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Meta-analysis

Prevalence of Depression in Nurses Working in Iranian Hospitals: A Systematic Review and Meta-analysis

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Abstract

Background and Objectives: The mental health of nurses, who are a part of the health care system, is extremely important in order to be able provide effective health care services to patients. This systematic review and meta-analysis aims to determine the prevalence of depression in nurses working in Iranian hospitals in order to point out to the importance of this issue to health policymakers.
Methods: This study is a systematic review and meta-analysis which was conducted by adherence to the PRISMA checklist and STROBE Statement. All related published articles during April 2000 to March 2016 were searched on SID & Magiran, Medline (PubMed), ScienceDirect and Google Scholar databases. The different combinations of keywords like nurse, depression, prevalence, hospital and Iran were used. The heterogeneity of the studies was assessed using I2 index and the data were analyzed in Comprehensive Meta-Analysis (CMA) software.
Results: A total of 12 studies were included in this review. The overall prevalence of depression in Iranian hospital nurses was 29.9% (19.4-43.2%: 95% confidence interval). The highest prevalence of depression was reported among nurses in Tehran hospitals in 2000 which was 73.1% (64.8%-80%: 95% confidence interval) and the least prevalence of depression was recorded among nurses in Ilam hospitals in 2014 which was 5.8% (2.4-13.2%: 95% confidence interval).
Conclusion: Considering the high prevalence of depression (29.9 %) in nurses working in hospitals of Iran, it is necessary that health policy makers and hospital managers pay more attention to this issue.

Keywords: Depression, Nurse, Hospital, Iran, Meta-analysis.

Introduction

Depression indicates a feeling of mental exhaustion, lack of energy, loss, hopelessness, uselessness, ineptitude and pessimism.[1] The prevalence of this disease has been reported 9% to 20%.[2] The prevalence of depression is more than twice in women than men, and the age of the onset of depression can vary from childhood to adulthood, but half of its onset is between the ages of 20 and 50 years old. There is a direct relationship between depression and psychological stresses. Actually, physical, psychological and social stimuli in the workplace can all cause stress.[1-3]

In Iran, 80 percent of health care workers are nurses. This is while the National Association of Occupational Safety (NAMS) has listed nursing as one of the top 40 stress-related occupations. Nursing is at the forefront of stressful jobs among health care professionals.[4] Nurses not only play a caring role but also manage the care of patients, they act as a consultant and guide in health matters and are a member of the health care group. Nurses need to have the right and necessary professional skills in order to perform their critical duties of promoting community health, preventing diseases, providing and maintaining the health of all members of their

family and society.[5]

It is well documented that depression has some effects on the absence of work, the degree of accuracy in doing duties and performance in nurses. Depressed nurses show little accuracy in their work safety and are more prone to occupational injuries and accidents. In addition, depression can cause workplace stress which can lead to challenges in interpersonal relationships and the work process. In fact, studies have shown that depression is one of the costliest diseases of the workforce. Those who are struggling with this disorder are approximately 27 times more likely to be exposed with the inability to perform their duties than healthy people. Also, depression is almost 30% of the cause of lower productivity while absenteeism is considered to be 70% of the cause of mistakes in job duties.[1-4]

In nurses, cumulative stress creates a state of chronic fatigue and hopelessness and finally depression.[4,5] As a result, considering the mental health of nurses who are a link to the health care system is extremely important. Maintaining nurses' mental health has an importance in the quality and quantity of health services provided by them which ultimately guarantees the health of the community. This

study aims to systematically review and analyze the prevalence of depression in nurses working in Iranian hospitals and emphasize the importance of this issue to health policymakers.

Methods

This study was a systematic review and meta-analysis based on the PRISMA checklist. A comprehensive search of the literature was conducted for manuscripts using the online biomedical search engines such as SID & Magiran, Medline (PubMed), ScienceDirect and Google scholar. All relevant published articles in Iranian and foreign journals from March 2000 to March 2016 were included in this review. Different combinations of the keywords; depression, depressive disorder, nurses, nursing personnel, patient admission, hospitals, Iran with AND and OR operatives were used for the searches. All the searching was done in Persian and English language. Limits for this literature search filters included papers published in human studies published as observational studies.

Criteria for Selecting and Evaluating the Quality of Articles

At first, the title of all retrieved articles were assessed then, a list of abstracts was prepared. After blinding the details of the articles, including the journal name and author's name, the full text of the articles was provided to the researchers. Each article was independently studied by two researchers, and in case the article was rejected, the reason was mentioned. In case of disagreement between the two researchers, the article was judged by a third researcher.

Inclusion and Exclusion Criteria

All cross-sectional studies on the prevalence or frequency of depression in nurses of Iranian hospitals were included in the study. Review articles, articles on the relationship between depression and other problems in nurses, causes and factors affecting nurses' depression, risk factors, interventional, cohort, case-control studies were excluded from the list of articles.

Evaluating the Quality of Articles

The STROBE statement was used to evaluate the quality of the cross-sectional articles. The statement consisted of 22 sections, 18 of which were general and applied to all observational studies and 4 specific sections for cross-sectional study. The various aspects of the methodology including study objectives, determination of appropriate sample size, type of study, sampling method, research community, data collection method, definition of variables, method of sampling, data collection tools, and the statistical tests were assessed. Based on the assessment of the quality of the articles; a list of selected articles including the researcher's name, article title, year and place of study, sample size, and prevalence of depression in the nurses were provided (Figure 1). Finally, after the final qualitative evaluation of the articles, 12 articles were included in the meta-analysis (Table-1.).

Data Analysis

The prevalence of depression in nurses working in Iranian hospitals was determined in each study. The heterogeneity of the studies was assessed using the I^2 test. According to results (I^2=97%) and the heterogeneity of the included studies, the random effects model was used to combine the results of the studies. The data were analyzed using Comprehensive Meta-analysis (version 3) software. The probability of bias in the results was analyzed by funnel diagram and Egger test with a significance level of 0.05 (Figure-1). Accordingly, the bias of diffusion was not statistically significant (P=0.344).

Table-1. Characteristics of the Included Studies

| Author	Publication Year	City	Sample Size	Age	Prevalence
Kazemi [6]	2011	Tehran	335	31.4±7.5	37.3
Habibi [7]	2014	Qazvin	80	35.7±5.4	32.5
mousaRezaei [8]	2011	Isfahan	405	35	45.9
Khajenasiri [9]	2000	Tehran	13.	-	73.1
Yasami [10]	2014	Ilam	60	31.8±8.3	33.3
Asadzandi [11]	2011	Tehran	272	37.05±6.3	24.9
Khani [12]	2016	Neyshaboor	196	31.8±8.3	26
Tajvar [13]	2015	BandarAbbas	72	31.5±5.8	10.7
Taghinejad [14]	2014	Ilam	86	31.8±8.3	5.8
Ardakani [15]	2008	Shiraz	1195	-	11.2
Mahmoudi [16]	2013	Kurdistan	314	-	58
Khamse [17]	2011	Tehran	416	30-40	51.8
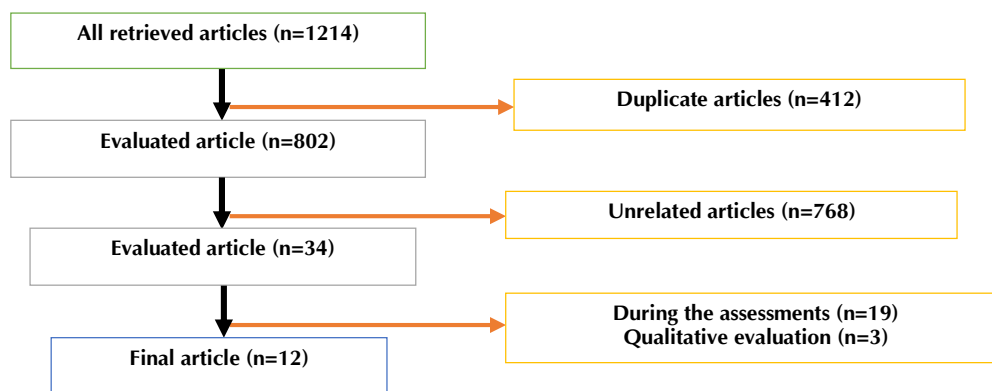
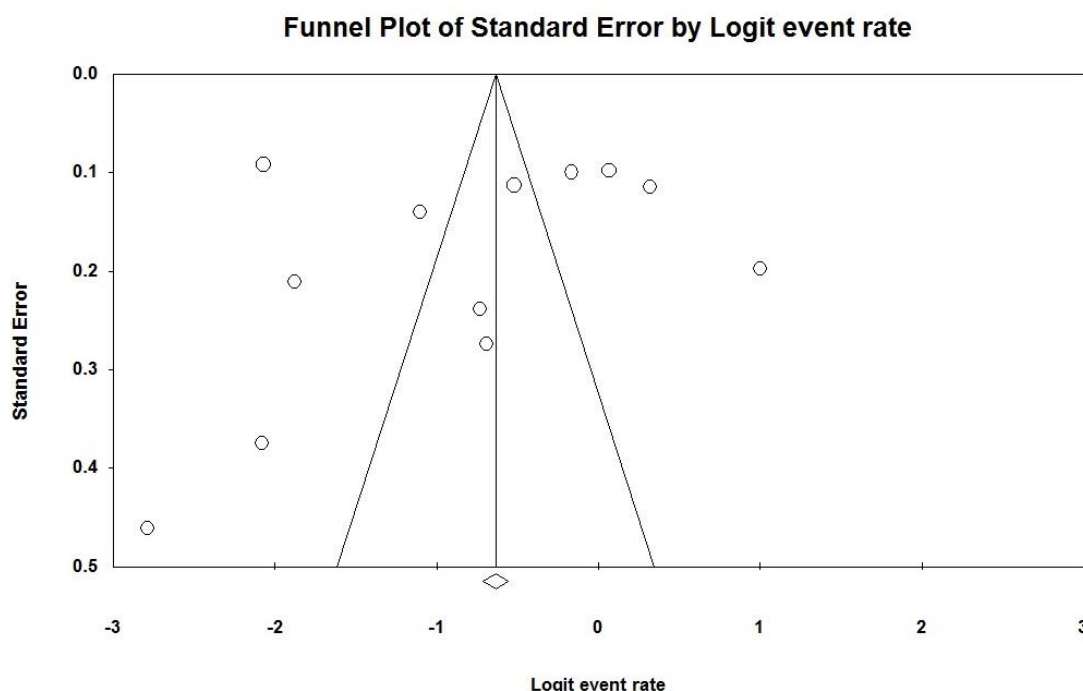**Figure-1.** Diagram of Selecting Systematic Reviews

Figure-2. Funnel plot of prevalence of depression in nurses working in Iranian hospitals

Results

In regards to the prevalence of depression in nurses working in Iranian hospitals, including articles published in Iranian and foreign journals; 22 articles in SID & Magiran databases, 15 articles in Medline (PubMed), 614 articles in ScienceDirect and 563 articles in Google search engine were obtained. According to the initial inclusion criteria, 412 duplicate articles, and 768 unrelated articles were removed. After on, 19 articles were removed during the assessments and 3 articles were removed in the qualitative evaluation of the articles, which eventually led to 12 articles which entered the meta-analysis process (**Figure-1**).

The total number of nurses in this review was 3,561 in the age range of 21 to 64 years. The overall prevalence of depression in nurses in Iranian hospital was 29.9% (19.4-43.2%: 95% confidence interval), the highest prevalence of depression was reported in nurses in Tehran with 73.1% (64.8 80%: 95% confidence interval)[9] and the lowest

prevalence of depression was recorded in Ilam nurses with 5.8% (2.4-13.2%: 95% confidence intervals)[14] (**Figure-3.**).

Data shows the prevalence of depression in nurses of Iranian hospitals based on the random effects model. The black square demonstrates the prevalence rate and the length of the segment shows the 95% confidence interval in each study, rhomboid display prevalence for all studies. In order to investigate the effects of potential contributing factors on heterogeneity in the prevalence of depression in nurses working in Iranian hospitals, two variables of sample size and year of study were used (**Figure-3. Prevalence** of Depression in Nurses Working in Iranian Hospitals Based on Random Model

(**Figure-4. Diagram of** the Prevalence of Depression in Nurses Working in Iranian Hospitals Based on Sample Size

As shown in **Figure 3**, with an increase of the sample size in studies, the prevalence of depression also decreased and this difference was statistically significant (P<0.05). According to **Figure-4.** Diagram of the Prevalence of Depression in Nurses Working in Iranian Hospitals Based on Sample Size

, it was reported that the prevalence of depression decreased as the year of which the study was conducted increased; however this difference was not statistically significant (P=0.777).

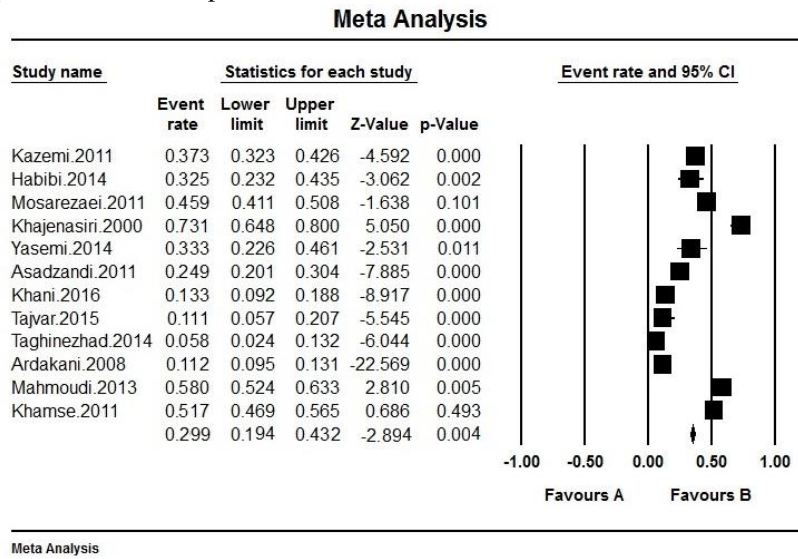**Figure-3.** Prevalence of Depression in Nurses Working in Iranian Hospitals Based on Random Model
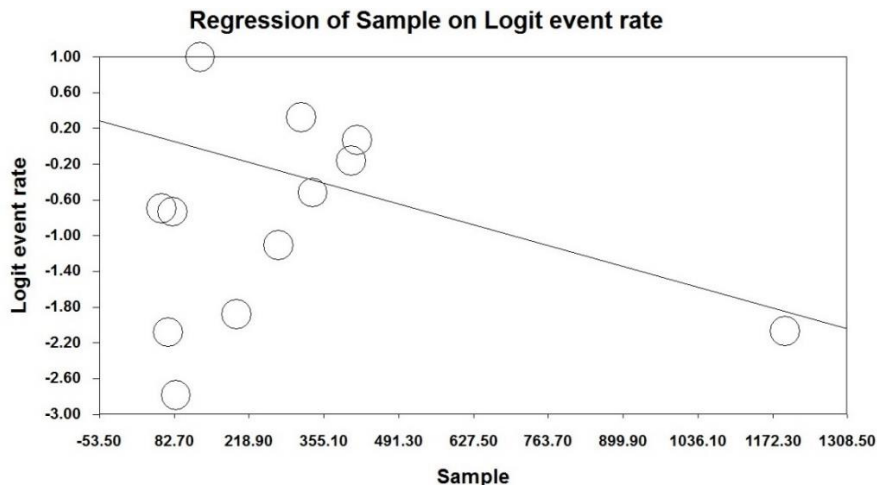

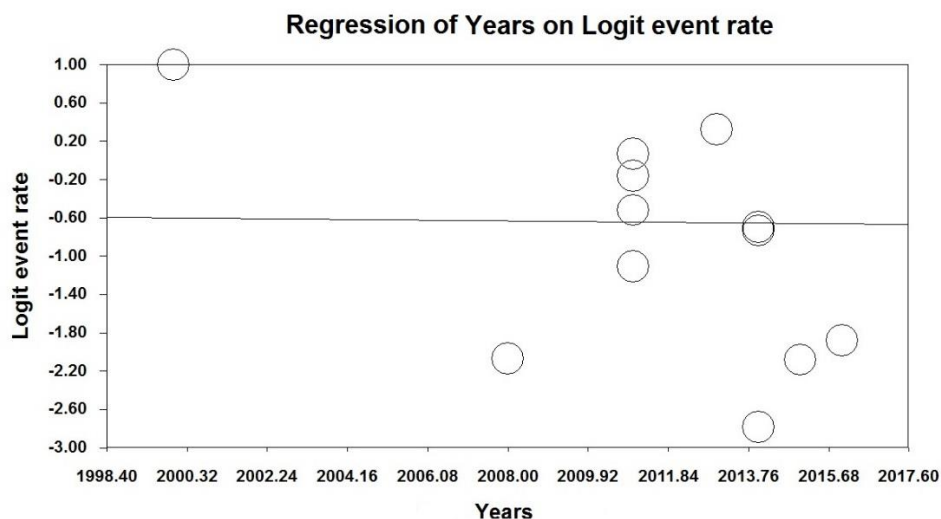**Figure-4.** Diagram of the Prevalence of Depression in Nurses Working in Iranian Hospitals Based on Sample Size

Regression of Years on Logit event rate

Figure-5. Meta Regression Diagram of the Frequency of Depression in Nurses Working in Iranian hospitals Based on Year

Discussion

Depression is a debilitating disease and one of the most common and serious disorders that threatens one's mental and physical health and imposes a heavy burden on the society.[17-19] A part of the economic impact of depression is the decline in productivity in the workplace and nurses and their depression are highly regarded due to their special role in the health system, because increasing work motivation in this area, creating health security that also applies to other segments of society.[20-22] The wide range of nurses' activities and the interdisciplinary nature of their profession have made them vulnerable to psychological trauma, especially mood changes, such as depression.[21, 22]

As nurses are exposed to patients with severe illness, mortality, inadequate social support, coping with patients' and their families' emotional expectations, sympathizing with suffering patient, interpersonal conflicts, noise pollution, exposure with aggressive and angry patients, work stress and conflict of roles are exposed to psychological stress and cause depression in them.[20-23] Based on the results of this study and based on a randomized model, the overall prevalence of depression in nurses working in Iranian hospitals was reported to be 29.9%, indicating a high prevalence which may have a significant effect on high rates of depression. In general, nurses in Iranian hospitals experience prolonged and long shifts, which can be effective on their mental health.

The World Health Organization (WHO) statistics show that the prevalence of depression in the community is between 15% and 20% and in nurses is 15% to 30%.[18] Compared to these statistics, the prevalence of depression in Iranian nurses is high and needs more attention. In a Brazilian study on nurses working in pediatric cardiac care, it was reported that 45% of nurses had symptoms of psychological problems, stress, and depression.[19] In a study in China,[20] nurses reported 52% depression, while in a

Canadian study it was reported that depression is serious in nurses and requires serious interventions in order to reduce it.[21]

In another study in Brazil,[22] the prevalence of depression among ICU nurses was more than 28%. In a US study on 1,171 nurses, the prevalence of depression was 18%.[26] This is while in a prospective study over a 4-year period on 32,470 female nurses, an 8% prevalence of depression was revealed.[27]

The difference between the values obtained in studies is due to the difference in populations, culture and context, the wards of nurses, differences in nursing care delivery, and how nurses interact in the workplace. There are also several occupational stressors in nursing which play a major role in the development of stress and depression among nurses. The psychological stress on nurses also has consequences which can end up in job mistakes. On the other hand, stress and depression provide burnout to nurses and eliminate their physical and mental strength and lead to negative responses from oneself and others.[23]

Various studies have reported that factors such as patient death, dealing with colleagues, lack of preparedness to deal with patients' emotional problems, lack of support from the selection agency, excessive workload, and lack of insurances about some clinical guidance exacerbate stress and anxiety in nurses.[24] A study in the United Kingdom[25] indicates that placing nurses in managerial positions will cause greater stress and excessive depression in nurses.

Nurses who continuously experience stress and tension in their work environment and have not been trained in the area of coping strategies are likely to face greater degrees of negative effects of depression and stress on their job performance. According to figures released by the International Nursing Council, occupational stress accounts for 60 to 90 percent of staff and nurses' referrals to health centers, and also states that employees who are at high occupational stress will be more likely to be injured than

other staff and will also decrease nurses' quality of life.[22-24] Since one of the most important areas in sustainable health development in human societies is the health sector, improved services and adequate support will provide healthy nurses and thereby promote community health.

Nurses are exposed to high levels of stress and depression due to their specific occupational status, so it is necessary to pay more attention to this issue and to make more practical steps. Changing the working hours of nurses, shifts of nurses, as well as increasing the amenities for them, training nursing students about stress management techniques, identifying depressed nurses and providing therapeutic and control strategies, as well as providing necessary training in aerobic exercise and relaxation techniques, proper diet, adequate sleep and social support, and finally more attention by authorities and decision makers will eventually lead to a decrease in depression levels. If the health and medical staff had problems with mental health and depression, they would not be able to provide the best service for target groups.

Conclusion

According to the results of this review, the overall prevalence of depression in nurses in Iranian hospitals was 29.9% and due to this high prevalence of depression in nurses working in hospitals, it is necessary for health policymakers and hospital managers to take effective measures in this regard which will eventually lead to better and more effective treatment systems in the country.

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Authors' Contribution

All authors pass the four criteria for authorship contribution based on the International Committee of Medical Journal Editors (ICMJE) recommendations.

Conflict of Interests

The authors declared no potential conflict of interests with respect to the research, authorship, and/or publication of this article.

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References

1. Veerman JL, Dowrick C, Ayuso-Mateos JL ,Dunn G, Barendregt JJ. Population prevalence of depression and mean Beck Depression Inventory score. British Journal of Psychiatry. 2009;195(6):516-9. doi: 10.1192/bjp.bp.109.066191

2. Wittchen HU, Pittrow D. Prevalence, recognition and management of depression in primary care in Germany: the Depression 2000 study. Human Psychopharmacology: Clinical and Experimental. 2002;17(S1):S1-1. doi: 10.1002/hup.398

3. Berardi D, Leggieri G, Ceroni GB, Rucci P, Pezzoli A, Paltrinieri E, Grazian N, Ferrari G. Depression in primary care. A nationwide epidemiological survey. Family Practice. 2002;19(4): 397-400. doi: 10.1093/fampra/19.4.397

4. Mehrabi T, Parvin N, Yazdani M, Asemanrafat N. The study of the severity of some occupational stressors in nurses. Journal of Nursing and Midwifery Research. 2004;27 (4): 34-39

5. Chen CK, Lin C, Wang SH, Hou TH. A study of job stress, stress coping strategies, and job satisfaction for nurses working in middle-level hospital operating rooms. Journal of Nursing Research. 2009;17(3):199-211. doi: 10.1097/JNR.0b013e3181b2557b

6. Kazemi MH, Kohian K. Prevalence of depression and its effective factors among nurses in a number of Tehran hospitals. Journal of Nurse and physician within War. 2011; 14(2):8-11

7. Habibi R, Zahedifar F, Hadizade M, Ghobadi M, Mohammadi M. The Relationship between Job Stress and Depression in Nurses of the Operating Room in shahid Rajaei and Taminejtemaei Haspitals of Qazvin 2012. Journal of edrak. 2014; 9(35): 45-50

8. Musarezaie A, Momeni-Ghalehghasemi T, Musarezaie N, Moeini M, Khodaee M. Investigate the Prevalence of Depression and its association with Demographic variables in Employee. Iranian Journal of Psychiatric Nursing. 2014;2 (7):37-45

9. Khajeh Nasiri F. A study of depression prevalence of nurses and its effective factors in Tehran Emam Khomeini Hospital. Tehran University Medical Journal TUMS Publications. 2000;58(1):10-4.

10. Yasemi M, Peyman H, Khajavikhan J, Nasiri AA, Najafi F, Hemati K, Bimanand L. Prevalence of depression among nurses working in the operating rooms and intensive care units. Journal of Zabol University of medical sciences and health services. 2015;6(4):70-7.

11. Asad Zandi M, Sayari R, Ebadi A, Sanainasab H. Abundance of depression, anxiety and stress in militant Nurses. Journal of Military Medicine.2011; 13(2):103-108

12. Khani H, Ghodsi H, Nezhadnik H, Teymouri S, Ghodsi A. Depression and its relationship with hypochondriasis in nurses in Neyshabur, Iran. doi: 10.18869/acadpub.mcs.3.1.34

13. Tajvar A, Saraji GN, Ghanbarnejad A, Omidi L, Hosseini SS, Abadi AS. Occupational stress and mental health among nurses in a medical intensive care unit of a general hospital in Bandar Abbas in 2013. Electronic physician. 2015;7(3):1108. doi: 10.14661/2015.1108-1113

14. Taghinejad H, Suhrabi Z, Kikhavani S, Jaafarpour M, Azadi A. Occupational mental health: a study of work-related mental health among clinical nurses. Journal of clinical and diagnostic research: JCDR. 2014;8(9):WC01. doi: 10.7860/JCDR/2014/8247.4835

15. Ardekani ZZ, Kakooei H, Ayattollahi SM, Choobineh A, Seraji GN. Prevalence of mental disorders among shift work hospital nurses in Shiraz, Iran. Pak J Biol Sci. 2008;11(12):1605-9. doi: 10.3923/pjbs.2008.1605.1609

16. Mahmodi SH, Zehni K. The comparison of depression prevalence between shift work nurses in education hospitals of Kurdistan medical sciences university. Iranian Journal of Nursing Research. 2013;8(28):29-38.

17. Khamseh F, Roohi H, Ebaady A, Hajiamini Z, Salimi H, Radfar S. Survey Relationship between demographic factors and stress, anxiety and depression in nurses working in selected hospitals in Tehran city. Journal of Holistic Nursing and Midwifery. 2011;21 (1):13-21.

18. Patti E, Acosta J, Chavda A, Verma D, Marker M, Anzisi L. Prevalence of anxiety and depression among emergency department staff. N Y Med J. 2007;2(2):24-9.

19. Tito RS, Baptista PC, da Silva FJ, Felli VE. Mental health problems among nurses in paediatric cardiac intensive care. British Journal

of Nursing. 2017;26(15):870-3. doi: 10.12968/bjon.2017.26.15.870

20. Wang YW, Liu GZ, Zhou XT, Sheng PJ, Cui FF, Shi T. Mediating effect of mental elasticity on occupational stress and depression in female nurses. Journal of industrial hygiene and occupational diseases. 2017;35 (6):436-9. doi: 10.3760/cma.j.issn.1001-9391.2017.06.009

21. Duhoux A, Menear M, Charron M, Lavoie-Tremblay M, Alderson M. Interventions to promote or improve the mental health of primary care nurses: a systematic review. Journal of nursing management. 2017;25(8):597-607. doi: 10.1111/jonm.12511

22. Vargas DD, Dias AP. Depression prevalence in Intensive Care Unit nursing workers: a study at hospitals in a northwestern city of Sro Paulo State. Revista latino-americana de enfermagem. 2011;19(5):1114-21. doi: 10.1590/s0104-11692011000500008

23. Sheikh M, Afzal M. World Health Organization Emro: Frequently Asked Questions about Community Based Initiatives; 2003

24. Meshkany Z, Kahdany F. Investigate anxiety and its related factors among nurses. ShahedUniv Res J. 2003;52:47-53.

25. Caplan RP. Stress, anxiety, and depression in hospital consultants, general practitioners, and senior health service managers. BMJ. 1994;309(6964):1261-3. doi: 10.1136/bmj.309.6964.1261

26. Letvak S, Ruhm CJ, McCoy T. Depression in hospital-employed nurses. Clinical Nurse Specialist. 2012;26(3):177-82. doi: 10.1097/NUR.0b013e3182503ef0

27. Vetter C, Chang SC, Devore EE, Rohrer F, Okereke OI, Schernhammer ES. Prospective study of chronotype and incident depression among middle-and older-aged women in the Nurses' Health Study II. Journal of psychiatric research. 2018;103:156-60. doi: 10.1016/j.jpsychires.2018.05.022