHODS

Study area, period and design: This institution based cross sectional comparative study was carried out between January and June 2016 at two comprehensive health centers (CHCs) of a Federal Government of Nigeria owned University Teaching Hospital in one of its South-eastern states. It is a multi-complex comprising the main site, an Eye Center, a Trauma center, a Staff annex and three CHCs. The main site and the CHCs offer comprehensive HIV/AIDs services under the FHI360 Strengthening Integrated Delivery of HIV/AIDS Services (SIDHAS). Each of the CHCs hosts about 35 bed facility which employs various cadre of health workers, runs HIV clinic twice a week and receives referrals from surrounding towns, cities and states.At the time of this study the first facility has 779 registered PLWHA accessing care with an average monthly attendance of 392 clients. It also runs a peer support group for the clients, with a total of 162 registered members. The second facility operates a linkage system with the first CHC, as both facilities are manned by the same group of doctors on a rotational basis. The center has 689 registered PLWHA accessing care with an average monthly attendance of 264 clients The peer support group run in this center has a total of 114 registered members. Although clients are encouraged to join the support group, they are at liberty to decline, withdraw or join a support group outside that attached to these centers.

Study population and sampling technique: The target population comprises all registered HIV positive clients accessing care at the CHCs selected for the study. All HIV positive clients who are accessing care for at least six months as well as those of age 18 years or older at the commencement of this study met the inclusion criteria. Terminally ill clients and those with gross cognitive dysfunction were excluded because they were not able to respond to the questions. Pregnant women were also excluded as other factors associated with pregnancy e.g. vomiting, excessive tiredness may affect their participation. The minimum sample size (n) to determine a difference in the mean QoL scores between two groups of HIV positive clients that is significant at 5% level and with 90% chance of detecting a difference (power) was calculated using the formula for comparison of two means stated thus; $n = \frac{(u+v)^2(\sigma_1^2+\sigma_0^2)}{(\mu_1-\mu_0)^2}$, where $\mu_1 - \mu_0$ = Difference between means; σ_1, σ_0 = Standard deviations; v = Percentage point of the normal distribution (standard normal deviate) corresponding to the two sided significance level set at 1.96; u= One sided percentage point of the normal distribution (standard normal deviate) corresponding to 100%− power ($1-\beta$); power = 80%, therefore u = 1.28. These assumptions were made: That this study is on peer support groups, a form of social support, so the social domain of the WHOQoLHIV BREF was considered the primary end point for the purpose of the sample size calculation.[129]Secondly, that the size of difference between the HRQoL mean scores that is to be detected was derived from the formula to determine effect size; (Walters, 2004) $\Delta = \mu_{ns} - \mu_{z/} \sigma$, where Δ = effect size; μ_{ns} =social domain mean of nonmembers of support group =16.09 (from a study "QOL of Nigerians living with HIV" conducted by Adeolu*et al.,* in Osun State, Nigeria); (Adeolu *et al*., 2014) μ=social domain mean of support group members =13.6(from a study by Akpan*et al*., on 'QoL of people living with HIV/AIDS in Cross River State, Nigeria,' (Samson *et al*., 2013)

σ = pooled SD = 2.91. (Adeolu *et al*., 2014; Samson *et al*., 2013)

$$= \frac{16.09 - 13.6}{2.91} = 0.86$$

Therefore, $\mu_1 - \mu_0 = 0.86$, and the standard deviations of the social domain scores in each group. $\sigma_1 = 2.81$[13], σ_0 =3.01. (Samson *et al*., 2013) Calculating n = 241 per group

Because the study compared two groups (support group members and non-support group members), the figure obtained above was multiplied by 2 to obtain the total sample size for the study: 241 × 2 =482. Thus, the minimum sample size required for the study =482 clients. Based on the average attendance over 3 consecutive months and the total monthly attendance over the 3 months, the sample size calculated was proportionately allocated to the two study centers using the formula

$$\frac{\text{Average monthly clinic attendance for the health facility}}{\text{Total monthly clinic attendance for both facilities}} \times 480$$

For the first CHC, the average monthly attendance was 392, therefore the minimum number of clients to be interviewed = 392/656 x 480 =286. For the second CHC, the average monthly attendance was 264, therefore the minimum number of clients interviewed =264/656 x 480 =194. For each center, the number of clients to be interviewed was split equally into those who belong to a support group and those who do not belong to a support group. A minimum number of clients interviewed per data collection day were obtained by dividing the total number of clients to be interviewed from the center by the number of weeks scheduled for data collection. For CHC Ukpo =286/8 = 36 clients per data collection day = 18 clients per group, while for CHC Neni =194/8 =24 clients per data collection day = 12 clients per group. The following sampling technique was then employed: *Stage 1*: For each data collection day, a list of clients booked for appointment was determined from the Records Department. Based on information from their case notes, stratified sampling technique was used to split this list into two- those that belong to a support group and those that do not. *Stage 2:* Systematic random sampling technique was then employed as follows: From the frame of each stratum, a sampling fraction was determined by dividing the number of clients booked for appointment on each data collection day by the minimum number of clients to be interviewed in each group. Then, every n^{th} eligible consenting client presenting for care was recruited for interview until the sample size for each center was obtained.

Data collection and analysis: An interviewer-administered semi- structured questionnaire, adopted and adapted from the WHOQOL HIV-Bref Instrument. (WHO 2002) The WHOQOLHIV-Bref Instrument consists of 31 items with each item using a five (5) point Likert scale, where 1 (one) indicates high positive perceptions. Higher scores depict better QOL. These items are distributed in six (6) domains: *Domain I Physical domain* – comprises four (4) items that assess areas such as presence of pain and discomfort, energy and fatigue, dependence on substances or treatments, sleep and rest and symptoms related to HIV; *Domain II Psychological wellbeing* – This comprises five (5) items that assess areas such as patient's affect, both positive and negative, self-concept, concentration, and body image; *Domain III Level of independence* consists of four (4) items which measure mobility, activities of daily living, dependence on medication and perceived working capacity; *Domain IV Social relationships*– comprises four (4) items that assess areas such as personal relationship, social support, sexual activity, and social inclusion; *Domain V: Environment*– comprises eight (8) items that assess aspects such as freedom, quality of home environment, physical safety and security and financial status, involvement in recreational activity, and accessibility and quality of health and social care, opportunities for acquiring new information and skills and transport; *Domain VI: Spirituality* measures forgiveness and blame, concerns about the future and death and dying. It contains 4 items. [16] Data were collected by four (4) research assistants carefully recruited from Community health extension workers at the CHCs along with the researcher. To ensure data quality, training of data collection team, pre data collection training and regular field monitoring of data collection were done. There was spot checking and reviewing of the completeness of questionnaires during and at the end of each data collection day.

The HRQoL among HIV/AIDS can be affected by several factors which for purposes of this study were categorized into community (membership or not of peer support groups), socio-demographic (age, sex, educational attainment), clinical (CD4 count, duration of infection) and individual factors (self-reported symptoms, adherence to medication) This model can be illustrated by considering an individual who is infected with HIV, CD4 cell count decreases with advancing disease. The dependent /outcome variable for this study is the QoL score, while the independent variables are support group membership, socio-demographic factors, CD4 count (CD4 count to be used was obtained from clients case notes and the test was carried out no later than six months prior to data collection). The domain scores are scaled in a positive direction with higher scores denoting better QOL however some questions are not scaled in a positive direction and as such, higher scores here did not denote higher QoL. The scores of negatively phrased items were reversed so that higher scores denote higher QoL. The mean scores of items within each domain were multiplied by 4 in order to make the domain scores comparable with the scores in the full version of World Health Organization Quality of Life instrument (WHOQOL-100). (WHO 2004) In the WHQoL -100, facet scores are multiplied by four so that, in case of a question that has not been answered, the score of a facet compensates the invalidation of the question by multiplication with the number of valid questions that the facet should have. (Pedroso *et al*., 2011) The scores therefore range from 4 and 20. Domains that had one missing score were replaced using the mean of the scores of other questions in the domain. (Mbakwem *et al*., 2013) The data were reviewed and entered into the computer. The data were cleaned by checking for any data collection or coding errors. Data entry and analysis was carried out with the aid of International Business Machines –Statistical Package for the Social Sciences (IBM-SPSS) Windows version 22.0. (Statistical Package for Social Sciences (IBM SPSS) 22.0 version 2013) Continuous and categorical variables are displayed as means ± standard deviation (SD), frequencies and percentages respectively. The t-test was used to assess differences in the mean QoL scores. Bivariate analysis with Chi Square was conducted with age, sex, HIV stage, CD4 cell count and duration of HIV infection as independent variables. Multivariate analysis was carried out to adjust for possible confounders and determine the independent effect of age, sex, marital status, CD4 cell count and duration of HIV infection on overall QoL. To achieve this, quality of life was dichotomized using the median domain score as the cut off. All statistical analysis considered p values < 0.05 as statistically significant.

Ethical consideration: The study has been examined and approved by the University Teaching Hospital Ethics Committee. A written informed consent was obtained from each participant for the conduct and publication of this research study and assurance of confidentiality given. Study participants were free to refuse or withdraw from the study at any time without any penalty. The study's purpose and objectives were explained to each participant prior to interview. All authors hereby declare that the study has therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki.

RESULTS

A total of 486 questionnaires were distributed out of which 482 were filled and analysed, giving a response rate of 99.2%. Their mean age was 41.5 ± 9.84 years. Variables such as age, gender, marital status, level of education, occupation, home ownership, sources of support, duration of HIV infection, presence of symptoms, adherence to medication, duration on HAART and the year client first tested positive, were comparable for support and non-support group members.

Table 1 highlights the adjusted odds ratio for the predictors of QoL in the physical domain. Respondents 30 – 39 years old were 2.7 times more likely to have good QoL compared to those>50 years (OR =2.678; 95%CI = 1.418 – 5.056). Males were two times more likely to have good QoL compared to females (OR = 2.175; 95% CI = 1.372 – 3.446) and the employed were more likely to have good QoL compared to the unemployed (OR = 1.864; 95% CI = 1.086 – 3.198). Those who had family support were more likely to have good QoL compared to those who had other forms of support (OR = 1.671; 95% CI = 1.002 – 2.787), the asymptomatic were almost 4 times more likely to have good QoL compared to the symptomatic (OR = 3.986; 95% CI = 2.054 – 7.734). Those that had good adherence to medication were 3 times more likely to have good QoL compared to those with poor adherence (OR = 3.114; 95%CI =1.559 – 6.221).

Table 2 highlights the adjusted odds ratio for the predictors of QoL in the psychological domain. Support group members were more likely to have good QoL compared to non-members (OR = 1.851; 95%CI = 1.232 – 2.781).

Table 1. Adjusted odds ratio for the predictors of QoL in the physical domain among HIV positive support group and non-support group members in a tertiary hospital in a South-eastern State in Nigeria from January to July 2016

Variable	Odds Ratio	95% Confidence Interval	p value
Support group membership			
Yes	1.471	0.988 – 2.192	0.058
No	1		
Age group (years)			
<30	2.018	0.901 – 4.519	0.088
30-39	2.678	1.418 – 5.056	0.002
40-49	1.799	1.016 – 3.184	0.044
>=50	1		
Gender			
Male	2.175	1.372 – 3. 446	0.001
Female	1		
Marital Status			
Married	0.844	0.545 – 1. 307	0.448
Unmarried	1		
Level of Education			
Primary or Lower	0.809	0.505– 1.295	0.376
Secondary or higher	1		
Occupation			
Employed	1.864	1.086 – 3.198	0.024
Unemployed	1		
Sources of Support			
Family	1.671	1.002 – 2.787	0.049
Others	1		
Duration of HIV Infection (yrs)			
14 – 18	1.382	0.414 – 4. 609	0.599
10 – 13	1.139	0.514 – 2.522	0.749
6 – 9	1.482	0.777 – 2.862	0.232
1 – 5	1		
Stage of HIV Infection			
Asymptomatic	3.986	2.054 – 7.734	<0.001
Symptomatic	1		
CD 4 Count (cell/mm^3)			
>500	1.058	0.704 – 1.590	0.785
<500	1		
Adherence			
Good	3.114	1.559 – 6. 221	0.001
Poor	1		
Duration on HAART (months)			
<60	1.647	0.567 – 4.790	0.359
60 – 119	1.307	0.497 – 3.435	0.497
>=120	1		

Table 2. Adjusted odds ratio for the predictors of QoL in the psychological domain among HIV positive support group and non-support group members in a tertiary hospital in a South-eastern State in Nigeria from January to July 2016

Variable	Odds Ratio	95% Confidence Interval	P Value
Support group membership			
Yes	1.851	1.232 – 2.781	0.003
No	1		
Age group (years)			
<30	1.156	0.508 – 2.630	0.729
30-39	2.445	1.282 – 4.664	0.007
40-49	1.857	1.030 – 3.349	0.040
>=50	1		
Gender			
Male	3.639	2.247 – 5.892	<0.001
Female	1		
Marital Status			
Married	0.759	0.487 – 1.183	0.224
Unmarried	1		
Level of Education			
Primary or Lower	1.073	0.658 – 1.748	0.778
Secondary or higher	1		
Occupation			
Employed	0.887	0.512 – 1.535	0.668
Unemployed	1		
Sources of Support			
Family	2.555	1.513 – 4.315	<0.001
Others	1		
Duration of HIV Infection (yrs)			
14 – 18	4.945	1.224 – 19.974	0.025
10 – 13	1.125	0.493 – 2.566	0.779
6 – 9	1.459	0.749 – 2.846	0.268
1 – 5	1		
Stage of HIV Infection			
Asymptomatic	1.938	1.034 – 3.631	0.039
Symptomatic	1		
CD 4 Count (cell/mm^3)			
>500	1.120	0.738 – 1.701	0.594
<500	1		
Adherence			
Good	2.884	1.470 – 5.658	0.002
Poor	1		
Duration on HAART (months)			
<60	1.981	0.651 – 6.027	0.228
60 – 119	1.260	0.470 – 3.381	0.646
>=120	1		

Table 3. Adjusted odds ratio for the predictors of QoL in the level of independence domain among HIV positive support group and non-support group members in a tertiary hospital in a South-eastern State in Nigeria from January to July 2016

Variable	Odds Ratio	95% Confidence Interval	p value
Support group membership			
Yes	3.303	2.172 – 5.022	<0.001
No	1		
Age group(years)			
<30	2.175	0.953 – 4.966	0.065
30-39	2.163	1.144 – 4.088	0.018
40-49	2.385	1.332 – 4.272	0.003
>=50	1		
Gender			
Male	1.154	0.729 – 1.825	0.542
Female	1		
Marital Status			
Married	0.976	0.624 – 1.527	0.917
Unmarried	1		
Level of Education			
Primary or Lower	0.454	0.282 – 0.730	0.001
Secondary or higher	1		
Occupation			
Employed	1.155	0.666 – 2.003	0.607
Unemployed	1		
Sources of Support			
Family	1.653	0.975 – 2.801	0.062
Others	1		
Duration of HIV Infection (yrs)			
14 – 18	2.726	0.748 – 9.932	0.128
10 – 13	1.879	0.811 – 4.352	0.141
6 – 9	1.789	0.906 – 3.536	0.094
1 – 5	1		
Stage of HIV Infection			
Asymptomatic	2.907	1.520 – 5.558	0.001
Symptomatic	1		
CD 4 Count (cell/mm^3)			
>500	0.806	0.529 – 1.226	0.313
<500	1		
Adherence			
Good	1.428	0.737- 2.767	0.291
Poor	1		
Duration on HAART(months)			
<60	2.741	0.903 – 8.324	0.075
60 – 119	1.903	0701 – 5.124	0.207
>=120	1		

Table 4. Adjusted odds ratio for the predictors of QoL in the social relationships domain among HIV positive support group and non-support group members in a tertiary hospital in a South-eastern State in Nigeria from January to July 2016

Variable	Odds Ratio	95%Confidence Interval	p value
Support group membership			
Yes	0.811	0.549 – 1.200	0.295
No	1		
Age group (years)			
<30	0.817	0.371 – 1.798	0.615
30-39	1.011	0.546 – 1.872	0.972
40-49	0.799	0.452 – 1.410	0.439
>=50	1		
Gender			
Male	1.055	0.681 – 1.634	0.811
Female	1		
Marital Status			
Married	1.833	1.203 – 2.793	0.005
Unmarried	1		
Level of Education			
Primary or Lower	0.670	0.423 – 1.061	0.088
Secondary or higher	1		
Occupation			
Employed	1.274	0.760 – 2.138	0.358
Unemployed	1		
Sources of Support			
Family	2.202	1.330 – 3.645	0.002
Others	1		
Duration of HIV Infection (yrs)			
14 – 18	1.410	0.421 – 4.721	0.578
10 – 13	0.592	0.271 – 1.294	0.189
6 – 9	0.960	0.516 – 1.786	0.898
1 – 5	1		
Stage of HIV Infection			
Asymptomatic	1.440	0.792 – 2.618	0.231
Symptomatic	1		
CD 4 Count (cell/mm^3)			
>500	0.668	0. 446 – 1.000	0.050
<500	1		
Adherence			
Good	3.227	1.661 – 6.266	0.001
Poor	1		
Duration on HAART(months)			
<60	0.554	1.189 – 1.620	0.280
60 – 119	0.636	0.238 – 1.699	0.366
>=120	1		

Table 5. Adjusted odds ratio for the predictors of QoL in the environment domain among HIV positive support group and non-support group members in a tertiary hospital in a South-eastern State in Nigeria from January to July 2016

Variable	Odds Ratio	95%Confidence Interval	p value
Support group membership			
Yes	1.049	0.709 – 1.552	0.809
No	1		
Age group (years)			
<30	0.837	0.380 – 1.843	0.658
30-39	0.913	0.494 – 1.687	0.772
40-49	0.126	0.639 – 1.983	0.681
>=50	1		
Gender			
Male	0.899	0.580 – 1.392	0.633
Female	1		
Marital Status			
Married	1.134	0.741 – 1.734	0.562
Unmarried	1		
Level of Education			
Primary or Lower	0.909	0.574 – 1.439	0.685
Secondary or higher	1		
Occupation			
Employed	2.332	1.389 – 3.917	0.001
Unemployed	1		
Sources of Support			
Family	1.727	1.049 – 2.841	0.032
Others	1		
Duration of HIV Infection (yrs)			
14 – 18	1.014	0.314 – 3.274	0.981
10 – 13	1.152	0.525 – 2. 526	0.724
6 – 9	1.306	0.695 – 2.456	0.407
1 – 5	1		
Stage of HIV Infection			
Asymptomatic	3.065	1.664 – 5.645	<0.001
Symptomatic	1		
CD 4 Count (cell/mm^3)			
>500	0.918	0.614 – 1.373	0.677
<500	1		
Adherence			
Good	1.926	1.021 – 3.632	0.043
Poor	1		
Duration on HAART (months)			
<60	1.068	0.361 – 3.154	0.906
60 – 119	0.780	0.291 – 2.091	0.621
>=120	1		

Table 6. Adjusted odds ratio for the predictors of QoL in the spirituality domain among HIV positive support group and non-support group members in a tertiary hospital in a South-eastern State in Nigeria from January to July 2016

Ariable	Odds Ratio	95%Confidence Interval	p value
Support group membership			
Yes	0.712	0.488 – 1.051	0.087
No	1		
Age group(years)			
<30	0.448	0.202 – 0.995	0.049
30-39	0.792	0.427 – 1.468	0.458
40-49	0.542	0.306 – 0.961	0.306
>=50	1		
Gender			
Male	1.546	0.999 – 2. 394	0.051
Female	1		
Marital Status			
Married	1.605	1.053 – 2.445	0.028
Unmarried.	1		
Level of Education			
Primary or Lower	0.775	0.490 – 1.226	0.275
Secondary or higher	1		
Occupation			
Employed	1.132	0.672 – 1.905	0.641
Unemployed	1		
Sources of Support			
Family	2.331	1.392 – 3.904	0.001
Others	1		
Duration of HIV Infection (yrs)			
14 – 18	0.874	0.268 – 2.857	0.824
10 – 13	0.470	0.216 – 1.024	0.057
6 – 9	0.668	0.356 – 1.252	0.208
1 – 5	1		
Stage of HIV Infection			
Asymptomatic	2.012	1.089 – 3.716	0.026
Symptomatic	1		
CD 4 Count (cell/mm^3)			
>500	1.256	0.841 – 1.875	0.266
<500	1		
Adherence			
Good	2.335	1.202 – 4.536	0.012
Poor	1		
Duration on HAART(months)			
<60	0.446	0.155 – 1.282	0.134
60 – 119	0.543	0.207 – 1.426	0.215
>=120	1		

Respondents aged 30 – 39 years were 2.4 times more likely to have good QoL compared to those >50 years (OR = 2.445; 0.007). Males were more 3.6 times more likely to have good QoL compared to females (OR =3.639; 95% CI = 2.247 – 5.892), those with family support were 2.5 times more likely to have good QoL compared to those with no or other forms of support (OR = 2.555; 95 % CI = 1.513 – 4.315). Those who tested positive >14 years ago were almost 5 times more likely to have good QoL compared to those who first tested positive < 5 years ago. (OR =4.945; 95 % CI = 1.224 – 19.974) while the asymptomatic were almost twice as likely as the symptomatic to have good QoL (OR = 1.938; 95% CI = 1.034 – 3.631). Those with good adherence to medication were almost 3 times more likely to have good QoL compared to those with poor adherence to medication (OR = 2.884; 95% CI = 1.470 – 5.658).

Table 3 highlights the adjusted odds ratio for the predictors of QoL in the level of independence domain. Support group members were more than 3 times more likely to have good QoL compared to non-members (OR = 3.303; 95% CI 2.172 – 5.022), the asymptomatic were almost 3 times more likely to have good QoL compared to the symptomatic (OR = 2.907; 95% CI = 1.520 – 5.558). Those who had at most primary education were almost 55% less likely than those who had at least secondary education to have good QoL (OR = 0.454; 95% CI = 0.282 – 0.730).

Table 4 highlights the adjusted odds ratio for the predictors of QoL in the social relationships domain. The married were almost twice as likely as the unmarried to have good QoL (OR = 1.833; 95% CI = 1.203 – 2.793) and those with family support were more than twice as likely as others to have good QoL (OR = 2.202; 95 % CI = 1.330 – 3.645).

Table 5 highlights the adjusted odds ratio for the predictors of QoL in the environment domain. The employed were more than 2 times more likely to have good QoL compared to the unemployed (OR = 2.332; 95% CI = 1.398 – 3.917), those with family support were more likely to have good QoL compared with those with other forms of support (OR = 1.727; 95% CI = 1.049 – 2.841). The asymptomatic were 3 times more likely to have good QoL compared the symptomatic (OR = 3.065; 95% CI =1.664 – 5.645) and those with good adherence to medication were almost 2 times more likely to have good QoL compared to those with poor adherence to medication (OR = 1.926; 95% CI = 1.021 – 3.632).

Table 6 highlights the adjusted odds ratio for the predictors of QoL in the spirituality domain. Respondents aged 30 to 49 years were less likely to have good QoL compared to those aged >50 years. The married were more likely to have good QoL compared to the unmarried (OR =1.605; 95%CI = 1.053 – 2.445), while those with family support were more than twice as likely as those with none or other sources of support to have good QoL (OR =2.331; 95% CI =1.392 – 3.904). The asymptomatic were twice as likely as the symptomatic to have good QoL (OR = 2.012; 95% CI = 1.089 – 3.716) and those with good adherence to medication were more than two times more likely than those with poor adherence to medication to have good QoL (OR = 2.335; 95% CI =1.202 – 4.536).

DISCUSSION

This cross sectional study determined and compared the predictors of QoL among HIV positive clients who are members and non-members of a peer support group in Anambra State, Nigeria. One strength of the index study is the high response rate (99.2 %) obtained. This is consistent with the rates obtained in studies by Nozaki *et al*. (2011) in Zambia and Kumar *et al*. (2014) in India. From our study, some sociodemographic, individual and clinical characteristics were found as predictors of QoL though to varying degrees depending on the domain assessed. These predictors of QoL revealed by the index study, include: age 30 -39 years, males, the employed, family support, the asymptomatic, good adherence to medication. In the physical domain; Support group membership, age 30 =39 years, males, family support, tested positive >14 years ago, asymptomatic, good adherence to medication in the psychological domain;. Support group membership the asymptomatic, at most primary education \in the level of independence domain; the married family support in the social relationships domain; the employed, family support the asymptomatic, good adherence to medication in the environment domain; age 30-49 years, married, family support the asymptomatic, good adherence to medication in the spirituality domain.. These findings from the current study corroborate the findings in Nigeria and other parts of the world, where socio demographics, individual and clinical factors were reported to affect QoL in their clients. (Adeolu *et al*., 2014; Adedimeji and Odutolu, 2012; Fatiregun *et al*., 2014; Odili *et al*., 2011; Mofolorunsho *et al*., 2013; Razera *et al*., 2008; Akinyemi *et al*., 2012; Mofolorunsho *et al*., 2013; Bello and Bello, 2013; Folarise *et al*., 2012; Arjun *et al*., 2015) Though they did not classify the factors found to affect QoL based on domains. Logistic regression model in this study revealed that support group members were more likely to have good QoL in four out of the six domains assessed by the WHOQOLHIV-bref. Support group members had statistically significant higher odds of good QoL in the psychological and level of independence domains. Also in this study, the presence of family support and good adherence to medication were statistically significant predictors of good QoL in all but the level of independence domain. Though we could not cite study findings in keeping with this or otherwise, and it is difficult to explain why this is so. However, it can be adduced that since clients' families may provide support in terms of finance, moral support, safety, assisting with daily activities and emotional support, it is possible that these play a part in its prediction of good QoL in the domains. Further studies are suggested in this area. On the other hand, good adherence to medication could lead clients to becoming asymptomatic. This could account for its prediction of good QoL in the domains in the current research. The index study also found that absence of symptoms was a statistically significant predictor of good QoL in all but the social relationships domain. Liping *et al*., who conducted a research on QoL in China showed adherence and stage of infection as factors related to QoL. (Liping *et al*., 2015)

From the index research, in the social relationships domain, being married was a predictor of good QoL. This could be because marital relationships could provide a form of social inclusion for persons. It should be noted that the current study did not document the duration and types of marital relationships among other indices that could have helped gain insight into the effect of marriage on QoL of these clients. Also, in the environment domain, being employed was a predictor of QoL. This may be because people who are in employment are able to earn money and improve their environment. As in the marital relationships, this study is limited in aspects of clients' employment status such as

duration clients have been employed, income level, etc. This is in keeping with some published reports on positive effects of peer support groups on QoL among people living with HIV and other chronic diseases. (Swindells *et al*., 1999; Van *et al*., 2012; Yadav, 2010) This suggests that several factors need to be taken into consideration in making efforts to improve QoL of PLWHA.

Limitations of the study

While our study maintained its internal validity through use of standardized HIV tests and well-structured validated data collection instruments-pretested questionnaires and WHOQOL-HIV BREF, its findings should be cautiously generalized because of the sampling of two out of four health centers. The WHOQOL-BREF instrument measures QoL within two weeks prior to the interview, the information provided by respondents may be influenced by recall bias.[131] However, participants were given enough time to reflect and think through a sequence of events in their life before answering. Also, we relied on self-reporting of couples on sociodemographic and other data, a method that could be prone reporting errors. Thirdly, the cross-sectional design of the study makes it difficult to causally draw conclusions on the direction of relationship between predictor variables and QoL.

Conclusions

This study found that some sociodemographic, individual and clinical characteristics were predictors of QoL to varying degrees depending on the domain being assessed. Support group membership was associated with QoL Family support and good adherence to medication were significant predictors of QoL in physical, psychological, social relationships, environment and spirituality domains; while absence of symptoms was a predictor of good QoL in the physical, psychological, level of independence, environment and spirituality domains. We recommend that health workers should target early integrated cum continued HIV counselling (more rigorous among females, married and self-employed) and health education on the role of participation in support group activities on QoL. We strongly suggest that the Government, Non-Governmental Organizations and support groups ensure use of multiple channels of communication in sensitizing people on myths concerning HIV as a way of reducing stigmatization and discrimination among PLWHA and promoting campaigns that increase utilization of HIV counselling and testing services especially among this group. The PLWHA should be empowered to enable them attain financial self-sufficiency via avenues such as provision of accessible loans through the support groups.

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