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RESEARCH ARTICLE

Health-Related Quality of Life Among Admitted HIV/AIDS Patients in Selected Ethiopian Tertiary Care Settings: A Cross-Sectional Study

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Abstract:

Background:

The introduction of Combined Antiretroviral Therapy (cART) shifted the perception of HIV/AIDS from a fatal to a potentially manageable chronic disease. As a result, patient-perceived health-related quality of life (HRQoL) is becoming an important outcome measure among HIV infected patients. We assessed the quality of life of admitted HIV/AIDS patients and the association of socio-demographic, clinical, and psychosocial characteristics of patients with health-related quality of life.

Methods:

Health facility-based cross-sectional study was conducted from April 1 to May 31, 2018 in selected tertiary care hospitals of Ethiopia. HRQoL was measured at discharge using the interviewer-administered World Health Organization's Quality of Life HIV short-form instrument (WHOQoL-HIV BREF). Data were entered into EpiData 3.2 and exported to SPSS version 21.0 for cleaning and analysis. Descriptive analytical results were reported in text and table. Logistic regression was conducted to identify predictors of poor quality of life. Variables with $p\text{-value} \leq 0.25$ in bivariate regression were considered as a candidate for multivariable regression. Multivariable logistic regression was performed to identify independent predictors. Regression coefficients and their 95% confidence intervals together with $p\text{-value} < 0.05$ were used to identify independent predictor of poor QoL.

Results:

Majority, 56 (58.9%) of the study participants, had poor general health-related quality of life. Being unemployed (AOR: 4.1, 95% CI; (1.23, 13.64); p=0.02), lack of support from family (AOR: 3.6, 95% CI: (1.05-12.6); p=0.04), and having co-morbidity (AOR: 4.2, 95% CI: (1.08, 16.65); p=0.039) were found to be independent predictors of poor quality of life.

Conclusions:

The study showed that the majority of the participants had poor health-related quality of life which was affected by unemployment, co-morbidity, and social support from family.

Keywords: Health-related quality of life, Human immune virus, WHOQOL-HIV BREF, Ethiopian tertiary care settings, Combined Antiretroviral Therapy (cART), Co-morbidity.

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1. BACKGROUND

Since the start of the HIV epidemic, an estimated 77.3 million people have been infected and 35.4 million have died of AIDS-related illnesses, globally [1]. In Sub-Saharan Africa, about 24.7 million people are living with the virus, making it the most affected region in the world. Sub-saharan African region covers 74% of HIV-related deaths [2]. Ethiopia has the largest population of HIV infected people in the region. According to an estimate by the Federal HIV/AIDS Prevention and Control Office [FHAPCO], there are over 738,976 people living with HIV in Ethiopia [3].

The introduction of combination antiretroviral therapy (cART) in the mid-1990s significantly declined HIV/AIDS-related mortality. This shifted the perception of HIV/AIDS from a fatal to a manageable chronic disease [4]. Combination antiretroviral therapy also improved the Quality of Life (QoL) domains of cognitive function, physical health, social activities,

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pain, sleep, feelings, and emotions [5]. As a result, greater emphasis is given for health-related quality of life (HRQoL) as an important outcome measure and it is recognized by HIV treatment guidelines as one of the therapeutic objectives [6].

According to World Health Organization (WHO), QoL is defined 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." It is a vast concept that would be affected by a multitude of factors such as a person's physical health, psychological state, level of independence, social relationships, personal beliefs, and their relationship to salient features of their environment [7].

Several studies have shown that patient-reported HRQoL has a significant impact on survival and adherence to cART [8 - 10]. As a result, the subject has got greater emphasis by policymakers, clinicians, and researchers. Socio-demographic characteristics, such as age, gender, education, income, employment status, social support, and disease-related variables such as WHO clinical stage, co-morbidity, opportunistic infection, and CD4 count have been found to be strongly associated with the QoL of People Living with HIV/AIDS (PLWHA) [11].

Even though improving the HRQoL of PLWHA is recognized as one of the therapeutic aims of cART, sufficient emphasis is not given in several resource-limited settings including Ethiopia [12]. Particularly, there is a dearth of studies on perceived HRQoL of admitted PLWHA. Therefore, this study aimed to examine the level of HRQoL and its predictors among admitted PLWHA in selected Ethiopian tertiary care settings.

2. METHODS

2.1. Study Design and Population

Health facility-based cross-sectional study was conducted among PLWHA admitted at Tikur Anbessa Specialized Hospital (TASH) and Jimma University Medical Center (JUMC) from April 1, to May 31, 2018.

TASH is the largest referral hospital in the country, with 700 beds. It is located in Addis Ababa, the capital of Ethiopia. It is now the main teaching hospital for both clinical and preclinical training of most disciplines. It is also an institution where specialized clinical services that are not available in other public or private institutions are rendered to the whole nation. On the other hand, JUMC is located in Jimma town, 355 km from Addis Ababa. It is currently the only teaching and specialized hospital in the southwest region of Ethiopia. The hospital serves as a referral site and provides specialized care for southwest Ethiopia with a catchment population of about 15 million.

During the study period, 97 patients were admitted and approached for an interview. Of these, one patient had a psychiatric problem and one patient was not willing for an interview. Finally, 95 patients were interviewed for HRQoL.

2.2. Measurement

Data for health-related quality of life (HRQoL) were collected from patients at discharge using World Health Organization QoL for HIV brief version (WHOQoL-HIV BREF) tool [13]. This tool is validated to measure the quality of life among PLWHA within clinical settings in Ethiopia. We translated the instrument into local languages (Amharic and Afan Oromo). The Amharic and Afan Oromo versions were translated back to English to ensure that the translated version gives the proper meaning [14]. Data were collected at discharge from the hospital using a face-to-face interviewer-administered structured questionnaire. Routine clinical and laboratory parameters were collected from patients' medical records.

The WHOQOL-HIV BREF instrument produces six domain scores and contains 31 items. Individual items were rated on a 5-point Likert scale where 1 shows low, negative perceptions and 5 indicate high, positive perceptions. In such a way, domain scores are scaled in a positive direction where higher scores denote higher quality of life. However, seven facets (question number 3, 4, 5, 8, 9, 10, 31) are not scaled in a positive direction, meaning that for those facets, higher scores do not denote higher quality of life. Those facets are re-coded in a positive direction so that high scores reflect better QoL.

The six domains of HRQoL include physical health (4 items), psychological well-being (5 items), level of independence (4 items), social relation (4 items), environmental health (8 items), and spiritual health (4 items). The first two questions of WHOQOL-HIV BREF examine the general quality of life: question 1 asks about an individual's overall perception of the quality of life and question 2 asks about an individual's overall perception of health. The first domain, physical health, deals with the presence of pain and discomfort, energy and fatigue, sleep and rest, and symptoms related to HIV. The psychological domain comprises negative and positive feelings, thinking, memory and concentration, body image and appearance, and self-esteem. The level of independence domain consists of mobility, activities of daily living, dependence on medication or treatments, and work capacity. The social relationships domain describes; personal relationships, social support, and sexual activity. Physical safety and security, home environment, financial resources, physical environment, and opportunities for acquiring new information were described under the environment domain. The last domain, spiritual health, contains information about concern about future death, forgiveness, and blame. There is also a general facet that measures the overall QoL and general health perceptions. The standard two weeks' time frame was used to derive the patient's QoL experience. The questionnaires were administered by 4 nurses and 2 physicians were acting as supervisors for the data collectors. Training on data collection tool and general procedures of data collection was given for data collectors and supervisors prior to data collection. Pre-test was conducted on 5% of participants.

2.3. Ethical Consideration

The study was approved by the Institutional Review Board (IRB) of Jimma University. It is designated with an IRB number of IHRPGB/219/2018. The principal investigator or data collectors briefed the aim of the study to the patients and signed informed consent was taken from all participants or their caregivers prior to data collection. During data collection, confidentiality was ensured and for this reason, the name and address of the patient were not recorded in the data collection checklist.

2.4. Data Processing and Analysis

Data were entered into EpiData 3.2 and exported to a statistical package for social sciences (SPSS) version 21.0 for cleaning and analysis. Descriptive analysis was performed, and results were presented by text and tables.

The WHOQOL-HIV BREF was used to produce a QoL profile of individuals. Domain scores were calculated by computing the mean of the facet score within the respective domain and eventually multiplied by 4 to make domain scores comparable with the scores used in the WHO quality of life-100 (WHOQOL-100), a commonly used scale. Accordingly, the scores range from 4 to 20 points, reflecting the worst and the best QoL, respectively [15]. The WHOQOL HIV instrument user's manual was rigorously followed for scoring and checking domain scores. Cronbach's alpha coefficient was calculated for each domain of the WHOQOL-HIV BREF instrument to determine internal consistency.

For the purpose of identifying factors associated with QoL, study participants were divided into two groups based on the mean score of the facet; "overall quality of life and general health perceptions" (range 1 to 5). Participants with mean scores of >3.0 were categorized as having good QoL, and their counterparts [mean scores of ≤ 3.0] as having poor QoL. Based on the domain mean, participants with a mean score >12.0 were categorized as having good QoL and their counterparts mean score ≤ 12.0 as having poor QoL. Bivariate and multivariate logistic regressions were carried out to assess independent predictors of HRQoL taking QoL (good/poor) as the binary dependent variable. Bivariate logistic regression was performed to identify candidate variables for multivariable logistic regression. Variables with a p-value ≤ 0.25 in bivariate regression were candidates for multivariable regression. Multivariable logistic regression was performed using the backward method to identify independent predictors. Regression coefficients and their 95% confidence intervals together with p-value < 0.05 were used to identify independent predictors of poor QoL. The goodness of fitness of the final model was checked using Hosmer and Lemeshow statistic.

3. RESULTS

3.1. Characteristics of the Study Participants

A total of 97 patients were admitted and approached for an interview at discharge from the hospital. Of these, one patient had a psychiatric problem and one patient was not willing to an interview. Finally, 95 patients were interviewed for HRQoL.

The study sample (n=95) had a higher percentage, 56 (58.9%) of female participants, and the mean age (+SD) of the study participants was 35.8 (+10.5) years. Majority, 73 (76.8%) of the study participants, were urban residents and more than half, 51 (53.7%), of the participants, were unemployed. Majority, 80 (84.2%) of them, were on cART. The mean (+SD) of current CD4 counts for poor and good QoL was 305 (+ 315) and 278 (+292) cells /mm3, respectively (p=0.68). More than half, 53 (55.8%) of them, had social support from family.

3.2. Participant's Characteristics by General QoL

Majority, 56 (58.9%) of the participants, had poor general health-related quality of life. Participants with poor general QoL were older (p =0.01). The percentage of participants who were unemployed was significantly higher in those with poor QoL compared to good QoL (p= <0.001). The mean (+SD) time period since diagnosis of HIV was 4.1 [+4.1] and 4.9 [+4.2] for participants with poor and good QoL, respectively (p=0.36).

A significantly higher number of participants with the co-morbid disease had poor general QoL (p=0.001). The percentage of participants who had no family support was significantly higher in those with poor *vs.* good QoL (p=0.001). A significantly higher proportion of participants who had disclosed their HIV serostatus had poor general QoL (p=0.01). There was no difference in general QoL between those on cART and non-cART (P=0.29) (Table **1**).

Table 1. Socio-demographic, clinical, and psychosocial characteristics of study participants by general QoL (poor *vs.* good).

Variable		Poor QoL	Good QoL	Total	p-value *
Sex	Female	34 (60.7%)	22 (39.3%)	56 (58.9%)	0.67
	Male	22 (56.4%)	17 (43.6%)	39 (41.1%)	
Age in years, mean (±SD)		38.1 (11.3)	32.6 (8.2)	35.8 (10.4)	0.01
Residence	Urban	43 (58.9%)	30 (41.1%)	73 (76.8)	0.98
	Rural	13 (59.1%)	9 (40.9%)	22 (23.2)	
Current CD4 count mean (±SD)		305 (315)	278 (292)	293 (303.4)	0.68
HIV sero-status	Known	51 (63%)	30 (37%)	81 (85.3)	0.056
	New	5 (35.7%)	9 (64.3%)	14 (14.7)	
Time since HIV diagnosis in years, mean (±SD)		4.1 (4.1)	4.9 (4.2)	4.5 (4.1)	0.36
cART status	Yes	49 (61.3%)	31(38.8%)	80 (84.2)	0.29
	No	7 (46.7%)	8 (53.3%)	15 (15.8)	

(Table 1) contd.....

Variable		Poor QoL	Good QoL	Total	p-value *
Occupation	Employed	16 (36.4%)	28 (63.6%)	44 (46.3)	<0.001
	Unemployed	40 (78.4%)	11 (21.6%)	51 (53.7)	
Co-morbidity	Yes	26 (83.9%)	5 (16.1%)	31 (32.6)	0.001
	No	30 (46.9%)	34 (53.1%)	64 (67.4)	
HIV disclosure	Yes	28 (73.7%)	10 (26.3)	38 (40)	0.01
	No	28 (49.1%)	29 (50.9%)	57 (60)	
Support from family	Yes	23 (43.4%)	30 (56.6%)	53 (55.8)	0.001
	No	33 (78.6%)	9 (21.4%)	42 (44.2)	

*P-values are from the chi-square tests for the categorical variables (sex, residence, HIV serostatus, cART status, co-morbidity, HIV disclosure, support from family); and from independent t-tests for the continuous variables (age, CD4 count, time since HIV diagnosis), using significance level of 0.05.

3.3. The Overall Health-Related Quality of Life [HRQoL]

The mean (±SD) scores for the overall QoL and general health and six domains of the study participants are presented in Table **2**. The study participants had a poor quality of life in all domains of quality of life except for social relationship and spiritual health domains. The domain score of health-related quality of life (HRQoL) was highest for social relationship [13], and the lowest score was for physical domain (8.7). Based on general QoL (overall QoL & general health perception) score, more than half, 56 (58.9%) of the study participants, had a poor quality of life.

Cronbach's alpha was calculated to estimate the internal consistency and reliability of the WHOQOL-HIV tool. All domains of the WHOQOL-HIV had an acceptable of Cronbach's alpha ($\alpha > 0.7$), showing acceptable reliability of the questionnaire (Table **2**).

3.4. Predictors of Health-Related Quality of Life [HRQoL]

Predictors of quality of life were assessed with socio-demographic, clinical, and psychosocial characteristics of the study participants. In a binary logistic regression, the factors which significantly increased the likelihood of poor QoL in the facet, "overall QoL and general health perceptions", included age (p=0.01), being unemployed (p<0.001), low income (p=0.03), HIV disclosure (p=0.02), support from family (p=0.001), co-morbidity (p=0.001) (Table **3**).

Table 2. Scores for 6 domains and general QoL with their respective Cronbach's alpha.

Domains	Mean [±SD]	Cronbach's alpha
General QoL (Overall QoL &general health perception)	2.9 ± 0.9	0.74
Physical domain	8.7 ±3.1	0.72
Psychological	11.3± 2.8	0.70
Level of independence	9.4 ± 4.2	0.72
Social relationship	13 ± 2.4	0.89
Environmental health	12±2.1	0.71
Spiritual health	12.9± 2.4	0.81

Table 3. Crudes and adjusted Odds Ratio (OR) for predictors of HRQOL at JUMC and TASH.

Characteristics		Quality of life		COR (95% CI)	P-Value	AOR (95% CI)	P-Value
		Poor	Good				
Socio-demographic							
Age (years) (mean age± SD)		38.1 (±11.3)	32.6 (±8.2)	1.1 [1.01-1.11]	0.01	1.03 [0.96-1.1]	0.38
Occupation	Employed	16	28		0.00		0.02
	Unemployed	40	11	6.4 [2.57-15.76]		4.1 [1.23-13.64]	
Income (ETB)	>5000	7	7	1	0.03	1	0.06
	<1500	27	9	4.0 [1.09-14.67]		5.3 [0.91-30.7]	
Psychosocial							
HIV disclosure	Yes	28	10	2.9 [1.19-7.1]	0.02	1.6 [0.48-5.35]	0.45
	No	28	29	1		1	
Support from family	Yes	23	30	1	0.001	1	0.04
	No	33	9	4.8 [1.9-11.1]		3.6 [1.05-12.6]	
Co-morbidity	No	30	34	1	0.001	1	0.039
	Yes	26	5	5.9 [2.01-17.27]		4.2 [1.08-16.65]	
HIV sero-status	Known	51	30	3.01[0.94-9.9]	0.064	4.6 [0.92-22.8]	0.063
	New	5	9	1		1	

COR: Crude Odds Ratio, AOD: Adjusted Odds Ratio

However, after including variables significant in a bivariate analysis into a multivariate analysis, being unemployed (p=0.02), lack of support from family (p=0.04), and having co-morbidity (p=0.039) were found to be independent predictors of poor quality of life.

4. DISCUSSION

This study revealed that the majority, 56 (58.9%) of HIV patients, had poor quality of life score in general QoL and in all domains of health-related quality of life except social relationship and spiritual health. Similar finding was reported in a cross-sectional study of 82 HIV-infected people conducted in Bangladesh [16] and other countries [17 - 19]. However, this finding is not comparable to studies conducted in Brazil [20], China [21], Finland [22], and Norway [23]. These differences may be due to differences in socio-economic, clinical status of the participants, study design, and better patient care.

The mean general QoL [overall QoL &general health perception] score for the participants (2.90 ± 0.9) was comparable with the Estonian study [19] but lower than that reported from other similar studies [24, 25]. The lowest health-related quality of life was documented for the physical domain of QoL. In contrary to this finding, several studies reported better physical health-related QoL in Ethiopia [26] and other regions [18, 20, 27]. The possible explanation for this finding is that the participants were symptomatic and burdened with physical symptoms of the disease, which in turn, impairs HRQoL [28]. Additionally, as most (36.8%) of the participants were at WHO clinical stage 4 with a CD4 count of less than 200cells/μL (56.8%), they were prone to a number of OIs causing them to be bedridden. Among the study participants, the best HRQoL was observed in the dimensions related to social relationship and spirituality. This finding is in line with the Georgian study [29] but it is inverse of Nigerian study [30]. The possible explanation may be our community has a long-standing culture of social interaction and most of the participants had not disclosed their HIV status so they were not a victim of social isolation, stigmatization, and discrimination. The high score of spiritual domain may be because of the fact that many Ethiopians are religious, especially when they gain chronic disease hoping divine healing.

This study also identified factors associated with health-related quality of life. The unemployment status of the participants was found as a predictor of poor quality of life. Therefore, unemployed participants were 4.1 times more likely to have poor health-related quality of life than their employed counterparts (p=0.02). Similar findings were reported from Ethiopia [26, 31, 32] and other countries [19, 20]. According to Fernanda *et al.* [20], unemployment was significantly associated with worse QoL in all the domains of QoL, except for the domain of spirituality and religion. The reason could be most of the participants in this study were at advanced disease state that it is difficult to keep jobs. When they lose their job, they will not have enough money to access what they need in life. This could contribute to poor quality of life. Furthermore, the distribution of a population of unemployment rate was higher in poor quality of life category based on general QoL.

Participants who had no social support from family were 3.6 times more likely to have a poor quality of life than their counterparts (p=0.04). Similar findings showed that social support is significantly associated with QoL [33, 34]. It is not surprising that individuals who are satisfied with social support would likely have better QoL. Legese A. Mekuria and his colleagues reported that satisfaction with social support was associated with higher social and spiritual HRQoL [35]. The presence of co-morbid disease state was also found to be a predictor of poor overall quality of life. Patients with co-morbidity had 4.2 times more likely risk to have a poor quality of life [p=0.039] compared with those without co-morbid disease. This finding is supported by numerous studies [36 - 39]. A study from Kenya reported that HIV patients with co-morbid chronic diseases had significantly worse HRQoL especially in the physical dimension [40]. HIV/AIDS patients with an additional co-morbid disease suffer from a double burden of illnesses that could significantly compromise their quality of life.

Unlike other studies that reported socio-demographic variables such as gender, age, marital status, educational level, and place of residence to have a significant association with HRQoL, this study found no such association, including clinical variables [16, 41, 42].

This study is not free of limitations. As this study is cross-sectional, it cannot establish an association between the outcome and predictor variables and inclusion of a few patients in the analysis could affect the power of the study [wide confidence interval]. This study took place in hospitals with little chance of including patients who are less regular in the health facilities and may have different characteristics. Furthermore, administering the questionnaire through face to face interviews may have resulted in a socially desirable response.

CONCLUSION

The majority of the participants had poor general health-related quality of life and in all domains of quality of life except for social relationship and spiritual health domains. The domain score of health-related quality of life [HRQoL] was highest for social relationship. Being unemployed, lack of support from family, and living with co-morbidity were found to affect the quality of life of the participants. Therefore, special attention should be given to those patients to enhance employment status, social support services delivery, and co-morbid disease management in order to improve the overall HRQoL.

ANNEX I:. WHOQOL-HIV BREF Questionnaire

Instructions

This assessment asks how you feel about your quality of life, health, or other areas of your life. Please answer all the questions. If you are unsure about which response to give to a question, please choose the one that appears most appropriate. This can often be your first response. Please keep in mind your standards, hopes, pleasures, and concerns. We ask that you think about your life in the last two weeks. You should circle the number that best fits how well you are able to concentrate over the last two weeks. Please read each question, assess your feelings, and circle the number on the scale for each question that gives the best answer for you.

	Very poor	**Poor**	**Neither poor nor good**	**Good**	**Very good**
1. How would you rate your quality of life?	1	2	3	4	5
	Very dissatisfied	**Dissatisfied**	**Neither satisfied nor dissatisfied**	**Satisfied**	**Very satisfied**
2. How satisfied are you with your health?	1	2	3	4	5

The following questions ask about **how much** you have experienced certain things in the last two weeks.

	Not at all	**A little**	**moderate amount**	**Very much**	**An extreme amount**
3. To what extent do you feel that physical pain prevents you from doing what you need to do?	1	2	3	4	5
4. How much are you bothered by any physical problems related to your HIV infection?	1	2	3	4	5
5. How much do you need any medical treatment to function in your daily life?	1	2	3	4	5
6. How much do you enjoy life?	1	2	3	4	5
7. To what extent do you feel your life to be meaningful?	1	2	3	4	5
8. To what extent are you bothered by people blaming you for your HIV status	1	2	3	4	5
9. How much do you fear the future?	1	2	3	4	5
10. How much do you worry about death?	1	2	3	4	5
	Not at all	**A little**	**A moderate amount**	**Very much**	**Extremely**
11. How well are you able to concentrate?	1	2	3	4	5
12. How safe do you feel in your daily life?	1	2	3	4	5
13. How healthy is your physical environment?	1	2	3	4	5

The following questions ask about **how completely** you experience or were able to do certain things in the last two weeks.

	Not at all	**A little**	**Moderately**	**Mostly**	**Completely**
14. Do you have enough energy for everyday life?	1	2	3	4	5
15. Are you able to accept your bodily appearance?	1	2	3	4	5
16. Have you enough money to meet your needs?	1	2	3	4	5
17. To what extent do you feel accepted by the people you know?	1	2	3	4	5
18. How available to you is the information that you need in your day-to-day life?	1	2	3	4	5
19. To what extent do you have the opportunity for leisure activities?	1	2	3	4	5
	Very poor	**Poor**	**Neither poor nor good**	**Good**	**Very good**
20. How well are you able to get around?	1	2	3	4	5

The following questions ask you how **good or satisfied** you have felt about various aspects of your life over the last two weeks.

	Very dissatisfied	**Dissatisfied**	**Neither satisfied nor dissatisfied**	**Satisfied**	**Very satisfied**
21. How satisfied are you with your sleep?	1	2	3	4	5
22. How satisfied are you with your ability to Perform your daily living activities?	1	2	3	4	5
23. How satisfied are you with your capacity for Work?	1	2	3	4	5

(Appendix) contd.....

	Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
24. How satisfied are you with yourself?	1	2	3	4	5
25. How satisfied are you with your personal relationships?	1	2	3	4	5
26. How satisfied are you with your sex life?	1	2	3	4	5
27. How satisfied are you with the support you get from your friends?	1	2	3	4	5
28. How satisfied are you with the conditions of your living place?	1	2	3	4	5
29. How satisfied are you with your access to health services?	1	2	3	4	5
30. How satisfied are you with your transport?	1	2	3	4	5

The following question refers to **how often** you have felt or experienced certain things in the last two weeks.

	Never	Seldom	Quite often	Very often	Always
31. How often do you have negative feelings such as blue mood, despair, anxiety, depression?	1	2	3	4	5

LIST OF ABBREVIATIONS

AIDS = Acquired Immune Deficiency Syndrome
cART = Combined Antiretroviral Therapy
CD4 = Cluster of Differentiation
HIV = Human Immunodeficiency Virus
HRQoL = Health-Related Quality of Life
NIV = Non- Invasive Ventilation
PLWHA = People Living with HIV/AIDS
QoL = Quality of Life
SPSS = Statistical Package for Social Sciences
UNAIDS = United Nations Program on Human immune virus [HIV]/AIDS
WHOQoL-HIV BREF = WHO Quality of Life of HIV specific instrument brief

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The study was approved by the Institutional Review Board (IRB) of Jimma University. It is designated with an IRB number of IHRPGB/219/2018.

HUMAN AND ANIMAL RIGHTS

Not applicable.

CONSENT FOR PUBLICATION

Signed informed consent was taken from all participants prior to data collection.

AVAILABILITY OF DATA AND MATERIAL

The datasets and materials used in our study are available from the corresponding author on reasonable request.

FUNDING

None.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest, financial or otherwise.

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