

# Psychological health among people living with HIV in Iran

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## Abstract

**Introduction:** Since human immunodeficiency viruses (HIV)-positive patients suffer from serious stigma and experience low quality of life in Iran, it seems that accompanying mental disorders are of high importance together with general mental disorders in the society. This study aimed to assess the psychological health of people living with HIV (PLWH) in Markazi Province in central Iran.

**Material and methods:** Participants of this cross-sectional study were PLWH registered and cared for at the High-Risk Behavior Counseling Center of Arak University of Medical Sciences and Saveh University of Medical Sciences during 2020-2021. People living with HIV were selected by convenience sampling method. 12-item General Health Questionnaire (GHQ-12) was used to collect mental health data by face-to-face interviews. GHQ-12 is a screening instrument for the identification of depression and general non-psychiatric disorders. All statistical analyses were performed using STATA software.

**Results:** A total of 123 PLWH over the age of 18 were included in the study. The prevalence of mental disorders was 40.7% (95% CI: 0.32-0.50%). There were significant differences among groups with and without mental disorders between job, age, health insurance, alcohol consumption, hookah tobacco smoking, cigarette smoking, and history of imprisonment and tuberculosis prophylaxis, first CD4+ counts, and socio-economic status.

**Conclusions:** This study concludes that the prevalence of mental disorders in PLWH was high in Markazi Province, Iran. It is recommended that health policymakers take necessary strategies for this group of patients, including the use of interventional methods based on cognitive behavior therapy principles to reduce HIV-related psychological health.

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**Key words:** psychological health, people living with HIV, Iran, HIV.

## Introduction

The prevalence of mental disorders varies in different parts of the world. The prevalence of these disorders is 19.1% in the United States [1] and 7.6% in Japan [2]. In the countries vulnerable to civil unrest, mental disorders have been reported to be approximately 22.1% of the population [3], while 23.6% of the Iranian population aged 15 to 64 have

had at least one type of mental disorder in the past year [4], demonstrating special importance of mental disorders as a public health concern.

About one million people die of human immunodeficiency virus (HIV) worldwide each year [5]. There was a 8.3% decrease in HIV-related deaths worldwide in 2007-2017 [5]. In contrast, Iran has not experienced a decrease, which was reported by a research with an annual increase

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of 10.3% in new HIV infections, and an annual increase of 5.3% in HIV/acquired immune deficiency syndrome (AIDS)-related deaths [5]. A faint hope of survival in people living with HIV (PLWH), especially in the early years of HIV epidemic, has raised serious concerns about social and emotional dimensions of this population [6].

On the other hand, PLWH are exposed to vulnerable social networks, stigma from health staff, family, and community members [6-8], and they are usually deprived of sufficient social support [7]. Since PLWH suffer from serious stigma and experience low quality of life in Iran [7], it seems that accompanying mental disorders are of high importance together with the general mental disorders in the society [4].

All of these challenges underlie the need for providing PLWH with the necessary psychological and emotional care. In addition, with advances in HIV antiretroviral therapies, the chance of survival among patients is increasing, resulting in longer HIV infections and potentially greater mental effects [6]. Identifying mental status of these people can reveal strategies to improve their quality of life. Therefore, this study aimed to assess the psychological status of PLWH in Markazi Province in central Iran.

## Material and methods

The present study included PLWH who were registered and cared for at the High-Risk Behavior Counseling Center of Arak University of Medical Sciences, and Saveh University of Medical Sciences. Arak and Saveh cities are located in Markazi Province in central Iran. According to the latest census, the province has a population of 1,430,000 people. The PLWH identified in this study were those who had been diagnosed with HIV.

This was a cross-sectional study conducted in 2020-2021 at the Behavioral Disease Counseling Center in Markazi Province. A total of 126 PLWH were followed-up in the study areas, three of whom were children and hence excluded. Finally, 123 individuals agreed to participate in the study.

People living with HIV were selected by a convenience sampling method. Patients were invited to take part in the study based on ethical protocols. Then, using face-to-face interviews, questionnaire items were read to interviewees, and their responses were written in the questionnaires by the interviewers. The interviewers were experts working in the High-Risk Behaviors Center. Prior to data collection, they have participated in three training sessions and received necessary training on how to complete a valid and reliable questionnaire.

Variables under study included sex (female/male), age (year), job, socio-economic status (SES) (the poorest/poor/intermediate/rich/the richest), transmission methods (marital sex/intravenous drug use/maternal transmission/extramarital sex/unknown), having health insurance (yes/no), education level (illiterate-elementary/middle school/diploma/academic), having another special disease (yes/no), duration of the disease (months), alcohol consumption

(yes/no), hookah tobacco consumption (yes/no), cigarette smoking (yes/no), history of imprisonment (yes/no), history of extramarital sex (yes/no), HIV symptoms in diagnosis (yes/no), HIV symptoms in interview (yes/no), first CD4+ counts (cells/ $\mu$ l), last CD4+ counts (cells/ $\mu$ l), and tuberculosis prophylaxis (yes/no).

Socio-economic status index was obtained from asset indices of individuals as defined in a study by Vyas *et al.* [9]. 12-item General Health Questionnaire (GHQ-12) was used to collect mental health data. The questionnaire employed in this study was a shortened version of 60-item inventory developed by Goldberg *et al.* [10]. GHQ-12 is a screening instrument for identification of depression and general non-psychiatric disorders, and has been used in many studies with PLWH. Therefore, this questionnaire was used to screen and detect mental disorders in PLWH [11, 12]. Validity and reliability of the Persian version of GHQ-12 questionnaire were assessed and standardized by Montazeri *et al.* [13]. Persian version of this questionnaire has adequate validity and reliability. Its Cronbach's  $\alpha$  is estimated to be 0.87 in the Iranian population. Items in this instrument are classified as positive and negative. Scoring method in this study was that in a range of positive items, to options of 'more than usual', 'as usual', 'less than usual', and 'much less than usual', scores of 'zero', 'zero', 'one', and 'one were assigned, respectively. Likewise, in negative items, to options of 'never', 'not more than usual', 'slightly more than usual', and 'much more than usual', scores of 'zero', 'zero', 'one', and 'one', were assigned respectively. Then, scores of each individual from the whole questionnaire were summed, and means of all participants were calculated. Anyone whose score of the questionnaire was above the mean of total scores of participants was classified as having a mental disorder [11]. Higher scores of the questionnaire indicated that the individual was mentally ill.

## Ethical considerations

This study was conducted under a supervision and approval of the Ethics Committee of Arak University of Medical Sciences. Informed consent was obtained from all participants before the onset of the study. The questionnaires were given to the authors after they were completed by the staff of the High-Risk Behaviors Center, without mentioning identities and identifiable personal details of the participants.

## Statistical analysis

Descriptive summaries were reported in frequency, mean, and standard deviation (SD). One-sample Kolmogorov-Smirnov test was used to determine normality of continuous variables. Since all variables had parametric distribution, independent sample *t*-test, analysis of variance (ANOVA), and  $\chi^2$  test were applied to show statistical significance. A significance level of 0.05 was assigned. All statistical analyses were performed using STATA version 12.0 software.

## Results

A total of 123 PLWH over the age of 18 were included in the study. The majority of the participants were males (66%). Most of them were illiterate or had primary education (44.7%). More than 44.7% of the patients were employed. Sharing drug injection equipment as the transmission method of the disease was indicated by 51.2% of the participants, 81.2% of them had health insurance, and 62.6% had no other special diseases. The mean time of HIV infection among the respondents was about 80 months (SD = 56.2). The history of alcohol use, hookah smoking, and cigarette smoking was 52.9%, 55.3%, and 65.9%, respectively. Additionally, imprisonment history, extramarital sex, and prophylaxis for tuberculosis were reported in 51.2%, 46.3%, and 60.7% of the patients, respectively. The majority of the participants had no symptoms of HIV at the time of diagnosis and interview (70.7% and 63.9%, respectively). The means of CD4+ counts of the patients at the first and last time of blood testing were 444.8 and 617.8 cells/ $\mu$ l, respectively. Based on the GHQ-12 instrument, the prevalence of mental disorders was 40.7% (95% CI: 0.32-0.50%) among all participants of the study.

As can be seen in Table 1, there were no significant differences ( $p > 0.05$ ) among GHQ-12 scores, gender, transmission methods, educational level, specific illnesses, disease duration, extramarital sex, symptoms of HIV at the time of diagnosis, time of interview, and last CD4+ count. However, there were significant differences ( $p < 0.05$ ) among groups with and without mental disorders identified by the GHQ-12 questionnaire in job, health insurance, alcohol consumption, hookah tobacco smoking, cigarette smoking, history of imprisonment, and tuberculosis prophylaxis. Moreover, there were statistically significant differences among the mean age of participants in each group as identified by the GHQ-12 questionnaire ( $p = 0.03$ ). In addition, the mean of the first CD4+ counts also showed a significant difference between individuals with and without mental disorders ( $p = 0.049$ ). Also, there was a statistically significant difference ( $p = 0.018$ ) between mental health status and socio-economic status of PLWH.

## Discussion

The findings of this study showed that about 41% of PLWH in Markazi Province in central Iran had mental disorders. The individuals were significantly younger, unemployed, socio-economically poor, without health insurance, alcohol consumers, hookah tobacco smokers and cigarette smokers, with history of imprisonment, CD4+ counts at the first blood test, and had received TB prophylaxis. Egbe *et al.* [14] in Nigeria showed that PLWH were at the risk of suicide because of their mental disorders, and given the high prevalence of this disorder in patients, psychological counseling and educational interventions were recommended to reduce psychological problems. The prevalence of mental disorders in the participants of the present study

was higher than those of Egbe *et al.*'s study [14] in Nigeria. In another Nigerian study, the prevalence of mental disorders in PLWH was similar to the present study [15]. In a systematic review from China [16], the prevalence of mental disorders was more than 60%, which was higher than that of the present study. However, because the study in China employed other instruments instead of the GHQ-12 questionnaire, it might be inappropriate to compare its findings with the findings of the present study.

In a study conducted in Cambodia [17], the mean of GHQ-12 scores was 3.2, which was much lower than that of the present study. However, the prevalence of mental disorders in PLWH was almost similar to the current study (the prevalence of mental disorders was observed to be 43.2%). Likewise, the results of a systematic review from Africa [18] demonstrated a high prevalence of mental disorders, with majority of studies reporting nearly half of PLWH to have mental disorders. In a study from the United States [1], the highest prevalence of mental disorders in people with HIV was 20% in a sub-group of whites, which was much lower than the results of this study. A systematic review study in people with HIV and AIDS in Iran ranged from 22% to 76%. This study did not show the prevalence of depression in central Iran, but it demonstrated that in Western, Northern, and Southern areas of Iran, 30%, 45%, and 56% of PLWH experienced depression, respectively. These results, however, were obtained using instruments other than GHQ-12 questionnaire employed in the current study. A study in Bandar Abbas in Southern Iran [20], with the GHQ-28 questionnaire, reported 85.3% prevalence of mental disorders, which was higher than the value obtained in the present study. Another study in Fars Province in Southern Iran [21] showed a 15% suicide tendency in PLWH in the last six months. In a systematic review conducted by Valizadeh *et al.* [22], the prevalence of mental disorders in prisoners was high. Therefore, it is necessary to consider this group of PLWH who, in addition to having a history of imprisonment, had psychological problems caused by HIV. Vilsaint *et al.* [1] also showed that the prevalence of mental disorders was higher among those with lower education, while no significant results were obtained in the present study. In contrast, in another study from Iran [23], there was not a significant difference between education level and suicidal tendency in mentally ill PLWH. Moreover, as in the present study [23], being employed was not a significant factor.

One of the advantages of this study is the use of an appropriate instrument for assessing patients' psychological status. The Persian version of this questionnaire has been already standardized and validated [13]. This study also has a high response rate, which makes the results less susceptible to selection bias, and it can be claimed that the results are representative of PLWH living in the province. However, it cannot be stated that all patients in the province are under the care of the High-Risk Behaviors Center, as some patients may be taken care of in other provinces. One of the limitations of the present study is the possibility

**Table 1.** Descriptive characteristics and statistically significance for the studied variables among people living with HIV ( $n = 123$ ) in Markazi Province, Iran

Variables	n (%)	GHQ-12 score		p-value
		0	1	
Sex				
Female	42 (34.0)	22	20	0.26
Male	81 (66.0)	51	30	
Age, mean (SD)	40.37 (10.2)	42.62 (9.21)	39 (8.11)	0.03
Job				
Housekeeper	27 (22.0)	18	9	0.001
Employed	55 (44.7)	41	14	
Unemployed	41 (33.3)	14	27	
Socio-economic status				
Poorest	26 (21.2)	10 (13.2)	16 (34.1)	0.018
Poor	24 (19.5)	13 (17.1)	11 (23.4)	
Intermediate	24 (19.5)	16 (21.0)	8 (17.0)	
Rich	25 (20.3)	17 (22.4)	8 (17.0)	
Richest	24 (19.5)	20 (26.3)	4 (8.5)	
Transmission method				
Extra marital sex	18 (14.6)	11	7	0.15
Marital sex	32 (26.0)	20	12	
Intravenous drug use	63 (51.2)	33	30	
Unknown	10 (8.2)	9	1	
Having health insurance				
Yes	99 (81.2)	66	33	0.001
No	23 (18.8)	6	17	
Education level				
Illiterate/elementary	55 (44.7)	34	21	0.17
Middle school	46 (37.4)	23	23	
Diploma	13 (10.6)	8	5	
Academic	9 (7.3)	8	1	
Having another special disease				
Yes	46 (37.4)	28	18	0.85
No	77 (62.6)	45	32	
Duration of the disease (month), mean (SD)	79.95 (56.2)	77.04 (57.96)	84.2 (53.82)	0.49
Alcohol consumption				
Yes	65 (52.9)	33	32	0.045
No	58 (47.1)	40	18	
Hookah tobacco consumption				
Yes	68 (55.3)	33	35	0.01
No	55 (44.7)	40	15	
Cigarette smoking				
Yes	81 (65.9)	42	39	0.02
No	42 (34.1)	31	11	
History of imprisonment				
Yes	63 (51.2)	29	34	0.003
No	60 (48.8)	44	16	

Table 1. Cont.

Variables	n (%)	GHQ-12 score		p-value
		0	1	
History of extramarital sex				
Yes	57 (46.3)	29	28	0.08
No	66 (53.7)	44	22	
HIV symptoms at diagnosis				
No	87 (70.7)	55	32	0.23
Yes	36 (29.3)	18	18	
HIV symptoms in interview				
No	78 (63.9)	49	29	0.34
Yes	44 (36.1)	23	21	
First CD4+ counts, mean (SD)	444.8 (602.6)	401.63 (290.35)	513.37 (311.99)	0.049
End CD4+ counts, mean (SD)	617.8 (640.5)	564.40 (366.77)	702.28 (140.42)	0.27
TB prophylaxis				
Yes	74 (60.7)	51	23	0.01
No	48 (39.3)	22	26	

GHQ-12 – 12-item General Health Questionnaire, SD – standard deviation, TB – tuberculosis

of information bias and variable misclassification [24, 25]. Some of the participants of the present study might not have provided accurate information in response to the items as a result of their unique characteristics and stigma of the disease. We tried to minimize the possibility of this disadvantage by using trained interviewers working at HIV care centers. Furthermore, because HIV is more prevalent in hidden populations [26, 27], it is not possible to reach all patients in the study population; hence, there is a risk of selection bias in this study.

Interventional approaches based on the principles of cognitive behavior therapy have been recommended in many studies to reduce the symptoms of mental disorders among PLWH [28, 29]. Therefore, given the high prevalence of this disorder in the population under study, it is suggested that health policy-makers take necessary strategies to reduce psychological problems of the disease using such techniques. One of the causes of HIV-related mental disorders is the attached stigma [30], which leads to concealment of the disease and various consequences associated with the increased prevalence of the disease. Timely diagnosis and intervention in mental disorders may increase antiretroviral adherence of HIV patients [31]. Since there is limited evidence of interventions performed on these specific patients [28], further research is recommended to evaluate the effectiveness of interventions for HIV-related mental disorders.

## Conclusions

This study assumes that the prevalence of mental disorders in PLWH is high in Markazi Province, Iran. It is recom-

mended that health policy-makers take necessary strategies for this group of patients, including the use of interventional methods based on cognitive behavior therapy principles to reduce HIV-related mental disorders.

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## Conflict of interest

The authors declare no conflict of interest.

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