Original Article
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Medical Journal of the Islamic Republic of Iran (MJIRI)

Med J Islam Repub Iran. 2017(10 Dec);31.75. https://doi.org/10.14196/mjiri.31.75

Prevalence of depression in people with HIV and AIDS in Iran: A systematic review

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Received: 2 Feb 2017 Published: 10 Dec 2017

Abstract

Background: Depression is the most common mental disorder in individuals with HIV and AIDS (PLWHA), and comorbidity with depression exacerbates the disease. Several studies have estimated the prevalence of depression in HIV and AIDS patients so far, but there is no consensus about the prevalence of depression among these patients. Thus, we aimed at estimating the overall prevalence of depression among Iranian PLWHA.

Methods: The international and national databases including Web of Science, Scopus, Medline, Science Direct, MagIran, Scientific Information Database (SID), IranMedex, and Medlib were searched until June 2016. The quality of included studies was assessed using Newcastle-Ottawa Scale.

Results: Out of 591 references, 9 cross-sectional studies met the eligibility criteria and were included in the review. The lowest and highest reported prevalence of depression among people with HIV was 22% (95% CI: (11, 33)) and 76% (95% CI: (71, 81)), respectively. Prevalence of depression in people with HIV in the north, west, and south of Iran was 45% (95% CI: (23, 67)), 30% (95% CI: (15, 45)), and 56% (95% CI: (35, 77)), respectively. Prevalence of depression among addict and non-addict patients was 25% (95% CI: (21, 30)) and 58% (95% CI: (40, 77)), respectively.

Conclusion: According to the results of this systematic review, the prevalence of depression is considerable among Iranian PLWHA. Prevalence in the southern regions of Iran is more than the western and northern regions of Iran. This evidence may be useful for Iranian health policymakers to design suitable preventive and therapeutic interventions in PLWHA to prevent and control depression among these people in Iran.

Keywords: Depression, HIV, Acquired Immunodeficiency Syndrome, Prevalence, Systematic Review

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Cite this article as: Doosti-Irani A, Moameri H, Ahmadi-Gharaei H, Holakouie-Naieni K. Prevalence of depression in people with HIV and AIDS in Iran: A systematic review. *Med J Islam Repub Iran. 2017* (10 Dec);31:75. https://doi.org/10.14196/mjiri.31.75

Introduction

Nowadays, HIV/AIDS is a major public health concern worldwide. According to the World Health Organization (WHO), 36.7 million people live with HIV and AIDS and 1.1 million deaths have occurred due to AIDS worldwide in 2015 (1). Depression is the most common mental disorder among people with HIV and AIDS (PLWHA) (2), and comorbidity with depression exacerbates the prognosis of HIV and AIDS (3). The prevalence of depression in PLWHA is approximately 2 times of HIV-negative people (4). Among female HIV positive, the prevalence of depression is nearly 4 times of female HIV-negative people (5). The prevalence of depression among PLWHA varies from 5% to 79% around the world (2, 6-10). Depression has more major complications for PLWHA than the general population. These complications are an increase in mortality (11), suicide (8, 10), and increase in drug abuse, sleep disorder, decrease in social function, and decrease in the number of CD4 in patients (12-14).

There are approximately 73 000 individuals with HIV and AIDS In Iran (15), and the trend of the disease preva-

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↑What is "already known" in this topic:
The prevalence of depression among Iranian PLWHA has been reported to be 53% to 85%, however, there is no universal consensus about the prevalence of depression.

→What this article adds:
This study provides summary measures of the prevalence of depression among these people based on addiction status, geographic area, and the used questionnaires for the diagnosis of depression. The results revealed that prevalence of depression in patients who live in the south of Iran was more than other regions.

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[DOI: 10.14196/mjiri.31.75]

lence is increasing (16). The quality of life and health of PLWHA are affected by depression and mental disorders (17). With an increase in the prevalence of HIV in Iran, depression can be a major problem for these patients, an additional burden for the health care system, and health care providers. Thus, estimating the overall prevalence of depression among PLWHA can be useful for the health policymakers to design health care services.

To date, several cross-sectional studies have estimated the prevalence of depression among these patients. According to the results of these studies, the prevalence of depression has been reported to be 53% to 85% (13, 18-22), therefore, there is no universal consensus about the prevalence of depression among these patients in Iran. This systematic review aimed at estimating the overall prevalence of depression among Iranian patients with HIV and AIDS.

Methods

Searching strategy

The national and international scientific databases including scientific information database (SID), MagIran, IranMedex, Medlib, Medline, Web of science, Scopus, and SinceDirect were searched until June 2016. The following keywords were used in the search strategy: HIV, AIDS, depression, prevalence, incidence, and Iran. In addition, to obtain more studies, the reference lists of included studies were scanned, the authors of the selected studies were contacted, and the websites of the related conferences were searched to obtain the unpublished articles up to June 2016.

Eligibility criteria for including the studies

All cross-sectional studies that estimated the prevalence of depression among Iranian PLWHA using standardized questionnaires were included. There was no limitation in the time and language of the published papers.

Data collection

Two investigators (HM, HAG) were responsible for screening the titles and abstracts of the retrieved studies; and in the next step, the full text of the selected studies were reviewed according to the eligibility criteria. Any disagreement between the two authors was resolved by the judgment of the third author (ADI). The following variables were extracted from selected studies: first author, year of publication, the location of study conduction, sample size, the number of people with depression, mean age, gender, addiction status, and type of used questionnaire for detection of depression.

Risk of bias assessment

The Newcastle-Ottawa Scale (NOS), which has been adapted for cross-sectional studies, was used for assessment of bias risk of the included studies. The NOS has three 3 domains, which are as follow: selection, comparability, and outcome. Because we aimed at assessing the prevalence of depression, we used selection and outcome domains with the following items: (1) representativeness of the sample; (2) determining the sample size; (3) reporting the non-respondents; (4) assessing the outcome, and (5) statistical tests (23, 24).

Heterogeneity assessment and statistical analysis

The statistical heterogeneity in the results of the included studies was assessed using chi-2 test and quantified by I2 (25). In addition, the between-study variance was estimated using the tau-square statistic (26). Meta-analysis was conducted to obtain a summary measure of prevalence of depression in PLWHA. The random effects model was used to report the results with 95% confidence interval (CI). The Metan Stata module (Stata 11, Stata Corp, College Station, TX, USA) was used for data analysis.

Results

In this systematic review, 591 cross-sectional studies were included, 483 from international databases, 77 from national databases, and 30 from the reference lists of the selected studies, and 1 through contacting the authors. Finally, after removing duplicated studies and checking the eligibility criteria, 9 cross-sectional studies (13, 18-22, 27-29) were included in the review (Fig. 1). These articles involved 1260 people with HIV and AIDS. The characteristics of the included studies are presented in Table 1. The risk of bias table is displayed in Table 2.

Heterogeneity test

According to the results of chi-square test, the results of included studies were highly and significantly heterogeneous, I2= 97.1% (p< 0.001). Therefore, we could not combine the results of the studies. However, we reported the pooled estimate of the prevalence of depression based on the addiction status, geographical area, and type of used questionnaire.

Estimate of prevalence

The highest prevalence of depression among people with HIV (76%, 95% CI: (71, 81)) had been reported by Amin Lari et al. in Shiraz (18), and the lowest prevalence (22%, 95% CI: (11, 33)) had been reported in Kermanshah (28). in another study in Kermanshah the prevalence was found to be 37% (95% CI: (29, 45)) (29) (Table 1).

We pooled the prevalence according to the addiction status, geographical regions of Iran, and the used questionnaire for assessing the depression among people with HIV and AIDS. However, there was considerable heterogeneity in the mentioned subgroups. However, there was no heterogeneity in the results of studies that involved addicted patients (I2= 0). Prevalence of depression among addicted and nonaddicted patients was 25.5% (95% CI: (20.7, 30.2)) and 58.3% (95% CI: (39.7, 77.0)), respectively. According to the pooled results of studies conducted in the north, west, and south regions of Iran, prevalence of depression was 44.7% (95% CI: (22.7, 66.7)), 30.0% (95% CI: (15.2, 44.7)), and 56.0% (95% CI: (35.3, 76.7)), respectively (Table 3).

Discussion

According to the results of this systematic review, the prevalence of depression among people living with HIV

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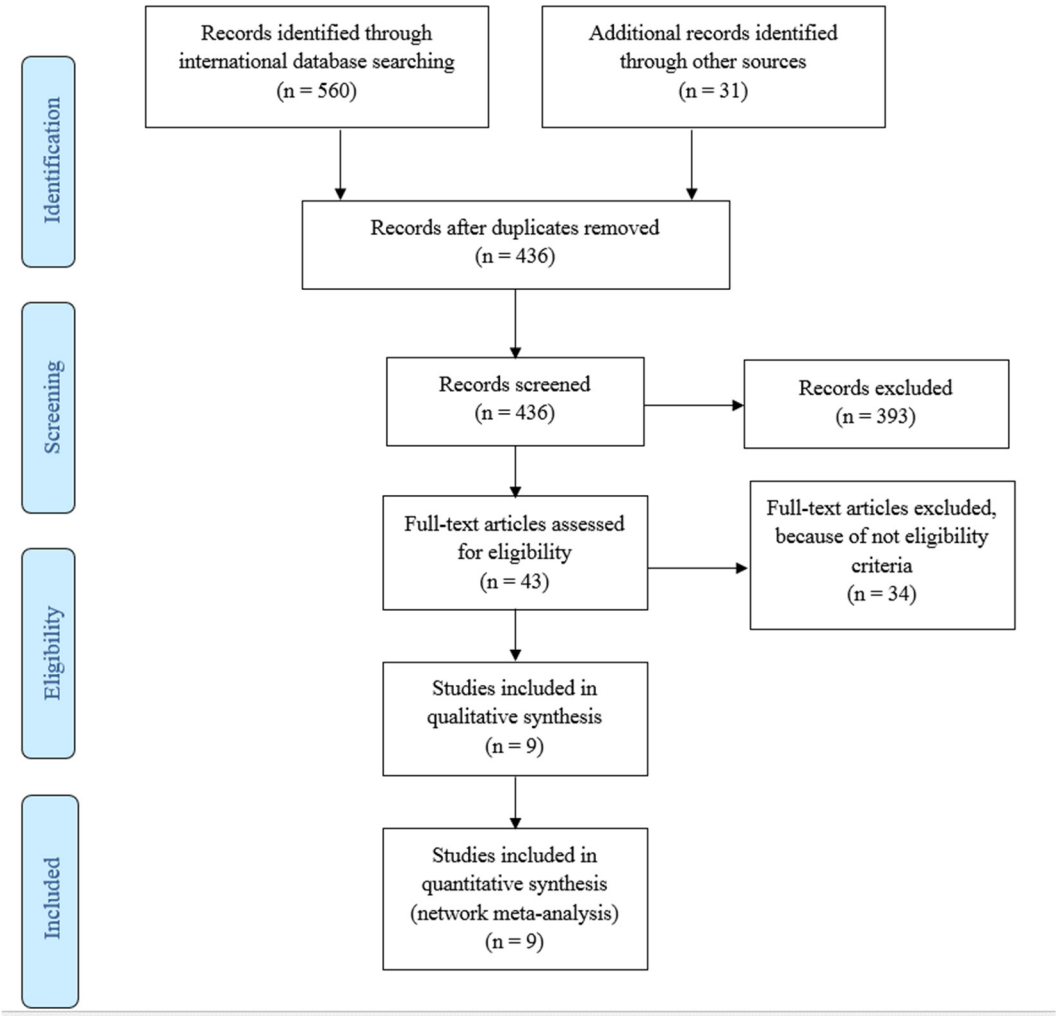


Fig. 1. A flow chart depicting the stages of retrieving articles and checking eligibility criteria for meta-analysis

varied from 22% to 76%. The pooled prevalence of depression in the west of Iran (30%) was lower than in the north (45%) and south of Iran (56%). In addition, the prevalence among people addicted to drugs (25%) was lower than the nonaddicted patients (58%). Overall, the prevalence of depression among people HIV and AIDS was considerable.

The prevalence of depression among people with HIV is more than the general population in Iran (30). Some factors were reported as reasons for more prevalence of de-

Table 1. Characteristics of the included studies in systematic review of the prevalence of depression among Iranian PLWHA

Study	Province	Sex	Age	Sample size	Addiction	Prevalence (95% CI)	Questionnaire
Amini Lari et al., 2010	Shiraz	Male	34.4	278	No	76% (71, 81)	Beck Depression Inventory(BDI-II)
Moayedi et al., 2012	Bandar Abbas	Mix	36	95	Mixed	73% (64, 82)	General Health Questionnaire -28 (GHQ-28)
Rezaee et al., 2011	Tehran	Mix	35.9	100	No	68% (59, 77)	Beck Depression Inventory(BDI)
Bagheripoor 2012	Kerman	Mix	39.6	83	No	48% (37, 59)	International Diagnostic Interview (CIDI)
Emadi-Kouchaka 2006	Tehran	Mix	37.9	199	No	41% (34, 48)	Beck Depression Inventory(BDI-II)
Shakeri et al., 2005	Kermanshah	Mix	NR	132	Mixed	37% (29, 45)	NR
Mobin et al., 2010	Gilan	Mix	33.4	270	Yes	26% (21, 32)	Beck Depression Inventory(BDI)
Golestane et al., 2012	Shiraz	Mix	NR	44	Mixed	25% (12, 38)	MMPI-2 test
Sayad et al., 2007	Kermanshah	Mix	34.3	59	Yes	22% (11, 33)	SCL-90-R questionnaire & diagnostic check list using criteria DSM- IV

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Table 2. Results of risk assessment bias using modified Newcastle-Ottawa Scale

Study	Representativeness of the sample				Determining the sample size		Reporting the non-respondents			Assessing the outcome				Statistical tests		Score
	a) Truly representative of the average in the target population. *	b) Somewhat representative of the average in the target group. *	c) Selected group of users.	d) No description of the derivation of the included subjects.	a) Justified and satisfactory. *	b) Not justified.	a) Comparability between respondents and non-respondents characteristics established and good response rate. *	b) Not satisfactory response rate or comparability between respondents and non-respondents.	c) No description of response rate or responders and non-responders characteristics.	a) Independent blind assessment. **	b) Record linkage. **	c) Self-report. *	d) No description.	a) Statistical test used to analyze the data clearly described, appropriate and measures of association presented including confidence intervals and probability level (p value). *	b) Statistical test not appropriate, not described or incomplete.	
Amini Lari 2010		*			*						**			*		5
Moayedi 2012		*									**			*		4
Rezaee 2011											**			*		3
Bagheripoor 2012					*		*				**			*		5
Emadi-Kouchaka 2006					*		*				**			*		5
Shakeri 2005												*				1
Mobin 2010	*				*						**					4
Golestane 2012												*				1
Sayad 2007		*									**					3

* Stars indicating the quality score of each study. The maximum score is 5 stars and minimum is zero.

Table 3. Subgroup analysis for prevalence of depression among PLWHA based on the geographical regions, addiction status, and type of the used questionnaire

Variable	Prevalence	95% CI	I2 (%)	p-value*
Addiction status				
Yes	25.5	20.7, 30.2	0	0.479
No	58.3	39.7, 77.0	96	<0.001
Mixed	45.1	17.5, 72.8	95.8	<0.001
Geographic area				
North	44.7	22.7, 66.7	96.7	<0.001
West	30.0	15.2, 44.7	79.4	<0.027
South	56.0	35.3, 76.7	95.5	<0.001
Used questionnaire				
Beck Depression Inventory	52.7	27.1, 78.2	98.5	<0.001
Other questionnaires	41.2	22.7, 59.6	94.1	<0.001

*p-value for heterogeneity test

pression in people with HIV than the general population, which are as follow: lack of social support, HIV-related stigma (31), lack of family support (32), and socioeconomic status (33).

In our study, prevalence of depression among addicted patients was lower than the nonaddicted HIV-infected patients. This finding is not in line with the other studies, which have shown that the prevalence of depression among addicted people is more than the nonaddict (34-36). In this review, two studies have reported the prevalence of depression among addicted HIV-infected participants. Therefore, this finding cannot be representative of all addicted HIV-infected people in Iran.

In a national survey in France, the overall prevalence of depression among PLWHA was 21%, and it was 32.8% and 55.7% among male and female injection drug users, respectively (37). Prevalence of depression among Iranian HIV-infected people was more than that of those in France. The reasons for higher prevalence in Iran may be due to social stigma and low social support for Iranian HIV-infected patients (38). However, prevalence among Iranian addicted patients was lower than that of the French. According to the results of a systematic review, prevalence of depression among people with HIV in low-, middle-, and high-income families was 31.8 (95% CI: 17.0, 51.5), 47.4 (95% CI: 31.3, 64.1), and 37.1 (95% CI: 30.6, 44.2), respectively (39). Results of our systematic review in Iran, as a middle-income country, were in the line with those of the mentioned systematic review.

According to the geographic regions of Iran, the higher prevalence was related to southern regions of Iran. On the other hand, there was an association between prevalence

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of depression among HIV-infected individuals and socioeconomic status (37). In addition, people with low income and low education level were at a higher risk of depression (40). The socioeconomic status of PLWHA in the southern regions may be lower than the northern region of Iran, so this may be the reason for higher prevalence of depression in the southern regions of Iran. However, more studies are needed to confirm this finding.

There was an association between depression and nonadherence to treatment among people living with HIV (41). Prevalence of depression among Iranian HIV-infected people is considerable, so the reason for nonadherence to treatment in HIV-infected people in Iran may be the high prevalence of depression. However, more studies, especially national studies, are needed to determine the prevalence of nonadherence to treatment in those HIV-infected people who are affected by depression, and association of depression, and nonadherence to treatment. In addition, conducting studies about depression and neurologic disorders of HIV-infected individuals and adherence to treatment are in priority for research in Iran (42).

There were some limitations in this review. First, some included studies had a low quality; second, a low sample size of some included studies might have increased the selection bias; and subsequently, the results might have not been representative of all Iranian HIV-infected people; third, the tools for assessing depression in the included studies were not the same, Beck Depression Inventory, SCL-90-R questionnaire, MMPI-2 test, General Health Questionnaire -28 (GHQ-28), and International Diagnostic Interview (CIDI) had been used as tools for diagnosis of depression among PLWHA. This might have increased the risk of information bias and might have been a reason for high heterogeneity in the results of the included studies. In addition, the low number of included studies was another limitation in this review. Finally, we recommend conducting further studies to assess mental disorders, especially depression, among Iranian PLWHA using standardized tools.

Conclusion

Results of this systematic review revealed that the prevalence of depression among Iranian people with HIV is considerable. Prevalence in the southern regions of Iran was more than the western and northern regions of Iran. This evidence may be useful for Iranian health policymakers to design suitable preventive and therapeutic interventions for those with HIV to prevent and control depression among these people in Iran.

Acknowledgments

We would like to thank Dr. Zahra Cheraghi for technical support of this study. In addition, we would like to thank the Department of Epidemiology and Biostatistics of Tehran University of Medical Sciences for technical support of this study.

Conflict of Interests

The authors declare that they have no competing interests.

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