Gender Differences in Health Related Quality of Life of People Living with HIV/AIDS in the Era of Highly Active Antiretroviral Therapy

**Easwaran Vigneshwaran, Yiragam Padmanabhareddy,
Nayakanti Devanna[1], Gerardo Alvarez-Uria[2]**

Department of Pharmacy Practice, Raghavendra Institute of Pharmaceutical Education and Research, [1]Department of Chemistry, JNTUA University, Anantapur, [2]Department of Infectious Diseases, RDT Hospital, Bathalapalli, Andhra Pradesh, India

Abstract

Background: Data about the health-related quality of life (HR-QOL) of people living with HIV/AIDS (PLHA) after the implementation of free antiretroviral treatment in India are scarce. **Aim:** The study was to describe the HR-QOL and gender differences of PLHA in rural India. **Materials and Methods:** Cross sectional study of 120 PLHA who came to the outpatient department in a rural district hospital. Assessment of the HR-QOL was performed through interviews using a validated structured questionnaire from the Medical Outcome Study HIV Health Survey. Linear regression with robust standard errors was used for multivariable analysis. **Results:** Domains related to social and daily activities such as cognitive, role and social functioning had lower HR-QOL scores than domains related to physical health. Men had higher scores of HR-QOL in health transition, perceived HR-QOL, health distress, social functioning and role functioning. In multivariable analysis, factors associated with poorer HR-QOL were female sex, lower levels of education and being widowed or separated in women. **Conclusions:** HR-QOL of PLHA in rural India is poor, especially in widowed or separated women and people with lower levels of education. There is an urgent need of implementing programmes for improving the HR-QOL of HIV infected women in rural India.

Keywords: Domain, Education, Gender, HIV, Quality of life, Women

Address for correspondence: Mr. Easwaran Vigneshwaran, Department of Pharmacy Practice, Raghavendra Institute of Pharmaceutical Education and Research, KR Palli cross, Anantapur-515 721, Andhra Pradesh, India. E-mail: vickku_e@yahoo.com.sg

Introduction

The World Health Organization (WHO) defines health as a state of complete physical, mental, and social well-being and not merely the absence of disease. In general terms, quality of life extends beyond health. It may include satisfaction with one's geographic location, access to education, or level of income. Measurement of health must not only include estimates of the frequency and severity of diseases, but also well-being and health-related quality of life (HR-QOL).[1]

People living with HIV/AIDS (PLHA) need to cope with a range of HIV-related symptoms for extended periods. These symptoms may be related to the infection itself, co-morbid illnesses, or iatrogenic effects from HIV-related medication.[2] In addition, many of the patients struggle with numerous social problems such as stigma, poverty, depression, substance abuse, and cultural beliefs which can affect their HR-QOL, not only from the physical health aspect, but also from mental and social health point of view.

HR-QOL can be measured with a variety of multidimensional generic and disease specific instruments, some of which have been specifically developed for PLHA.[1] The assessment of the HR-QOL is useful for assessing patients' perceived burden of chronic disease, tracking changes on health over time, assessing the effects of treatment and quantifying the return on health care investment.[2] Moreover, the assessment of HR-QOL is central for understanding how people's

lives are affected by HIV infection and can help health care providers in planning of individual interventions for those areas and subgroups where HR-QOL is a significant problem.[3]

With the implementation of highly active antiretroviral therapy (ART) in developed and developing countries, HIV infection has become a chronic disease. The majority of the studies on HRQOL of PLHA in India have been performed before the complete implementation of free ART in the country, which happened approximately in 2007.[4-7] In some of these studies, important differences in HR-QOL between men and women were found, indicating that men had higher scores in domains related to psychological well being, positive feelings, sexual activity and financial resources.[4,8] However, many of the patients that were involved in these studies had severe physical problems related to opportunistic infection or other HIV-related diseases,[8] so the results of these studies may not be fully applicable to most PLHA living in India today. Moreover, these studies have been performed in urban settings by tertiary care centers, so information of HR-QOL of PLHA in rural areas is lacking. A better knowledge of the characteristics of HIV in rural area is important to understand the characteristics of the HIV epidemic in India, because two thirds of 2.4 million PLHA in India are rural residents.[9,10] The main objective of the present study was to describe the HR-QOL of men and women living with HIV/AIDS in a rural area of India.

Materials and Methods

The study was performed in the RDT Bathalapalli Hospital, Andhra Pradesh, India. The hospital belongs to a non-governmental organization called Rural Development Trust, and provides health care free of cost to PLHA. The study was approved by the Institutional Ethical Committee and all patients gave written informed consent.

We carried out a descriptive cross sectional study on a stratified random sample of 60 men and 60 women who attended the outpatient section of the Department of Infectious Diseases during the second half of the year 2011. Only patients aged above 18 years were included in our study. After explaining the purpose of study, inform consent was taken to all patients before the interview. Interviews were done using a validated structured questionnaire of Medical Outcome Study (MOS) HIV health survey.[11] The MOS-HIV health survey was created for assessing the functional status and well-being of PLHA in multiple settings. The MOS-HIV Health Survey consists of 35 questions which assess 11 dimensions of HR-QOL including general health perceptions, physical functioning, role functioning, pain, social functioning, mental health, energy, health distress, cognitive functioning, perceived quality of life and health transition [Table 1].[12] Scores for dimensions range from 0 to 100, where higher scores indicate better health.

Statistical analysis

Statistical analysis was performed using Stata Statistical Software (Stata Corporation. Release 11, College Station,

Table 1: Description of domains in the HIV-MOS health survey			
Dimensions	**N**	**Low scores**	**High scores**
General health perceptions	5	Views personal health as poor	Views personal health as excellent
Physical functioning	6	Very limited in performing physical activities due to poor health including eating, dressing, bathing or using the toilet	Performs all types of physical activities due to poor health including vigorous or strenuous activities without limitations
Role functioning	2	As a result of physical health, experiences problems with work or daily activities	No problems with work or other daily activities as a result of health
Pain	2	Very severe and limiting pain	No pain or limitations due to pain
Social functioning	1	Social activities limited due to health	No limitations on social activities as a result of health
Mental health	5	Feels nervous and depressed all of the time	Feels calm, peaceful and happy all of the time
Energy	4	Feels tired and worn out all of the time	Feels energetic and full of pep all the time
Health Distress	4	Feels despair, discouraged and afraid due to health all of the time	Does not feels despair, discouraged and afraid due to health
Cognitive functioning	4	Has difficulty concentrating, reasoning and remembering all of the time	Has no problem concentrating, reasoning and remembering
Perceived quality of life	1	Life has been very bad; could hardly be worse	Life has been very good; could hardly be better
Health transition	1	Physical health and emotional condition much worse than 4 weeks ago	Physical health and emotional condition much better than 4 weeks ago

N: Number of questions

Texas, USA). Univariable analysis was performed with Student's *t*-test for continuous variables and Chi-square test for categorical variables. Linear regression with robust standard errors was used for the multivariable analysis of socio demographic factors associated with HR-QOL scores, so positive coefficients indicate positive linear relationship, negative coefficients indicate negative linear relationship and 0 indicates no linear relationship.[13] Internal consistency was calculated using scale reliability coefficients (Cronbach's alpha) with standardized items.

Results

The characteristics of the patients are described in Table 2. The mean age of the patients was 34 years, almost two thirds were married and 27% were illiterate. Women had lower levels of education than men.

Scores of HR-QOL stratified by gender are presented in Table 3. Lowest mean scores were observed for cognitive, role and social functioning. Mean scores of HR-QOL were higher in men than in women in all HR-QOL domains. Men had significantly higher scores of HR-QOL in health transition, perceived quality of life, health distress, social functioning and role functioning. The overall scale reliability coefficient was 0.53. By gender, the scale reliability coefficient was 0.54 for females and 0.58 for males.

Multivariable regression analysis of socio-demographic factors associated with higher HR-QOL scores are presented in Table 4. Factors associated with better HR-QOL were being married, not being illiterate and male sex. We found important differences between men and women. Single or widowed/separated women had lower scores of HR-QOL than married women, but marital status was not an important factor for determining HR-QOL in men. In both men and women, having higher education was associated with better HR-QOL. Compared to women who finished primary or secondary education, illiterate women had worse HR-QOL, but this was not observed in men.

Coefficients of linear regression analysis for each domain of the HIV-MOS health survey are presented in Table 5. Being widowed or separated was associated with worse role functioning. Being illiterate was associated with lower scores in pain and perceived quality of life, whereas having higher education was associated with having higher scores in role and social functioning.

Discussion

To our knowledge, this is the first published study describing the HR-QOL of PLHA living in rural areas

Table 2: Demographic characteristics of patients by gender

Variables	Total (*n*=120) N (%)	Females (*n*=60) N (%)	Males (*n*=60) N (%)	P value*
Age (years)	34.5 (8.92)†	36 (8.8) †	33 (8.8)†	0.067
Marital status				0.114
Single	34 (28.3)	20 (33.3)	14 (23.3)	
Married	78 (65)	34 (56.7)	44 (73.3)	
Widowed/ separated	8 (6.7)	6 (10)	2 (3.3)	
Education				<0.001
Higher	21 (17.4)	4 (6.7)	17 (28.3)	
Secondary	26 (21.7)	5 (8.3)	21 (35)	
Primary	41 (34.2)	23 (38.3)	18 (30)	
Illiterate	32 (26.7)	28 (46.7)	4 (6.7)	

*Two sided Student's *t* test for age, Chi-square for marital status and education; †Mean (standard deviation)

Table 3: Mean and 95% confidence interval for each domain score in the HIV-medical outcome study health survey

Dimensions	Total	Women	Men	P value*
General health perceptions	51.5 (49-54.1)	49.9 (46.2-53.6)	53.2 (49.8-56.6)	0.2
Physical functioning	57.7 (54.3-61)	54.7 (50.2-59.3)	60.6 (55.7-65.5)	0.08
Role functioning	35.8 (30.4-41.2)	27.5 (19.8-35.2)	44.2 (37-51.3)	0.0019
Pain	64.9 (60.8-69)	59.1 (53.2-64.9)	70.8 (65.4-76.2)	0.0041
Social functioning	39.8 (35.6-43.9)	34.2 (29.7-38.7)	45.3 (38.4-52.3)	0.0079
Mental health	47.2 (45.1-49.2)	46 (42.8-49.3)	48.3 (45.8-50.9)	0.26
Energy	51.6 (49.4-53.8)	50.8 (48-53.7)	52.3 (48.8-55.7)	0.5
Health Distress	47.8 (44.5-51.1)	42.7 (38.1-47.2)	53 (48.4-57.5)	0.0019
Cognitive functioning	33.7 (30.6-36.7)	31.4 (27.4-35.4)	35.9 (31.2-40.6)	0.15
Perceived QOL	54.6 (49.7-59.5)	43.8 (37-50.6)	65.4 (59.3-71.5)	<0.0001
Health transition	56 (50.4-61.7)	39.6 (32.2-46.9)	72.5 (66.1-78.9)	<0.0001
Overall health related QOL	49.1 (47.6-50.6)	43.6 (42.1-45.1)	54.6 (52.9-56.3)	<0.0001

*Two sided Student's *t* test; QOL: Quality of life

Table 4: Linear regression multivariable analysis with robust standard errors of overall health related quality of life scores stratified by gender

Variables	Total (*n*=120) Coefficient (95% CI)		Women (*n*=60) Coefficient (95% CI)		Men (*n*=60) Coefficient (95% CI)	
Age (years)	-0.04	(-0.14 to 0.06)	0.01	(-0.14 to 0.17)	-0.04	(-0.18 to 0.1)
Marital						
Married	3.40‡	(-0.11 to 6.91)	5.82*	(2.2 to 9.44)	-2.14	(-7.02 to 2.73)
Single	2.91	(-0.84 to 6.66)	4.26†	(0.37 to 8.16)	-1.45	(-7.59 to 4.7)
Widowed	Reference		Reference		Reference	
Education						
Higher	12.74*	(9.84 to 15.65)	11.97*	(6.96 to 16.97)	10.14*	(4.41 to 15.86)
Secondary	4.38†	(0.91 to 7.85)	3.18	(-2.01 to 8.37)	2.01	(-4.1 to 8.12)
Primary	3.01†	(0.63 to 5.39)	3.84*	(1.17 to 6.52)	-0.65	(-6.36 to 5.06)
Illiterate	Reference		Reference		Reference	
Male sex	6.92*	(4.72 to 9.11)				
Constant	39.73*	(34.68 to 44.77)	35.86*	(28.48 to 43.24)	54.52*	(46.57 to 62.47)

CI: Confidence interval; *$P<0.01$, †$P<0.05$, ‡$P<0.1$

of India. Unlike other studies performed before the implementation of free ART in India,[7] domains related to physical health such as pain or physical functioning had higher scores than other domains. In a study performed on 60 patients taking ART in an urban setting in Chennai, South India, the lowest HR-QOL scores were seen in social domains.[14] Similarly, in our study the lowest scores were seen as well in domains related to social and daily activities such as role, social and cognitive functioning, probably due to the stigma and discrimination associated with HIV infection in India.[15]

Gender differences are important for explaining the HIV epidemic in rural India.[9,16] We found that women have poorer HR-QOL than men. Although there was no significant difference in cognitive functioning, women had poorer perception of their health and their quality of life, and consequently, women had more problems in their daily and social activities than men. Our results are in accordance with other two urban studies performed in South India, indicating that HIV infected women have poorer HR-QOL than men both in urban and rural areas of India.[5,8]

The poorest HR-QOL scores were seen in illiterate persons and widowed/separated women. The negative impact of low educational levels in the HR-QOL of PLHA in India has been previously described.[14,17] Stigma, discrimination and lack of support, even from relatives and friends, are common in widowed or separated women living with HIV in rural areas of India.[18,19] These data indicate that there is a need to implement specific programmes for improving the HR-QOL of women infected by HIV in India, especially illiterate or widowed/separated women.[20] These programmes should aim to improve the social and economical status

of HIV infected women with the objective of achieving economic independence and building a social network, sometimes outside of their families, where they can feel safe.

The study has some limitations. We did not collect clinical information such as CD^4 + lymphocyte count, concomitant diseases or treatment of patients. Therefore, our linear regression models performed poorer in domains related to physical health such as physical and cognitive functioning, general health perceptions, and energy and health distress. Including clinical data related to HIV infection would have improved the predictive power of these models. While scale reliability coefficients improved somewhat after stratification by gender, the scale reliability coefficient was lower than in previous studies,[12] indicating poor inter-domain consistency of the MOS-HIV health survey in our setting. Moreover, we did not include other important factors that could affect the HR-QOL of the patients such as the mode of transmission or the time since HIV diagnosis.

Conclusion

The results of this study demonstrate that PLHA in rural India have poor HR-QOL. Compared to previous studies performed before the implementation of free ART in India, we have observed an improvement in domains related to physical health, but not in domains related to social and daily activities. We found that specific groups, widowed or separated women and people with lower levels of education, had the lowest HR-QOL scores and, therefore, they are more vulnerable than others. These results can be used to design target programmes for improving the HR-QOL of PLHA in rural areas of India.

Variables	General health perceptions	Physical functioning	Role functioning	Pain	Social functioning	Mental health	Energy	Health Distress	Cognitive functioning	Perceived QOL	Health transition
Age (years)	-0.11	-0.02	0.45	0.24	-0.13	-0.15	0.09	-0.11	-0.13	-0.11	-0.34
Marital											
Married	-2.27	4.63	19.74‡	1.3	-2.42	4.56	3.48	-2.83	-8.77	8.34	12.96‡
Single	-4.94	0.83	25.55†	2.26	1.79	2.23	2.8	-2.8	-3.52	10.05	-1.34
Widowed	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference
Education											
Higher	5.19	9.7	25.13*	15.50†	14.95‡	-1.28	4.07	4.09	5.83	23.85*	32.80*
Secondary	0.96	-4.01	2.26	16.69‡	-2.21	3.23	-2.16	2.75	1.92	10.38	19.84†
Primary	-1.39	-1.24	4.51	17.37*	2.44	-2.01	-0.87	-1.39	-5.57	11.48‡	9.47
Illiterate	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference
Male sex	1.3	4.01	11.61‡	6.04	8.91‡	0.58	1.04	8.41†	2.99	13.94*	18.00*
Constant	57.05*	52.63*	-12.07	39.95*	37.88*	48.74*	44.75*	49.18*	43.80*	32.85*	37.49*

Table 5: Coefficients of linear regression analysis with robust standard errors for each domain of the medical outcome study-HIV health survey

QOL: Quality of life; *P<0.01, †P<0.05, ‡P<0.1

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