Job burnout among nurses in Iran: A systematic review and meta-analysis

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ABSTRACT

Background: Job burnout is a major problem among nurses. The three dimensions of job burnout include emotional exhaustion (EE), depersonalization (DP), and low personal accomplishment (PA). Objectives: The aim of this study was to determine the mean of job burnout among nurses in hospitals affiliated to Medical Sciences Universities in Iran. Methods: This was a systematic review and meta-analysis. An online search was performed in the PubMed, Web of Sciences, Scopus, Google Scholar, Scientific Information Database, Medlib, Iranmedex, Magiran, Civilica, Noormags, and IranDoc databases. The search keywords were “burnout,” “job burnout,” “occupational burnout,” “nurses,” “nursing staff,” and “Iran.” Critical appraisal of eligible studies was performed using the Critical Appraisal Skills Program checklist. The first author’s name, publication year, sample size, and the mean scores and standard error values of the different dimensions of job burnout were extracted from each included study. The random-effects and the fixed-effect models were used for the meta-analysis. The Cochran’s Q test, the F index, and the Egger’s regression analysis were used. Results: Nineteen studies with a total sample of 3926 nurses were included in the meta-analysis. The overall means of the EE, DP, and low PA dimensions of job burnout were 21.19 (95% confidence interval [CI]: 19.28–23.11), 7.85 (95% CI: 6.26–9.43), and 28.89 (95% CI: 27.10–30.67), respectively. The F index values of these dimensions were, respectively, 96.6%, 99.4%, and 97.8%, indicating high heterogeneity among the studies. The Egger’s regression analysis showed that there was no evidence of publication bias in the studies (P = 0.08). Conclusion: Job burnout among nurses in Iran is moderate in the EE and the DP dimensions and high in the low PA dimension. Strategies are needed to improve nurses’ work conditions, fulfill their needs, and thereby, reduce their job burnout.

Keywords: Iran, Job burnout, Meta-analysis, Nurses, Systematic review

INTRODUCTION

Nurses play critical roles in restoring patients' physical and mental health. Meanwhile, they are under high strain and stress due to their

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Job burnout (JB) is a psychological syndrome that includes emotional exhaustion (EE), depersonalization (DP) (feeling irresponsible and indifferent to clients), and low personal accomplishment (PA). A systematic review and meta-analysis on studies conducted in 49 different countries reported that the prevalence of JB among nurses was 11.23% in the world, 13.68% in South-east Asia and the Pacific, 10.51% in Latin America and the Caribbean area, 10.27% in North America, 10.06% in Europe and Central Asia, 8.94% in sub-Saharan Africa, and 4.86% in the Middle East and North Africa. A systematic review in Iran also suggested that the prevalence of JB among nurses in Iran was 36%, denoting that one-third of nurses suffered from JB.

Many different factors can contribute to JB among nurses. These factors include direct contacts with patients and their suffering, taking care of patients with acute or incurable conditions, low professional autonomy, and role ambiguity and conflict. Other factors contributing to JB include inadequate income, inability to adapt to work environment, long-term exposure to occupational and emotional stress, and excessive energy expenditure which leads to reduced job motivation, energy depletion, and fatigue.

JB is associated with negative attitude toward self and job, reduced personal, professional, and organizational communications, chronic fatigue, sleep disorders, different physical symptoms, pessimism toward colleagues and patients, and ineffective professional performance.

Despite the importance and the negative consequences of JB, there are no reliable data on the mean score of JB among nurses working in hospitals affiliated to Medical Sciences Universities in Iran. Therefore, the present study was conducted to narrow this gap.

**Objectives**

The aim of this study was to determine the mean of JB among nurses in hospitals affiliated to Medical Sciences Universities in Iran.

**Methods**

This systematic review and meta-analysis were conducted in 2020 according to the recommendations of the Preferred Reporting Items for Systematic Reviews and Meta-Analysis protocol.

**Search strategy**

An online literature search was done in the English databases of PubMed, Web of Sciences, Scopus, and Google Scholar, and Persian databases of Scientific Information Database, Medlib, Iranamedex, Magiran, Civilica, Noormags, and Irandoc databases. Search keywords were “burnout,” “job burnout,” “occupational burnout,” “nurses,” “nursing staff,” and “Iran.” Moreover, the reference lists of the retrieved studies were manually reviewed for more eligible studies. Literature search was done in December 20–31, 2019. Appendix 1 shows the search strategy used for English databases.

**Selection of studies**

Search results were imported into the EndNote X9 program for better data management and recognizing duplicate records. After removing the duplicate records, two reviewers independently assessed the titles and the abstracts of the studies for eligibility. Then, they retrieved the full-texts of eligible studies and reviewed them. Eligibility criteria were cross-sectional design, having findings related to JB among nurses working in university-affiliated hospitals in Iran, publication in English or Persian, publication between March 21, 2001, and December 31, 2019, use of the Maslach Burnout Inventory for JB assessment, and accessible full-text. Gray literature and studies on other health-care providers were not included.

Maslach Burnout Inventory has 22 items in three main dimensions, namely EE, DP, and low PA. The validity of the inventory has been confirmed in different languages and contexts.

**Data extraction**

The first author’s name, publication year, sample size, mean scores, and standard error values of the different dimensions of JB were extracted from each included study. Extracted data were entered into a data sheet in the Microsoft Excel 2013 software (Microsoft Corporation, Redmond, Washington, USA).

**Critical appraisal of the studies**

The Critical Appraisal Skills Program checklist for cross-sectional studies was used to appraise the methodological quality of the included studies. This checklist includes 12 items on the attributes of each study, including aim, sample size, sampling method, sample representativeness, selection bias, data collection instrument, validity and reliability of the instrument, and response rate. Studies with a score of 8 or more for the checklist were included in the final analysis.

**Data analysis**

Data analysis was performed using the STATA 13 software with the meta analysis package (StataCorp LLC, College Station, Texas, USA). The random-effects and the fixed-effect models were used for the meta-analysis. The heterogeneity of the studies was assessed using the Cochran’s Q test and the I² index. The overall mean
and the confidence interval (CI) of each JB dimension were calculated through an independent meta-analysis. Sensitivity analysis was also performed to determine the effect of each study on the overall result. Moreover, the funnel plot and the Egger’s regression analysis were used, respectively, for qualitative and quantitative assessment of publication bias.

**RESULTS**

Initially, 1235 studies were found. Eligibility assessment and critical appraisal revealed that 19 studies were eligible and appropriate for the meta-analysis [Figure 1]. All these studies were cross-sectional. The total population of the meta-analysis composed of 3926 nurses. Table 1 shows the characteristics of these studies. Some of the included studies had not reported the total JB score and instead, had reported the total JB score according to their participants’ characteristics such as gender and marital status. We included these studies into meta-analysis as two independent studies [Table 1].

Sensitivity analysis to evaluate the effects of each study on the overall result showed that none of the studies had significant effects on the overall mean. Based on the results of Cochran’s Q test and the F index, the random-effects model was used to report the final results.

The overall mean of JB in the EE dimension was 21.19 with a 95% CI of 19.28–23.11. The result of the Cochran’s Q-test was statistically significant (P < 0.001) and the F index was 96.6%, indicating that the heterogeneity among the studies was significantly high. Figure 2 shows the forest plot for the EE dimension of JB.

The overall mean of the PA dimension of JB was 28.89 with a 95% CI of 27.10–30.67. The result of the

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**Figure 1: Study flow diagram**

**Table 1: The characteristics of the reviewed studies**

| Study author(s)          | Province     | Sample size | EE (SD) | PA (SD) | DP (SD) |
|--------------------------|--------------|-------------|---------|---------|---------|
| Karaman Özli et al. (2017) | Azerbaijan    | 92          | 25.47 (0.95) | 31.57 (0.55) | 9.35 (0.41) |
| Amini (2013)             | Tehran       | 304         | 22.33 (0.67) | 34.05 (0.55) | 7.83 (0.43) |
| Pordanjani (2014)        | Khuzestan    | 300         | 28.61 (0.84) | 33.6 (0.68)  | 10.6 (0.48) |
| Bazazan et al. (2016)    | Tehran       | 362         | 19.56 (0.66) | 28.91 (0.54) | 5.93 (0.38) |
| Jamshidian-GhalehShahi et al. (2014) | Isfahan | 146     | 24.64 (0.76) | 26.39 (0.76) | 10.63 (0.38) |
| Heshmat et al. (2012)    | Tehran       | 200         | 31.3 (0.59)  | 23.1 (0.42)  | 10.9 (0.30) |
| Khani et al. (2015)      | Isfahan      | 120         | 22.64 (1.05) | 33.24 (0.48) | 7.6 (0.40)  |
| Khazaei et al. (2005)    | Khorasan     | 32          | 20.8 (1.75)  | 34.9 (1.48)  | 13.2 (0.57) |
| Khazaei et al. (2005)    | Khorasan     | 88          | 16.3 (1.11)  | 32.4 (1.20)  | 11.3 (0.41) |
| Khalatbary et al. (2016) | Mazandran    | 400         | 16.4 (0.52)  | 31.41 (0.37) | 4.9 (0.23)  |
| Delaram et al. (2016)    | Khuzestan    | 39          | 12.84 (1.37) | 28.3 (1.14)  | 5.94 (1.11) |
| Delaram et al. (2016)    | Khuzestan    | 112         | 16 (0.98)    | 29.49 (0.74) | 5.5 (0.49)  |
| Rahimi-Zarchi et al. (2016) | Fars | 33             | 20.6 (1.85) | 24.57 (1.20) | 8.9 (0.86)  |
| Rahimi-Zarchi et al. (2016) | Fars | 212            | 21.16 (0.78) | 24.75 (0.47) | 8.83 (0.37) |
| Namnabati et al. (2016)  | Isfahan      | 86          | 21.28 (0.87) | 22.6 (0.58)  | 2.6 (0.03)  |
| Safaeifar et al. (2016)  | Tehran       | 55          | 18.65 (1.56) | 28.2 (1.27)  | 5.87 (0.79) |
| Safaeifar et al. (2016)  | Tehran       | 52          | 17.11 (1.40) | 34.73 (1.24) | 4.89 (0.55) |
| Sadeghi et al. (2016)    | Hamedan      | 299         | 19.1 (0.80)  | 27.8 (0.64)  | 7.4 (0.41)  |
| Abbasinia et al. (2015)  | Isfahan      | 97          | 23.02 (1.19) | 28.69 (1.12) | 11.55 (0.62) |
| Abbasinia et al. (2015)  | Isfahan      | 163         | 23.85 (0.91) | 31.11 (0.80) | 11.06 (0.53) |
| Gholami et al. (2015)    | Hamedan      | 415         | 25.13 (0.61) | 33.3 (0.47)  | 5.91 (0.25) |
| Hashemian et al. (2015)  | Kermanshah   | 103         | 27.91 (1.27) | 34.9 (1.24)  | 10.8 (0.61) |
| Yaghoubi et al. (2015)   | Khorasan     | 110         | 16.5 (1.09)  | 33.4 (1.02)  | 5.3 (0.42)  |
| Ghassemi and Yousefy (2006) | Isfahan | 51                   | 16.64 (1.06) | 13.82 (1.38) | 4.96 (0.77) |
| Ghassemi and Yousefy (2006) | Isfahan | 55                   | 21.07 (1.20) | 15.87 (1.57) | 4.38 (0.69) |

EE: Emotional exhaustion, DP: Depersonalization, PA: Low personal accomplishment, SE: Standard error
Cochran’s $Q$-test was significant ($P < 0.001$) and the $I^2$ index was 97.8%, implying that the heterogeneity among the studies was significantly high. Figure 3 shows the forest plot for the PA dimension of JB.

The overall mean of the DP dimension of JB was 7.85 with a 95% CI of 6.26–9.43. The result of the Cochran’s $Q$ test was significant ($P < 0.001$) and the $I^2$ index was 99.4%, denoting that the heterogeneity among the studies was significantly high. Figure 4 shows the forest plot for the DP dimension of JB.

The funnel plot was used for the qualitative assessment of publication bias and the Egger’s regression analysis was used for the quantitative assessment of publication bias. The funnel plot [Figure 5] was relatively symmetrical, indicating that there was no significant publication bias. The result of the Egger’s regression analysis was not statistically significant ($P = 0.08$), implying no evidence of publication bias in the studies.

**Discussion**

The findings showed that the overall means of the EE, DP, and PA dimensions of JB were 21.19, 7.85, and 28.89, respectively. Based on Maslach Burnout Inventory, scores ≥30 on EE, ≥12 on DP and ≤33 on PA are considered high burnout; scores of 18–29 on EE, 6–11 on DP and 34–39 on PA were considered moderate burnout; and scores of ≤17 on EE, ≤5 on DP and ≥40 on PA were considered low burnout.[16] Findings denote that nurses in university-affiliated hospitals in Iran suffered from moderate JB in the EE and the DP dimensions and high JB in the PA dimension. Consistent with these findings, a former systematic review into JB among emergency nurses reported moderate JB in the EE dimension (overall mean = 25.552) and high JB in the DP (overall mean = 10.383) and the PA (overall mean = 30.652) dimensions.[37]

The possible reasons for high JB in the AP dimension may be inadequate work experience of younger nurses,[38] patients’ mistreatment and hostility toward nurses,[39] and nurses’ limited assertiveness.[40] Factors such as inadequate family support,[41] having an unemployed spouse,[42] heavy workload, and limited control over work environment[43] can also contribute to high JB in the PA dimension. Karaman Özli et al. in a study concluded that high number of working hours and high number of patients can contribute to high JB in the low PA dimension among Iranian nurses[18] which is consistent with the result of several studies in other countries.[44–46] Furthermore, Bazazan et al. studied 450 nurses working in public hospitals of Iran and reported that the mean score of

![Figure 2: The forest plot for the emotional exhaustion dimension of job burnout](image-url)
Askari, et al.: Job burnout in Iranian nurses

**Figure 3:** The forest plot for the low personal accomplishment dimension of job burnout

**Figure 4:** The forest plot for the depersonalization dimension of job burnout
nurses’ job satisfaction had significant positive correlation with their PA so that nurses with greater job satisfaction had higher PA. Several studies in other countries found that job satisfaction had significant negative relationship with JB. A systematic review also showed that the prevalence of JB among nurses in Iran was 36%, i.e., more than one-third of them suffered from JB. High JB is associated with low care quality and increased risk of clinical errors. Therefore, effective strategies are needed to reduce JB among nurses in Iran.

The main strength of the present study was the determination of the overall means of JB dimensions among nurses in university-affiliated hospitals in Iran using a systematic review and meta-analysis design. One of the main limitations of the study was inaccessibility to the full-texts of some potentially eligible studies. Moreover, the heterogeneity among the included studies was high due to the fact that the reviewed studies had been conducted in different hospital settings in different sociocultural contexts in Iran. Therefore, findings should be interpreted with caution. Further studies are needed to provide better understanding about JB among nurses in Iran, its contributing factors, and strategies for its effective management.

**Conclusion**

Nurses in Iran suffer from moderate JB in the EE and the DP dimensions and high JB in the PA dimension. As nurses’ JB can negatively affect patients and health-care organizations, strategies are needed to identify nurses who are prone to or suffer from JB and to provide them with necessary care to manage their JB. Adequate social support and in-service training are also needed to help nurses more effectively manage their stress and emotions. Studies are recommended to assess causal relationships between JB and its potential personal and environmental risk factors.

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**Conflicts of interest**

There are no conflicts of interest.

**References**

1. Vasquez-Manrique JF, Saito MA, Martin VE. Burnout syndrome frequency and levels of its dimensions in health care workers of pediatric emergency at Hospital Nacional Cayetano Heredia in 2014. Lima, Peru. Rev Neuropsiquiatr 2014;77:168-74.
2. Rocha LJ, Juste Werneck Cortes MD, Dias EC, Fernandes FM, Gontijo ED. Burnout and job satisfaction among emergency and intensive care providers in a public hospital. Rev Bras Med Trab 2019;17:300-12.
3. Aghajani MJ, Tizdast T, Ghorbani M, Bajyar M. Relationship between hardness and nurses’ professional burnout. J Holist Nurs Midwifery 2013;23:1-7.
4. Woo T, Ho R, Tang A, Tam W. Global prevalence of burnout symptoms among nurses: A systematic review and meta-analysis. J Psychiatr Res 2020;123:9-20.
5. Rezaei S, Karami Matin B, Hajizadeh M, Soroush A, Nouri B. Prevalence of burnout among nurses in Iran: A systematic review and meta-analysis. Int Nurs Rev 2018;65:361-9.
6. Hooper C, Craig J, Janvrin DR, Wetsel MA, Reimels E. Compassion satisfaction, burnout, and compassion fatigue among emergency nurses compared with nurses in other selected inpatient specialties. J Emerg Nurs 2010;36:420-7.
7. Cañadas-De la Fuente GA, Vargas C, San Luis C, García L, Cañadas GR, De la Fuente EI. Risk factors and prevalence of burnout syndrome in the nursing profession. Int J Nurs Stud 2015;52:240-9.
8. Xie Z, Wang A, Chen B. Nurse burnout and its association with occupational stress in a cross-sectional study in Shanghai. J Adv Nurs 2011;67:1537-46.
9. Garrosa E, Jiménez MB, Muñoz RA, Rodríguez-Carbajal R. Role stress and personal resources in nursing: A cross-sectional study of burnout and engagement. Int J Nurs Stud 2011;48:479-89.
10. Tiam A. Determination of prevalence of factors associated with burnout among health professionals in Maseru District (dissertation). Johannesburg (MI): University of the Witwatersrand; 2011.
11. Maslach C, Marek T. Burnout: A multidimensional perspective. In: Shaufeli WB, Maslach C, Marek T, editors. Professional burnout: Recent developments in Theory and Research. London: Taylor and Francis; 2017. p. 19-32.
12. Maslach C, Jackson SE. The measurement of experienced burnout. J Organ Behav 1981;2:99-113.
13. Queiros C, Carlotto MS, Kaiseler M, Dias S, Pereira AM. Predictors of burnout among nurses: An interactionist approach. Psicothema 2013;25:330-5.
14. Shaufeli WB, Maslach C, Marek T. Professional burnout: Recent
developments in theory and research. 1st ed. London: Taylor and Francis; 2017.

15. Moher D, Shamseer L, Clarke M, Ghersi D, Liberati A, Petticrew M, et al. Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. Syst Rev 2015;4:1.

16. Maslach C, Jackson SE, Leiter MP. Maslach burnout inventory manual. In: Zalaquett CP, Wood RJ, editors. Evaluating stress: A book of resources. Michigan: Scarecrow Press; 1997. p. 191-218.

17. Singh J. Critical appraisal skills programme. J Pharmacochemother 2013;7:67-76.

18. Karaman Özü Z, Çay Yayla A, Güنمüz K, Khaghanyrad E. Comparison of nurses in two different cultures: Who experiences more burnout. J PeriAnesthesia Nurs 2017;32:238-44.

19. Amini F. The relationship between resiliency and burnout in nurses. J Res Dev Nurs Midwifery 2013;10:94-102.

20. Jaberi SP, Pordanjani BS, Beiranvand S. Relationship between self-esteem and burnout in nurses. J Clin Nurs Midwifery 2014;4:52-62.

21. Ashgar B, Bazazan A, Nasouhi S, Aghighy Q, Ahmadi F, et al. Job burnout and its association with work schedules and job satisfaction among Iranian nurses in a public hospital: A questionnaire survey. Biotech Health Sci 2016;3:e37891.

22. Jamshidian-GhalehShahi P, Mansheeha Gh, Yaghobzadeh M. A study of the relationship between burnout styles and dimensions of burnout among nurses in Najaf Abad in 2013. Modern Care J 2013;11:203-10.

23. Mohammadi-Fakhar F, Rafii F, Heshmat R, Haghani H. Relationship between supervisor social support and burnout in nurses. Iran J Nurs 2012;25:63-71.

24. Jaafarpour M, Khani A, Mahmodian MR. Evaluation of the quality of nursing work life and its association with job burnout in Isfahan university of medical sciences. Int J Epidemiol Res 2015;2:30-9.

25. Khazaei T, Khazaei T, Sharifzadeh GH. Nurses’ professional burnout and some predisposing factors. J Birjand Univ Med Sci 2005;13:9-15.

26. Nasiry D, Javadi Kahriz E, Khalatbary AR. Musculoskeletal disorders and their relationship with burnout among nurses: A descriptive analytical study. Iran J Rehabil Res Nurs 2017;3:44-52.

27. Alidosti M, Delaram M, Dehgan L, Moghadam MM. Relationship between self-efficacy and burnout among nurses in Behbahan city, Iran. Womens Health Bull 2016;3:c30445.

28. Shafaghat T, Rahimi-Zarchi MK, Kavosi Z. Studying the status of job burnout and its relationship with demographic characteristics of nurses in Shiraz Nemazie Hospital profession. Hosp Pract Res 2016;1:9-13.

29. Soroush F, Zargham-Boroujeni A, Namabati M. The relationship between nurses’ clinical competence and burnout in neonatal intensive care units. Iran J Nurs Midwifery Res 2016;21:424-9.

30. Mahmoodabadi MS, Safaeifar M, Gharraee B, Fallahzadeh H. Effect of communication skills training on components of burnout among nurses work in Tehran University of Medical Science Hospitals. J Toloo-e-behdasht 2016;15:198-208.

31. Sadeghi A, Shadi M, Moghimabaeig M. Relationship between nurses’ job satisfaction and burnout. Avicenna J Nurs Midwifery Care 2016;24:238-46.

32. Shamali M, Shahriari M, Babaii A, Abbasinia M. Comparative study of job burnout among critical care nurses with fixed and rotating shift schedules. Nurs Midwifery Stud 2015;4:e27766.

33. Heidari-Pahlavian A, Gholami T, Moghaddam HR, Akbarzadeh M, Motamedzadeh M. Demand-control model and its relationship with burnout syndrome in nurses. J Fasa Univ Med Sci 2015;5:23-35.

34. Hashemian AH, Rezaei J, Naderi S, Mahmoudi E, Rezaei S. Job burnout rate and related demographic factors in nursing personnel employed in emergency departments of chosen educational hospitals by Kermanshah University of Medical Science in 2012. Adv Biol Res 2015;9:117-27.

35. Haresabadi M, Sharifi SS, Yaghoubi MM. The relationship between emotional intelligence and occupational burnout among nurses. J North Khorasan Univ Med Sci 2015;7:527-36.

36. Yousef AR, Ghassemi GR. Job burnout in psychiatric and medical nurses in Isfahan, Islamic Republic of Iran. East Mediterr Health J 2006;12:662-9.

37. Li H, Cheng B, Zhu XP. Quantification of burnout in emergency nurses: A systematic review and meta-analysis. Int Emerg Nurs 2018;39:46-54.

38. Ayala E, Camero AM. Determinants of burnout in acute and critical care military nursing personnel: A cross-sectional study from Peru. PLoS One 2013;8:e54408.

39. Bernaldo-De-Quirós M, Piccini AT, Gómez MM, Cerdeira JC. Psychological consequences of aggression in pre-hospital emergency care: Cross sectional survey. Int J Nurs Stud 2015;52:260-70.

40. Salazar I, Roldan GM, Garrido L, Ramos-Navas JM. Assertiveness and its relationship to emotional problems and burnout in healthcare workers. Behav Psychol 2014;22:523-49.

41. Garcia-Izquierdo M, Rios-Ríos Med. The relationship between psychosocial job stress and burnout in emergency departments: An exploratory study. Nurs Outlook 2012;60:322-9.

42. Lorenz VR, Guirardello Ede B. The environment of professional practice and Burnout in nurses in primary healthcare. Rev Lat Am Enfermagem 2014;22:926-33.

43. Monsalve-Reyes CS, San Luis-Costas C, Gómez-Urquiza JL, Albendin-Garcia L, Aguayo R, Cañadas-De La Fuente GA. Burnout syndrome and its prevalence in primary care nursing: A systematic review and meta-analysis. BMC Fam Pract 2018;19:59.

44. Van Bogaert P, Clarke S, Willems R, Mondelaers M. Nurse practice environment, workload, burnout, job outcomes, and quality of care in psychiatric hospitals: A structural equation model approach. J Adv Nurs 2013;69:1515-24.

45. van der Doef M, Mbazzi FB, Verhoeven C. Job conditions, job satisfaction, somatic complaints and burnout among East African nurses. J Clin Nurs 2012;21:1763-75.

46. Greenglass ER, Burke RJ, Fiksbaum L. Workload and burnout in nurses. J Commun Appl Soc Psychol 2001;11:211-15.

47. Piko BF. Burnout, role conflict, job satisfaction and psychosocial health among Hungarian health care staff: A questionnaire survey. Int J Nurs Stud 2006;43:311-8.

48. Dolan N. The relationship between burnout and job satisfaction in nurses. J Adv Nurs 1987;12:3-12.

49. Kallith T, Morris R. Job satisfaction among nurses: A predictor of burnout levels. J Nurs Adm 2002;32:648-54.

50. Teng CI, Shyu YI, Chiou WK, Fan HC, Lam SM. Interactive effects of nurse-experienced time pressure and burnout on patient safety: A cross-sectional survey. Int J Nurs Stud 2010;47:1442-50.

51. Hall LH, Johnson J, Watt I, Tsipa A, O’Connor DB. Healthcare Staff wellbeing, burnout, and patient safety: A systematic review. PLoS One 2016;11:e0159015.

52. Shanafelt TD, Balch CM, Bechamps G, Russell T, Dyrbye L, Satele D, et al. Burnout and medical errors among American surgeons. Ann Surg 2010;251:995-1000.
### Appendix 1: Search strategy used for English databases

**PubMed**

((((((“Burnout, Professional”[Mesh]) OR burnout[Title/Abstract]) OR(“Occupational burnout”[Title/Abstract])) OR(“Job burnout”[Title/Abstract])) OR (Depersonalization[Title/Abstract])) OR(“Emotional exhaustion”[Title/Abstract])) OR(“personal accomplishment”[Title/Abstract])) AND (IRAN[Text Word]) AND ((“Nurses”[Mesh]) OR ((NURSES[Title/Abstract]) OR (“NURSING STAFF”[Title/Abstract])))))))

**Scopus**

((TITLE-ABS-KEY ( burnout ) OR TITLE-ABS-KEY (“job burnout”) OR TITLE-ABS-KEY (“Occupational burnout” ) OR TITLE-ABS-KEY (depersonalization) OR TITLE-ABS-KEY (“Emotional exhaustion”) OR TITLE-ABS-KEY (“personal accomplishment”))) AND (ALL (Iran)) AND ((TITLE-ABS-KEY (nurses) OR TITLE-ABS-KEY (“nursing staff”)))

**Web of sciences**

(TS=(burnout) OR TS=(“job burnout”) OR TS=(“Occupational burnout”) OR TS=(depersonalization) OR TS=(“Emotional exhaustion”) OR TS=(“personal accomplishment”) AND TS=(Iran)) AND (TS=(nurses) OR TS=(“nursing staff”))