



Original Article

# Association between job burnout and noise pollution among nurses in Behbahan city, Iran

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## Abstract

**Introduction:** Nowadays job burnout is a common problem in all healthcare systems, and it seems that physical factors such as noise pollution play an important role in it. Based on this, we aimed to study the association between noise pollution and job burnout among nurses in Behbahan city in 2015.

**Materials and Methods:** The statistical community of this cross-sectional analytic study included the nurses in Behbahan city in 2015 so 151 nurses were selected from 3 hospitals through systematic random sampling. The data collection tools were Maslach Burnout Inventory and standard questionnaire of noise pollution. Collected data were analyzed by SPSS 16 software through descriptive statistics, ANOVA, independent t-test, and Spearman correlation coefficient test.

**Results:** 25.8% of the participating nurses were male and 74.2% were female. The mean age of participants was 33.48±8.74 years old. The mean score of noise sensitivity was 63.7±22.98 and the mean score of noise pollution was 56.52±22.68. Most of the nurses were at the low occupational burnout level in subscales of depersonalization (63.6%) and emotional exhaustion (64.2%); but in the subscale of lack of personal success, a higher percentage of nurses (65.6%) were at the high level of burnout. There was a positive and significant direct association between the subscale of emotional exhaustion and noise pollution ( $P=0.000$ ) and sensitivity to the noise ( $P=0.002$ ) and also between depersonalization and noise pollution ( $P=0.004$ ).

**Conclusion:** The results indicate that with the increase in noise pollution, job burnout tends to increase, specifically in the emotional exhaustion and depersonalization subscales. Therefore, it seems necessary to implement approaches to reduce noise pollution in hospitals to prevent job burnout in nurses.

**Keywords:** Job burnout, Noise pollution, Nurses

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## Introduction

Job burnout is defined as disability and boredom due to over use of personal energy (1) and at the moment, it is a common problem for all health systems. According to the statistics, one out of each seven employed people experience burnout at the end of day. According to the US intelligence service, health care workers have the highest rate of occupational harms including burnout (2,3). Job

burnout syndrome is not basically a mental disorder but it develops gradually during the time and becomes a disability (4).

This common event is because of the interaction between individual's personality and the working environment and results in losing motivation, eager and energy and reduction in desirable performance in personal life. After a continuous work, not only fatigue and stress happens but it also affects one's general life style and his effective waking hours (5). It has many harmful impacts on body, spiritual, mental and social situation and occupational performance which include losing mood, problematic job performance, reduction in

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production, absence from work, improper behavior with clients, negative attitude towards job, less job satisfaction and lower quality of life (6).

Job burnout may be due to the physical environment. If a person is not able to tolerate some factors like noise, crowd and improper light and sound, he will be involved with various physical, mental and behavioral problems which lead to boredom, apathy and reduced effectiveness at work (7). One of the factors that may be effective in this issue is noise. Noise is defined as inconsistent, uneven and accidental sound waves that may interfere with hearing and noise pollution is the presence of a level of noise in the environment that annoys people in that area (8). Noise pollution leads to the increased anxiety, stress and early fatigue in hospital personnel (9). Results of Mahmoodi et al. study which aimed to investigate the association between job burnout in nurses and physical situation and especial facilities in the working place, indicated that there is a significant association between them and there was a reverse association between having favorable physical situation and occupational facilities with the rate of burnout. Therefore, they suggested that authorities pay more attention to the improvement of environment and occupational facilities in hospital wards (10). In Flynn et al. study that investigated the effect of organizational factors and work environment on the process of care and occupational burnout in nurses, findings indicated an association between situation of the working place and occupational burnout (11).

The main motivation of all human efforts and evolutions of societies is providing and promoting human health. Since the harmful impacts of occupational burnout on health care providers and those who get these services is obvious and it may be affected by various factors like environmental situation, this study was conducted to investigate the association between noise pollution and occupational burnout among nurses in Behbahan.

### Materials and Methods

In this cross-sectional analytic study that was conducted in 2015, nurses in Behbahan were investigated. After approval and getting needed permissions from research vice-chancellery of Behbahan College of Medical Sciences, the sample size was calculated to be 15 people according to the formula. Since there are 3 hospitals in Behbahan, stratified sampling method was used to select the samples. The number of nurses working in those 3 hospitals was as follows: Shahidzadeh hospitals 189 people, Farideh Behbahani 102 and Social welfare

hospital 74 people. Therefore 78, 42 and 30 nurses were selected randomly from each hospital respectively. After informing about objectives of the research and getting consent, the selected nurses got into the study. They were assured about confidentiality of their information as well.

The inclusion criteria were having the degree of bachelor's or masters in nursing and at least one-year clinical job experience. The exclusion criteria were having any chronic physical or mental disease, having any of critical emotional crises like bereavement, divorce, losing properties during last 6 months and not to fill all parts of the questionnaire. The data collection tools were two questionnaires of measuring noise pollution and Maslach occupational burnout.

### Research instruments

- *Standard Questionnaire of Noise Pollution:* In order to measure the amount of noise pollution, standard questionnaire was used. The validity of questionnaire has been approved by a number of acoustic professionals in Golmohammadi and Aliabadi's study and the reliability of the questionnaire was 99% (12). In Dehghan et al.'s study, the content validity was approved by some experts and after a primary test, Cronbach's alpha coefficients was calculated to be 0.81 (13).

The questionnaire has 14 questions about sensitivity to the environment noises which assess the amount of received noise. Participants were asked to give a score from 0 to 10 to their sensitivity to the environment noise. It also has 14 questions about the amount of pollution of environment noise. The amount of pollution of environment noise was also scored from 0 to 10.

- *Maslach Job Burnout Questionnaire:* This questionnaire included 3 independent measuring subscales with 22 items that measure various aspects of occupational burnout syndrome. 9 items analyze the emotional exhaustion, 5 items are related to subscale of depersonalization and 8 items are related to the subscale of lack of personal success or personal insufficiency. In terms of emotional exhaustion, participants were classified into 3 groups according to the score obtained from occupational burnout questionnaire, including high ( $\geq 30$ ), moderate (18 to 29) and low ( $\leq 17$ ). This classification for depersonalization was as high ( $\geq 12$ ), moderate (6 to 11) and low ( $\leq 5$ ) and for lack of personal success it was classified as high ( $\leq 33$ ), moderate (34 to 39) and low ( $\geq 40$ ) (14).

Maslach and Jackson have reported the Cronbach's alpha coefficient of 71% to 90% in all 3 fields and the reliability of 60% to 80% by test retest method

after one month (15). In Iran, Filian was translated the Maslach questionnaire in Persian for the first time and has reported the validity and reliability 78% by retest method (16).

After data entry in SPSS 16 software, descriptive and analytic statistics (ANOVA, independent t-test and Pearson correlation coefficient) were used to analyze the data and the significance level was set at  $P < 0.05$ .

**Results**

151 nurses including 39 (25.8%) men and 112 (74.2%) women participated in this study. The mean and standard deviation of age and job experience of participants was  $33.48 \pm 8.74$  and  $8.74 \pm 5.19$  years respectively. 63.6% of the nurses in terms of depersonalization, 64.2% in terms of emotional exhaustion and 9.9% in terms of lack of personal success were at the low level of occupational burnout (Table 1).

Table 2 shows the comparison between mean scores of pollution and sensitivity to noise in various subscales of burnout. These results indicate that for all 3 subscales, at the low level of occupational burnout, the mean score of sensitivity to noise and noise pollution has been less than them in high levels of occupational burnout. Although this difference was not significant for the subscale of lack of personal success, it was significant for the difference between pollution score and depersonalization in high and low level of burnout ( $P < 0.05$ ). For emotional exhaustion subscale also lower mean score of noise sensitivity in low burnout group in comparison with moderate and high burnout groups was statistically significant (Table 2).

Spearman correlation coefficient test showed that there was a direct association between subscale of emotional exhaustion and pollution and sensitivity to noise and also between subscale of depersonalization and noise pollution, such that with the increase in them, the occupational burnout was increasing as well (Table 3). There was no statistically significant association between sex and age of participants and occupational burnout in these subscales. In terms of association between job experience and occupational burnout, only in subscale of emotional exhaustion, there was a significant reverse association, such that with increase in job experience, emotional exhaustion was decreasing ( $r = 0.22, P = 0.006$ ).

**Table 1.** The frequency of job burnout levels in various subscales

Subscales of job burnout	High burnout	Moderate burnout	Low burnout
	Number (Percentage)	Number (Percentage)	Number (Percentage)
Depersonalization	19 (12.6%)	36 (23.8%)	96 (63.6%)
Emotional exhaustion	17 (11.3%)	37 (24.5%)	97 (64.2%)
Lack of personal success	99 (65.6%)	37 (24.5%)	15 (9.9%)

**Table 2.** Comparison between the mean score of noise pollution and sensitivity to noise in various levels of burnout subscales

Subscales of occupational burnout		Sensitivity to noise	Noise pollution
		Mean $\pm$ SD	Mean $\pm$ SD
Depersonalization	High	72.52 $\pm$ 23.15	68.36 $\pm$ 18.92
	Moderate	63.44 $\pm$ 18.08	59.77 $\pm$ 18.97
	Low	62.06 $\pm$ 24.37	52.96 $\pm$ 23.81
ANOVA significance level		0.19	0.01
Emotional exhaustion	High	72.64 $\pm$ 13.09	70.23 $\pm$ 14.54
	Moderate	71.72 $\pm$ 24.74	68.10 $\pm$ 22.72
	Low	59.08 $\pm$ 22.51	49.71 $\pm$ 21.05
ANOVA significance level		0.004	0.000
Lack of personal success	High	63.69 $\pm$ 23.75	57.72 $\pm$ 23.76
	Moderate	65.56 $\pm$ 20.86	55.86 $\pm$ 21.22
	Low	59.20 $\pm$ 23.67	50.26 $\pm$ 18.63
ANOVA significance level		0.66	0.48

**Table 3.** Association between job burnout subscales and sensitivity to noise and noise pollution

Variable	Noise pollution		Sensitivity to noise	
	P	r	P	r
Depersonalization	0.004	0.23	0.1	0.13
Emotional exhaustion	0.000	0.38	0.002	0.25
Lack of personal success	0.25	0.09	0.72	0.02

**Discussion**

Nowadays organizations have found out the importance of human resources and their health in promotion of productivity and therefore trying to promote their mental health. One of the factors that jeopardizes the mental health of staff and eventually leads to the decreased personal and organizational performance, is job burnout (17). In terms of investigating the association between noise pollution and job burnout in nurses, this study is the first one and no similar study was found during literature review. Therefore, in this part we mention the

researches closely related to this issue.

In this research, no association was observed between age and subscales of job burnout and it is consistent with results of the studies conducted by Khammrnia (18) and Kowalski (19). There was a significant reverse association between job experience and subscale of emotional exhaustion such that with increase in job experience, the emotional exhaustion was decreasing. Maybe with the increase in job experience people can cope with their job situation better and actually having more knowledge and job experience increases their readiness to face stressful situations (7).

Results of the study indicate that emotional exhaustion in female nurses is more than it in male nurses but the difference was not significant. Results of other studies also have shown that emotional exhaustion in female nurses has been more (20). Dickson believes that from emotional aspect, women are more susceptible than men, because stresses of working environment and especially the conflict between family and work, exposes women more to mental distress (15). However, Maslach et al. believe that gender is not an important predictor for job burnout (15). It seems that in some researches, the rate of job burnout is more in women and in some others it is more in men and among job burnout subscales, depersonalization in men and emotional exhaustion in women get the highest score (22). This has been observed in this study as well but the difference was not statistically significant.

Lack of personal success was high in about half of the participants (65.6%) but as it was mentioned before, most of the participants were at the low level burnout in terms of depersonalization and emotional exhaustion which is consistent with the result of other studies (7,23). In an investigation on personal of Welfare Organization in Tehran, the job burnout status was low in two subscales of emotional exhaustion but it was high in lack of personal success subscale (24). Findings of Delpasand's study was consistent with results of this study in subscale of lack of personal success (25). One will have the feeling of personal success when other than confidence he has the feeling of strength and domination on doing his duties. Therefore, one will have a better idea about his job and enjoys it more and feels satisfied (26).

In terms of noise pollution and sensitivity to the noise, although in some studies the noise pollution has been measured in some hospitals by sound level meter devices (27-31) and they have reported the noise pollution rate higher than standard levels, it

seems that sensitivity to noise and noise pollution has not been investigated in nurses. In this study, it has been measured and both of them have been higher than the average. This finding is similar to the results of studies conducted in manufacturing jobs like Farhang Dehghan et al.'s study (13). The amount of pollution is usually in accordance with the amount of interference that noise makes in everyday activities (13). Studies have shown that hospitals are among centers in which noise is considered as a hazardous factor and too much noise in hospitals may other than having mental and physiological effects, lead to the increase in mistakes among medical staff including nurses (27). Results of the investigation of the association between pollution and sensitivity to the noise with job burnout showed that there is a significant direct association between emotional exhaustion and pollution and sensitivity to the noise and also between depersonalization and noise pollution, such that with increase in these items, job burnout will increase in those subscales too. However, there was no significant association between pollution and sensitivity to the noise and lack of personal success. This result is consistent with results of Mahmoodi et al.'s study that aimed to investigate the association between job burnout among nurses and physical situation and professional facilities of working place.

The results indicated that the highest level of job burnout was in emotional aspect and the association between job burnout in subscales of emotional exhaustion and depersonalization and physical situation of working place was significant (10). Results of Flynn et al.'s study showed an association between working place situation and job burnout especially in subscale of depersonalization. Since it was reported as a hazardous factor for job burnout, it was probable that nurses leave their jobs because of that (11).

Regarding the harmful effects of noise on treatment of patients and the negative effects on nurses, it is necessary to pay more attention to reducing noise pollution. Researchers believe that most of noise sources in hospitals are controllable and preventable (32) and using technical, engineering and management principles will be beneficial. For example, for air circulation, it is possible to design vents and canals according to the standards to control noise in the permitted range and avoid using materials like stone in building walls and the floor, because it reflects the noise in rooms and corridors. By using administrative rules in wards we may reduce a lot of buzz and undesirable

noise (27) and reduced the job burnout in nurses. In Ahanchian et al.'s study, it is said that burnout preventive interventions among nurses should affect all aspects of their lives including behavior, social life and working place and in prevention of job burnout, it is necessary to have managers' support (33). Results of a study conducted by Laschinger et al. in hospitals in 10 provinces of Canada showed that proper management and leadership in hospitals has a positive effect on various aspects of job including self-efficiency of nurses and reduction of occupational burnout (34).

Since this study was conducted on nurses in Behbahan, it is not possible to generalize the results to other groups. Therefore, it is recommended to perform a research with a larger sample size and in several medical centers and in a broader

geographical area.

### Conclusion

This study showed that with increase in noise pollution and sensitivity to noise, job burnout increases in nurses. Therefore, it seems necessary to adopt strategies to reduce noise pollution in hospitals so that make a healthier working place for nurses and increase their satisfaction and reduce their burnout.

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### References

1. Akbari R, Samar RG, Kiary GR, Egtesadi AR. Factorial validity and psychometric properties of Maslach burnout inventory-the Persian version. *Knowledge and Health* 2011; 6(3): 1-8.
2. Abdi F, Kaviani H, Khaganizadeh M, Moemeni AA. [The study of relationship between burnout and mental health: Study on 200 nurses]. *Journal of Tehran University of Medical Sciences* 2007; 65: 65-75. (Persian)
3. Talaee A, Mokhber N, Mohammadnadjad M, Samari AA. [Burnout and related factors in Mashhad academic hospital employees]. *Journal of Semnan University of Medical Sciences* 2008; 9: 237-46. (Persian)
4. Hakimshostari M, Khajodin N, Arabgool F. [Relation between professional burnout nurses and behavior disorder in the childs]. *News in cognitive sciences* 2007; 6(1-2): 67-77. ( Persian)
5. Badri Gargari R, Lotfinia H, Mohamadnadjad R. Staff burnout in Tabriz hospitals: The role of behavior types and coping strategies. *The journal of Urmia Nursing and Midwifery Faculty* 2011; 9(4): 221-9.
6. Shahnazdoust M, Maghsudi Sh, Tabari R, Kazemegad E. Relationship between nursing burnout and occupational support. *Journal of Guilan University of Medical Sciences* 2011; 20(80): 49-59.
7. Hoseini S, Sharifzadeh M, Khazaie T. Occupational burnout in Birjand dentists. *Journal of Dental Medicine of Tehran University of Medical Sciences* 2011; 24(2): 113-20.
8. Rabiyan M, Gharib M. [Noise pollution in the oprating rooms and intensive care units]. *Teb va Tazkiye* 2003; 51: 50-8. (Persian)
9. Otenio MH, Cremer E, Turini Claro EM. Noise level in a 222 bed hospital in the 18<sup>th</sup> health region- PR. *Rev Bras Otorrinolaringol* 2007; 73(2): 245-50.
10. Mahmoodi GhR, Rouhy Gh, Mojerlu M, Sheikh H, Rahmany H. Relationship between nursing burnout, physical environment and profesinal equipments. *Journal of Gorgan University of Medical Sciences* 2006; 8(2): 40-6.
11. Flynn L, Hawkins TH, Clarke SP. Organizational traits, care processes, and burnout among chronic hemodialysis nurses. *West J Nurs Res (WJNR)* 2009; 31(5): 569-82.
12. Golmohammadi R, Aliabadi M. Noise pollution and its irritating effects in hospitals of Hamadan, Iran. *Journal of health system research* 2011; 7(6): 958-64.
13. Farhang Dehghan S, Monazzam MR, Nassiri P, Haghighi Kafash Z, Jahangiri M. [The assessment of noise exposure and noise annoyance at a petrochemical company]. *Journal of health and safety at work* 2013; 3(3): 11-24. (Persian)
14. Aghajani M, Tizdast T, Abbas Ghorbani M, Bajvar M. Relationship between hardiness and nurses' professional burnout. *Holist Nurs Midwifery* 2013; 23(2): 1-7.
15. Maslach C, Jackson S. Maslach burnout inventory manual. 2<sup>nd</sup> ed. Palo Alto, CA: Consulting Psychologists Press, Inc; 1993: 191-217.
16. Filian E. Evaluation of burnout and its correlation with coping mechanisms in nurses of educational hospitals of Tehran [dissertation]. Tehran University of Medical Sciences. 1993.35-45 [Text in Persian]
17. Salahian A, Matinisadr M, Nouri M, Malekpor N. [Burnout and its predictor's variables in Mobarakeh Steel Company]. *Occupational medicine quarterly journal* 2015; 6(4): 19-29. (Persian)
18. Khammarnia M, Tourani S, Mohammadi A. [The effect of social capital dimensions on burnout in female nurses]. *Hormozgan medical journal* 2011; 15(3): 209-17. (Persian)
19. Kowalski CH, Ommen O, Driller E, Ernstmann N, Wirtz MA, Kónler T, et al. Burnout in nurses - the relationship between social capital in hospitals and emotional exhaustion. *J Clin Nurs* 2010; 19: 1654-63.

20. Khodabakhsh MR, Mansuri P. Analysis and comparison between frequency and depth of job-burnout aspects among male and female nurses. *Zahedan journal of research in medical sciences* 2011; 13(4): 40-42.
21. Dickinson-Bannack M, González-Salinas C, Fernández-Ortega M, Palomeque R, González- Quintanilla E, Hernández-Vargas I. [Burnout syndrome among Mexican primary care physicians]. *Archivos en Medicina Familiar* 2007; 9(2): 75-9. [Spanish]
22. Brake H, Bloemendal E, Hoogstraten J. Gender differences in burnout among Dutch dentists. *Community Dent Oral Epidemiol* 2003; 31(5): 321-7.
23. Roghanizad N, Vatanpoor M, Sharifi V, Seddigh Oraee N, Abbasi M. Investigation of burn-out syndrome and its related factors among dentists of faculty member of Islamic Azad University in 2008. *Proceeding of the 12<sup>th</sup> Congress of Iran Endodontist Association*; 2009.
24. Rashedi V, Foroughan M, Hosseini MA. [Burnout and related demographic variables among Tehran Welfare Organization staffs]. *Journal of Kermanshah University of Medical Sciences* 2012; 16(1): 28-36. (Persian)
25. Delpasand M, Nasiripoor AA, Raiisi P, Shahabi M. [The relationship between emotional intelligence and occupational burnout among nurses in critical care units]. *Iranian journal of critical care nursing* 2011; 4(2): 79-86. (Persian)
26. Patrick K, Lavery JF. Burnout in nursing. *Aust J Adv Nurs* 2007; 24(3): 43-8.
27. Heydari HR, Mohebi S, Paidari N, Ramouz P, Nayebi T, Omrani D, et al. [Noise exposure assessment among nurses in Qom Educational Hospitals in 2012, Iran]. *Qom University of Medical Sciences journal* 2013; 7(6): 46-53. (Persian)
28. Jafari N, Bina B, Mortezaei S, Ebrahimi A, Abdollahnejad A. [Noise pollution in Feyz hospital and its surrounding area]. *Scientific journal of health system researches* 2012; 8(3): 377-84. (Persian)
29. Zonouzi F, Ranjbarian M, Afjeie S. Evaluation of noises in neonatal intensive care unit in Mofid Children's Hospital. *Journal of Medical Sciences of Islamic Azad University* 2006; 16(3): 129-34.
30. Abbasi S, Talakoob R, Soltani F, Yousefi H. Evaluating the noise level and sources in Isfahan University Hospital's intensive care units. *Journal of Isfahan Medical School* 2011; 28(118): 1267-74.
31. Asgharnia HA, Tirgar A, Amouei AI, Fallah H, Khafri S, Mohammadi AA, et al. Noise pollution in the teaching hospitals of Babol (Iran) in 2012. *Journal of Babol University of Medical Sciences* 2014; 16(4): 64-9.
32. Allaouchiche B, Duflo F, Debon A, Bergeret A, Chassard D. Noise in the postanaesthesia care unit. *Br J Anaesth* 2002; 88(3): 369-73.
33. Ahanchian MR, Meshkinyazd A, Soudmand P. Nurses' burnout in psychiatric wards. *Journal of Fundamentals of Mental Health* 2015; 17(5): 265-8.
34. Laschinger HK, Borgogni L, Consiglio C, Read E. The effects of authentic leadership, six areas of worklife, and occupational coping self-efficacy on new graduate nurses' burnout and mental health: A cross-sectional study. *Int J Nurs Stud* 2015; 52(6): 1080-9.