



Quality of Life of HIV/AIDS Patients: The Influence of CD4 Count on It

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ABSTRACT

Introduction: The HIV pandemic had a prevalence of 0.27% with 20.9 lakhs PLHIV in the year 2011. Decreased CD4 counts and associated opportunistic infections affects their Quality of Life. Objective: The objective of the study was to assess the association between CD4 counts and Quality of Life (QOL).

Material and Methods: A cross-sectional study was conducted among 558 subjects visiting ART centre of Burdwan Medical College aged ≥ 15 years. Information regarding Socio-demographic variables was taken and Quality of Life (QOL) assessed by WHOQOL-BREF (Bengali version).

Results and Analysis: Majority of the 558 subjects were Male (6.9%), Hindu (80.1%) and aged between 25-34 years (44.6%). 32.6% subjects had CD4 count < 200 mm³. Increased CD4 count was associated with higher QOL which was found to be statistically significant.

Conclusion: QOL of HIV patient is influenced to a great extent by CD4 Count

Keywords: HIV/AIDS, CD4 count, ART

INTRODUCTION

The goal of individual and human society is to stay healthy, lead a life full of happiness, and ultimately maintain well-being throughout the life. Well-being is a concept that has subjective and objective components. The subjective component of well-being (as expressed by each individual) is referred to as 'Quality of life (QOL)'.¹ Quality of life is defined by WHO as "The condition of life resulting from the combination of effects of the complete range of factors such as those determining health, happiness (including comfort in the physical environment and a satisfying occupation), education, social and intellectual attainments, freedom of ac-

tion, justice and freedom of expression."² However in some situations, all these things change and living becomes not so normal when a person is affected by a chronic debilitating illness like HIV/AIDS. Being HIV positive can alter an individual's quality of life dramatically in all aspects. After entry into the body, the virus of HIV/AIDS continues to multiply actively and kills the cells of the immune system (CD4 cells). The chance of getting infected with some opportunistic infection becomes increased with the downfall of CD4 count. Ultimately the quality of life is at stake. Reduced immunity and impending opportunistic infections can be both stressful and traumatic. A downward change

in a person's quality of life can be very difficult, especially knowing the fact that the illness is possibly life threatening. India has the third largest number of people living with HIV/AIDS.³ According to HIV Estimations for the year 2012, the adult (15-49 years) HIV prevalence at national level continued its steady decline from the estimated level of 0.41% in 2001 to 0.27% in 2011.³ The total number of people living with HIV/AIDS in India was estimated at around 20.9 lakh in 2011, 86% of whom were in 15-49 years age-group.³ India HIV Estimation 2015 report, National adult (15-49 years) HIV prevalence in India is estimated at 0.26% (0.22%-0.32%) in 2015. In 2015, adult HIV prevalence is estimated at 0.30% among males and at 0.22% among Females.⁴ West Bengal have shown an estimated adult HIV prevalence in the range of 0.21-0.25%.⁵ Concern about Quality of life is a very important issue now-a-days especially in those type of patients who are suffering from this chronic debilitating disease which has no cure but side by side regular therapy prolonging their life. Based on the aforesaid observation, the present study was conducted. The aim of this study was to assess the Quality of life of the HIV/AIDS patients receiving ART along with a specific objective, to find out the influence of CD4 count on their quality of life.

MATERIAL AND METHODS

The study was an observational hospital based with cross-sectional design. It was carried out for a period of one year starting from 1st July, 2010 to 30th June, 2011 at the Antiretroviral therapy (ART) centre of Burdwan Medical College & Hospital of West Bengal. The ART centre of Burdwan Medical College and Hospital has been selected as the study area, because it is a tertiary care centre and maximum numbers of HIV/AIDS patients, residing mainly at Burdwan district and its adjacent surroundings, come here for their treatment purpose. It is the nodal ART centre providing the care, support and treatment to the HIV/AIDS patients of Burdwan and its adjacent 4 districts. The above mentioned services are delivered for 6 days a week. On an average, nearly 20 patients attend the clinic every day for receiving ART. Each of those registered patients, who are taking ART, visits the centre once in a month. HIV/AIDS patients, registered for Antiretroviral therapy (ART) from the month of December, 2005 to the end of June, 2010 in the ART centre of Burdwan Medical College and those, who were alive, aged ≥ 15 years and had been on ART in this ART Centre at the end of June, 2010 were selected as the study population for this study. We excluded those patients who were unwilling & unable to participate in the study and

also those who were registered for ART during the reference period of the study but died or transferred out or discontinued their treatment or currently not taking ART from this ART Centre before appearing for the interview. We intended to include all the patients who fulfilled all the inclusion criteria by complete enumeration method.

According to the available records (monthly report of June, 2010 of this ART Centre), the cumulative number of patients who were alive and had been on ART at the end of June, 2010 were 614. Among them, 21 subjects were aged <15 years. So, the rest of the patients i.e. 593, were eligible for the study, who were aged ≥ 15 years, alive and had been on ART in this ART centre at the end of June, 2010. Among these 593, 2 patients died, 10 were transferred out and 8 patients refused to take part in the interview. These 20 patients were excluded according to the exclusion criteria. Pretesting was done on 15 patients. The final study sample size came to be 558.

To collect the necessary information, regarding the socio-demographic and the clinico-epidemiological profile of the patients, a semi-structured interview schedule was prepared. A structured interview schedule of WHOQOL-BREF instrument⁶ was also used for assessing their quality of life. The validated Bengali version of this instrument was used. It was also ensured that the patients were interviewed after at least 6 months of Antiretroviral treatment. During the period of data collection, each study subject was interviewed only for a single occasion by the researcher.

The WHOQOL-BREF Field Trial Version has been developed to provide a short form quality of life assessment that looks at Domain level profiles, using data from the pilot WHOQOL assessment and all available data from the Field Trial Version of the WHOQOL-100. In certain instances however, the WHOQOL-100 may be too lengthy for practical use. WHOQOL-BREF is ideally suited for busy clinics. That's why this WHOQOL-BREF has been used in this study. It consists of 26 items. Each item uses a Likert-type five point scale. These items are distributed in four domains. The four domains of quality of life are - Physical health, Psychological health, Social relationships, Environmental condition (According to WHOQOL-BREF scale). Domain scores are scaled in a positive direction (i.e. higher scores denote higher quality of life). There are 3 negatively phrased items. These 3 questions had to be reversed by recoding them. A method for the manual calculation of individual scores was used for converting raw scores to transformed scores. The table framed by WHOQOL-BREF instrument for this manual calculation was used for this study.

The data was collected by interviewing the patients with the schedule, thorough examination of the OPD tickets, register maintained at ART Centre and the laboratory investigation reports were used for necessary information. The study protocol was approved by the institutional ethics committee. Permission to conduct the study was taken from the Principal of Burdwan Medical College and Hospital. Permission was also taken from the in charge of ART Centre and the senior medical officer of this Centre at the time of interview. The study subjects were interviewed after taking the informed written consent.

RESULTS

By analyzing the collected data it has been revealed that 63.1% of the 558 HIV/AIDS patients were male and the rest were female. Among the patients majority i.e. belonged to the age group of 25-34 years. 80.11% of the study subjects were Hindu by their religion and the rest were Muslim. We revealed that 19.5% were illiterate. Female illiteracy (29.6%) was more prominent than male. Maximum number of the patients was businessman by their occupation. As shown in table 1, majority of the patients were having their CD4 count in between 200-499/mm³. Only 17.74% of them had CD4 count 500/mm³ and more. A sizable proportion (32.62%) of the patients had CD4 count below 200/mm³.

Among all the domains, psychological domain was mostly affected. This was followed by social domain, then physical domain. Environmental domain was least affected among these four. The in-

ter-domain correlation was positively significant between each pair of the four domains. The patients had significantly poorer quality of life that had low CD4 count comparing to those patients whose CD4 count was higher. Table 2 shows the QOL scores in different domains as lowest mean score was found in psychological domain (10.65) among all the patients. This was followed by social domain (11.37) and physical domain (11.67), in ascending order. Highest mean score was observed in environmental domain (11.98) among all the study subjects. We performed ANOVA test between the different CD4 count levels & the 4 domains of QOL at dF2 and CI 95% as shown in table 3. Significantly positive correlation was found between the CD4 count of the patients and their quality of life scores.

Table 1: Distribution of the subjects according to their CD4 count (n=558)

| CD4 count/mm ³ | Number (%) |
|---------------------------|-------------|
| <200 | 182 (32.62) |
| 200-499 | 277 (49.64) |
| ≥ 500 | 99 (17.74) |
| Total | 558 (100) |

Table 2: Distribution of different domains of quality of life in terms of mean and standard deviation

| Domains | Mean±SD | Minimum - Maximum |
|---------------|------------|-------------------|
| Physical | 11.67±2.14 | 6 - 16 |
| Psychological | 10.65±2.53 | 5 - 16 |
| Social | 11.37±2.47 | 5 - 16 |
| Environmental | 11.98±1.60 | 8 - 15 |

Table 3: Distribution of the mean score of each domain of quality of life according to different CD4 levels of the patients

| CD4 count | Physical mean±SD | Psychological mean±SD | Social mean±SD | Environmental mean±SD |
|-----------------------------|------------------|-----------------------|----------------|-----------------------|
| <200 (1) (n=182) | 9.38±1.52 | 8.06±1.65 | 9.59±2.15 | 10.71±1.28 |
| 200-499 (2) (n=277) | 10.50±1.39 | 11.41±1.79 | 11.88±2.14 | 12.31±1.40 |
| ≥500 (3) (n=99) | 13.56±0.99 | 13.28±1.19 | 13.24±1.75 | 13.35±0.89 |
| F value | 397.607 | 378.618 | 114.892 | 153.365 |
| ANOVA p value | 0.000 | 0.000 | 0.000 | 0.000 |
| Pearson correlation r value | 0.706* | 0.758* | 0.548* | 0.621* |
| P value | 0.000 | 0.000 | 0.000 | 0.000 |

*correlation is significant at the 0.01 level (2-tailed)

DISCUSSION

In the present study, it was found that most of the study subjects (74.9%) belonged to the age group of 25-44 years. This reflects that majority of the patients were in sexually active period of their life. The mean age of the study subjects in this research was 34.1 (SD ±8.85) years. This finding can be compared with some other studies on HIV/AIDS

patients. Among them, Nojomi et al. ⁷ found the mean age as 35.4 (SD±6.4) whereas Elisabete et al. ⁸ conducted a study on HIV/AIDS patients in Brazil and the mean age was found as 39.3 (SD ±9.1).

Male dominance, in the overall number of HIV/AIDS people was shown in the study of Nojomi et al. (88.5%) ⁷, and also in the study of

Anis et al. (98.1%)⁹ In the present study also, male proportion was found to be higher.

In the present study, psychological domain of the quality of life among the study subjects was affected mostly (mean score 10.65) than the other domains. This was followed by social domain (11.37), physical domain (11.67) and environmental domain (11.98), in ascending order.

In this study inter-domain correlation was found to be positively significant, between all pairs of the four domains. Similar finding was also found in the study conducted by Wig et al. in North India,¹⁰ where they also found positively significant inter-domain correlation among each pair of the four domains.

Significant effects of CD4 count of the HIV/AIDS patients upon each domain of their quality of life was found in the present study. In each domain, positive correlation was observed between the CD4 count and the mean Quality of life scores. In all the domains of QOL, the mean scores were significantly higher among the patients whose CD4 count was 500/mm³ or more. And the lowest mean QOL score was found among those patients, who were having CD4 count <200/mm³. Similar type of picture was observed in different studies. The finding can be supported by the results of the studies, done by Campsmith et al.¹¹ (2003) and Nojomi et al.⁷

(2008). Their findings suggested a relationship between quality of life and immunological factors, such as CD4 count, or virological factors, such as viral load. They made an opinion that it is still likely that the experience of symptoms, variables clinically related to immunological and virological parameters are actually most responsible for the variance in quality of life. Nojomi et al.⁷ found clinical stage of the disease had the strongest relationship with the quality of life by multivariate analysis, using multiple linear regressions. According to them, the significant impact of clinical stage of disease or CD4 count, on the quality of patients' life in their study reflects the disabling nature of the disease which affects various aspects of patients' quality of life seriously. Campsmith et al.¹¹ concluded that, lower CD4 count was the factor most consistently associated with lower HRQOL. Taking antiretroviral medication was not associated with differences in QOL regardless of CD4 count. Tiwari et al.¹² also found that the QOL of patients having higher CD4 count is better than patients having lower CD4 count, but difference was not found to be significant. Gowda et al.¹³ conducted similar type of study in Mysore district of India in 2011. They have also concluded that Quality of life of HIV-infected people is significantly determined by the CD4 count and an advanced stage of HIV infection needs more attention and care with respect to

physical, psychological, environment, and social aspect of life. This information can be utilized in planning a broad range of services including primary medical care, financial assistance, housing, food, child care, and educating the patients how to remain healthy.¹³ Miners et al.¹⁴ also found lower CD4 counts were associated with lower HR-QOL scores, in their study. Ping-Chuan Hsiung et al.¹⁵ conducted a study among 224 patients with HIV infection in Taiwan. They concluded that patients with higher CD4 cell counts and with less intensity of symptoms scored significantly higher regarding their different domains of Quality of life. They used 2 different instruments for measuring this issue named as WHOQOL and the SF-36 (Short Form Health Survey). The picture was same on both these instruments.

CONCLUSION

Present study revealed CD4 count has a significant influence over the Quality of Life of HIV/AIDS patients. As the CD4 count is a definite status of immunological status of a patient. The downfall of this marker is closely associated with various opportunistic infections, which may ultimately hamper the physical health and the other dimensions of Quality of Life also suffers with the physical quality of life. So, the target should be maintain the CD4 count of the HIV/AIDS patients in a higher level by reducing the viral replication with regular and strict monitored therapy with Antiretroviral medication.

REFERENCES

1. Nagpal R, Sell H. Subjective wellbeing. SEARO, WHO (New Delhi). Reg. Health Papers 1985: 7
2. World Health Organization. WHO Chr. 1976; 30 (8): 312.
3. National AIDS Control Organizations, Department of AIDS Control, Ministry of Health and Family Welfare, Government of India. Annual report 2014-2015 (Part B). New Delhi, India: p 405.
4. National AIDS Control Organizations, Department of AIDS Control, Ministry of Health and Family Welfare, Government of India. Annual report 2015-2016. New Delhi, India: p 336.
5. National AIDS Control Organisation & National Institute of Medical Statistics, ICMR Ministry of Health & Family Welfare Government of India. India HIV Estimations 2015, Technical Report: 2
6. World Health Organization: Programme on Mental Health. WHOQOL-BREF, Introduction, Administration, Scoring and Generic Version of the assessment. World Health Organization, Field trial version 1996: 7-18.
7. Nojomi M, Anbary K, Ranjbar M. Health-Related Quality of Life in Patients with HIV/AIDS. Arch Iranian Med 2008; 11(6): 608 - 612.

8. Elisabete C, Morandi Dos Santos, Ivan FJ, Fernanda L. Quality of life of people living with HIV/AIDS in São Paulo, Brazil. *Rev Saúde Pública* 2007; 741(Suppl. 2): 647.
9. Anis, Aslam H, Nosyk, Bohdan MA, Sun, Huiying, Daphne P, et al. Quality of Life of Patients with Advanced HIV/AIDS: Measuring the Impact of Both AIDS-Defining Events and Non AIDS Serious Adverse Events. *Journal of Acquired Immune Deficiency Syndromes* 2009; 51(5): 631- 639
10. Wig N, Lekshmi R, Pal H, Ahuja V, Mittal CM, Agarwal SK. The impact of HIV/AIDS on the quality of life: A cross sectional study in north India. *Indian Journal Medical Sciences* 2006; 60: 3-12.
11. Campsmith ML, Nakashima AK, Davidson AJ. Self-reported health-related quality of life in persons with HIV infection: results from a multi-site interview project. *Health and Quality of Life Outcomes* 2003; 1:12.
12. Tiwari MK, Verma S, Agrawal D, Heena. Quality of Life of Patients with HIV Infection. *Indian Journal of Social Science Researches* 2009; 6(2): 79-86.
13. Gowda S, Channabasappa AN, Dhar M, Krishna D. Quality of life in HIV/AIDS patients in relation to CD4 count: A cross-sectional study in Mysore district. *International Journal of Health & Allied Sciences* 2012; 1(4): 263-267.
14. Miners AH, Sabin CA, Mocroft A, Youle M, Fisher M, Johnson M. Health-related quality of life in individual infected with HIV in the era of HAART. *HIV Clin Trials* 2001; 2: 484-92.
15. Hsiung PC, Fang CT, Chang YY, Chen MY, Wang JD. Comparison of WHO-QOL Bref with SF-36 in patients with HIV infection. *Qual Life Res* 2005; 14: 141-50.