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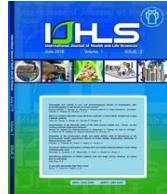
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Prevalence of depression and its relationship with quality of life and physical activity in patients with HIV/AIDS

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ABSTRACT

Depression is one of the most common secondary effects of HIV/AIDS that affects the quality of life and treatment process and accelerates the progression of the disease. This study aimed to determine the prevalence of depression and its relationship with quality of life and physical activity in patients with HIV/AIDS. This cross-sectional study was conducted among 340 patients with HIV/AIDS who were referred to the behavioral health counseling center of Kermanshah province. Using the Beck Depression Inventory, the quality of life and physical activity were assessed. The data were analyzed by chi-square test, Mann-Whitney test, Kruskal-Wallis test, t-test, ANOVA, and logistic regression analysis. The average age of the participants was 38.53 ± 8.86 years. The average quality of life scores in the areas of physical health was 11.76 ± 2.73 , mental health was 11.10 ± 2.70 , social relations was 12.12 ± 2.86 , and environment health was 11.16 ± 2.19 . The quality of life in the mental health area of married individuals was significantly more (11.63 ± 2.76) than in the unmarried (10.79 ± 2.60) ($p = 0.004$). The social area score of married individuals (12.62 ± 2.78) was significantly more than that of unmarried (11.71 ± 2.88) ($p = 0.002$). The prevalence of depression was 61.01% (confidence interval [CI] = 55.80–66.22), being more in men (66.04 %) than women (52.03%) ($p = 0.011$). The risk of depression in 2.34 times greater in men than in women (odds ratio = 2.52; CI = 1.22–4.48). The findings of this study revealed the prevalence of depression in people with HIV/AIDS was high, which is notable, and it has a role in decreasing the quality of life, particularly in the area of physical and mental health. We recommend providing appropriate counseling to prevent and reduce depression in this group of people.

Introduction

Acquired immune deficiency syndrome (HIV/AIDS) pandemic has been a progressive and serious threat to human health in the recent two decades. HIV is a chronic and debilitating disease due to the physical and psychological effects, stigma and financial losses, and impaired quality of life in the patients [1]. The disease process is too complex affecting different dimensions of health, such as physical, social, spiritual, and mental health [2]. These population often experience social expulsion and bias in the field of employment,

housing, insurance, medical care, and many other situations which affect physical and psychological health [3]. Many psychological disorders have been observed in HIV patients in different disease stages; some of them due to the effects of the virus and some due to the awareness of positive result of HIV test in infected people. Depression disorder has also been reported in the asymptomatic and early stages in HIV infected patients [4, 5]. Depression is the most common secondary complication of HIV/AIDS and the most common psychiatric disorder among HIV-positive patients. The prevalence of depression among HIV positive

patients is 57.3%, and the rate of depression is five times more common than in the general population [6]. Also, depression has a significant influence on the quality of life. For example, it can weaken the immune system performance, exacerbate chronic pains, increase alcohol and drug abuse, and finally, have an adverse impact on antivirus treatment compliance [7]. Quality of life is an important factor in evaluating the health of patients with HIV. The quality of life shows that disease and treatment have effects on infected individuals. Identifying which part of the life of the infected people is mostly affected is important to practitioners and policy-makers for health planning [8, 9].

Studies have shown that the quality of life in patients infected with HIV is lower in comparison with the healthy people [10-11]. Studies have shown that depression could essentially increase the relative risk of death in HIV/AIDS population. Experimental data suggest that treatment of depression can increase the adherence to treatment and motivation to improve health in HIV/AIDS population [12]. On the other hand, some studies have shown that depression can increase according to disease progression to AIDS. In these people, depression intensity is independent of the stage of the disease and demographic factors and can cause a reduction in daily physical activity [13].

Studies show that diagnosis of HIV in patients is often stressful psychologically and can affect the mental health and quality of life [14]. By assessing the quality of life, the psychological needs of individuals can be determined and evaluated, and more attention can be provided to these patients to increase the quality of years after disease. With the increasing prevalence of HIV infection [15], considering the psychological status to access necessary information for the proper planning and delivery of services according to the needs of these patients is important.

The aim of this study was to determine the prevalence of depression and its relationship with quality of life and physical activity in patients with HIV/AIDS in the Kermanshah province.

Method

This cross-sectional study was conducted in patients with HIV/AIDS in 2015. Considering 95% confidence and 5% precision, the sample size required was 340. The participants were randomly selected from among the infected individuals referred to Kermanshah behavioral health counseling center. There are several behavioral counseling centers in Kermanshah province, but only one of them is exclusive to patients with HIV/AIDS. The inclusion criteria were a definitive diagnosis of HIV infection in participants and living in Kermanshah Province. People with HIV in whom the virus was not detected with certainty were excluded. The challenges in this study were difficulty in accessing the patients and a lack of willingness to participate in the study; so we assigned a lot of time to collect the data. To collect the information, we sought the help of our colleagues working in the Behavioral Diseases Counseling Center who were trusted by the patients and could communicate better with them. The data were collected through questionnaires and face to face interviews. The researcher-developed questionnaire contained 12 demographic questions such as age, sex, marital status, education, occupation, place of residence (city or village), family history, history of smoking and drug addiction, HIV infection status, and the duration of the disease. For the evaluation of depression, the long form of the Beck Depression Inventory (BDI) was used. The questionnaire contains 21 questions about various emotions: sad, pessimistic, sense of failure, dissatisfaction, guilt, expectation of punishment, dislike of self-accusation, suicidal ideation, crying, irritability, social withdrawal, indecisiveness, imagine the physical changes, difficulties at work, insomnia, fatigue, change in appetite, weight loss, intellectual involvement, and sexual disinterest. The questions had various options to choose from and were given a score ranging from zero to three. The total points were calculated; 16 was the cut-off point based on which the participants were divided into two groups: lack of depression and depressed. The reliability and validity of the BDI

have been confirmed. Beck, Esther, and Garbin have found the internal consistency of this scale to be between 0.73 and 0.92 [16]. The quality of life was assessed by the Quality of life questionnaire (WHOQOL-BREF) which evaluates four domains including physical health, mental health, social communications, and environment, with 24 items (each of the areas contains 7, 6, 3, and 8 questions, respectively). The first two questions do not belong to any of the domains and evaluate the health condition and quality of life in general. Thus, the questionnaire has 26 questions in total. After performing the calculations, each domain separately gets a score of 4–20 scores with a score of 4 being the worst and 20 being the best condition for that domain. The validity and reliability of the Persian version of the questionnaire have been verified in Iran [17]. To measure the amount of physical activity for each person, the international physical activity questionnaire (IPAQ) was used. This included questions about physical activity of high, medium, and low intensity related to daily activities during the last 7 days. The people were grouped according to the instructions of the questionnaire, so Total Met was calculated for each person. Thus, if the combination of physical activity was moderate, severe, or walking within 7 recent days was less than 600 Met-min/week, it was considered as low physical activity. A minimum physical activity of 600 Met-min/week was considered as moderate physical activity, and if the minimum physical activity reached to 3000 Met-min/week, it was considered as high physical activity. The reliability and validity of the questionnaire have been confirmed in Iran [18]. This study is the result of a research project numbered 93117 approved by the Kermanshah University of Medical Sciences Ethics Committee. Before starting the study, voluntary informed consent was obtained from all participants. In the end, all the information was coded and entered into Stata software version 11, and the data were analyzed using descriptive statistics (mean, standard deviation, and percent) and statistical tests like chi-square test, Mann-Whitney test, t-test, ANOVA, Kruskal-Wallis test, and logistic regression. P value less than 0.05 was considered significant.

Results and Discussion

Data from 340 participants of Kermanshah province suffering from HIV/AIDS were collected by interviewing, but at the end, data from 335 individuals were examined (the response rate was 95.59%). The mean age of the study population was 38.49 ± 8.87 years, ranging from 18 to 70 years; 36.72% were women (123 persons). One hundred eighty-seven participants (53.29%) were unmarried, and 229 (68.15%) had educational qualification below the standard of a diploma. The majority of participants (74.93%) were living in the center of the province (table 1). Active smokers constituted 50.15% (165 participants) of the study sample, and 56.92% (185 individual) were addicts. The HIV/AIDS infection was acquired by drug injection in 49.84% (153 participants); 44.30% (136 participants) by sexual contact; 4.23% (13 participants) by needle, syringe, or other sharp equipment; 1.30% (4 participants) by blood and blood product transfusion; and 0.33% (1 participant) by unknown reason. Categorizing the participants based on physical activity showed that 61.59% (202 participants) had low physical activity, 30.49% (100 participants) had moderate physical activity, and 7.93% (26 participants) had high physical activity. Physical activity was significantly higher in men than in women ($P = 0.04$) (Table 2). The mean life quality score for physical health was 11.76 ± 2.73 , mental health was 11.17 ± 2.70 , social communications was 12.12 ± 2.86 , and environmental health was 11.16 ± 2.19 (Table 2). The quality of life in the emotional area was significantly more in married individuals (11.63 ± 2.76) than the unmarried (10.79 ± 2.60) ($p = 0.004$). The quality of life in the community area of married people (12.62 ± 2.78) was more than that in unmarried (11.71 ± 2.88) ($p = 0.002$) (Table 3). The prevalence of depression was 61.01% (confidence interval [CI], 55.80–66.22) and was significantly more in men (66.04%) than women (52.03%) ($P = 0.011$). Depression was more in the age group of 31–50 years than in the other age groups, but the difference was not significant. The prevalence of depression among the married was not significantly different from that in the unmarried individuals. The number of depressed persons

was more in the unmarried group compared with that in the healthy participants. Depression in people who acquired the infection through sex was more than those who acquired the infection by other methods, such as addiction and blood products. The prevalence of depression in patients with HIV/AIDS in the provincial capital was 65.74%, in urban 44.07%, and in those living in rural areas was 56% (Table 4). According to the

logistic regression results, despite adjusting for other variables, the odds of being depressed was 2.34 in men relative to women (odds ratio [OR] = 2.52, CI = 1.22–4.48). Also, with the increase by every unit in the value of the physical and mental health, the chance to being depressed reduced by about 19% and 43%, respectively (CI = 0.45–0.70, OR = 0.56; CI = 0.70–0.96, OR = 0.82) (Table 5).

Table 1. Demographic information of participants infected with HIV/AIDS

Demographic specifications						
	No.	Percent		No.	Percent	
Gender	Woman	123	36.72	Employee	10	3.02
	Man	212	63.28	Worker	34	10.27
	Total	335	100	Householder	102	30.82
Marital Status	Single	178	53.29	Workless	74	22.36
	Married	156	46.71	Free work	111	33.53
	Total	334	100	Total	331	100
Education	Illiterate	29	8.63	Center of the province	251	74.93
	Below diploma	229	68.15	City	59	17.61
	Diploma	65	19.64	Village	25	7.46
	Above diploma	8	2.38	total	335	100
	Bachelor and higher	4	1.19			
Total						

Table 2. Comparison of physical activity in people infected with HIV/AIDS according to sex and marriage

Variables	Physical activity			P-Value *	
	Number (%)				
	Low	Moderate	Sever		
Woman	81(69.94)	36(29.75)	4(3.31)	0.045	
Man	120(58.25)	64(31.07)	22(10.68)		
Single	101(58.38)	59(34.10)	13(7.51)	0.296	
Married	100(65.36)	40(26.14)	13(8.50)		

*by using Chi²-test

Table 3. comparison of life quality in patients with HIV/AIDS according to sex and marriage

Variables	Domains of quality of life (average ± standard deviation)			
	Physically	Psychologically	Social	Environmental
Woman	11.96±2.60	11.25±2.70	12.36±2.80	11.17±2.07
Man	11.64±2.80	11.13±2.71	11.99±2.90	11.16±2.26
P-Value*	0.199	0.602	0.244	0.982
Single	11.74±2.77	10.79±2.60	11.71±2.88	10.97±2.19
Married	11.80±2.70	11.63±2.76	12.62±2.78	11.39±2.18
P-Value*	0.700	0.004	0.002	0.081

*by using Mann-Whitney test for physical, emotional and community area and t-test for environmental area

Table 4. The prevalence of depression based on the demographic characteristics of individuals with HIV / AIDS

		Depressed	Healthy	Total	*P- Value	Depressed	Healthy	Total	*P-Value
Gender	Woman	64 (52.03)	59 (47.97)	123 (100)		Single	(64.04)	(35.96)	(100)
	Man	140 (66.04)	72 (33.96)	212 (100)	0.002	Marital Status	114	64	178
Education	Illiterate	19 (65.52)	10 (34.48)	29 (100)		Married	(57.05)	(42.95)	(100)
	Below diploma	144 (62.88)	85 (37.12)	229 (100)		Drug injection	(55.67)	(39.82)	(100)
	Diploma	36 (54.55)	30 (45.45)	66 (100)	0.41	Sexual contact	108	45	153
	Above diploma	3 (37.50)	5 (62.50)	8 (100)		The way of being infected	(58.82)	(41.18)	(100)
	Bachelor and higher	3 (75.00)	1 (25.00)	4 (100)		blood and blood products transfusion	80	56	136
	19-30	22 (61.11)	14 (38.89)	36 (100)		Unknown	(2.06)	(7.96)	(100)
Age groups	31-50	168 (62.92)	99 (37.08)	267 (100)	0.78	the center of the province	4	9	13
	51-70	14 (56.00)	11 (44.00)	25 (100)		city	(12.68)	(26.33)	(100)
						village	(6.83)	(14.84)	25 (100)

*by using Chi²-test

Table 5. predictive Variables of depression in people with HIV / AIDS

Different variables	Crude OR (95% CI)	P-Value	Adjusted OR (95% CI)	P-Value
Age	1.01 (0.98-1.03)	0.313	1(0.96 - 1.03)	0.997
Sex (man)	1.79 (1.13-2.82)	0.012	2.34 (1.22- 4.48)	0.010
The quality of life				
Physical health	0.59 (0.52-0.66)	<0.001	0.82 (0.70- 0.96)	0.014
Psychological health	0.50 (0.43-0.58)	<0.001	0.56 (0.45- 0.70)	<0.001
Social communications	0.65 (0.59- 0.73)	<0.001	0.87 (0.75-1.02)	0.0108
Environmental health	0.58 (0.50-0.66)	<0.001	1.11 (0.89- 1.38)	0.314
Physical activity				
Low	1	-	1	-
moderate	0.83 (0.50-1.36)	0.461	1.01 (0.51-2.02)	0.959
severe	0.40 (0.17- 0.93)	0.033	0.40 (0.12-1.29)	0.126

* Multiple analyses include only variables that were significant in unavailable analysis.

* By using logistic regression

OR=Odds Ratio

CI=Confidence Interval

Hosmer- Lemeshow goodness-of-fit test= 0.969

Area under the ROC (Receiver Operating Characteristic) curve= 0.888

Discussion

The results of this study showed that the prevalence of depression among people infected with HIV/AIDS was more than 60%, and the chance of being depressed in men was 2.34 times greater than women. Different studies have reported different prevalence rates of depression among people infected with HIV/AIDS. Depression prevalence among people in Hamadan was 79%, in North Carolina was 12.2%, and in Belgic, the emotional problem prevalence was 52% [4, 19-20]. Differences between the prevalence of depression in our study and other studies may be due to the factors which were evaluated such as occupation, job security, education, family and friends support, and also, it may be related to the available welfare and healthy lifestyle options in the living area of the HIV suffered patients. The least average value from among the different quality of life parameters was related to the psychological health. In the psychological health, points like the positive and negative feelings, the idea of his or her appearance, concentration, and self-regard were assessed. Similar studies also confirm these findings [19, 21-22]. Next, to

psychological health, the least value was for environmental health as determined by the scores of participant life quality. Environmental health assessment measured conditions like physical health and security, house environment and life, financial sources, participation in entertaining activities, and physical environment. Low quality of life seen in this domain might be because of the disease stigma or fear of transfer of the disease which causes the person to be rejected from the family, so deprived from having an ideal family. Complications like physical and psychological side effects of the disease on one hand and social tag on the other can affect the quality of life of these patients. Other studies have also verified that these patients have a lower quality of life in comparison with the healthy people [11, 23]. The results of this study, like the results of the study by Vahdat and coworkers and also Khumsaen and coworkers, showed that the life quality of HIV infected people could be affected by depression [8, 24]. So, for each unit decrease in life quality value, the chance of being depressed will increase. In addition to the effects of depression on life quality of people infected with HIV, it can cause many other problems too. A study in China has shown

that with an increase in cigarette smoking, the depression symptoms were increased [25]. In the present study, the level of physical activity in a large percent of the participants was notably low, about 61.59%. The results of this study showed that depression could affect various aspects of life in these patients. The negative effects of depression on the life quality of HIV infected people and the role of depression in decreasing physical activity make depression a negative prognosis for HIV disease, causing disease progression, leading to AIDS, and also, in people in whom the infection has progressed, leading to early death. So, it is necessary to pay more attention to these patients, and a broader assessment should be done. Reports suggest that the diagnosis and treatment of psychiatric disorders in patients with AIDS can increase the possible influence of antiretroviral drugs [4]. Mitigating the depression, besides improving the life quality, can increase the adherence to drug therapy and treatment, promote self-watchfulness, and decrease self-injury. All these variables can lead to decrease self-damage, a reduction in HIV transmission, and decreased mortality rate [26]. It is recommended for HIV infected patients to know about the disease, follow the treatment methods, think optimistically, concentrate on positive things, and accept one's own situation. Also, it is necessary for the individuals who counsel these patients to consider all the aspects of the disease so that the psychological disorders like depression could be diagnosed early and proper treatment be provided. The strength of this study was the face to face interview with patients infected with HIV, and for confirming the correctness of the data, we surveyed the patient files, and the answers were checked. The limitation of this study was that we did not compare the quality of life of the patients with a control group. Because many patients with HIV/AIDS are unknown to the society and are not supported by any private or governmental health providers, and people who have records in counseling centers are part of the entire patient population, it was not possible for us to verify these patients on a large scale. Also, it was difficult to access these patients, and there was a lack of willingness to participate in the study; so, we assigned a lot of time to collect the data. Finally,

we recommend that the quality of life of patients with HIV/AIDS should be given more consideration in the planning of health and social protection.

Conclusion

The results of this study showed that the prevalence of depression among people infected with HIV/AIDS is high, which is notable, and it had a role in reducing the quality of life, particularly in the areas of physical and mental health. To improve the quality of life of these patients, it is recommended that regular and periodic consultations be held for the patients in these centers, and the health service staffs need to check the patients' mental and emotional status and begin treatment, if necessary. Paying attention to the problems of people with HIV/AIDS, such as unemployment, social isolation, and rejection by family and friends, and providing solutions to these problems can improve their quality of life. On the other hand, the culture of the society to accept these patients, the elimination of unemployment, and employment creation are very important.

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