Original Article

Assessment of Quality of Life of HIV-Positive People Receiving ART: An Indian Perspective

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ABSTRACT

Context: HIV/AIDS is known to affect an individual not only physically but also mentally, socially, and financially. It is a syndrome that builds a vacuum in a person affecting his/her life as a whole. **Aims:** The purpose of the present study is to evaluate the quality of life (QOL) of people living with HIV/AIDS (PLHIV) receiving ART and its association with Body mass index (BMI) and CD4 count. **Study Design:** An observational study was performed on PLHIV receiving ART in Orissa, India. **Materials and Methods:** Data on sociodemographic profile, BMI, and CD4 were gathered from 153 HIV-positive subjects. QOL was assessed using WHOQOL-HIV BREF scale. **Results:** The overall QOL score of the subjects was moderate; PLHIV with lower BMI also had poorer QOL (P<0.05). Employment affected only the social health domain of the subjects. Men reported poorer level of independence and physical health while women reported poorer social relationships and environment. All the six domains correlated significantly with the overall QOL indicated by the G-facet. **Conclusion:** Attention toward improving the nutritional status of PLHIV should be accorded high priority to ensure improvement in the overall QOL of PLHIV.

Keywords: BMI, HIV/AIDS, quality of life, WHOQOL-BREF

Introduction

HIV/AIDS has become a serious health, economic, and social problem with 33 million people living with HIV (PLHIV) virus globally and 2.4 million people only in India in the year 2007.[1] National AIDS Control Organization (NACO) reports stabilization of virus in the southern part of the country; however, 26 districts have been identified with the increase in HIV prevalence. In India, anti-retroviral (ARV) treatment is given free of cost to PLHIVs registering themselves at the anti-retroviral treatment (ART) center. In 2009, NACO reports that there are 4 987 integrated counseling and testing centers (ICTC) and 211 ART centers where ART treatment is given free of cost to over 2 lakh PLHIVs.[2]

Access this article online

Quick Response Code:

Website: www.ijcm.org.in

DOI: 10.4103/0970-0218.99918

ARV drugs have revolutionized the treatment for HIV by increasing the average lifespan of HIV-positive individual. QOL of PLHIV has become a salient issue after the increase in availability of ARV and increase in average life span. WHO defines QOL as individuals' perceptions 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.[3]

There are various studies conducted across the globe which report that as the HIV infection progresses, it affects the QOL of the individual.[4-7] Various factors apart from physical and mental health like employment status, age, gender, income, education, HIV stage, severity of HIV infection, etc. are found to impinge on the QOL of PLHIVs.[8-12] Also, QOL is identified as a useful medium to measure or determine the efficacy of treatment or interventions like dietary interventions.[13] Therefore, the present study investigates the QOL of Indian PLHIV receiving ART and examines the factors that may affect it.

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Received: 22-05-10, **Accepted:** 03-02-12

Materials and Methods

From a total of 890 registered patients at the ART clinic of MKCG Medical College, Berhampur, Orissa, a total of 153 PLHIV (96 males and 57 females) were enrolled for the study. The permission to gather information from the registered PLHIV was obtained for a period of 15 days during November 2008. All PLHIV who attended the clinic over a period of two weeks were greater than 21 years of age, received ART not more than last 6 months, had record of CD4 estimations within last 30 days from the date of data collection, and agreed to answer the questions related to QOL were enrolled in the study. Infants, children, adolescents, and pregnant and lactating mothers; those not registered at the center; and those who refused to participate in the study were excluded from the study.

Ethical approval was obtained from the Institutional Ethics Committee of Institute of Home Economics, University of Delhi, India. Details of the study procedures were given on the volunteer's information sheet (in Oriya language). The benefits, confidentiality, and voluntary participation features of the study were explained and written informed consent was obtained from all the subjects.

WHOQOL-HIV BREF version[3] was used to investigate the QOL of PLHIV receiving ART. The scale produces six domain scores namely physical, psychological, level of independence, social relationships, environmental, and spirituality, religion, personal beliefs (SRPB). There is also a general facet ('G' facet) which asks about general QOL and health. Individual items are rated on a 5-point Likert scale where 1 indicates low, negative perceptions and 5 indicates high, positive perceptions. Higher score indicates better QOL. For better result interpretations, the QOL scores between 4 - 9.9 were taken as low scores, 10 -14.9 as medium scores, and 15 - 20 as high score.[14]

The sociodemographic information was collected with the help of a questionnaire. As the researcher was not equipped and allowed to carry out blood examinations, CD4 counts were taken from the hospital records assessed not prior to 30 days from the date of QOL data collection. Body mass index (BMI) was determined by assessing the height and weight of the PLHIV using standardized techniques.

All the statistical procedures were carried out in SPSS 9.0 software.

Results

Sociodemographic and anthropometric profile

Majority of the study population (84%) belonged to the age group of 21 to 40 years. Around 31% of the population was illiterate and among the literates, primary level education (40.5%) was common. Heterosexuality and unsafe sexual activity was found to be the major cause for HIV transmission both among males and females (98%). Unemployment was more among females than in males as majority of the females were housewives. Among those employed, construction work and cultivation was the main occupation. Almost 50% of the respondents reported annual per capita income to be less than Rs. 20,000 (i.e., less than Rs. 2000 or $41.67 per month).

Anthropometric and biochemical profile

The anthropometric profile and mean CD4 count of the study population is shown in Table 1. The mean BMI of males was 19 ± 2.3 kg/m^2 ranging from 14.8 to 28.4 kg/m^2 while that of females was 18.3 ± 2.5 kg/m^2 ranging from 13 to 24.6 kg/m^2. No significant differences were found between the BMI scores of males and females. Since there was a wide range in the BMIs, the subjects were also classified according to the standard BMI cut-off points[15] as shown in Table 2. Although 45% of the subjects fell within the normal BMI range, 50% were underweight.

Quality of life

The mean scores of QOL domains are shown in Table 3 wherein the scores range from 9.7±2.4 (G-facet) to 14.5±2.3 (SRPB). The QOL profile of subjects indicates a moderate score in all domains of QOL; however, only G-facet score was below 10 indicating a poor overall QOL. There was not much difference in the QOL domain scores between males and females, except that the social relationships and environment domains indicated a statistically significant lower score of females than males. However, this difference in the scores could not lead to any significant clinical interpretations.

Table 2 highlights the change in QOL scores with the BMI. A positive shift in the QOL scores is seen as the BMI rises. Linear regression analysis was carried out to find out the contribution of BMI to each domain of QOL. It was found that BMI explained only 3.1% of the variance, contributing maximum to level of independence (R^2 = 0.053) and least to physical domain (R^2 = 0.009). Similarly, CD4 explained only 1.0% of the variance. This indicates that there are a lot many factors apart from BMI and CD4 that affect QOL of an HIV-positive individual which needs to be identified and worked upon.

Pearson's correlations were determined between BMI and QOL which showed that for the entire sample (males and females), BMI correlated positively and significantly with level of independence (domain 3) and SRPB (domain 6) (P<0.01) and with G-facet, Psychological (domain 2), and Environment (domain 5) (P<0.05). Gender-wise analysis showed that in males, BMI correlated significantly (P<0.05) only with level of independence (domain 3);

however, in females, it correlated significantly with G-facet and SRPB (domain 6) (P<0.01).

QOL scores were also analyzed according to the CD4 count. The subjects were classified according to the severity of infection as indicated by CD4 count.

It can be seen from Table 4 that as the CD4 count improves, the domain score also increases, being significant only in SRPB domain. This indicates that better the clinical health, better the QOL. Also, a significant correlation (P<0.05) was found between CD4 and Spirituality, religion, and personal belief domain. Except for environment domain, in all the other domains the score increased as the CD4 count increased.

Discussion

The present study used the WHOQOL-BREF-HIV scale designed to investigate the QOL of PLHIV. The study investigated the QOL of PLHIV who were registered at the ART clinic and were on ARV treatment. In India, heterosexual behavior continues to be the major risk factor for the transmission of HIV and we also found high levels of heterosexuals and unsafe sexual practices as major route of HIV transmission.[16,17] While interviewing the women, they revealed that the infection spread from males to females as the males went out to work in neighboring districts/cities and indulged in unsafe sexual practices. After returning to their native place, they spread the infection to their spouse.

The overall QOL of PLHIV, as evident by the G-facet scores, was found to correlate significantly with every domain. This indicates that any damage to any one domain of life (physical, psychological, social relations, independence, environment, or spirituality) affects the overall QOL of an individual.

The QOL scores fell in the moderate category (12-17), with maximum in SRPB and lowest in social relationships. However, PLHIV who were on ART but did not attend the clinic during two-week period (reasons for not attending could be poor health, difficulty in travelling from far flung areas, economic reasons, etc.) or whose CD4 count was either not done in the last 30 days was not available, lost-follow-up cases (i.e., those who have not returned to the ART center for last three months), adults below the age of 21 years, and pregnant females have not been included in the present study and this may have influenced the QOL scores. Yen *et al.* and Santos *et al.*[14,18]

Table 1: Mean anthropometric and clinical parameters

	Gender		Total (n=153)
	Males (n=96)	Females (n=57)	
Anthropometry (mean ± SD)			
Height (cm)	165.1 ± 5.9	153.7 ± 5.9	160.8 ± 8.1
Weight (kg)	51.8 ± 8.1	43.4 ± 7.0	48.7 ± 8.7
BMI (kg/m^2)	19 ± 2.3	18.3 ± 2.5	18.7 ± 2.4
Clinical (mean ± SD)			
CD4 count (cells/cumm)	267.8 ± 188.73	355.95 ± 216.02	300.64 ± 203.18

BMI: Body mass Index

Table 2: QOL domain scales according to the BMI cut-off points (mean±SD)

BMI cut-off (kg/m2)	n (%)	G Facet	Physical	Psychological	Level of independence	Social relationships	Environment	SRPB
<18.5	77 (50.3)	9.3 ± 2.4	11.4 ± 2.7	11.7 ± 2.5	11.3 ± 2.4	11.4 ± 2.0	11.7 ± 1.8	14.4 ± 2.4
18.5 – 22.9	69 (45.1)	10.2 ± 2.3	12.4 ± 2.6	12.3 ± 2.3	12.3 ± 2.6	12.0 ± 2.1	12.2 ± 1.8	14.6 ± 2.6
23 – 24.9	5 (3.3)	11.0 ± 2.0	9.6 ± 2.3	11.4 ± 1.3	12.4 ± 2.2	10.6 ± 3.1	11.7 ± 0.9	14.6 ± 1.1
>=25	2 (1.3)	8.5 ± 0.7	12.5 ± 0.7	12.8 ± 0.0	14.0 ± 0.0	12.5 ± 0.7	13.5 ± 2.1	15.5 ± 2.1

BMI: Body mass index, QOL: Quality of life, SRPB: Sprituality, religion and personal beliefs

Table 3: Mean scores of quality of life domains (mean±SD)

Gender	n	G Facet	v	Psychological	Level of Independence	Social Relationships*	Environment*	SRPB
Male	96	9.7 ± 2.4	12.0 ±2.7	12.2 ± 2.4	11.8 ±2.5	12.0 ± 1.9	12.2 ± 1.8	14.5 ± 2.4
Female	57	9.8 ± 2.3	11.5 ± 2.6	11.8 ± 2.4	11.8 ± 2.6	11.0 ± 2.1	11.5 ± 1.7	14.6 ± 2.1
Total	153	9.7 ± 2.4	11.8 ± 2.7	12.0 ± 2.4	11.8 ± 2.5	11.7 ± 2.1	11.9 ± 1.8	14.5 ± 2.3

*Significant difference between males and females (P<0.05). SRPB: Sprituality, religion and personal beliefs

Table 4: QOL domain scales according to the CD4 count

CD4 count	n	G Facet	Physical	Psychological	Level of independence	Social relationship	Enviornment	SRPB
<200	59	9.7 ± 2.4	11.7 ± 2.9	11.9 ± 2.4	11.6 ± 2.4	11.7 ± 1.7	12.2 ± 1.8	13.9 ± 2.5*
201 – 500	69	9.6 ± 2.3	11.7 ± 2.5	12.0 ± 2.2	11.9 ± 2.6	11.8 ± 2.2	11.9 ± 1.7	14.8 ± 2.1
>500	25	10.1 ± 2.6	12.5 ± 2.7	12.2 ± 2.9	12.1 ± 2.7	11.0 ± 2.4	11.6 ± 2.0	15.3 ± 1.8*

*Significant difference between groups as tested by Tukey's HSD, QOL: Quality of life, SRPB: Spirituality, religion and personal beliefs

also reported similar findings. PLHIV in the present study believed that they were suffering because they were chosen to suffer by the supreme power and it was their destiny. However, this did not affect their faith in the supreme power. Low score on the social front could be attributed to the fact that the PLHIV restrained themselves from social interactions (i.e., making friends, participating in social gatherings, accepting help from their relatives or friends, etc.) because of their positive status. Social relationship domain measures personal relationships, social support, sexual activity, and social inclusion. Low score on this domain indicates poor social health of PLHIV. This can be attributed to the poor social interaction due to self consciousness about the disease.

When comparisons between the genders were made, it indicated that females scored lower on all the domain of QOL compared with males. Significant difference was seen in social relationships and environment domains. A study conducted on PLHIV in Italy also reported that females scored lower on psychological and environment domains than males.[19] Low levels of literacy among females, unemployment, financial dependency, and social boundations can be the contributory factors for lower scores on QOL domains by females. While collecting the data, responses from the females indicated that the females acquired the infection from their spouse which brings in more frustration toward partner, themselves, disease, and the society.

Employment not only makes an individual financially independent but also serves as a means of social support, role identity, and personal meaning.[20] Previous studies have shown that employed PLHIV have significant higher scores than their unemployed counterpart.[21,22] Although in the present study no such results were found, the employed individuals scored high on the social health domain, which could be attributed to the financial security and social support as indicated by another study conducted in Estonia.[23] Considering the functional capacities and health profile of PLHIV, suitable employment opportunities should be provided to eliminate the stigma attached and to improve the social health of these individuals.

According to the NACO (2007) guidelines, CD4 estimations for PLHIV on ART are repeated every six months.[24] Due to this reason, only those PLHIV whose CD4 estimations not later than 30 days were available were included in the study. Literature has shown that CD4 is an indication of level of infection in the body, wherein an increase in CD4 level results in better physical health and decrease makes the patient prone to opportunistic infections.[25,26] In the present study, CD4 was not found to have profound effect on the QOL of PLHIV (though an increase in score was found with the increase in CD4 count), same results were reported by earlier studies also.[18,27,28] This can be due to the fact that the patients enrolled in the present study were outpatients receiving ART and were in a relatively stable clinical condition. People living with AIDS had better QOL on environment domain than other patients but scored worse on SRPB domain. BMI correlated significantly with psychological, level of independence, environment, and SRPB domains. An increase in BMI is an indication of improvement in physical health which helps to increase self confidence, infuse a sense of independence wherein a person moves around and feels accepted in the environment he stays, and thanks the almighty for his improved condition. The present study had some limitations like small sample size, stipulated time frame, and non-inclusion of those who were on ART but could not be included in the study due to variable reasons.

Conclusion

The present study found that PLHIV receiving ART in Orissa had moderate QOL; scoring maximum in SRPB domain and lowest in social relationships. A positive correlation between BMI and QOL do indicate that attention toward improving the nutritional status of PLHIV should be accorded high priority to ensure improvement in overall QOL of PLHIV.

Acknowledgement

We are grateful to the World Food Programme, India Office, for supporting the study. We also thank the participants and the staff of MKCG Medical College, Berhampur, Orissa, for their cooperation.

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How cite this article: Anand D, Puri S, Mathew M. Assessment of quality of life of HIV-positive people receiving art: An Indian perspective. Indian J Community Med 2012;37:165-9.

Source of Support: Nil, **Conflict of Interest:** None declared.