

A systematic review of prevalence of Depression in Iranian patients

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Background: Depression is a common mental health disorder which has become a global public health issue. It constitutes around 35 to 45% of mental health problems in Iran and covers 8% to 20% of population of Iran. Therefore, the present study aimed to determine the prevalence of depression among the Iranian patients through systematic review and meta-analysis. **Method:** For the present study information were searched in Web of Science, Scopus, PubMed, Google Scholar, and in Iranian databases including Iran Medex, SID, MedLib, Scientific Information Database, MagIran, using the following keywords: “depression”, “prevalence” and Iran. The data from these databases were analyzed through meta-analysis (random effects model). Heterogeneity among the results of the studies was examined by I² index. Beck Depression Inventory (BDI), Depression Anxiety and Stress Scale-21 (DASS-21), General Health Questionnaire-28 (GHQ-28), and Geriatric Depression Scale (GDS) were used in this study, and statistical analyses were performed using STATA Ver.16. **Results:** A total of 46 studies conducted in Iran based on a sample size of 2960 individuals was found during the time period of 2010 and 2018. Prevalence of depression among Iranian patients was estimated to be 34.26 (95% CI, 24.12% - 44.10%). Thus, the findings indicated that there exists a moderate prevalence of depression which is continuously growing. **Conclusion:** The prevalence of depression in Iran is moderate and growing which is alarming as it may turn out to be a massive increase in incidence rate of depression in coming years. This indicates a greater risk for Iranian population and calls for effective measures to be taken to control the mental health problems among Iranian patients.

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Keywords: Depression, Iranian, Systematic review and Meta-Analysis

INTRODUCTION

Depression is the main cause of disability and an important world-wide public health issue. It used to account for 4.4 % of the whole global disability adjusted life years (DALYs) in 2000 and is projected as the 2nd leading cause of burden of disease in 2020 and 2030 (1).

The differences in the cultures, lifestyles, and socioeconomic status may be a reason for variations in the prevalence of depressive disorders. However, it is an equally dominant psychological problem across the globe. Iran has experienced profound socio-economic adjustments over the past three decades (2). This may be a cause of an increase among the cases reported of depression in Iranian communities.

Behavioral and psychological problems show an increase in developing countries, so that in transition to social improvement and subsequent changes in climate, politics, and economics, human beings are additionally exposed to psychological pressures. Accordingly, the issue of psychological health has constantly been an essential health subject in developing nations (3).

A systematic review conducted regarding the incidence of mental health problems in Iran the year 2006 reflected the differences in various studies conducted across the country (4). The review showed the necessity for the use of all evidence from the United States of America to estimate the prevalence of the mental disorders. A number of small- to intermediate-scale epidemiologic studies and national surveys have reported a high prevalence of major depressive disorder around the country (5).

Research has shown that many people who die through suicide have a mental illness and melancholy is one of the most common cause of suicide completion (6).

Considering numerous studies on the prevalence of depression among Iranians, conducting a meta-analysis is necessary to synthesise the results of these studies, so that a precise and valid rate is provided for planners and researchers in the field. Thus, this study aimed at estimating the prevalence of depression in Iran using systematic review and meta-analysis. This study conducted a systematic review of previous studies, performed meta-analysis of the final data, and finally assessed the prevalence of depression in Iranian patients.

DEPRESSION IN IRAN

The problem

Iran's Health Minister, Hassan Ghazizadeh stated on World Health Day in 2017 that the range of humans suffering from depression has doubled in the previous 26 years. "The humans are victims of wrong decisions made through a wide variety of policymakers and it has been observed that it unfortunately leads to a path of hopelessness," (7). He further stated that issues such as unemployment, dropping loved ones, traffic accidents and immoderate use of narcotics have resulted in an increasing number of psychological problems and depression. He added that "Young men and women, even juveniles, at instances go through from despair in life, and our society is currently full of these problems. But unfortunately, politicians close their eyes to such issues and only add to the problems. Women at the age of pregnancy and those in the early months of their pregnancy, as well as elderly people that is people above 60 years of age are amongst the most prone of groups. "Our troubles related to depression and intellectual problems are quite a few," he said. "In our country, girls suffer from depression more than men, and presently this mental disorder has multiplied by 50 %." Iran has faced worse conditions in comparison to other countries involving cases of severe depression. Cities in the provinces of Tehran, Fars, Isfahan and Chaharmahal and Bakhtiari, respectively, are suffering the most from severe depression. "Living in the city outskirts is another trouble main to depression. Widespread migration from villages to cities and their altering life-style cause the most extreme psychological and spiritual damage, and those dwelling in the city outskirts are dealing with the worst conditions," he added. More than 12 % of adults in Iran go through melancholy and more than 14 % of them have signs and symptoms of nervous disorders, according to Iran's Health Ministry Office of Psychological and Social Health. The complete range of people suffering from intellectual issues in Iran is over 23 % (7).

Methods

In order to carry out systematic review and meta-analysis, a screening and selection procedure was followed in harmony with the PRISMA statement (8).

Table 1. Characteristics of the selected articles for meta-analysis

First Author	Year	City	Tool	Age Average	Sample Size	Quality score	Prevalence of Depression in patients
Alizadeh	2010	Tehran	Kessler	71.5 ± 8.9	402	average	57.4
Gharanjik	2010	Torkman	GDS	68 ± 7.04	300	good	33
Mortazavi	2010	Shahrkord	GHQ -28	71.9 ± 8.4	400	average	45
Moshki	2014	Gonabad	Edinburgh	26.89 ± 4.5	208	good	30
Nazari	2011	Khorramabad	GHQ	26.7 ± 6.0	280	good	11.8
Hadavi	2012	Rafsanjan	Beck	20.10 ± 1.35	64	good	58.1
Tajvar	2015	Bandar abbas	GHQ	31.57 ± 5.86	72	average	10.7
Bahnam	2016	Semnan	Beck	29.74 ± 7.919	182	good	16.5
Kashani	2017	Tehran	MMPI	30.2 ± 5.6	102	good	31.4
Jamshidi et al	2016	Tehran	BDi	45 ± 11.6	414	good	63.6
Arman et al	2016	Kermanshah	BDi	45 ± 11.2	171	good	47.7
Mohammadi et al	2018	south khorasan	aboutthe-Zangdepression	37 ± 4.2	181	good	6.63
Mokhber Dezfoly et al	2018	Tehran	Beck	23.50 ± 13.352	51	average	25.5
Rahnama et al	2015	Tehran	HADS	33.7 ± 9.5	93	good	15
Tahan et al	2018	Birjand	Dass	18.40 ± 1.85	40	good	61.48

Search strategy

In the current study the systematic review and meta-analytisis was performed based on published articles in Persian and English in domestic and international journals. Peer reviewed articles were searched in various international databases including Web of Science, , Scopus, PubMed, Medline, and Google Scholar and also in Iranian databases including Scientific Information Database, MagIran, Iran Medex, SID, and MedLib from 2010 until February 2018. The keywords used for search were “depression”, “prevalence” and “Iran”. In addition, reference lists of the selected articles were evaluated for finding relevant studies.

Selection of studies and data extraction

The inclusion criteria for the studies included observational (non-interventional) articles reporting the prevalence of depression in Iranian patient samples. The exclusion criteria included non-relevant articles, case reports, interventional studies, repeated studies, and studies with no access to the full-text. In the next step, the articles' information was extracted and recorded on a specific form.

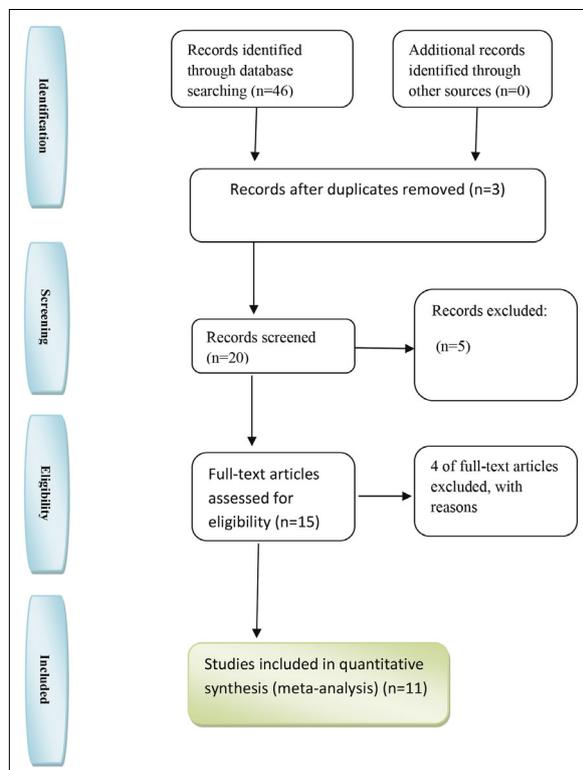
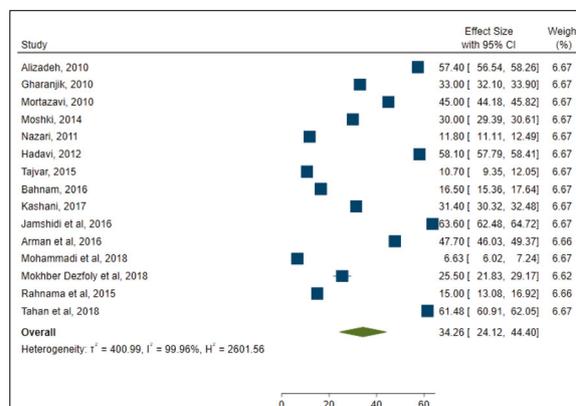
Quality assessment

The methodological quality of the selected articles was evaluated using a tool assessing five aspects: study plan, comparison groups, and characteristics of the samples, sample size, and data collection tools. Each aspect was rated on a 0–3 continuum level, and a higher score indicated a higher methodological quality (9) (Table 1).

Statistical analyses

Distribution of prevalence of depression was binomial, therefore, its variance was computed using binomial distribution. The effect size (ES) in this study was defined as prevalence of depression. Due to significant heterogeneity between studies ($P=0.000$), random-effects model in meta-analysis was used to combine the results of studies. Heterogeneity among the results of the studies was examined by “I²” index. Beck Depression Inventory (BDI), Depression Anxiety and Stress Scale-21 (DASS-21), General Health Questionnaire-28 (GHQ-28), and Geriatric Depression Scale (GDS) were used in this study.

Meta-regression was used to assess the relationship between prevalence of depression and sample size and

Figure 1. Screening process and selection of articles for meta-analysis according to the PRISMA statement**Figure 2.** Prevalence of Depression in Iranian patients and its 95% CI in Iran Based on Author's Name and Year of Study According to Random Effects Model

Random-effects REML model

Prevalence of depression among in Iranian patients was estimated to be 34.26 (95 % CI, 24.12 % – 44.10 %). In this study, the lowest prevalence of depression in Iranian patients was 1 % in the study of Mohammadi et al. in 2018 (95 % CI, 6.02 % – 7.24 %) and the highest prevalence of depression among Iranian patients was 63.60 % in the study of Jamshidi et al. in 2016 (95 % CI, 62.48 % – 64.72 %) (Figure 2). Due to the heterogeneity among studies, random-effects model was used to compute pooled estimate of prevalence of depression (Figure 2).

In the analysis by the type of questionnaire Beck Depression Inventory (BDI) was in 5 studies, General Health Questionnaire-28 (GHQ-28) was used in 3 studies, Geriatric Depression Scale (GDS) in 1 study, Kessler questionnaire in 1 study, and there was only 1 study from other questionnaires, Depression Anxiety and Stress Scale-21 (DASS-21). The meta-regression showed no significant relationship between the prevalence of depression in Iranian patients and the sample size ($P = 0.414$) (Figure 3). Also, there was no significant relationship between the prevalence of depression in Iranian patients and the year of study ($P=0.524$) (Figure 4). Funnel figure of Beggs test showed that the effect of publication bias was not significant (Figure 5).

DISCUSSION

Depression is one of the most common mental health disorders and has the capacity to negatively affect the bodily functions and personal/professional life quality of an individual (13). The general prevalence of depression among Iranian in patients was estimated

year of study. Sensitivity analysis was used to evaluate the effect of each study on the pooled analysis. Funnel plot and Beggs test were used to assess publication bias. The sensitivity analysis was performed by removing articles step by step. The statistical analyses were performed using STATA Ver.16.

RESULTS

In the first phase of the search on the basis of the keywords 46 articles were identified, out of which a total of 15 articles were selected based on the inclusion and exclusion criteria for the final analysis (Figure 1). The overall sample size was 2960 individuals within an average of 197 participants in each study. The findings showed that largest and smallest sample sizes were for the studies conducted by Jamshidi et al and Tahan et al, respectively (10,11). The highest and lowest prevalence rates of depression were reported by Jamshidi et al and Mohammadi et al, respectively (10,12). In terms of methodological quality, all articles were in the moderate level of quality. The general profile of selected studies for meta-analysis is reported in Table 1.

Figure 3. The Relationship between Prevalence of Depression in Iranian patients and Sample Size Using Meta-regression

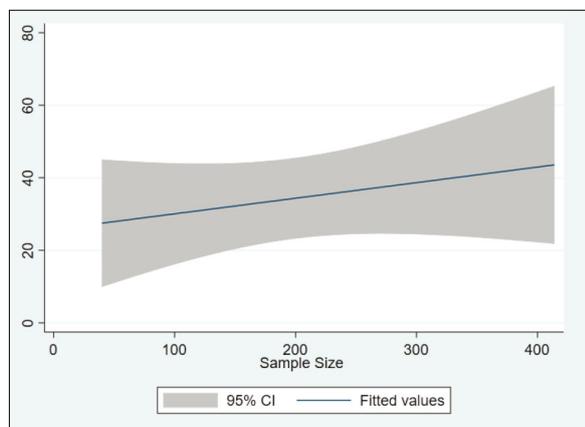


Figure 4. The Relationship between Prevalence of Depression in Iranian patients and Year of Study Using Meta-regression

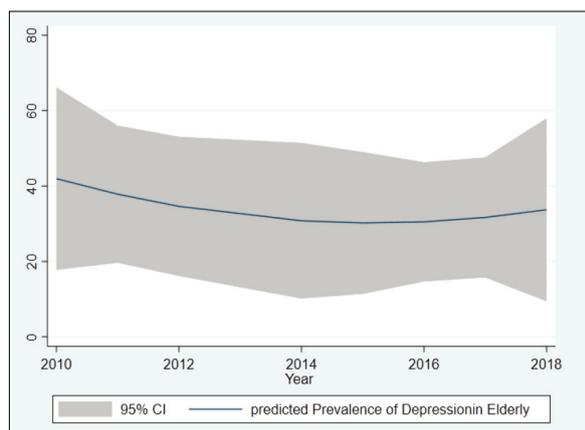
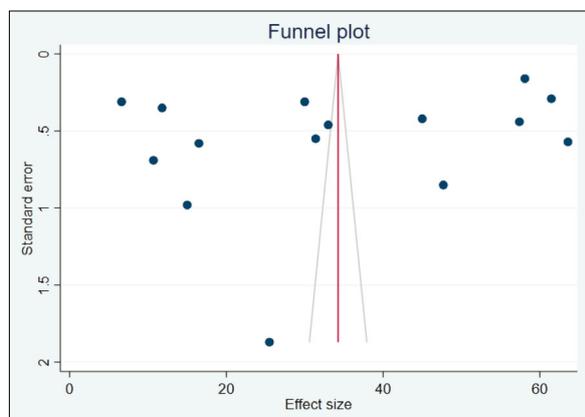


Figure 5. Publication Bias



to be 34.26 (95 % CI, 24.12 % - 44.10 %). The present systematic review and meta-analysis discovered a relatively high prevalence of depression among Iranian People. In this study, the prevalence of depression ranged from 6.63 % (95 % CI, 6.02 % - 7.24 %) to 63.6 % (95 % CI, 62.48 % - 64.72 %) (Table 1). One of the reasons for this variation comes from differences in diagnostic tests used (14).

A study conducted in an Iranian sample based on a meta-analysis including 26 studies with a sample size of 5781 individuals during 2001 and 2015 showed a prevalence of 43 % (95 % confidence interval (CI): 30 % - 55 %). Their findings further indicated that in the Iranian population the prevalence is 49 % in females and 48 % in males. Further, the prevalence of severity levels of depression put forward a proportion of 5 % for very severe, 19 % for severe, 33 % for moderate, and 38 % for mild depression. It also showed that most of Iranian individuals experience mild depression (15).

Findings of the present study are similar to the studies available in literature, however, epidemiological studies conducted in this field in Iran are limited. The results of a study in Greece showed a prevalence of 27 % for mild to moderate depression and 12 % for moderate to severe depression (16). Two studies conducted in Taiwan revealed that the prevalence was 52.5 % and 27.7 %, respectively (17, 18). Canada, France, and the USA reported a prevalence rate of 10 % to 40 % (19-22).

Moreover, different methodological designs and different tools used for assessing depression could play a role in explaining these discrepancies. The study results recommend adopting a combined approach that includes both clinical tests and depression measurement tools in future research. In addition, it is imperative for health policy-makers to devise and adopt those strategies which are required for prevention, early diagnosis, treatment, and follow-up of depression among patients.

The present study had some limitations including lack of access to full-text articles, due to the different types of questionnaires used in the reviewed articles, the difference in scoring the questions of the respective questionnaires and the difference in the number of questions in questionnaires, different measurement tools, and lack of uniform distribution of studies between different regions of the country. Different measurement tools to estimate prevalence of depression were another limitation of the study. Thus, we suggest conducting a large number of original research in these fields to estimate the prevalence of depression.

ETHICAL CONSIDERATION: As review-based researches depend on the data available as evidence in text the validity of the information can greatly influence the outcome of the research. Therefore, for the present study only authentic sources were involved so that no distorted realities will form the foundation of the research. Further, data from previously published research was used in which informed consent was taken by the primary research investigators. For the present study only articles permissible for reproduction for the sake of research have been used and it has in no manner directly affected the people of concern as a composite narrative has been used. No human participants have been involved for this study.

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A depresszió prevalenciája iráni betegekben: szisztematikus áttekintés

Háttér: A depresszió gyakori mentális betegség, mely napjainkra globális közegészségügyi problémává vált. Iránban a mentális betegségek mintegy 35-45 %-ért felelős, ami az iráni népesség 8-20 %-át érinti. A jelen kutatás célja a depresszió prevalenciájának megállapítása volt Iránban szisztematikus áttekintés és metaanalízis módszerével. **Módszer:** A jelen vizsgálathoz a Web of Science, Scopus, PubMed, Google scholar adatbázisokban, valamint az Iran Medex, SID, MedLib, Scientific Information Database, MagIran adatbázisokban végeztünk kutatást a „depresszió”, „prevalencia”, és „Iran” kulcsszavak segítségével. Az azonosított cikkek adatait random hatás modell metaanalízissel elemeztük, A vizsgálatok eredményeinek heterogenitását az I2 index segítségével vizsgáltuk. Az elemzésben a Beck Depresszióskála, Depresszió és Szorongás Stressz Skála-21, Általános Egészségkérdőív-28 és a Geriátriai Depresszióskála segítségével kapott adatokat elemeztük, és statisztikai elemzésekhez a STATA Ver.16 programot használtuk. **Eredmények:** 2010 és 2018 között összesen 46 olyan vizsgálatot azonosítottunk, melyet Iránban végeztek, összesen 2960 személy bevonásával. A depresszió prevalenciája az iráni páciensek között 34,26 % volt (95 % CI, 24,12 % - 44,10 %). Az eredmények alapján a depresszió prevalenciája mérsékelt, és folyamatosan emelkedik. **Következtetés:** Iránban a depresszió prevalenciája mérsékelt és emelkedik, ami óvatosságra int, mivel előfordulhat az elkövetkező években a depresszió incidenciájának jelentősebb emelkedése. Ez fokozott kockázatot jelent az Iráni népesség számára és felhívja a figyelmet a hatékony lépések szükségességére az irániak mentális egészségügyi problémáinak kontrollálása érdekében.

Kulcsszavak: depresszió, Irán, szisztematikus áttekintés, metaanalízis