

ASSESSING QUALITY OF LIFE AND DEPRESSION AMONG PEOPLE LIVING WITH HIV/AIDS AND TB-HIV COINFECTION IN KATHMANDU, NEPAL

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ABSTRACT

Introduction: Assessing the health related quality of life (HQoL) and depression in human immunodeficiency virus (HIV) positive people and TB-HIV coinfecting people is of extreme importance in designing strategies and implementing interventional programs on treatment care and support to People living with HIV and AIDS.

Methodology: A cross-sectional study was conducted among People living with HIV/AIDS and TB-HIV Coinfection from July to December 2011 at care and support centers in Kathmandu, Nepal. The list HIV care and Support centre registered at Kathmandu were selected using the lottery proportionately to meet the sample size of 154. The method of data collection was summarized in the World Health Organization's questionnaire for Health related Quality of life and Beck Depression Inventory Scale II for depression. Data was collected using verbal information of respondents, entered on Epi Data version 3.4.1 and analyzed using SPSS version 16.0.

Results: TB-HIV coinfecting people had lower quality of life in all domains compared to HIV/AIDS infected people. The prevalence of depression was found higher in TB-HIV coinfecting people than HIV/AIDS group. CD4 count, educational status, occupation, ethnicity, family size and depression were statistically significant with the QoL domains. Among coinfecting patients, depression was 3.86 times more likely to influence QoL while adjusted odds ratio was 4.21 times higher.

Conclusion: The TB control program should design strategies to improve the quality of life of TB-HIV coinfecting people and depression should be targeted as an intervention to improve the quality of life of people living with HIV with or without TB.

Key words: Nepal, World Health Organization, Quality of Life Instrument, Beck Depression Inventory-II

INTRODUCTION

With the detection of Human Immunodeficiency Virus (HIV) for the first time in Nepal in 1988, HIV/AIDS is now increasingly considered as a chronic disease and is in the stage of a concentrated epidemic. Tuberculosis, more commonly known as TB, is a bacterial infection that usually affects the lungs but can affect any part of the body

except hair, teeth and nails and is one of the main causes of HIV-related morbidity and mortality.¹ When a person is infected with HIV, they are at an increased risk of also contracting TB. Co-infection with TB can also mean an accelerated progression to AIDS. A HIV-negative person with a latent TB infection has a 10% chance of progressing to active TB over his or her entire lifetime, whereas a HIV-positive person has a 10% chance of developing active TB each year.² Many of the TB-HIV and HIV patients struggle with numerous social problems such as stigma, poverty, depression, substance abuse, and cultural beliefs which can affect their QoL not only from the physical health aspect, but also from a mental and social health point of view, and this causes numerous problems relating to the

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patients' useful activities and interests. Assessing health-related quality of life (HQoL) is useful for documenting the patients' perceived burden of chronic disease, tracking changes in health over time, assessing the effects of treatment and quantifying the return on health care investment. The World Health Organization (WHO) has defined quality of life "as an individual's 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". According to WHO "Depression is a common mental disorder that presents with depressed mood, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, low energy, and poor concentration. These problems can become chronic or recurrent and lead to substantial impairments in an individual's ability to take care of his or her everyday responsibilities." The unparalleled magnitude and scale of the HIV/ AIDS and TB epidemic remain major public health challenges globally.³ Nepal has a concentrated HIV and AIDS epidemic, with an estimated 61,000 persons living with HIV and AIDS and about 14 new HIV infections each day.⁴ The estimated prevalence of HIV among TB patients between the ages of 15-49 years and the estimated number of active TB cases among PLHIV in Nepal is 2.4%.⁵ The assessment of QoL is central to understanding how people's lives are affected by TB and HIV infection. Optimization of HQoL is particularly important now that TB and HIV Coinfection can be considered a chronic disease with the prospect of long-term survival. The assessment of HQoL in this population can help us to detect problems that may influence the progression of the disease.

METHODS

Study Design

The study was cross sectional in nature and was prepared with the aid of quantitative data. The study was conducted at care and support centre i.e. Prerana, Navakiran Plus, Genetup, National Association of PLHA in Nepal (NAP+N) for 6 months starting from July 2011.

Study Population

The study population included people above 16 years including men and women with HIV/AIDS and TB-HIV Coinfection.

Inclusion and Exclusion Criteria

The study subjects above 16 years who had the history of HIV/AIDS and TB-HIV co-infection were included in the study. However the study subjects below 16 years and with auditory, visual and cognitive disability were not included in the study. Besides this, those who were unwilling to disclose the required information were excluded and unavailability of respondents was considered.

Sampling Method and size

The sample population was 154 including the 10% of non response rate at 95% confidence interval. The Random sampling technique followed by systematic selection of respondent was used by following procedure:

1. List of care and support centres present at Kathmandu valley were ranked anonymously and four care and support centres were chosen to meet the required sample size proportionately from the lottery.
2. Systematic sampling Method was done to select the respondents at this care and support centers.
3. During administration of questionnaire 50% of PLWHA were women.
4. Unavailability of respondents was addressed by keeping ten extra optionally selected samples at step 2.

Data Collection Procedure

The data was collected by interviewing the respondents using a structured questionnaire WHOHQoL-HIV BREF⁶ instrument consists of 31 items, with each item using a 5-point Likert scale and Beck Inventory Depression Scale II⁷ which has 21 items.

Validity and Reliability

The study was conducted using the WHO health related quality of life indicator (HQoL) and Beck Inventory Depression Scale II which is valid, widely used and the most accepted instrument. Besides this, the pre testing was performed in order to check the acceptability of the questionnaire with the respondents. To measure internal consistency, the Cronbach's alpha was calculated for each domain of the instrument. Physical and Level of independence domains of WHOHQoL BREF questionnaire had a high value of Cronbach's alpha ($\alpha > 0.7$) i.e. 0.78 and 0.72. However, all of the other

remaining had an average value of Cronbach's alpha that is psychological health 0.68, social relationship 0.64, environmental 0.64, spiritual/personal beliefs 0.66 and overall satisfaction 0.63.

Data Processing and Analysis

The data was entered in Epi data version 3.4.1 and analysis was done using SPSS version 16. Descriptive statistics for continuous data and frequencies & proportion for categorical data were calculated. For inferential statistics, t-test and one way ANOVA were used for bivariate analysis. Statistical significance was set at $p \leq 0.05$. Rank sum test and correlation were used for significant test and association. A binary logistic regression was performed to measure the strength of association between dependent and independent variables.

Ethical Consideration

The ethical approval was received from the Institutional Review Board of faculty of health science, Nobel College, Pokhara University. An informed verbal consent was ensured prior to administration of the questionnaire. The beneficence of the respondents was taken into consideration, subjects were not coerced to participate in the study and confidentiality was maintained. No incentives were provided for extraction of data. Cited references are presented in APA format for due acknowledgement of academic source and to avoid plagiarism.

RESULTS

Sample Characteristics

One hundred fifty four respondents were asked to participate in the study out of which 8 (6%) refused to participate in the study. The overall response rate of participation in the study was high, 146 (94%). The remaining participants refused to participate in the study explaining that they have participated in

too many researches and few others said that they were not interested in our study.

Among all the participants 100%, 51.36% (n=75) were PLWHA and 48.63% (n=71) were coinfecting with TB-HIV. Majority of respondents 55.48% (n=81) were males and were between the age of 26-35 years i.e.48.63 % (n=71) (table 1). 33.56 % (n=49) of the respondents had secondary level of schooling. As per the marital status 50 % (n=73) of the respondents were married followed by single, separated and divorced 1.54.11 % (n=79) of the respondents have CD4 count less than 350 other than 45.90 % (n=67) have CD4 count more than 350. Majority of the respondents i.e.68.50% (n=100) were employed and 56.16 % (n=82) lived in nuclear family (table 2).

The mean score for the six domains of HQoL and overall satisfaction regarding the general quality of life was highest in the environmental domain in both groups (22.08 and 24.08) followed by the psychological domain, i.e. 13.25 and 14.88, and the least in the physical and overall satisfaction domains. All the domains were found to have positive correlation with PLWHA and TB-HIV Coinfected people except the physical health domain in Coinfected people where no correlation was found.

The prevalence of depression among 71 TB-HIV Coinfected people and 75 PLWHA using beck depression scale was found to be 33.8% and 7.9% respectively (figure 1).

Depression and CD4 Count were associated with both the PLWHA and coinfecting patients. Among coinfecting patients, depression was 3.86 times more likely to influence QoL while, adjusted odds ratio was 4.21 times higher, OR = 4.211(95%CI: 1.22, 14.47). No significant association was observed with the sex, occupation and occupational status in both the groups (table 3).

Quality of life domains	Number of items	TB-HIV Co-infection (n=71) Mean (SD)	Correlation with total score	HIV without TB/ HIV Co-infection (n=75) Mean (SD)	Correlation with total score	Proportion of respondents with QoL score	
						High	Low
Physical Health	4	11.99 (1.80)	0.041	11.52 (2.05)	0.385**	26.7	80.8
Psychological Health	5	13.25 (2.08)	0.515**	14.88 (2.24)	0.590**	37	89.7
Level of Independence	4	12.77(1.46)	0.406**	12.97 (1.77)	0.467**	42.5	86.3
Social Relationship	4	11.79 (2.47)	0.744**	13.36 (2.41)	0.680**	35.6	85.6
Environmental	8	22.08 (2.96)	0.773**	24.08 (2.71)	0.597**	26	80.1
Spiritual	4	11.08(2.48)	0.772**	13.09 (2.59)	0.725**	25.3	81.1
Overall satisfaction	2	5.25 (2.01)	0.783**	7.07(1.51)	0.507**	33.1	81.2

p* < 0.05 ** p < 0.001

Variables	Sample characteristics (%)	PH	Psy	Spr	Social	Env	Variables	Ind	Overall satisfaction
Sex							Sex		
Male	55.48	11.53	14.16	12.30	12.75	22.83	Male	13.00	6.00
Female	44.52	12.02	14.00	11.89	12.40	23.46	Female	13.00	6.00
T test		-1.501	0.416	0.890	0.827	-1.273	U test	2546.0	2604.5
Age									
16-25	17.80	11.88	13.96	12.12	12.38	23.73		12.96	6.38
26-35	48.63	11.66	14.10	11.90	12.59	23.28		12.97	6.24
36-45	28.09	11.80	14.10	12.46	12.78	22.37		12.59	5.93
46-55	5.48	12.25	14.38	12.45	12.38	22.38		13.25	6.38
F-test		0.353	0.067	0.370	0.147	1.320		0.679	0.356
Educational Status									
Primary	17.80	11.88	13.35	12.12	12.23	22.73		12.62	5.50
Lower secondary	6.16	12.44	15.00	12.22	13.11	23.56		12.56	6.56
Secondary		11.86	14.35	12.10	12.57	23.02		12.94	6.06
Above secondary	33.56	10.88	14.42	12.95	13.52	23.58		12.80	7.35
F-Test	27.38	3.083*	2.302	0.898	1.793	0.531		0.310	6.518**
Marital Status									
Married		11.79	14.07	12.56	13.03	23.07		12.67	6.01
Single	50.0	11.47	14.00	11.76	11.93	22.98		13.02	6.40
Separated	30.82	12.50	14.36	11.50	12.00	23.07		13.07	5.93
Divorced	9.59	11.64	14.21	11.57	13.07	23.79		13.29	6.64
F-Test	9.59	1.083	0.099	1.347	2.159	0.267		0.868	0.678
Current CD4 Count (cells/mm ³)									
≤350	45.90	11.85	13.07	11.09	11.69	21.82		12.64	5.10
>350	54.11	11.66	14.95	12.99	13.37	24.20		13.08	7.10
T-Test		.594	5.328**	-4.457**	-4.168**	5.192**		1.616	-6.978**
Occupation									
Employed	68.50	11.51	14.36	12.68	13.27	23.54		12.87	6.53
Unemployed	31.50	12.26	13.10	10.89	11.23	22.17		12.89	5.43
T-Test		2.193*	2.114*	3.856**	5.073**	2.607*		-.073	3.192*
Family Size							Family Size		
Nuclear	56.16	11.54	13.87	11.98	12.56	22.74	Nuclear	13.00	6.00
Joint	32.20	12.21	14.45	12.49	12.79	23.96	Joint	13.00	6.00
Single	11.64	11.47	14.18	11.76	12.24	22.53	Single	13.00	6.00
F Test		2.023	0.958	.688	.304	2.878*	Kruskal wallis test	0.559	3.400
Depression									
Minimal	Prevalence of depression is 41.7	11.58	14.58	12.82	13.24	23.59		13.03	6.58
Mild		12.80	13.30	11.90	11.90	22.90		12.70	5.20
Moderate		11.73	13.07	9.80	10.67	22.13		12.60	4.13
Severe		12.27	12.20	9.60	10.47	20.80		12.20	4.20
F Test		1.627	7.066**	12.748**	10.455**	4.781*		1.366	21.504**

*p < 0.05, **p < 0.001, PH = Physical health, Psy = psychological health, Social = Social relationship, Env = Environment, Ind = level of independence, Spir = Spiritual health

Table 3. Bi-variate and Multivariate Logistic Regression to measure the relationship of Independent variables with dependent variable

Variables	TB/ HIV Co-infection (n=71)		Variables	HIV/AIDS without TB (n=75)	
	Crude Odds ratio (95% CI)	Adjusted Odds ratio (95% CI)		Crude Odds ratio (95% CI)	Adjusted Odds ratio (95% CI)
Sex	0.955 (0.368-2.473)	0.995 (0.328-3.021)	Sex	1.458 (0.587-3.642)	1.322 (0.457-3.830)
Depression	3.860* (1.440-10.345)	4.211* (1.225-14.478)	Depression	2.259 (0.896-5.698)	1.858 (0.686-5.026)
Occupation	0.410 (0.156-1.080)	0.756 (0.238-2.398)	Occupation	0.411 (0.127-1.328)	0.475 (0.126-1.791)
CD4 Count	5.042* (1.268-20.053)	0.188* (0.043-0.818)	CD4 Count	0.095* (0.011-0.796)	0.103* (0.012-0.891)
Educational status	1.381 (0.425-4.490)	0.666 (0.150-2.961)	Educational status	2.000 (0.461-8.677)	2.044 (0.419-9.960)

*p<0.05

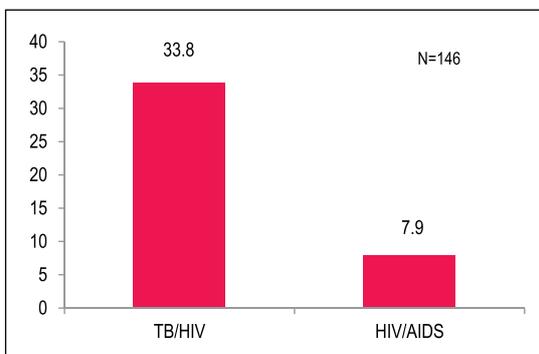


Figure 1. Prevalence of depression among PLHIV and TB/ HIV co-infection

DISCUSSION

In this study, comparison of the QoL of persons with HIV infection with and without TB was done. The WHOHQoL BREF questionnaire had a good internal consistency to assess the QoL of TB-HIV coinfecting patients which was similar to the study conducted in Taiwan and Iran.^{8,9} The overall response rate in the study was ninety-four percent which was similar to the study conducted in Croatia and Ethiopia where the response rate was above eighty percent.^{10,11}

According to this study, the largest portion of respondents were affected with this disease between 18- 40 years of age and this finding is congruent the report of UNAIDS/WHO Report on the global AIDS epidemic 2008, in 2007 off total about 33 million people of HIV positive, an Estimates 30.8 million people were in the working age group (15-49 years of age). The majority of the

respondents were males and this is similar to the research conducted in Bangladesh and Iran.^{12,13} With more urban areas respondents were found to receive levels of secondary education similar to the other study.¹³ Most of the respondents were married and were employed, in contrast with the other studies where most of the respondents were unemployed and separated. A majority of the respondents had a history of opportunistic infection and had CD4 Count more than 350 for PLWHA which was found to be similar to a study conducted in Bangladesh.¹²

The mean score of HQoL was highest in the environmental domain in both groups and the least in physical and overall satisfaction domains in this study, findings similar to the study in Bangladesh¹², where the mean QoL scores was highest in spiritual/ religion and lowest in the overall satisfaction, but in contrast with the study at Croatia.¹⁰ TB-HIV co-infected patients had a lower quality of life in all domains as compared to HIV infected patients without TB.¹¹ In other studies, it was reported that HIV patients had a lower QoL as compared to the general population¹⁴ and that TB patients had a lower QoL as compared to their neighbors.¹⁵

The Bivariate Analysis revealed that CD4 count, educational status, occupation, ethnicity, family size and depression was significantly associated with the QoL domains in the study while an association between CD4 count, WHO staging and other Socio demographic characteristics with QoL was observed in various studies.^{15,16} Similarly,

Socio-demographic characteristics, such as age, gender, education, income employment status and disease related variables such as disease stage, opportunistic infection, CD4 count etc have been found to be strongly associated with the QoL of PLHIV.¹⁷ Some researchers have documented low performance for women in some aspects of quality of life¹⁸ while in some other studies difference according to gender was not found, or have even shown the opposite. Women had poorer QoL compared to men.¹³ Some reports in literature find younger age to be related with better QoL¹⁹ while in this study gender and sex has no relationship with the quality of life, which is similar to a study conducted at India.²⁰ Comparison with the educational status revealed that those with lower secondary and secondary education had better physical health and overall satisfaction whereas contradictory results have been observed in comparisons between educational groups which showed that those with less education reported significantly poorer QoL than those with more education, according to some authors. Likewise, Subjects with higher education reported better QoL in the independence and environment domains.²¹ In this study marital status had no influence on the quality of life domains but marital status influences quality of life; Subjects who are married or in relationship reported a higher level of QoL for the social relationships domain. Those in relationships may enjoy better social support.¹⁰ Having an occupation or a source of income meant a higher QoL in all the domains except level of independence which was similar to the results of study conducted in Brazil where source of income was associated with a better HQoL only with respect to the physical and psychological domains. Some authors have acknowledged the fact that being employed is the main predictor of the HQoL scales for their population and it has been shown that the HIV-infected patients find it difficult to get and keep jobs.²² An association between CD4 count and other Socio demographic characteristics with QoL was observed in this study, in line with various other studies.^{16,15} Studies show that depression affects the quality of life of people living with HIV in many ways,²³ which coincides with this study where depression had significant association with all the QoL domains except physical health and level of independence.

The prevalence of depression was higher in TB-HIV coinfecting patients than PLWHA, findings which are similar to the results of a study where TB-HIV coinfecting patients had significantly greater risk of CMD than the non-co-infected patients.²⁴ Clinical Management of TB-HIV co-infection can be complicated and due to the fact that many ART drugs pharmacokinetics and dynamics leads to drug interaction and predisposal symptoms, negative health effects and illness, as HIV leading to weak immune response itself is a risk factor for Neuropsychiatric manifestations.^{24,25} Variations in clinical outcomes of neuropsychiatric manifestations are observed in TB-HIV co-infections and HIV infection only. HIV only people are more symptomatic than in people with TB-HIV co-infection however these manifestations vary with the severity and viral load in the person.²⁶

In coinfecting patients, individuals who had depression were 8.8 times more likely to have poor physical health as compared to individuals who had no depression¹¹ whereas in this study, among coinfecting patients, depression was 3.86 times more likely to influence QoL. When adjusted for the effect of potential confounding variables, the odds of having CMD for TB-HIV coinfecting individuals was 1.7 times the odds for non-coinfecting patient, while in this study adjusted odds was 4.21 times higher.²⁴

CONCLUSION

TB-HIV co-infected patients had a lower quality of life in all domains compared to HIV infected patients without TB. The prevalence of depression was found higher in TB-HIV coinfecting people than HIV/AIDS group. The Bivariate Analysis revealed that CD4 count, educational status, occupation, family size and depression were significantly associated with the QoL domains in the study. Gender, sex and marital status had no relationship with the quality of life. A significant association between CD4 counts and depression with QoL was observed with all the domains except physical health and level of independence. Among coinfecting patients, depression was 3.86 times more likely to influence QoL, 4.21 times higher with adjusted odds. The TB control program should design strategies to improve the quality of life of TB-HIV coinfecting

people and depression should be targeted as an intervention to improve the quality of life of people living with HIV with or without TB.

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