

Prevalence of Depression in Iranian School Students: A Systematic Review and Meta-Analysis

Abstract

Background: Depression is one of the major psychiatric disorders in the world. The present study was conducted to determine the prevalence of depression among Iranian school students through a meta-analysis. **Methods:** All national and international information databases including PubMed, Scopus, Web of Science, SID, Magiran, Medlib were searched. The search phase was performed without language and time restrictions, but the searched studies were all in Persian and English, and the sources were updated by 03.08.2020. As the selected studies had high heterogeneity, the random effects model was used. **Results:** In 51 studies with a sample of 537144 people, the prevalence of depression in Iranian school students was 37% (95%CI: 32, 42). In addition, the prevalence of depression in girl school students was 45% (95%CI: 25-65) and in boys was 28% (95%CI: 20-35). The prevalence of mild, moderate and severe depression in school students is 31%, 18% and 11%, respectively. Also, the prevalence of depression in primary school students was 12%, middle school students 32%, high school students 47% and pre-university students 46%. **Conclusions:** About a third of Iranian school students suffer from some degree of depression, and the prevalence of depression in girls is about twice that of boys. The prevalence of mild depression among school students is higher than moderate and severe depression. On the other hand, the prevalence of depression in school students from primary to pre-university level is increasing, which is very worrying.

Keywords: Depression, Iran, prevalence, school students

Introduction

Depression is a serious disorder that affects all aspects of quality of life and leads to economic, social, occupational, and familial problems in affected individuals.^[1,2] World Health Organization identifies depression as the fourth cause of disability in the world and predicts that it will be the second leading cause of disability in the world by 2020.^[3] Depression is a disorder characterized by a decrease in energy and interest, feeling guilty,^[4] difficulty concentrating, inferiority, and thoughts of death and suicide, and is associated with a change in the level of activity, cognitive abilities, speech, sleep, appetite, and other biological rhythms.^[5]

The prevalence of depression in children and adolescents is a topic that needs serious attention because of impairment in various social, educational, professional and other functions.^[6] Depression in adolescence is a growing psychological problem that can cause educational and academic failure,

physical and social problems, and therefore may alter the future of adolescents.^[7,8] Depression may aggravate the accompanied chronic diseases such as diabetes, renal failure, and hypertension.^[9,10] Several factors can contribute to depression, such as age, sex, educational background, type of school, academic performance, household size, birth rank, occupation and parental education, residence status, history of mental disorders in parents, and family structure^[11] and in this regard poor mental and educational performance, weakening of role play, increasing paradox with parents and suicidal thoughts or suicide attempts are the consequences of depression.^[12] Depression may lead to obesity and presenting the diabetes and hypertension by itself too^[13]. Additionally, depression can predispose the individuals to cardiovascular disease and decreasing the immune system potency and even cancers.^[14,15]

Iran is a young country, of which more than half of the population is people under the age of 18 years. In this regard, it is

**Abbasali Karimi,
Nourollah Yadegari¹,
Diana Sarokhani²,
Moloud Fakhri^{3*},
Ali Hasanpour
Dehkordi^{4,*}**

M.sc. in Health Services Management, Lecture, School of Public Health, Social Determinates of Health Research Center, Yasuj University of Medical Sciences, Yasuj, ¹Assistant Professor of Psychiatry, School of Medicine, Psychosocial Injuries Research Center, Shahid Mostafa Khomaeini Hospital, Ilam University of Medical sciences, Ilam, ²Research Center for Environmental Determinants of Health, School of Public Health, Kermanshah University of Medical Sciences, Kermanshah, ³Traditional and Complementary Medicine Research Center, Addiction Institute, Mazandaran University of Medical Sciences, Sari, ⁴Social Determinants of Health Research Center, School of allied medical sciences, Shahrekord University of Medical Sciences, Shahrekord, Iran

Address for correspondence:

*Dr. Moloud Fakhri,
Traditional and Complementary
Medicine Research Center,
Addiction Institute, Mazandaran
University of Medical Sciences,
Sari, Iran.*

*E-mail: mmfir@yahoo.com
Dr. Ali Hasanpour Dehkordi;
Social Determinants of Health
Research Center; School
of allied medical sciences,
Shahrekord University of
Medical Sciences, Shahrekord,
Iran.*

E-mail: alihasanpourdehkordi@gmail.com

Access this article online

Website:
www.ijpvmjournal.net/www.ijpvm.ir

DOI:
10.4103/ijpvm.IJPVM_312_19

Quick Response Code:



How to cite this article: Karimi A, Yadegari N, Sarokhani D, Fakhri M, Hasanpour Dehkordi AH. Prevalence of depression in Iranian school students: A systematic review and meta-analysis. *Int J Prev Med* 2021;12:110.

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

important to study the problems and solve them among adolescent students as future community managers, who account for 25% of the population of the country.^[11,16]

Prevalence of depression in students in Rostamzadeh study in Urmia based on Beck questionnaire 68%,^[17] in Shojaeizadeh study in Kazerun using zong questionnaire 42%,^[18] and in Shakibaei study in Isfahan with questionnaire CDI was reported 22%.^[19]

In Iran, many studies have examined the prevalence of depression in school students, and these studies have reported different findings, the need for a meta-analysis study seems necessary to provide us a comprehensive and accurate estimate of the prevalence of depression in Iranian school students. Therefore, the present systematic and meta-analytic study was conducted to determine the prevalence of depression in Iranian school students.

Methods

Study protocol

The present study used systematic review and meta-analysis methods.

Statistical population

Participants in the selected studies were school students with no limitations gender.

Studied results

Primary results

Estimation of the prevalence of depression in Iranian school students by different questionnaires such as: Beck, SCL-90, Zong, and etc.

Secondary results

Estimation of the prevalence of depression in Iranian school students by sex, and depression level (mild, moderate and severe) in Iranian school students.

Search strategy

The present study is a meta-analysis study for determining the prevalence of depression among Iranian school students. international and national database PubMed, Scopus, Web of Science, SID, Magiran, Medlib were deeply searched using valid keywords of “Prevalence, Depression, School students, and Iran “and Latin and their combinations using the (AND, OR) operators. The documents found were published from 1998 to 2019. The search phase was performed without language and time restrictions, but the searched studies were all in Persian and English, and the sources were updated by 03.08.2020. In order to find articles that were not found during the e-search phase, the sources of the available articles were reviewed and thus a manual search was performed, but no new article was found. two researchers independently searched the databases.

Search strategy in PubMed

((Iran [Affiliation]) AND (Prevalence)) AND (Depression OR Depressive Symptom OR Emotional Depressions) AND (School Enrollment OR School students)

Inclusion and exclusion criteria

Studies that examined the prevalence of depression in Iranian school students were included and the age group of the study participants was over 5 years old. The exclusion criteria were non-Iranian studies, non-random sample size studies, failure to report required information such as the sample size or the prevalence of general depression or its levels in school students, Our statistical population was healthy individuals and school students who had mental health problems were not included in the study, poor quality of studies according to STROBE¹ checklist^[17] and the inaccessibility of full text of studies.

Qualitative assessment of studies

The standard and international STROBE checklist was used to assess the quality of the studies. The checklist consists of 22 different sections. In this regard, 51 papers that received at least a score of 16 from the checklist were entered into the meta-analysis process.

Data extraction

In this study, two researcher independently extracted data from studies to minimize reporting bias and error in data collection. The researchers entered the extracted data in a checklist containing: name of author, study title, year of study, city of study, prevalence of depression in boy and girl school students, name of questionnaire, mean age, degree, the severity of depression as mild, moderate and severe, sample size, and the number of girls and boys separately. The third researcher then examined the data extracted by the two previous researchers, so that if there were inconsistencies in both files, it would be reviewed and resolved.

Questionnaires

The Beck Depression Inventory (BDI)²: The Beck questionnaire is a self-report questioner includes 21 items that assess the severity of depression symptoms in emotional, cognitive and physical aspects. Each question had a set of at least four possible response ranging in intensity, a value of 0 to 3 is assigned for each answer. Total score range from 0 to 63. Higher total scores indicate more severe depression symptoms.^[18]

The Symptom Checklist-90 (SCL-90-R)³:

The SCL-90-R is normed on individuals 13 years and older. It consists of 90 items and takes 12–15 minutes to complete. It shows nine dimension of symptoms including;

- 1 Strengthening the Reporting of Observational Studies in Epidemiology
- 2 The Beck Depression Inventory
- 3 The Symptom Checklist-90

somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, psychoticism. It consist of a category of “additional items” which helps clinicians assess other aspect of the clients symptoms.^[19]

Children Depression Inventory (CDI)⁴: The Child Depression Inventory is a psychological assessment that shows the severity of depressive symptoms in children and adolescents. This scale has 27 items that are classified into 5 main areas and each question is assigned a score from 0 to 2. Therefore, the overall scoring varies between 0 and 54.^[20]

Rutter⁵: the Rutter Children’s Behavior Questionnaire (1967) is a 26- item survey designed to evaluate children’s behaviors at school. It completes by teachers. Answers are rated on a scale of 0 to 2, with higher ratings indicating more severe presence of the symptoms. Possible ratings on the scale range from 0 to 52.^[21]

Depression, Anxiety and Stress Scale -21 Items (DASS-21)⁶: The scale has 21 questions, of which 7 are related to depression, 7 to anxiety and 7 to stress assessment. Each question is scored from 0 to 3 and the whole questionnaire is scored from 0 to 63.^[22]

And other questionnaires such as

SDS, CES-DC, K-SADS, TRF, DSM-IV, Zong, GSHS, CADS, GHQ-28.

Statistical analysis

A random effects model was used to pooled the results of studies. I² test was used to evaluate the heterogeneity of studies. Subgroup analysis were done according to the questionnaire type, gender, level of education, level of depression (mild, moderate and sever). The Egger test and funnel plot were used to checked publication bias. Meta-regression was used to investigate the relationship between the year of publication of studies, sample size of studies with the prevalence of depression in school students. Sensitivity analysis was used to investigate influence studies. STATA Ver. 14 was used for data analysis.

Results

In this meta-analysis, 51 articles with a sample of 537144 people were reviewed. The data of the articles reviewed are summarized in Table 1 and the stages of the entry of studies into the meta-analysis process are presented in Figure 1. The results of meta-analysis on the prevalence of depression in Iranian school students based on different Subgroups are shown in Table 2.

According to Figure 2, there is no significant relationship between prevalence of depression in Iranian school students and the sample size ($P = 0.159$).

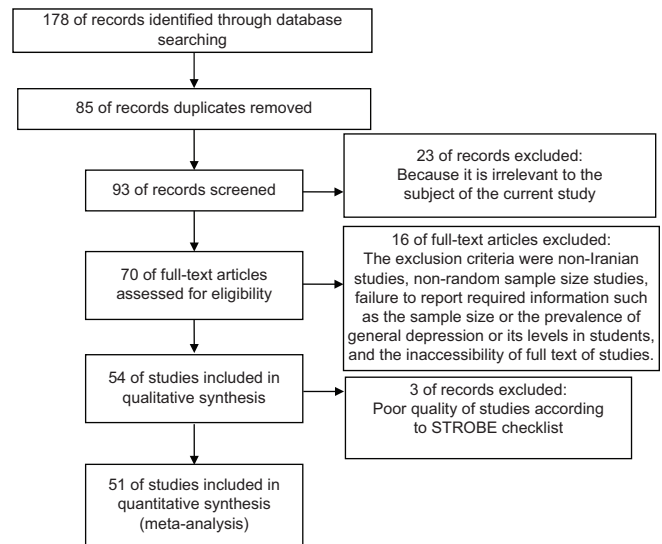


Figure 1: Flowchart of the entry of studies into meta-analysis

This means that in larger studies (more samples), the prevalence of depression is lower in Iranian school students, but this decrease is not statistically significant.

According to Figure 3, there is no significant relationship between prevalence of depression in Iranian school students and year of study ($P = 0.296$).

That is, over time and during the years 1997 to 2019, the prevalence of depression among Iranian school students has been upward. But this increase is not statistically significant.

Figure 4 shows that the prevalence of depression in Iranian school students is 37% (95%CI: 32%, 42%). The lowest prevalence of depression in school students was 1% (95%CI: 1%, 2%)^[38] and the highest was 91% (95%CI: 89%, 93%)^[45] [Figure 4].

In Figure 5 we see that the effect of diffusion bias is significant ($P = 0.000$). In the sensitivity analysis, we concluded that with the omission of the Shams study in 2011,^[48] the prevalence of depression in school students will be reduced to 33% (95%CI: 29%, 37%) and in contrast to the omission of the Sayyari study in 1998^[66] it will increase to 36% (95%CI: 29%, 43%). These two studies are, the most influence studies in the final result of the meta-analysis.

Discussion

In the study, which was conducted between 1997 and 2019, the prevalence of depression in school students was reported to vary from 1%^[38] to 91%.^[45] There are many reasons for these differences, including: different educational levels, type of schools (private or public), school students’ gender, economic and educational status of parents, variety of questionnaires, cultural differences in different cities and regions of Iran. The prevalence of depression was also different in different questionnaires.

4 Children Depression Inventory
 5 The Rutter Children Behaviour Questionnaire
 6 Depression, Anxiety and Stress Scale -21 Items

Table 1: Information of the articles entered into the meta-analysis process

Author	Year of Study	City of Study	Mean Age (year)	Degree of school students	Name of Questionnaire	Prevalence of Depression (%)	Sample Size	Number of girls	Number of boys	Prevalence of depression in girls	Prevalence of depression in boys
Sooky Z ^[23]	2010	Kashan	14-17	High school	Beck	53.5	762	762	-	-	-
Monir poor N ^[24]	2005	Rey	14-18	High school	Beck	-	388	222	166	-	-
Rostamzadeh Z ^[25]	2007	Urmia	14-18	High school	Beck	68.1	2023	-	-	-	-
Anvari S ^[20]	2009	Bam	14-18	High school	Beck	74.2	472	306	166	-	-
Riasi HR ^[26]	2012	Birjand	14-18	High school	Beck	51	200	96	104	55.2	48.1
Zahirodin A ^[22]	2004	Firuzkooch	14-18	High school	Beck	-	604	296	308	73	58
Mahmudnia A ^[27]	2011	Gharachak	14-18	High school	Beck	-	475	-	-	-	-
Rahimian E ^[28]	2008	Shahreza	12-18	Secondary school and High school	Beck	-	960	-	-	-	-
Narimani M ^[29]	2002	Ardebil	14-18	High school	Beck	-	197	197	-	-	-
Toulabi T ^[30]	2014	KhorramAbad	14-19	High school	Beck	-	152	-	-	-	-
Roshan R ^[31]	2002	Ardebil	14-18	High school	Beck	-	967	-	-	-	-
Rezaei-Barmi M ^[32]	2011	Karaj	14-18	High school	Beck	-	160	-	-	-	-
Modabber Nia MJ ^[33]	2007	Rasht	14-20	High school	Beck	33.9	3681	-	-	-	-
Shojaeizadeh D ^[34]	2001	Kazeron	-	Pre university	Zong	42.9	240	-	240	-	-
Turi A ^[35]	2015	Birjand	-	High school	DASS-21	27.5	400	200	200	-	-
Jahangasht Kh ^[36]	2016	Rasht	-	Secondary School	CDI	10	753	398	355	11.3	8.5
Nejati V ^[37]	2012	Tehran	7-14	Elementary and Secondary school	Rutter	4.2	347	-	-	-	-
Haghibin S ^[38]	2003	Gachsaran& Yasouj	7	Elementary		1.2	2846	1446	1397	-	-
Shahsavarani AM ^[39]	2013	Tehran	14-19	High school	CADS	67.1	417	-	-	-	-
Haji maghsoudi F ^[40]	2004	Bam	17-18	Pre university	SCL-90-R	49.4	259	151	108	48.3	50.9
Khodakarami B ^[41]	2013	Hamedan	11-15	Secondary School	Woodworth	49.5	400	400	-	-	-
Shakibaei ^[42] F	2014	Esfahan	11-16	Secondary School	CDI	22	1606	803	803	24.2	19.8
Shakiba M ^[43]	2012	Zahedan	-		SCL-90	70	40	40	-	-	-
Musavi-bazaz SM ^[44]	2015	Bashagard	14-21	High school	SCL-90	5.4	313	122	191	12.3	1
Shams G ^[45]	2011	Ardakan&Meibod	14-18	High school	SCL-90	91.2	909	553	356	91.2	-
Azizi-soleiman F ^[46]	2016	-	6-18	Elementary, Secondary school and High school	GSHS	21	11701	5823	5878	-	-
Ahmadi J ^[47]	2014	Shiraz	6-18	Elementary, Secondary school and High school	DSM-IV	3	1020	510	510	5	1
Ahadi Z ^[48]	2016	-	6-18	Elementary, Secondary school and High school	GSHS	-	13486	-	-	22.8	19.1
Ghobari-bonab B ^[49]	2009	Tehran	6-12	Elementary	TRF	2	1407	-	-	-	-

Contd...

Table 1: Contd...

Author	Year of Study	City of Study	Mean Age (year)	Degree of school students	Name of Questionnaire	Prevalence of Depression (%)	Sample Size	Number of girls	Number of boys	Prevalence of depression in girls	Prevalence of depression in boys
Ahmadkhamiha H ^[50]	2002	Tehran	11	Elementary	K-SADS	61.4	87	31	56	86.7	48.2
Hoseini-fard SM ^[51]	2005	Rafsanjan	14-18	High school	SCL-90	2.4	830	-	-	3.1	1.6
Sadeghian E ^[52]	2010	Hamedan	16	High school	GHQ-28	45.8	600	-	-	-	-
Zargham-borojemi A ^[53]	2001	Esfahan	14-17	High school	Beck	43.4	323	164	159	55.5	30.1
Hoseini SH ^[54]	2003	Rey	14	Secondary School	SCL-90	41.1	350	-	-	-	-
Sepehrmanesh Z ^[55]	2008	Kashan	17	High school	SCL-90	18	400	-	-	-	-
Moghrab M ^[56]	2010	Birjand	-	High school	Beck	58.8	450	-	-	-	-
Jena-abadi H ^[57]	2011	Saravan	14-19	High school	SCL-90	-	125	-	-	-	-
Ranjbar F ^[58]	2003	Tabriz	5-16	Elementary, Secondary school and High school	Rutter	4.1	221	99	122	65.7	44.5
Habibpour Z ^[59]	2009	Esfahan	16-19	High school	Zong	-	400	-	-	-	-
Rahimi-kian F ^[60]	2007	Karaj	13-18	High school	Beck	64.8	264	-	-	-	-
Rajabi Gh ^[61]	2004	Ahvaz	15	High school	CDI	25.6	400	-	-	-	-
Ghorbani B ^[62]	2006	Esfahan	8-16	Elementary, Secondary school and High school	CDI	16.2	234	-	-	-	-
Sayyari A ^[63]	2002	-	13	Secondary School		1.7	479504	-	-	-	-
Abdollahian E ^[64]	2002	Mashhad	10-12	Elementary	CDI	10.3	2071	1022	1049	13.1	7.6
Johari G ^[65]	1999	Ilam	17-18	High school	Beck	29.1	372	-	-	31	27
Shahnazi B ^[66]	2007	Tabriz	12-18	Secondary school and High school	CES-DC	75.8	364	-	-	-	-
Bahrami A ^[67]	2019	Mashhad& Sabzevar	12-18	Secondary school and High school	Beck	Beck	940	940	-	-	-
Safi-Al-Hosseini FS ^[68]	2018	Bojnurd	16.1	High school	Beck	Beck	384	384	-	-	-
Riahi F ^[69]	2017	Kuhdasht	15-18	High school	Beck	Beck	600	600	-	-	-
Servatyari K ^[70]	2019	Divandareh	16-19	High school	Beck	Beck	370	172	198	-	-
Moieni B ^[71]	2019	Hamedan	15-18	Secondary School	CES-D	CES-D	670	-	-	-	-

Table 2: The results of meta-analysis on the prevalence of depression in Iranian school students based on different Subgroups

Subgroups	Number of study	Prevalence of Depression (95% CI)	I ² (%)	P
Total	Prevalence of Depression	40	37% (32-42)	99.9 <0.001
Total by Sex	Prevalence of Depression in Girl	12	45% (25-65)	99.7 <0.001
	Prevalence of Depression in boy	11	28% (20-35)	98.9 <0.001
Total by Level	Prevalence of mild Depression	19	31% (25-37)	98.1 <0.001
	Prevalence of moderate Depression	19	18% (13-23)	98.7 <0.001
	Prevalence of severe Depression	18	11% (8-15)	99 <0.001
Total by Grade	Prevalence of Depression in Elementary	4	12% (7-16)	99 <0.001
	Prevalence of Depression in Guidance	6	32% (14-51)	99.8 <0.001
	Prevalence of Depression in High school	19	47% (31-62)	99.8 <0.001
	Prevalence of Depression in Pre university	2	46% (40-53)	53 0.145
Questionnaires	Prevalence of Depression in Beck	12	%53 (43-63)	99.1 <0.001
	Prevalence of Depression in SCL-90	7	%40 (5-74)	99.9 <0.001
	Prevalence of Depression in CDI	5	%17 (%11-%23)	97 <0.001
	Prevalence of Depression in Zong	1	%43 (37-49)	--- ---
	Prevalence of Depression in Rutter	2	%4 (3-6)	0 0.953
	Prevalence of Depression in GSHS	1	%21 (20-22)	--- ---
	Prevalence of Depression in DASS-21	1	%28 (23-32)	--- ---
	Prevalence of Depression in CADS	1	%67 (63-72)	--- ---
	Prevalence of Depression in Woodworth	1	%50 (45-54)	--- ---
	Prevalence of Depression in DSM-IV	1	%3 (2-4)	--- ---
	Prevalence of Depression in TRF	1	%2 (1-3)	--- ---
	Prevalence of Depression in K-SADS	1	%61 (51-72)	--- ---
	Prevalence of Depression in GHQ-28	1	%46 (42-50)	--- ---
Prevalence of Depression in CES-DC	1	%76 (71-80)	--- ---	

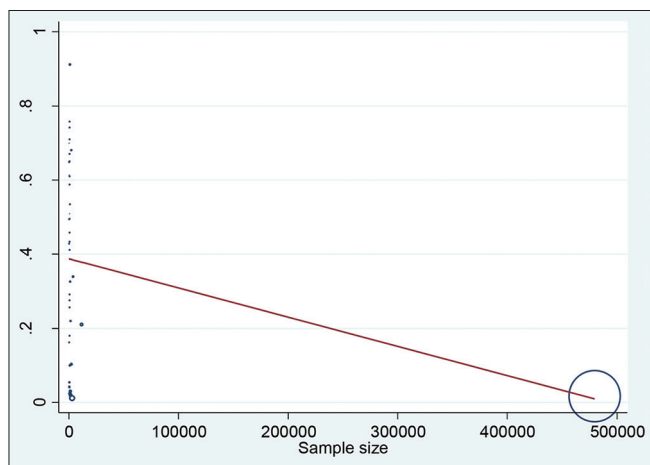


Figure 2: Relationship between prevalence of depression in Iranian school students and the sample size using the meta-regression model

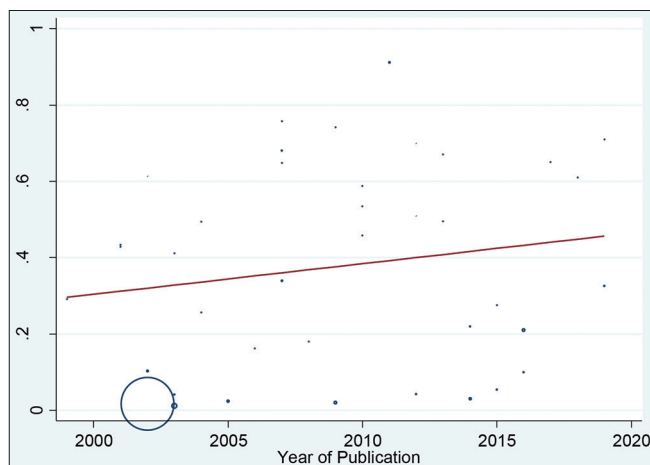


Figure 3: Relationship between the prevalence of depression in Iranian school students and the year of the study using the meta-regression model

Due to the different types of questionnaires, differences in the cut-off score of each of them, different number of questions in the questionnaires, lack of uniform distribution of studies among different questionnaires, these differences have occurred.

With the exception of the Rutter questionnaire, the prevalence of depression was higher in girls than in boys. This shows that in the student body, girls are more vulnerable than boys, and since our girls today are the mothers of our country tomorrow and can play

a significant role in society in the future as mothers and wives, mental health They should be paid more attention than before.

We could show no association between the prevalence of depression in Iranian school students and the number of research samples. In other words, with an increase in the sample size, the prevalence of depression in Iranian school students did not change significantly. Also, no relationship was found between the prevalence of depression in school students and research year and thus within the duration

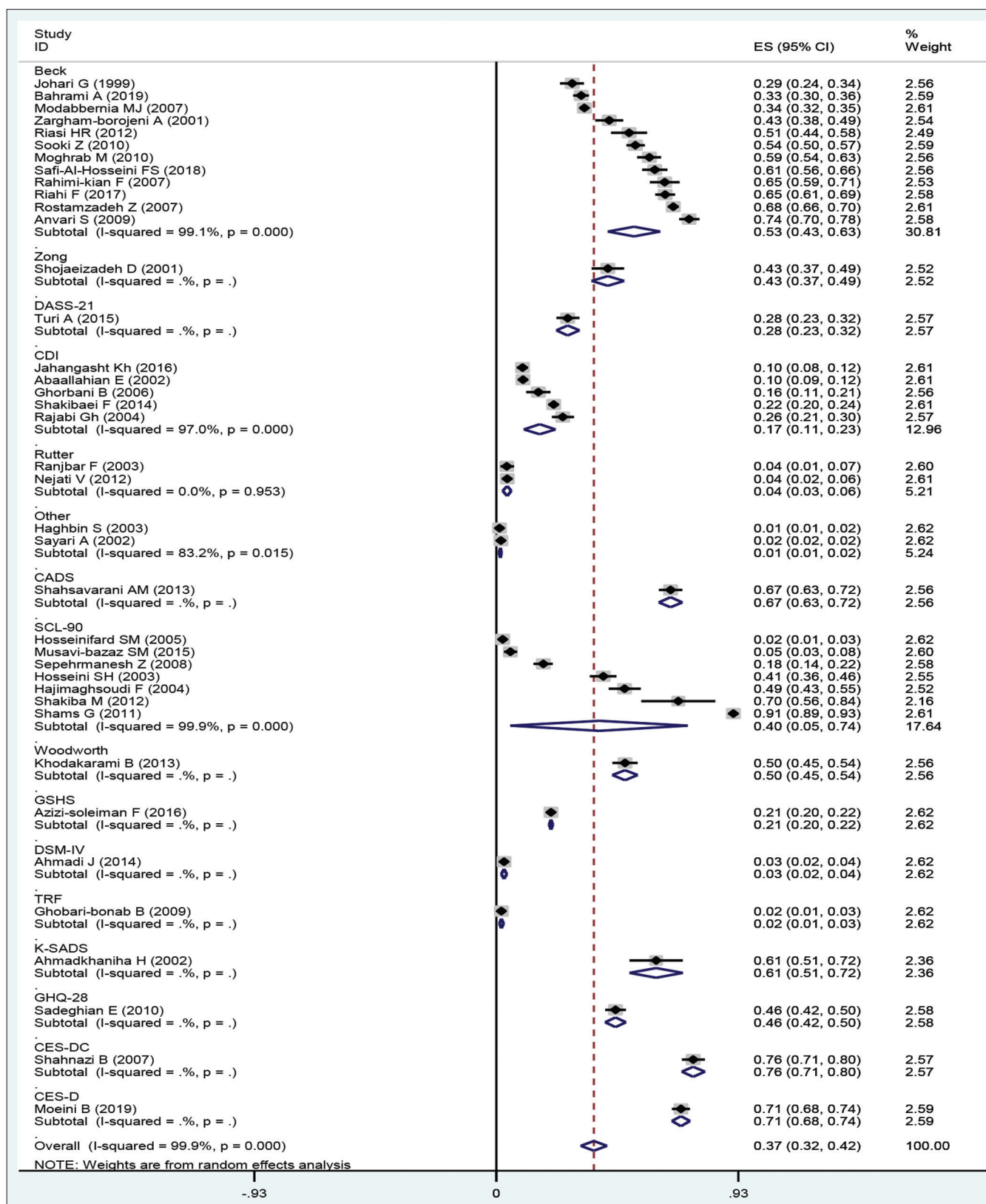


Figure 4: Prevalence of depression in Iranian school students with a 95% confidence interval based on the type of questionnaires

from 1998 to 2019, the prevalence of depression in Iranian school students has increased but this increase is not statistically significant.

In a meta-analysis study, the prevalence of depression in Iranian college students based on the Beck questionnaire was 40% (40% girls and 39% boys).^[72] In another

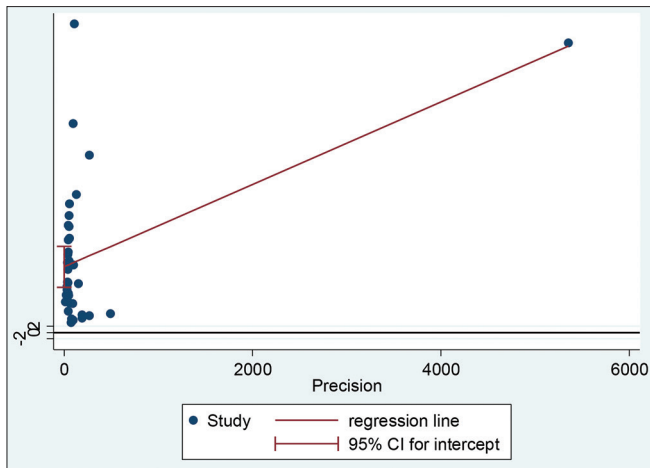


Figure 5: Publication bias prevalence of depression in Iranian school students

meta-analysis in 2013, the prevalence of depression in Iranian college students was 33%.^[73] These studies show that the prevalence of depression in Iranian school students is more than college students. The study found that the incidence of depression in girls was almost two times compared to boys. This difference is likely to result from multiple biological, psychological, social and cognitive factors.

According to Gunilla Olsson study in 1999, the prevalence of depression among high school students in Sweden was 12.3%, which was 17.9% in girls and 6% in boys.^[74]

Depression, anxiety and stress are the most common mental disorders of adolescence that threaten the health of the individual and society and are closely related to each other. In another study by Ehrenberg *et al.*, on 366 high school students in Canada, the prevalence of depression using the Beck questionnaire was obtained to be 41.4%.^[75]

According to a study by Ehrenberg *et al.*, The prevalence of depression in high school students in Canada is lower than in Iran. In another study, the overall prevalence of depression based on the Beck questionnaire was 71.25%. This study showed that 46.3% of the depressed were female and 53.7% were male. 27.8% of students had mild depression, 29.3% moderate, 7.5% severe, and 6.7% very severe.^[74] And the prevalence of depression in Iranian students was lower than Indian students. On the other hand, in the above study, the prevalence of depression in girls was lower than boys, which is not consistent with our study. In another study, in Canadian high school students. According to similar studies in the United Kingdom and the United States, 31.4% of the samples were clinically depressed, as measured by the Beck Depression Inventory.^[73] The prevalence of depression was slightly higher in Iranian students than in Canadian students.

The rate of depression in Nigerian Students was 9%,^[76] in Taiwanese students was in the range of 12.3% to 13.4%.^[77] Similar studies have been conducted on

depression in adolescents and high school students in other countries, with depression rate of 30% for Pakistani students.^[78]

According to a study conducted by Slee *et al.* in Australia on pre-school students, the prevalence of depression was 33%.^[79] The results of a study on 5423 high school students (sixth to eighth grades) in the United States showed the prevalence of major depressive disorder as 4.4%.^[80]

As you can see, the prevalence of depression in Iranian students is higher than students in Nigeria, Taiwan, Australia, the United States and Pakistan.

Study limitations

The main limitations of the current study included the inability of the Iranian databases to combine the keywords, due to differences in the questionnaires, and distribution of number of studies in different regions of Iran (north, south, west and east) were not same.

Conclusions

Considering that about one third of Iranian students suffer from some degree of depression and the prevalence of depression in girls is about twice that of boys. Also, the prevalence of depression in students from primary to pre-university level is increasing and almost one third of Iranian students is anxious. Due to the fact that childhood and adolescence is one of the most critical periods in the life of each person due to psychological, intellectual and social changes that can affect his academic and professional performance. Therefore, the results of this study should be used by policy makers and mental health officials for proper planning to reduce mental disorders.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

Received: 20 Aug 20 **Accepted:** 21 Jan 21

Published: 21 Sep 21

References

1. Sarokhani D, Parvareh M, Dehkordi AH, Sayehmiri K, Moghimbeigi A. Prevalence of depression among Iranian elderly: Systematic review and meta-analysis. *Iranian J Psychiatry* 2018;13:55-64.
2. Hassanpour-Dehkordi A. Influence of yoga and aerobics exercise on fatigue, pain and psychosocial status in patients with multiple sclerosis: A randomized trial. *J Sports Med Phys Fitness* 2016;56:1417-22.
3. Kessler RC, Bromet EJ. The epidemiology of depression across cultures. *Ann Rev Public Health* 2013;34:119-38.
4. de Souza J, Ferrari G, Ferrari C. Correlates of Geriatric Depression Scale with Perceived Quality of Life in an Elderly Population. *Geriatrics Persia*; 2017. 2.

5. Kaplan H, Sodock B. Comprehensive Textbook of Psychiatry From Williams & Wilkins. 7th ed. Baltimore: USA; 2001. p. 1284-431.
6. Tahmasyan K, Anari A. Modeling self somatic efficacy based on Bandura's agentic model from depression in depressed adolescents. *J Fam Res* 2009;2:83-93.
7. Molabagery M, Zeraati H. Evaluation of the association between marital satisfaction and depressive symptoms in adolescents and their mothers Tuysarkan city in 2004. *J Ment Health* 2007;8:50-43.
8. Kennebeck S, Bonin L. Epidemiology and risk factors for suicidal behavior in children and adolescents. *Youth risk behavior* 2005;51:27-30.
9. Nazar CMJ, Ahmed A, Akhtar MH, Kareem N. The awareness levels, attitude and perception of people about diabetes. *J Ren Endocrinol* 2016;2:e01.
10. Dehghan-Shahreza F. From oxidative stress to endothelial cell dysfunction. *J Prev Epidemiol* 2016;1:e04.
11. ELmissiry M. Screening for depression in a sample of Egyptian secondary school female students. *J Affect Disord* 2011;136:61-8.
12. Tahmasyan K, Anari A. The relationship between self-efficacy and depression in adolescents. *J Appl Psychol* 2010;1:1-18.
13. Sebani AM, Alamdary MP, Abdollahpour N. Depression among patients undergoing hemodialysis; a narrative review. *J Prev Epidemiol* 2017;3:e04.
14. Hajibabaei K. The role of antioxidants and pro-oxidants in the prevention and treatment of cancers. *Annals of research in antioxidants* 2016;1.
15. Kafeshani M. Diet and immune system. *Immunopathologia Persa*. 2016;1:e04.
16. Abdolahiyan A. Depression in school age children in Mashhad. *J Mashhad Univ Med Sci* 2001;1:1-7.
17. Von Elm E, Altman D, Egger M, Pocock S, Gøtzsche P, Vandenbroucke J. Strengthening the reporting of observational studies in epidemiology (STROBE) statement: Guidelines for reporting observational studies. *BMJ* 2007;335:806-8.
18. Beck A, Ward C, Mendelson M, Mock J, Erbaugh J. An inventory for measuring depression. *Arch Gen Psychiatry* 1961;4:561-71.
19. Derogatis LR. Symptom Checklist-90-Revised (SCL-90-R). Pearson: Clinical Psychology Pearson Education, Inc; 1994.
20. Anvari S. Prevalence of depression and its relationship with some demographic indicators in high school students in Bam after the earthquake of 2003. *Rescue and Relief Journal* 2009;1:1-7.
21. Rutter M. A children's behaviour questionnaire for completion by teachers: Preliminary findings. *J Child Psychol Psychiatry* 1976;8:1-11.
22. Zahirodin A, Hoseini S, Semnani Y. The prevalence of depression and related factors in high school students in Firoozkooh. *Researcher* 2004;9:9-15.
23. Sooky Z, Sharifi K, Tagharrobi Z, Akbari H, Mesdaghinia A. Depression prevalence and its correlation with the psychosocial need satisfaction among Kashan high-school female students. *Fez J Kashan Univ Med Sci* 2010;14:256-63.
24. Monirpour N, Yazdan doost R, Atef vahid K, Delavar A, Khosefi H. The Relation Between Demographic Characteristics and Prevalence Rate in Depression among Adolescent Undergraduate Students at Ray City. *refahj*. 2005;4:189-204.
25. Rostam Zade Z, Khalil Zade R. The prevalence and severity of depression in Urmia girls' high school students. *Urmia Nurs Midwifery J* 2007;5:56-62.
26. Riasi M, Mogharab M, Salehi Abar Ghooei M, Hasan Zade Taheri E, Hasan Zade Taheri M. Comparison of depression among normal and gifted students in Birjand city in the academic year of 2008-2009. *Modern Care* 2012;9:95-103.
27. Mahmudnia A, Rastegarpur H, Jekar F. Effect of cognitive group therapy on the reduction of depression of high school student. *Clinical Psychology Studies* 2011;2:1-29.
28. Rahimian Buger E, Najafi M, Khooshabi K, Heidari F, Heidari M. Investigating the prevalence of depression among high school students in Shahreza city. *Educational Psychology* 2008;4:136-59.
29. Narimani M, Roshan R. The prevalence of depression and the effectiveness of behavioral-cognitive therapy in reducing depression in students. *J Psychol* 2002;6:244-54.
30. Toulabi T, Khosh Niyat Nikoo M, Amini F, Nazari H, Mardani M. The influence of a behavior modification interventional program on body mass index in obese adolescents. *J Formos Med Assoc* 2012;111:153-9.
31. Roshan Chesli R, Narimani M. The prevalence and causes of depression among high school students in Ardabil city. *Daneshvar* 2002;9:59-66.
32. Rezaei Barmi M. Comparative study of depression level among male athletic students engaged in individual and team sports versus male nonathletic students of schools from the second board of education in Karaj, Iran. *Procedia Soc Behav Sci* 2011;30:352-6.
33. Modabber-Nia MJ, Shodjai-Tehrani H, Moosavi SR, Jahanbakhsh-Asli N, Fallahi M. The prevalence of depression among high school and preuniversity adolescents: Rasht, northern Iran. *Arch Iran Med* 2007;10:141-6.
34. Shoja'ei-Zadeh D, Rassafiani H R. A Study on Depression among Pre-University Students Kazeran City 1379-80. *jrehab*. 2001;2:29-32.
35. Turi A, Miri M, Beheshti D, Yari E, Khodabakhshi H, Anani Sarab G. Prevalence of internet addiction and its relationship with anxiety, stress, and depression in intermediate students in Birjand city in 2014. *J Birjand Univ Med Sci* 2015;22:67-75.
36. Jahangasht K, Asiri S, Pakseresht S, Kazemnejad Leili E. Prevalence of depression symptoms and its related factors in school students. *J Compr Nurs Midwifery* 2016;26:8-15.
37. Nejati V. The prevalence of behavioral problems in elementary school students in Tehran province. [HYPERLINK "http://mjiri.iums.ac.ir/"](http://mjiri.iums.ac.ir/) *Medical Journal of The Islamic Republic of Iran (MJIRI)* 2012;30:162-8.
38. Haghbini S, Ebrahimi S, Poormahmoodi A, Moohamadi J. Medical examination of children due to enter first grade elementary in Yasuj and Gachsaran-2000-2001. *Armaghane Danesh* 2003;8:17-26.
39. Shahsavarani A, Shahrani H, Sattari K, Mohammadi M, Hakimi Kalkhoran M. Psychometric characteristics and factor structure of children and adolescent depression scale (CADS) and depression status among female adolescents. *J Couns Res* 2013;12:91-122.
40. Haji Maghsoodi F, Yasini M, Karimzadeh A. Prevalence of psychological disorders in youth after natural disasters. [HYPERLINK "https://www.sid.ir/en/Journal/JournalList.aspx?ID=4039"](https://www.sid.ir/en/Journal/JournalList.aspx?ID=4039) *Journal of medical research (JMR)* 2004;3:56-76.
41. Khodakarami B, Faradmaj J, Asghari S, Zaini E, Masumi S. Behavioral disorders among students of girl's guidance schools of Hamadan City and affecting factors. *Sci J Hamadan Nurs Midwifery Fac* 2013;21:59-69.
42. Shakibaei F, Esmaeili M. Study of MDD epidemiology in students of middle school (11-16 yrs. old) of Esfahan city in 2007-8. *J Res Behav Sci* 2014;12:1-11.
43. Shakiba M, Ziai M. Comparative study of mental health of

- female students living in dormitories of welfare organization and University of Sistan & Balouchestan. *Zahedan J Res Med Sci (ZJRMS)* 2012;14:56-60.
44. Mousavi Bazaz S, Madani A, Zarei F, Abbasi khaddar E. Prevalence of psychological disorders and its social determinants among high school students in Bashagard. *J Prev Med* 2015;2:40-6.
 45. Shams G, Foroughi E, Esmaili Y, Amini H, Ebrahimkhani N. Prevalence rates of obsessive-compulsive symptoms and psychiatric comorbidity among adolescents in Iran. *Acta Med Iran* 2011;49:680-7.
 46. Azizi Soleiman F, Esmaeell Motlagh M, Qorbani M, Heshmat R, Ardalan G, Mansourian M, *et al.* Dietary habits and health related behaviors in Iranian children and adolescents. *Int J Pediatr* 2016;2087-97.
 47. Ahmadi J, Amiri A, Ghanizadeh A, Khademalhosseini M, Khademalhosseini Z, Gholami Z, *et al.* Prevalence of addiction to the internet, computer games, DVD and video and its relationship to anxiety and depression in a sample of Iranian high school students. *Iran J Psychiatry Behav Sci* 2014;8:75-80.
 48. Ahadi Z, Kelishadi R, Qorbani M, Zahedi H, Aram M, Esmaeil Motlagh M, *et al.* Association of breakfast intake with psychiatric distress and violent behaviors in Iranian children and adolescents: The CASPIAN- IV study. *Indian J Pediatr* 2016;83:922-9.
 49. Ghobari Bonab B, Parand A, Khan Zade H, Firooz Jah A, Molleli G, Nemati S. The prevalence of behavioral problems in elementary school students in Tehran. *RES Exceptional Children* 2009;9:223-38.
 50. Ahmad Khaniha H, Turkman Nejad S, Hussaini Moghaddam M. Epidemiology of depression and sexual abuse among street children. *IJPCP* 2002;8:14-20.
 51. Hoseini Fard S, Bireshek B, Atef Vahid M. Epidemiology of mental disorders in high school students in Rafsanjan. *Iran J HYPERLINK "http://ijpcp.iums.ac.ir/en" Iranian Journal of Psychiatry and Clinical Psychology* 2005;11:71-80.
 52. Sadeghian E, Moghadari Kosha M, Gorji S. The study of mental health status in high school female students in Hamadan city. *Sci J Hamadan Univ Med Sci* 2010;17:39-45.
 53. Zargham Borujeni A, Yazdani M, Yazdan nik A. Association between behavioral patterns of parents with depression and suicidal thoughts among adolescents. *J Shahrekord Univ Med Sci* 2001;3:46-54.
 54. Hosseini S, Moosavi S, Reza Zadeh H. Assessment of mental health in students of junior high schools in the city of Sari, Iran. *Journal of Fundamentals of Mental Health* 2003;6:92-9.
 55. Sepehrmanesh Z, Ahmadvand A, Yavari P, Saei R. Assessing the mental health of adolescents in Kashan, 2004. *IRJE* 2008;4:43-9.
 56. Mogharab M, Shayeste Roudi A, Rezaei Z, Meliroudi S, Hajinejad M, Salarkhani K. Depression level in girls' high school students in Birjand (2009-10). *Mod Care J* 2011;7:55-61.
 57. Jenaabadi H, Nastiezaie N. A comparison of aggression, anxiety and depression in HIGH School students in Saravan city. *J Urmia Nurs Midwifery Fac* 2011;9:147-56.
 58. Ranjbar Kuchak Saraei F, Dadash Zade H, Fakhari A, N Abdel Y. Prevalence of psychiatric disorders in children and adolescents in the northwestern region of Tabriz. *Medicine* 2003;59:56-60.
 59. Habibpour Z, Sharifi A. A comparative study about the intensity of depression Among girls and boys in teenage period. *J Urmia Nurs Midwifery Fac* 2009;7:10-2.
 60. Rahimikian F, Amelvalizadeh M, Ghobari bonab B, Mehran A, Rahimi N. Frequency and intensity of depression during menstrual period and it's relation with religious attitudes in Karaj high school girls 2003. *J Dena* 2006;1:1-9.
 61. Rajabi G, Attari Y. Factor analysis of children and adolescent depression questionnaire. *Coins Red(New Red Consult Serv)* 2004;3:82-102.
 62. Ghorbani B. Comparison of depression in children and adolescents of ordinary families and families of divorce application in Isfahan. *Scholarship Appl Psychol* 2006:95-112.
 63. Sayyari A, Iman Zade F, Karami H, Ramazan Khani A, Alikhani S, Samad Zade H, *et al.* Investigating the physical and psychological health of primary school students in the academic year of 1998-1999. *Med Cult* 2001;2:20-9.
 64. Abdollahian E, Yazdani Farabi S, Amiri Moghadam R. Prevalence of depression among primary school children in Mashhad. *IJPCP* 2002;7:42-8.
 65. Johari G. Study of depression in Ilam students. *J Ilam Univ Med Sci* 1999;6:34-44.
 66. Shahnazi B. Depression among female students in public schools in Tabriz. *J Nurs Midwifery* 2007;3:22-30.
 67. Bahrami A, Salarbashi D, Mohammad-Zadeh M, Tayefi M, Mirmoosavi S, Ferns G, *et al.* Depression and aggression scores, reported sleep disorders status and their associated factors among adolescent girls in Northern Iran. *Curr Psychol* 2019;16:1-12.
 68. Safi-Al-Hosseini F, Saki M, Hamedi A, Saadati H, Lashkardoost H. The prevalence of depression among female high school students in Bojnurd, North Khorasan province, Iran, 2016. *J North Khorasan Univ Med Sci* 2018;9:42-8.
 69. Riahi F, Izadi-Mazidi M, TashaKori A, Mansouri L. Prevalence of depression among high school girls in Kuhdasht, Iran. *Jundishapur Sci Med J* 2017;16:433-42.
 70. Servatyari K, Yousefi F, Valizadeh Ardalan P, Rasouli M, Hosseini S, Ghaderi M, *et al.* The prevalence of depression and disappointment and their relationship with Substance addiction tendency among high school students in Divandareh City in 2018. *Shenakht J Psychol Psychiatr* 2019;6:1-13.
 71. Moeini B, Bashirian S, Soltanian A, Ghaleiha A, Taheri M. Prevalence of depression and its associated sociodemographic factors among Iranian female adolescents in secondary schools. *BMC Psychol* 2019;7:25.
 72. Sarokhani D, Veisani Y, Sarokhani M, Esmaelimanesh R, Sayehmiri K, Vafae R. Prevalence of depression among university students: A systematic review and meta-analysis study. *Res Med* 2012;36:36-42.
 73. Sarokhani D, Delpisheh A, Veisani Y, Sarokhani M, Esmaelimanesh R, Sayehmiri K. Prevalence of depression among university students: A systematic review and meta-analysis study. *Depress Res Treat* 2013;2013:1-7.
 74. Olsson G, Knorrning A. Adolescent depression: Prevalence in Swedish high-school students. *Acta Psychiatr Scand* 1999;99:324-31.
 75. Ehrenberg M, Cox D, Koopman R. The prevalence of depression in high school students. *Adolescence* 1990;25:905-12.
 76. Adewuya A, Ologun Y. Factors associated with depressive symptoms in Nigerian adolescents. *Adoles Health* 2006;39:105-10.
 77. Huang C, Guo S. Stress, perceived support, resourcefulness and depressive symptoms in Taiwanese adolescents. *J Clin Nurs* 2009;18:3271-9.
 78. Khan M, Mahmood S, Badshah A, Ali S, Jamal Y. Prevalence of depression, anxiety and their associated factors among medical students in Karachi, Pakistan. *J Palk Med Assoc* 2006;56:583-6.
 79. Slee P. Peer victimization and its relationship to depression among Australian primary school students. *Pers Individ Differ* 1995;18:57-62.
 80. Neshatdost T, Khademi M. Study of prevalence of depression in middle school of five area of education organization of Esfahan on 2004. Isfahan, Iran; Isfahan University of medical sciences. 2006.