

## Investigating Workload and Occupational Burnout of healthcare workers in the Welfare Organization of Gonabad City

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Received March 07, 2017; Revised December 20, 2017; Accepted February 21, 2018

This paper is available on-line at <http://ijoh.tums.ac.ir>

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### ABSTRACT

Workers in welfare centers have to work more than other people, which may lead to job burnout. The present study was conducted to analyze the relationship between workload and burnout dimensions among the employees in health centers of Gonabad City, eastern Iran. In this descriptive-analytic study, a total number of 100 healthcare workers from the Welfare Organization of Gonabad City were selected to investigate the association between their workload and occupational burnout using the NASA-TLX questionnaire and the Maslach-Jackson Inventory. The data were analyzed by Chi-square, Pearson correlation, and one-way ANOVA in SPSS 22 software. Among the healthcare workers of the Welfare Organization, nurses had the highest rate of burnout in terms of efficiency ( $67.9 \pm 21.3$ ). They had the lowest rate of burnout in terms of exhaustion and frustration ( $37.05 \pm 24.23$ ), and moderate burnout in terms of mental pressure, physical pressure, time pressure, and effort ( $63.40 \pm 26.17$ ,  $58.75 \pm 23.78$ ,  $60.30 \pm 21.72$  and  $61.54 \pm 26.31$ ). Considering the findings of the study and the importance of the health care profession, it is of the utmost importance to address the problems of healthcare workers in the Welfare Organization. Accordingly, the authorities must take the necessary steps to suit the environmental, managerial, and personnel conditions to them.

**KEYWORDS:** *Welfare Organization, workload, occupational burnout, Healthcare workers*

### INTRODUCTION

Workers are an inevitable necessity for the survival of society and continuation of life. Furthermore, every person's life is fulfilled through work and self-sufficiency of each country depends on the amount and type of performance of its employees [1]. Being in the workplace and devoting a significant amount of time to work and mentally worrying about work activities has led many to voluntarily spend a lot of time on work activities without having sufficient rest and time to spend with family and friends, which often cause mental and physical problems [2]. Occupation and workplace are one of the social factors affecting mental health.

Recent studies show that in the event of disregard for human health, workplaces become as places most at risk for employees and besides, impose a heavy cost on organizations [3]. From the perspective of ergonomic science, the most important factor in the occurrence of occupational accidents and injuries is the disproportion between the workload and workers' abilities and limitations [4]. Human resources, compared to other resources, are the most valuable strategic resource for any organization that can be the source of changes in the systems [5]. In the meantime, the health sector is one of the most important organizations in the world; therefore, there is a need to pay attention to different aspects of its workers [6-7]. Undoubtedly, many occupations are "stressful" and workers usually do not know how to stay away from these

kinds of stresses and protect themselves from injuries, so some of them are constantly stressed out because of enduring the stress or weakness caused by coping with these tensions [2, 8].

Occupational burnout can be a consequence of working in organizations that is a negative aspect of work-life [9]. The concept of occupational burnout was first introduced by Freudenberger in 1974 as a form of exhaustion and frustration due to the communications and business relationships that does not lead to the desired outcomes. Occupational burnout syndrome, which occurs in response to the working burden, is defined as a process in which employees' attitudes and behaviors become negative and pessimistic towards their work [2, 10].

Occupational burnout includes three perspectives of emotional exhaustion, depersonalization, and personal accomplishment. The emotional exhaustion is described as psychological stress, emotional stress and loss of emotional resources in a person [11]. The depersonalization is a negative and pessimistic attitude toward others and clients. A decline in personnel's self-accomplishment is also a decline in the sense of merit and the ability to perform a task successfully, as well as a negative attitude and assessment towards oneself [12-13]. This syndrome is defined as a disability in the long-term adaptation/exposure to emotional/working stress or frequent use of energy and resources leading to the feeling of failure, declination, and exhaustion [14]. In a review study by Yaman et al. on occupational burnout of healthcare workers, it was shown that depression, burnout, and psychosomatic disease among healthcare workers are due to the nature of their occupation. Interventions to the individual, by the inclusion in the institutional management in addition to institutional improvements, may help prevent burnout [15].

Workload, as a multidimensional and complex structure, is affected by the external needs of the task and environment, as well as organizational and mental factors [16], such as administrative and cognitive capabilities [17]. The workload in healthcare centers is not limited to physical tasks. The cognitive tasks may also be part of the complexity of the overall workload endured by healthcare workers [18, 19]. Workload addresses a set of job requirements, the amount of effort required to perform the work and the efficiency and performance of workers [20-21]. One of the factors that currently reduces the employees' quality of life, especially in the stressful system of hospitals, is excessive work (workload) [22]. Workload assessment is necessary to measure perceptual demands and to calculate the capacity of individuals to perform additional tasks, as well as to prevent fatigue and human errors and to evaluate tasks in workplaces [23].

According to Gaba Wali (1995), assessing the amount of work in nursing is essential because the stressors that are so prevalent in the job can affect the management of high workloads. In addition, the high volume of tasks and their compliance with supervisory needs in nursing may reduce the recognition and response to emergencies [11, 24]. In a study by Malekpour et al. (2014) on the assessment of mental workload among Iranian nurses, the mean score of mental workload was found to be high among nurses. This could negatively affect the quality of the health care services provided by them. Accordingly, it was recommended to implement effective programs to mitigate the mental load to improve the nurses' performance [25]. Therefore, assessing the workload of nurses is essential to ensure the provision of appropriate healthcare services. This assessment is important not only for the health of nurses, as a valuable force in medical care, but also for the health of patients in terms of the performance of healthcare workers.

The employees in the Welfare Organization have a very difficult job because of providing services to people with poor financial, physical, and mental health status. The employees have a high workload and burnout. The purpose of this study was to determine the rate of workload and prevalence of burnout among the healthcare workers of the Welfare Organization in Gonabad City and to investigate the relationship between these two variables.

## MATERIALS AND METHODS

This cross-sectional (descriptive-analytic) study was conducted in 2016 to assess the workload and occupational burnout among the healthcare workers of the Welfare Organization in Gonabad City, eastern Iran. To this end, all of the healthcare workers of the organization were included in the study. Totally, 100 workers were entered the study according to the inclusion criteria of at least one year of work experience, not working two jobs, no alcohol addiction, and no history of musculoskeletal disorders and mental and emotional diseases. The data on the occupational burnout were collected by Maslach-Jackson Inventory and on the workload by NASA-TLX [26]. The burnout questionnaire was developed by Maslach in 1981, which is a new estimate of the stress phenomenon i.e. burnout. The questionnaire consists of 22 sections dealing with the measurement of emotional exhaustion [27], depersonalization, and lack of personal accomplishment in the framework of occupational activity. It particularly measures and prevents burnout in professional groups, such as nurses and teachers, etc [28]. The scoring of items in the questionnaire is based on a 7-point Likert scale (range of score: 0- 132). The reliability of the

questionnaire has already investigated by Wheeler (2011) using Cronbach's alpha between 0.70 and 0.80 and by Akbari et.al (2011) within the range of 0.85 - 0.94 [29-30].

The NASA TLX questionnaire was first designed by Sandra Hart in the United States National Aeronautics Organization. The validity and reliability of the NASA TLX were tested by the Nasl- Seraji et al. in 2011 in a study on the workload of nurses ( $\alpha = 0.83$ ). NASA-TLX is a multi-dimensional approach that offers a general score of workload based on the weighted average of six subscales, including mental pressure, physical pressure, time pressure, performance, effort, and frustration and exhaustion. The score of weighted workload is achieved by comparing the scores of each subscale based on pairwise comparison method [31]. After completing the questionnaire, the stepwise correlation coefficient was calculated. The study protocol and its ethical considerations were approved by the Applied Research Council and the Ethics Committee of Gonabad University of Medical Sciences.

After obtaining permission from the authorities of the Welfare Center, the purpose of the study was explained to the participants, and all of them signed the written informed consent form prior to participation. The participants were also assured of the confidentiality of data and anonymity of all questionnaires. The collected data were analyzed in SPSS software, version 19. Descriptive and analytical statistical tests, such as one-way ANOVA, t-pair, independent t-test, Kruskal-Wallis, Chi-square, and Pearson correlation coefficient with a significant level of  $p \leq 0.05$  were used to investigate the effects of the different variable on each other.

## RESULT

The mean and standard deviation of the workers' age and work history were  $35.3 \pm 8.9$  and  $7.4 \pm 7.12$  years, respectively. The mean and standard deviation of daily working hours and income were  $8.3 \pm 1.7$  hours and  $11470 \pm 805$  thousand IRR, respectively. In terms of sex composition, 49 of the 100 healthcare workers were female and 51 workers were male. The demographic characteristics of the studied nurses are shown in Table 1. The mean and standard

deviation of workload and occupational burnout were  $58.15 \pm 12.9$  and  $62.65 \pm 20.93$ , respectively. According to the results of this study, there was found no significant relationship between the variables of "workload and marital status", "occupational burnout and marital status", "workload and education level", and "job satisfaction and educational level". There was also no significant relationship between workload and occupational burnout ( $p > 0.05$ : Kruskal-Wallis and Cronbach's Alpha tests). The workers obtained the highest level of workload in terms of efficiency. Their workload was the lowest in terms of frustration. From the perspective of mental pressure, physical pressure, time pressure, and effort, their workload was evaluated to be moderate. The relationship between the different variables is shown in Table 2. The results of the t-test showed that there was no significant difference between occupational burnout of single workers (with a mean of  $67.25 \pm 19.49$ ) and married workers (with mean  $61.77 \pm 21.19$ ). In addition, t-test results showed that the workload of the married subjects was  $55.83 \pm 12.89$  and the single workers  $59.04 \pm 12.97$  respectively. No significant difference was found between the workload of the married and single workers.

The results of the one-way ANOVA test showed that there was no significant relationship between workload and occupational burnout with education level. The workload score in the individuals with secondary education, diploma, associate, bachelor's, and master's degrees was  $63.20 \pm 14.94$ ,  $59.29 \pm 12.86$ ,  $57.81 \pm 10.00$ ,  $56.57 \pm 12.75$ , and  $58.02 \pm 12.19$ , respectively. The occupational burnout score in the subjects with secondary education, diploma, associate, Bachelor's, and Master's degrees was  $62.05 \pm 19.59$ ,  $72.12 \pm 16.66$ ,  $59.84 \pm 20.35$ ,  $56.57 \pm 12.75$ , and  $58.02 \pm 20.88$ , respectively. Table 3 shows the scores of various subscales in the NASA- TLX questionnaire.

Based on the results for burnout and workload of health care workers, it was found that the performance subscale had the highest score over other subscales of workload ( $67.9 \pm 23.3$ ). The results showed that the workers with elementary-middle school education had the lowest degree of occupational burnout.

**Table 1.** Demographic characteristics of the subjects

Variable		Number	Percentage
Marital status	single	16	16.00
	married	84	84.00
Education level	Associated	46	46.00
	BSc	46	46.00
	MSc	8	8.00
Employment status	Official	22	17.14
	Contractual	44	48.57
	Internship	34	34.28

**Table 2.** Relationship between different variables among the workers in the Welfare Organization

Variable		Work Experience	Income	Daily Working Hours	Occupational Burnout	Workload
Work Experience	R	1.000	-0.083	0.153	0.047	0.027
	p-Value	-----	0.412	0.129	0.644	0.005
Income	R	-0.083	1.000	0.009	-0.083	-0.079
	p-Value	0.412	-----	0.913	0.413	0.433
Working hours daily	R	0.153	0.009	1.000	0.255	-0.043
	p- Value	0.129	0.931	-----	0.010	0.669
Burnout	R	0.047	-0.083	0.255	1.000	-0.096
	p-Value	0.644	0.413	0.010	-----	0.341
Workload	R	0.276	0.079	-0.043	-0.096	1.000
	p-Value	0.005	0.433	0.669	0.341	-----

**Table 3.** Score of workload subscales

Perspectives of workload	Mean	SD
Mental pressure	63.40	26.17
Physical pressure	58.75	23.78
Time pressure	60.30	21.72
Performance	67.90	21.33
Effort	61.54	26.31
Frustration and exhaustion	37.05	24.23

The job burnout rate was higher among single workers (67.24) than married workers (61.77). The results showed that marital status had no effect on job burnout, which is in line with the study by Asgari [32].

In terms of workload, it can be said that the workers with secondary education had the highest workload. The married workers had the highest workload than the single workers. In general, it can be concluded that there is no significant relationship between occupational burnout and workload, as well as between occupational burnout and workload with educational level and marital status. Barbosa et al. found no significant relationship between occupational burnout and workload of physicians [33]. It was also concluded that with an increase in the work experience, the rate of workload increased (p-value: 0.005), and with an increase in daily working hours, the rate of burnout increased (p-value: 0.01). This could be due to the delegation of responsibility beyond the capacity of workers in the organization, lack of managers' attention to employees' affairs, lack of facilities and opportunities for workers, lack of training, very difficult working conditions, and consuming much time and energy. In order to combat occupational burnout and workload, it is recommended to "make sure the workers are physically and mentally fit before employing them for the job", "pay attention to the rights of employees", "create diversity in work", "use a psychologist or an expert to improve the employees' working relationships", "consider giving the staff a short break between work" and "avoid overwork" [34]. In the studies by Safary et al. and Malekpour et al., cognitive stress was found to be

the most important workload among health workers [35, 36]. However, other researchers, such as Sarsangi et al., reported that the subscale of effort had the highest score among nurses [25]. The reason for such differences may be due to differences in the occupational groups. In this study, the workload was mainly of performance type.

More than 36% of the nurses participating in the study of Cimiott et al. suffered from high levels of occupational burnout [37]. Some other studies found moderate to high levels of occupational burnout for healthcare workers in the specialized wards [38, 39]. The reason for this difference can be explained by the higher mean age and work experience (11 years) of the participants in the present study compared to those participating in the above-mentioned studies [40]. In other words, burnout is the end result of exposure to chronic and prolonged occupational stresses. Accordingly, burnout is greater among people who spend more time in a job than those who have just taken a job.

In the case of work experience, in the low-effect logistic model (1.09), emotional exhaustion increased with each year of increased work experience. It can be argued that due to the difficulties of the nursing profession, with increasing work experience, healthcare workers' tolerance for emotional excitement becomes decreases. According to some other studies, the work experience is not related to the dimensions of occupational burnout that is consistent to the present study [41-43]. The study by Tabolli et al. indicated that the nurses' well-being and health are affected by increased working hours per week and high workload [44]. In this regard, it can also be

claimed that high daily working hours, by increasing workload, cause the creation and persistence of stress. One of the major consequences of this negative process is the experience of burnout and a decline in psychological well-being.

## CONCLUSION

Given the findings of this study and the importance of the profession of healthcare workers, it is important to address the problems of workers in the Welfare Organization. The relevant authorities also need to provide solutions to suit their environmental, management and personnel requirements.

## ACKNOWLEDGMENTS

This study, as part of a research project approved in February 2017 at Gonabad University of Medical Sciences, was financially sponsored by the Vice-Chancellery of Research at the Health School of the university. The authors greatly appreciate the support and cooperation of the Vice-Chancellor, as well as the workers at the Welfare Organization.

## REFERENCES

- Shafiei SF, Shojaati A. A survey of the relationship between coping strategies, occupational stress and job satisfaction of counselors of education organization districts of Shiraz. *Q J New Approach Educ Admin* 2008;1(1):39-60.
- Sadra Abarghouei N, Jafarpour H. Surveying the relationship of Total Ergonomics with burnout (With Case Study). *J Ergon* 2017;5(1): 51-59.
- Backs RW, Ryan AM, Wilson GF. Psychophysiological measures of workload during continuous manual performance. *Hum Factors* 1994;36(3):514-531.
- DiDomenico, A. and M.A. Nussbaum. Effects of different physical workload parameters on mental workload and performance. *Int J Ind Ergon* 2011; 41(3): p. 255-260.
- Zamanian Z, Roshan Sarvestani M, Sedaghati M, Ghatmiri M, Kouhnavard B. Assessment of the relation between subjective workload and job satisfaction in university faculty and staff. *J Ergon* 2016;3(4):1-10.
- Nishtar S, Ralston J. Can human resources for health in the context of noncommunicable disease control be a lever for health system changes? *Bull World Health Organ* 2013;91(11):895-896.
- Mosadeghrad AM. Quality of working life: an antecedent to employee turnover intention. *Int J Health Policy Manag* 2013;1(1):43-50.
- Maslach C, Jackson SE. The measurement of experienced burnout. *J Organ Behav* 1981; 2(2):99-113.
- Wu S, Zhu W, Wang Z, Wang M, Lan Y. Relationship between burnout and occupational stress among nurses in China. *J Adv Nurs* 2007; 59(3):233-239.
- Li, A., Early SF, Mahrer NE, Klaristenfeld JL, Gold JI. Group cohesion and organizational commitment: protective factors for nurse residents' job satisfaction, compassion fatigue, compassion satisfaction, and burnout. *J Prof Nurs* 2014; 30(1):89-99.
- Gaba DM, Lee T. Measuring the Workload of the Anesthesiologist. *Anesth Analg* 1990;71(4):354-361.
- Emold, C., Schneider N, Meller I, Yagil Y. Communication skills, working environment and burnout among oncology nurses. *Eur J Oncol Nurs* 2011;15(4):358-363.
- Saremi, M, Tassi P. Comparison of fatigue level, sleep quality and quantity in old and young shift workers. *Res Med* 2008;32(2):135-139.
- Poncet MC, Toullic P, Papazian L, Kentish-Barnes N, Timsit JF, Pochard F, Chevret S, Schlemmer B, Azoulay E. Burnout syndrome in critical care nursing staff. *Am J Respir Crit Care Med* 2007;175(7):698-704.
- Yaman H. Occupational Burnout in Healthcare Workers. *Cyprus Med J* 2017; 2(3):61-63.
- Van Bogaert, P., Clarke S, Roelant E, Meulemans H, Van de Heyning P. Impacts of unit-level nurse practice environment and burnout on nurse-reported outcomes: a multilevel modelling approach. *J Clin Nurs* 2010;19(11-12):1664-1674.
- Meeusen, V., VAN Dam K, Brown-Mahoney C, VAN Zundert A, Knape H. Burnout, psychosomatic symptoms and job satisfaction among Dutch nurse anaesthetists: a survey. *Acta Anaesthesiol Scand* 2010;54(5):616-621.
- Poghosyan, L, Clarke SP, Finlayson M, Aiken LH. Nurse burnout and quality of care: Cross-national investigation in six countries. *Res Nurs Health* 2010;33(4):288-298.
- Tantisewee P. *A study of the influences of motivation on employees turnover rate: A case study of book corner. Ltd.*, M.Sc. thesis, Srinakharinwirot University, Bangkok, Thailand, 2007.
- Kebriaei A, Moteghedhi M. Job satisfaction among community health workers in Zahedan District, Islamic Republic of Iran. *EMHJ* 2009; 15 (5):1156-1163 (Persian).
- Al-Kandari F, Thomas D. Adverse nurse outcomes: correlation to nurses' workload, staffing, and shift rotation in Kuwaiti hospitals. *Appl Nurs Res* 2008;21(3):139-146.
- Ghorbani M. *Personal and observational*

- methods to assess the workload on the assembly line of an auto industry.* Proceedings of the 7<sup>th</sup> National Conference on Safety and Health Working. 4-5 May 2011; Qazvin, Iran (in Persian).
23. Khandan M, Maghsoudipour M. Survey of workload and job satisfaction relationship in a productive company. *Iran Occup Health* 2012; 9(1): 30-36 (in Persian).
  24. Hoover A, Singh A, Fishel-Brown S, Muth E. Real-time detection of workload changes using heart rate variability. *Biomed Signal Process Control* 2012;7(4):333-341.
  25. Malekpour F, Mohammadian Y, Malekpour AR, Mohammadpour Y, Sheikh Ahmadi A, Shakarami A. Assessment of mental workload in nursing by using NASA-TLX. *J Urmia Nurs Midwifery Fac* 2014;11(11) (in Persian).
  26. Noyes JM, Bruneau DP. A self-analysis of the NASA-TLX workload measure. *Ergonomics* 2007;50(4):514-519.
  27. Schutte, N., Toppinen S, Kalimo R, Schaufeli W. The factorial validity of the Maslach Burnout Inventory-General Survey (MBI-GS) across occupational groups and nations. *J Occup Organ Psychol* 2000;73(1):53-66.
  28. Ostroff, C. The relationship between satisfaction, attitudes, and performance: An organizational level analysis. *J Appl Psychol* 1992; 77(6):963-74.
  29. Wheeler D, Vassar M, Worley J, Barnes L.A reliability generalization meta-analysis of coefficient alpha for the Maslach Burnout Inventory. *Educ Psychol Meas* 2011;71(1):231-244.
  30. Akbari R, Ghafar Samar R, Kiany GhR, Eghtesadi AR. Factorial validity and psychometric properties of Maslach burnout inventory—the Persian version. *Knowledge Health* 2011; 6(3):1-8 (in Persian).
  31. Hart SG, Staveland LE. Development of NASA-TLX (Task Load Index): Results of empirical and theoretical research. *Adv Psychol* 1988;52:139-183.
  32. Asgari A. The Effects of Gender and Marital Status on Burnout of English Teachers in Iran. *Pertanika J Soc Sci Hum* 2012;20(3):635-644.
  33. Barbosa, F.T., Leão BA, Tavares GM, Santos JG. Burnout syndrome and weekly workload of on-call physicians: cross-sectional study. *Sao Paulo Med J* 2012;130(5):282-288.
  34. Singh, N., Knight K, Wright C, Baird M, Akroyd D, Adams RD, Schneider ME. Occupational burnout among radiographers, sonographers and radiologists in Australia and New Zealand: Findings from a national survey. *J Med Imaging Radiat Oncol* 2017;61(3):304-310.
  35. Sarsangi, V, Saberi HR, Hannani M, Honarjoo F, Salim Abadi M, Goroochi M, Kazemi H. Mental workload and its affected factors among nurses in Kashan Province during 2014. *J Rafsanjan Univ Med Sci* 2015;14(1):25-36 (in Persian).
  36. Safari S, Mohammadi-Bolbanabad H, Kazemi M. evaluation mental work load in nursing critical care unit with National Aeronautics and Space Administration Task Load Index (NASA-TLX). *J Health Sys Res* 2013;9(6):613-9.
  37. Cimiotti JP, Aiken LH, Sloane DM, Wu ES. Nurse staffing, burnout, and health care-associated infection. *Am J Infect Control* 2012;40(6):486-490.
  38. Hooper C, 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(5):420-427.
  39. Massoudi R, Aetemadifar S, Afzali SM, Khayri F, Hassanpour Dehkordi A. The influential factors on burnout among nurses working in private hospitals in Tehran. *Iran J Nurs Midwifery Res* 2008;3(9):47-58.
  40. Nobakht F, Oliaei A, Rafiei H. *A survey on job burnout among psychologists and physicians, and its comparison with other clinical psychologists and physicians in Tehran.* Office of Research and Teaching, Iran Drug Control Headquarters, 2012.
  41. Sahebazzamani M, Safavi M, Farahani H. Burnout of nurses employed at Tehran psychiatric hospitals and its relation with social supports. *Med Sci* 2009;19 (3):206-211.
  42. Soleimani K, Sharifi V, Tehranidust M. Burnout among Ruzbeh Medical Psychological Hospital staff. *J New Cogn Sci* 2005;7(4):36-42.
  43. Kowalski, C, Ommen O, Driller E, Ernstmann N, Wirtz MA, Köhler T, Pfaff H. Burnout in nurses—the relationship between social capital in hospitals and emotional exhaustion. *J Clin Nurs* 2010;19(11-12):1654-1663.
  44. Tabolli, S., di Pietro C, Luigi Aparo U, Renzi C. Psychological wellbeing in the hospital administrative personnel. *Ann Ig* 2010;22(2):157-164.