

Quality of life among human immunodeficiency virus-1 infected and human immunodeficiency virus-1/hepatitis C virus co-infected individuals in Iranian patients

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ABSTRACT

Background: The aim of this study was to compare the quality of life (QOL) of people infected with both hepatitis C virus (HCV) and human immunodeficiency virus (HIV). The study design was a cross sectional descriptive survey, using self administered questionnaires. **Materials and Methods:** A convenience sample of 242 patients (131 of them HIV/HCV), Iranian adults (aged 18–57) living with HIV/AIDS, was recruited from outpatient referring to Imam Khomeini Hospital behavioral counseling center in Tehran city, Iran. The instruments included the Multidimensional QOL HIV (MQoL HIV) and a demographic section. **Results:** The majority of the samples were male and single. The mean age was 36.52 years (standard deviation = 8.5). HIV mono infected patients reported higher scores in social support and physical functioning, but lower scores in physical health compared with HIV/HCV co infected individuals. There was no significant difference in overall MQOL HIV score between HIV and HIV/HCV patients. **Conclusion:** Future studies will need to explore the impact of HCV on HIV infected individuals' QOL.

Key words: Co-infected, hepatitis C virus, human immunodeficiency virus

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INTRODUCTION

Co-infection with human immunodeficiency virus (HIV) and hepatitis C virus (HCV) is one of the significant public health problems around the world.¹⁻³ HIV and HCV share the same routes of transmission. Both viruses can be transmitted through exposure to contaminated blood, sexual intercourse, and from mother to child. In Europe, the United States and Australia, approximately 25% of people living with HIV (PLHIV) are co-infected with HCV,⁴ however, HCV prevalence differs based on the route through which HIV has been acquired. The highest HCV co-infection rates are among persons who have acquired HIV from injection drug use, where the rates reach almost 30–50% or even more among this population.^{1,5-7} According to the 2010

update of the UNAIDS/World Health Organization (WHO) epidemiological fact sheet ("Update of the UNAIDS/WHO epidemiological fact sheet," 2010), the estimated number of PLHIV/AIDS in Iran is 80,000. Therefore, it can be estimated that at least about 20,000–40,000 of those individuals have HIV/HCV infection at the same time.

Health-related quality of life (HRQOL) is recognized as a significant factor in the assessment of burden in chronic diseases. HCV has frequently been reported as a factor associated with a poor HRQOL in immunocompetent patients.^{8,9} The results of studies involved with HRQOL of HIV-infected individuals show that HIV is also associated

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with reduced HRQOL;^{10,11} however, it has been found that better QOL is associated with the absence of mental illness, social support, and also fewer years as a nonintravenous drug user, not being an intravenous drug user, not having any difficulty in taking the medication, and being female.¹²

The impact of HIV/HCV co-infection on QOL is studied since before.¹³⁻¹⁶ Furthermore, HRQOL of Iranian PLHIV/AIDS is studied using WHO QOL for HIV/AIDS.¹⁷ By our knowledge, this study is the first one to compare the QOL of mono-infected HIV and co-infected HIV/HCV in a substantial number of patients living with HIV/AIDS in the Middle East and North Africa region.

MATERIALS AND METHODS

This was a cross-sectional study comprising patients visited the Imam Khomeini Hospital behavioral counseling center conducted over a 1-year period since May 2009–March 2010. The study participants were 242 PLHIV, of them 131 participants were co-infection with HIV and HCV. The study was approved by the Institutional Review Board of Tehran University of Medical Sciences. Before enrollment to the study, written informed consent was taken from participants. Multidimensional QOL Questionnaire for HIV/AIDS (MQOL-HIV) was implemented. The MQOL-HIV is a multidimensional, 40-item instrument that purports to measure ten dimensions of QOL specific to PLHIV.¹⁸ These include mental health, physical functioning, physical health, social support, social functioning, cognitive functioning, financial status, partner intimacy, sexual functioning, and medical care. Each of these dimensions is measured by four items. Each item is worded as a statement and is prefaced by a question, “How often (have) each of these statements been true for you in the past 2 weeks”¹⁸ response options range from “1: Never” through “7: Always.” Separate domain scores can be obtained by summing the frequency of the four items in each domain, with a possible range of 4–28. In addition to QOL scores for each domain, a single summary index for overall QOL was computed using the mental health and physical functioning domain scores. For individual domain scores and the summary index score, a low score represented poor QOL and vice versa.

Translation into Farsi and standardization of this questionnaire was done by Sh.¹⁹ in Iran. Inclusion criteria comprised a diagnosis of HIV infection, age of 18, no severe cognitive impairments such as AIDS dementia complex, and any physiologic disabilities such as hearing impairments and mental disabilities.

Statistical analysis

Demographic characteristics were calculated using Student's *t*-tests to compare the mean MQOL-HIV subscale scores of Iranian HIV alone and HIV/HCV co-infected

patients. The study's sample of HIV/HCV was based on patient's records. Results are expressed as means, percentages, standard deviations, and standard errors of means. The internal consistency of the subscales of the MQOL-HIV was assessed by Cronbach's alpha. The Chi-square analysis for categorical data and Student's *t*-test or ANOVA with Tukey's test for multiple comparisons were performed to identify factors associated with the MQOL-HIV scores of both groups of HIV/HCV co-infected and HIV mono-infected participants.

RESULTS

Of the 214 participants, 131 were HIV/HCV co-infected and 83 were HIV mono-infected. Mean age was 36.52 (range: 18–57) years. The majority of the sample belonged to age category of 31–40 years (42.9%). Patients co-infected with HIV/HCV were more likely to be male (173 [80.8%] vs. 41 [19.2%]), infected via drug injection (128 [60.7%]) and alcohol consumer and had history of drug use, cigarette smoking, and needle sharing, 145 (69%), 154 (73%), and 133 (62.1%), respectively. Majority of the participants were single 85 (39.7%), married 83 (38.8%), and 10.7% divorced. Educational levels were neither high nor low, with 74 (34.6%) secondary school, 64 (30%) elementary school, 58 (27.1%) precollege schooling grades, and 14 (6.5%) had university degrees. 72 (33.8%) of participants were unemployed, 71 (33.3%) involved in nongovernment-based jobs, and 32 (15%) engaged in home duties. Around half (104 [52.3%]) of participants' CD4 counts were between 200 and 500 cells/ μ L. 102 participants (approximately 48%) reported that their income rate was “very low” (<1000, 000 Rials); also, regarding for source of income, majority of patients (96 [46.2%]) reported they have no regular income source. In terms of transmission mode and alcohol intake, over 70% (143) of PLHIV did not use alcohol at all; however, some of them (44 [21.6%]) drink [Tables 1 and 2].

DISCUSSION

In this study, HRQOL of 131 HIV/HCV co-infected participants was investigated and compared to 83 HIV mono-infected participants.

Although there are evidence that HRQOL diminishes in patients infected with HCV or HIV alone, there is a paucity of data to show the effect of HIV/HCV co-infection on HRQOL.¹³ The overall mean scores of MQOL-HIV demonstrated no significant difference in both HIV/HCV co-infected and HIV mono-infected participants (134.84 \pm 26.80 vs. 111.58 \pm 2.55, $P \leq 0.270$).

The relatively same mean scores in the overall score is in line with the results from Kanwal *et al.* study in 2005

Table 1: Demographic factors of 214 participants

Characteristics	Total (n=214)	HIV/HCV co-infection (n=131)	HIV alone (n=83)
Age: Mean±SD	36.52±8.5	37.52±8.04	35.27±8.78
Sex			
Male	173 (80.8)	119 (68.8)	54 (31.2)
Female	41 (19.2)	12 (29.3)	29 (70.7)
Marital status			
Single	85 (39.7)	51 (23.8)	34 (15.9)
Married	83 (38.8)	48 (22.4)	35 (16.4)
Widowed	15 (7.0)	11 (5.1)	4 (1.9)
Divorced	23 (10.7)	14 (6.5)	9 (4.2)
Partner-left	8 (3.7)	7 (3.3)	1 (0.5)
Level of education			
Illiterate	4 (1.9)	3 (1.4)	1 (0.5)
Elementary	64 (30.0)	43 (20.1)	21 (9.8)
Secondary	74 (34.6)	50 (23.4)	24 (11.2)
Precollege	58 (27.1)	30 (14.0)	28 (13.1)
University grade	14 (6.5)	5 (2.3)	9 (4.2)
Occupational status			
Unemployed	72 (33.8)	48 (22.5)	24 (11.3)
Government-clerk	5 (2.3)	1 (0.5)	4 (1.9)
Worker	19 (8.9)	14 (6.6)	5 (2.3)
Student	1 (0.5)	0	1 (0.5)
Nongovernment-clerk	71 (33.3)	47 (22.1)	24 (11.3)
Retired	3 (1.4)	2 (0.9)	1 (0.5)
Housewife	32 (15)	9 (4.2)	23 (10.8)
Other	10 (4.7)	9 (4.2)	1 (0.5)
Income rate (unit)			
Very low (<100)	102 (47.9)	61 (28.6)	41 (19.2)
Low (100<X<200)	17 (8.0)	13 (6.1)	4 (1.9)
Moderate (200<X<500)	25 (11.7)	17 (8.0)	8 (3.8)
High (>500)	14 (25.8)	8 (57.1)	6 (2.8)
Source of income			
Personal salary	34 (16.3)	23 (11.1)	11 (5.3)
No income source	96 (46.2)	56 (26.9)	40 (19.2)
Family overall salary	22 (10.6)	10 (4.8)	10 (4.8)
Other	56 (26.9)	36 (17.3)	20 (9.6)
CD4 cell count (cells/μL)			
<200	58 (29.1)	46 (23.1)	12 (6.0)
200<N<500	104 (52.3)	56 (28.1)	48 (24.1)
>500	34 (17.1)	19 (9.5)	15 (7.5)
Source of infection			
Blood products	20 (9.5)	6 (2.8)	14 (6.6)
Injection	128 (60.7)	101 (47.9)	
Sex (spouse)	28 (13.3)	11 (5.2)	17 (8.1)
Sex (spouse)	17 (8.1)	11 (5.2)	6 (2.8)
I don't know	18 (8.5)	2 (0.9)	16 (7.6)
Alcohol intake			
Do not drink	143 (70.1)	76 (37.3)	67 (32.8)
Daily	7 (3.4)	6 (2.9)	1 (0.5)
Weekly	10 (4.9)	7 (3.4)	3 (1.5)
Occasionally	44 (21.6)	32 (15.7)	12 (5.9)
Drug use history			
Yes	145 (69.0)	109 (51.9)	36 (17.1)
No	65 (31.0)	19 (9.0)	46 (21.9)
Cigarette smoking history			
Yes	154 (73.0)	113 (53.6)	41 (19.4)
No	57 (27.0)	15 (7.1)	42 (19.9)

Contd...

Table 1: Contd...

Characteristics	Total (n=214)	HIV/HCV co-infection (n=131)	HIV alone (n=83)
Sharing needle history			
Yes	133 (62.1)	105 (49.1)	28 (13.1)
No	81 (37.9)	26 (12.1)	55 (25.7)

HCV – Hepatitis C virus; HIV – Human immunodeficiency virus; SD – Standard deviation

who reported no significant differences in disease burden among HIV mono- and HIV/HCV or HIV/HBV co-infected participants using a generic HRQOL instrument,²⁰ this could be explained by the finding that most of the patients with HCV infection usually are asymptomatic until the advanced stages of the disease, and so HIV/HCV co-infection does ensue to a total change in the course of diseases.

In domains analyses, our study results showed that QOL scores were lower in the physical health (13.48 ± 3.10 vs. 12.20 ± 4.68; $P \leq 0.032$), physical functioning (14.32 ± 4.69 vs. 16.10 ± 4.81; $P \leq 0.008$), and social support (12.88 ± 4.85 vs. 14.31 ± 5.13; $P \leq 0.040$) domains in HIV/HCV co-infected participants compared to those with HIV mono-infection. These findings are similar to the results reported by Baum *et al.* which was done on 218 HIV positive drug users,²¹ and also results of the study performed by Tillmann *et al.*²² Furthermore, significant lower mean scores in the domain of physical functioning was reported by Tsui *et al.*, however, the results of the mean scores in the domain of social functioning, in this study differs from the results of Tsui *et al.*, who found that HIV/HCV participants report lower mean scores.²³ Whether these findings in domains analyses are a direct effect or an indirect effect of HCV superinfection on HIV infection, needs more investigations and scrutiny. In this study, the rate of cigarette smoking reported in participants with HIV/HCV co-infection (113 [53.6%]) was much higher than those with HIV (41 [19.4%]). This finding is similar to the results reported by Balfour *et al.* on cigarette smoking, and its independent association with reduced health-related QOL scores²⁴ Alcohol consumption rate reported by participants with HIV/HCV co-infection was also higher than those with HIV mono-infection. These results are consistent with results achieved the study conducted by Zani *et al.*, who found a fairly high proportion of HCV-infected patients who regularly drink alcohol and coffee beverages and smoke cigarettes, especially among males.²⁵

In this study, the histories of alcohol intake, drug use, and sharing needle of PLHIV/HCV also were significantly higher than those with HIV mono-infection. The low scores of the physical health and physical functioning domains can thus be attributed to alcohol intake theoretically. Excess alcohol consumption with therapy for HIV infection increases HCV RNA levels and may impede the effectiveness of this treatment strategy,²⁶ there was no clear explanation to show these differences in risky behaviors (cigarette smoking and

Table 2: Distribution and reliability of multidimensional quality of life-human immunodeficiency virus subscales

Domain	Score (range 4-28) mean±SD	Internal consistency (Cronbach's α)	Infectious status		P
			HIV/HCV	HIV alone	
Mental health	14.91±4.91	0.70	14.80±5.11	15.10±4.60	0.670
Physical health	12.98±4.26	0.60	13.48±3.10	12.20±4.68	0.032
Physical functioning	15.01±4.80	0.82	14.32±4.69	16.10±4.81	0.008
Social functioning	14.43±4.29	0.83	14.73±4.27	13.97±4.30	0.216
Social support	13.44±5.0	0.82	12.88±4.85	14.31±5.13	0.040
Cognitive functioning	16.30±5.45	0.88	16.84±5.42	15.43±5.43	0.067
Financial status	20.18±7.04	0.77	20.68±7.85	19.37±5.48	0.187
Partner intimacy	13.96±4.94	0.67	13.47±4.40	14.71±5.64	0.230
Sexual functioning	11.62±4.85	0.60	12.20±5.23	10.73±4.09	0.156
Medical care	16.64±4.64	0.69	16.79±4.54	16.40±4.88	0.568
Overall score	134.63±24.82	-	134.84±26.80	134.29±21.50	0.875
MQOL-HIV index	11.32±2.75	-	11.15±2.85	11.58±2.55	0.270

All results are frequencies and percentages except for age, which is reported as mean±SD. Values in bold: $P < 0.005$. SD – Standard deviation; MQOL-HIV – Multidimensional quality of life-human immunodeficiency virus; HCV – Hepatitis C virus; HIV – Human immunodeficiency virus

alcohol consumption) between the study groups. This issue needs further investigations.

The high number of HCV infection found in our study among HIV-infected participants is due to injection drug use, as the dominant route of HIV transmission. This subpopulation of PLHIV is usually of lower socioeconomic status and literacy. This situation, and specially the later one, could behave as a limiting factor of this study to take precise answer from participants. The strength of the study, however, is that none of the patients were under HCV treatment with pegylated interferon, which affects patients' feelings and their QOL.

CONCLUSION

In summary, patients with HIV mono-infection and HIV/HCV co-infection have similar perceptions of their HRQOL total scores. However, in domains analyses, such perceptions are significantly lower in physical health, physical functioning, and social support domains in HIV/HCV co-infected participants compared to those with HIV mono-infection. Our data underscore the impact of complex medical and psychosocial issues on HRQOL and indicate the need for a multidisciplinary approach to improve HRQOL in HIV and/or HCV care settings.

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Conflicts of interest

There are no conflicts of interest.

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