



Investigating the relationship between smental workload index and nurses' quality of work life in teaching hospitals of Kurdistan University of Medical Sciences, Iran

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Original Article

Abstract

BACKGROUND: The mental load of work is one of the important and influential factors on the behavior and performance of nurses in the work environment. The purpose of this study was to evaluate the relationship between the mental load of work and the quality of work life in working nurses.

METHODS: In a descriptive-analytical study, 125 nurses working in the general and special departments of Kurdistan University of Medical Sciences, Sanandaj, Iran, in October and November of 2016 were examined. Data collection was done using a demographic form, a quality of work life questionnaire, and a mental workload index. The resulting data were analyzed using SPSS software and descriptive and inferential tests.

RESULTS: A significant relationship was observed between the components of physical demand, the level of frustration, and the effort score with the quality of work life ($P < 0.05$).

CONCLUSION: The results of the study show that the quality of work life of most nurses is average and this issue is related to the mental load of work.

KEYWORDS: Workload; Nurses; Quality of Life; Job Satisfaction

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Introduction

The most important and effective element in the continuity and success of any organization is the convenient job performance of its personnel.¹ Therefore, every organization seeks to maximize its dynamism and organizational survival, and this dynamism requires the application and formulation of ethical principles and the obligation of its employees to

follow that required principles;² hence, diverse psychological and physical factors could affect cognitive and concentration capacities of the organizational personnel, which in most of the cases cause human resource performance mistakes. Some of these factors include mental and physical working load pressure, job burnout, stress, inappropriate behavior in the workplace, and bad data processing.³ As mentioned above, working load pressure which is classified in the category of occupational factors, is considered as one of the most important occupational stressors, regarded as the mental workload of the job,

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which is a level of intellectual and cognitive need or analytical effort required by the worker or workers to fulfill the physical, time, and contextual demands.²

Nursing is a profession within the health care sector, focused on the care of individuals, families, and communities, so that they may attain, maintain, or recover optimal health and quality of life; therefore, in order to use these human resources as appropriate and effective as possible and ensure the health of the society, it is necessary to pay special attention to their professional and personal characteristics.⁴ The nursing profession is increasingly complex and exhausting, considered as one of the most stressful jobs and they are responsible for a set of relatively difficult tasks.⁵ In this regard, the National Association of Safety Professionals (NASP) in the United States (US) considered nursing as one of the top 40 professions with a high prevalence of work-related diseases.⁶ Factors such as the nurses-to-bed ratio, nursing care hours per day, nursing competency, the number of admissions, and the behavior of patients, all are important factors which affect workload.⁷ In order to measure the efficiency of nurses, measuring their workload is a necessity. In the US, every year, due to the mental and physical burden on the personnel of various medical departments, about 44000 to 98000 patients die due to medical errors;⁷ moreover, the results of studies in Iran have shown that there is a direct relationship between the increase in patients' death rate and nurses' workload.^{8,9} In addition, surveys conducted on nurses showed that mental workload had a direct relationship with inefficiency due to mental problems, which is one of the aspects of quality of life.⁷

Although nurses are trained to pay attention to the quality of care and life of patients, they often neglect their individual needs.¹⁰ The quality of working life is defined as the reaction of employees to their work,

especially its necessary consequences in satisfying job needs and mental health.⁹ In the hospitals where the nurses have reported a low quality of life, the rate of absenteeism, leaving service, burnout, and work pressure is very high, and on the other hand, the quality of care and their performance has decreased.⁸ The results of the study by Hu et al. in China showed that the mean score of the quality of work life of nurses was at an average level,¹¹ and Komjakraphan et al. in Thailand also reported the average score of the quality of work life among nurses.¹² Faraji et al. in the hospitals of Kurdistan Province, Iran, reported the quality of work life of nurses as about 61% which was evaluated as poor.¹³ Previous studies found the reasons for the low quality of work life of nurses as heavy workload, inappropriate work shifts, not having enough rest breaks in the work environment, and lack of independence in making.^{11,12,14}

And as mentioned above, the nursing profession has factors and triggers, including excessive work load, which are considered as a serious threat to the well-being and comfort of individuals and their level of quality of life.¹⁵

In general, regarding the fact that the level of the quality of work life of nurses plays an effective role in their performance in work environment and the level of care service to patients and the healthcare system,¹⁶ the present study aimed to investigate the relationship between quality of working life and mental burden in hospitals of Sanandaj City, Iran, as an important factor in achieving high-quality levels of patient care.

Methods

The current study was a cross-sectional, descriptive-analytical study. The statistical population of the study included all nurses working in hospitals of Kurdistan University of Medical Sciences, Sanandaj. The research context included general and special care departments of Tohid, Kowsar, Be'sat, and

Quds hospitals in Sanandaj City in October and November of 2016. Sampling was done based on the study of Malekpour et al.,¹⁷ considering the standard deviation (SD) of the mental burden equal to 21.24 and the accuracy equal to 1.8 as well as the confidence interval (CI) of 95%; based on the following formula, the sample size was determined to be 139 individuals.

$$n = \frac{\left(z_{1-\frac{\alpha}{2}} * \sigma\right)^2}{d}$$

Considering the exclusion criteria which were unwillingness to continue cooperation or incomplete responses to questionnaires, 14 participants were excluded from the sampling process; however, under the statistical consultant's advice, the exclusion of these participants did not affect the data analysis procedure. The method of the sampling was stratified random sampling, so that each teaching hospital was assigned one floor and considering the number of nurses in each hospital, the required samples were randomly selected. The inclusion criteria were: being a nurse working in hospitals of Kurdistan University of Medical Sciences and willingness to cooperate.

Data were collected by the demographic form, the nurses' quality of work life questionnaire, and the standard questionnaire for mental workload [NASA-TASK Load Index (TLX)]. The demographic form included 10 items (age, sex, marital status, academic degree, work resume, workplace department, number of work shifts, number of patients in each shift, hours of rest after the work shift, and health status). The quality of work life questionnaire has already been validated by Mazloumi et al.,¹⁸ and its reliability was assessed by Safari et al.¹⁹ The quality of work life questionnaire defines an individual's perception of their quality of life in 8 dimensions. This questionnaire has international reliability and validity,²⁰ and in

Iran, it has been translated, validated, and verified by the Iranian Institute for Health Science Research. Cronbach's alpha coefficient for its reliability test in all aspects of the questionnaire, except for the dimension of vitality, was between 0.77 up to 0.90 and for the dimension of vitality, it was 0.65. Convergent validity was assessed for the the questionnaire, and the linear correlation of each dimension with the assumed sub-scale in all cases was above 0.4 between 0.58 and 0.95, and thus the reliability and validity of the Persian translation were confirmed.¹⁹ In connection with the mental workload assessment index, Mohammadi et al.²¹ in their study evaluated the validity and reliability of the mentioned questionnaire as $\alpha = 0.89$. The NASA-TLX tool by using a visual scale that is divided into 5 units ranging from 0 to 100 evaluates 6 subscales of mental need, physical need, time need, performance, effort, and frustration.

Finally, after obtaining official permission from the Vice President of Research and Technology and the code of ethics of the Kurdistan University of Medical Sciences and coordinating with the heads of the hospitals, the questionnaires were distributed among nurses. Data were collected and based on the related coding entered into SPSS statistical software (version 23, IBM Corporation, Armonk, NY, USA) and were subjected to statistical analysis by using descriptive (percentage, frequency, mean, and SD) and inferential [chi-square, analysis of variance (ANOVA), and Pearson correlation] statistics. A significance level of 0.05 was considered.

This article is the result of a research project approved by the Vice President of Research and Technology of Kurdistan University of Medical Sciences, with the ethics committee code of IR.MUK.REC.1396.215. Having obtained informed consent from the nurses participating in the study, in order to comply with ethical standards, the questionnaires were distributed

anonymously among the participants, and completing the questionnaires was done with the personal consent of the research samples.

Results

Among the 139 distributed questionnaires, 125 questionnaires were responded completely, and subjected to statistical analysis. 87 individuals (69.6%) were in the age group of 22-30 years, 33 individuals (26.4%) were in the age group of 31-40 years, and 5 individuals (4%) were in the age group of 41-50 years. 74 individuals (59.2%) were married. Most of them (92%) had bachelor's degrees in nursing and 45.6% had work experience of 3-10 years (Table 1).

In relation to the components of mental workload, the findings of the study showed that the highest observed average was related to the amount of effort with a mean of 84.50 and an SD of 16.20, and the lowest observed average was 51.44 with an SD of 28.36 which was related to physical needs (Table 2).

The quality of work life of 40 (32%) individuals was poor, 49 (39.2%) individuals moderate, and 36 (28.8%) individuals relatively appropriate.

One-way ANOVA was used to investigate the relationship between the mental workload index and nurses' quality of work life. The results of the study proved a significant difference in physical needs ($P = 0.004$), frustration level ($P = 0.010$), and effort level ($P = 0.035$) in different levels of work-life quality. The results of Tukey's post hoc test showed that there was a significant difference between the score of physical needs in relatively favorable quality of life and poor quality of life. The scores of physical needs were higher in relatively good conditions than in poor conditions. The level of disappointment in people with relatively good quality of life was lower than in people with poor and moderate quality of life, and this difference was statistically significant. The

amount of effort in people with poor quality of life was more than people with moderate quality of life and this difference was statistically significant (Table 3).

Table 1. Frequency distribution (percentage) of the demographic characteristics of the research samples

Variable	n (%)	Total
Sex		
Men	60 (48.0)	125 (100)
Women	65 (52.0)	
Age (year)		
22-30	87 (69.6)	125 (100)
31-40	33 (26.4)	
41-50	5 (4.0)	
Marital status		
Single	51 (40.8)	125 (100)
Married	74 (59.2)	
Degree of education		
Associate degree	2 (1.6)	125 (100)
Bachelor	115 (92.0)	
Master	1 (0.8)	
Other	7 (5.6)	
Ward		
1-3	46 (36.8)	125 (100)
4-10	57 (45.6)	
11-20	7 (5.6)	
Above 20	15 (12.0)	
Shift hours		
6	32 (25.6)	125 (100)
12	87 (96.6)	
18	6 (4.8)	
Rest after shift (hour)		
12	109 (87.2)	125 (100)
12-24	16 (12.8)	
24-48	0 (0)	
Physical and mental health		
Yes	71 (56.8)	125 (100)
No	54 (43.2)	
Number of shifts per month		
10-20	50 (40.0)	125 (100)
Above 20	60 (75.0)	
Number of patients per shift		
1-5	4 (3.2)	125 (100)
6-10	34 (27.2)	
11-16	51 (40.8)	
Above 16	36 (28.8)	

Discussion

The present study investigated the relationship between the mental workload index and the quality of work life of nurses in teaching hospitals of Kurdistan University of Medical Sciences.

Table 2. Central indicators and dispersion of the mental load components of work

Components of mental load	The least	The most	Mean \pm SD
Mental needs	10	100	74.84 \pm 20.05
Physical needs	5	100	51.44 \pm 28.36
Time needs	5	100	72.20 \pm 25.05
Function	20	100	79.44 \pm 18.01
Amount of frustration	5	100	69.72 \pm 28.19
Amount of effort	2	100	84.50 \pm 16.20

SD: Standard deviation

The results of the study showed that there was a significant difference in physical needs ($P = 0.004$), the level of frustration ($P = 0.010$), and the amount of effort ($P = 0.035$) that existed in different levels of quality of work life. Therefore, according to the mentioned studies, it could be concluded that the workload of the studied nurses was high.¹⁴ Similar results have been confirmed in other studies which are in line with the present study.^{9,22}

Yusefi et al. reported that the average workload among nurses and its dimensions

was estimated at a high level equal to 73.47 ± 16.75 ; the highest average for the dimension of effort level was 79.09 ± 21.81 , and the lowest was related to frustration and failure dimension (51.59 ± 30.23)⁶. In this regard, Ferreira et al. in their study estimated the high workload among nurses with an average of 69.81 ± 24.10 .²⁴

high quality workplace is known as a basic imperative for empowering human resources needed by the health care. Therefore, in any organization, a high quality of work life is essential to attract and retain employees.²³

Table 3. The relationship between mental work load index and quality of work life

Variable	Quality of life	Mean \pm SD	P
Mental needs	Weak	72.69 \pm 21.21	0.105
	Moderate	80.20 \pm 17.11	
	Relatively optimal	70.00 \pm 21.55	
	Optimal	70.00 \pm 12.34	
Physical needs	Weak	40.51 \pm 34.69	0.004
	Moderate	51.84 \pm 21.81	
	Relatively optimal	61.53 \pm 24.46	
	Optimal	95.00 \pm 23.25	
Time needs	Weak	76.03 \pm 25.58	0.611
	Moderate	69.80 \pm 28.78	
	Relatively optimal	71.81 \pm 18.56	
	Optimal	55.00 \pm 11.64	
Function	Weak	79.49 \pm 24.08	0.830
	Moderate	77.86 \pm 16.01	
	Relatively optimal	81.39 \pm 12.63	
	Optimal	85.00 \pm 12.34	
Amount of frustration	Weak	75.90 \pm 36.33	0.010
	Moderate	74.39 \pm 19.46	
	Relatively optimal	57.50 \pm 24.74	
	Optimal	40.00 \pm 7.78	
Amount of effort	Weak	90.69 \pm 22.12	0.035
	Moderate	81.02 \pm 14.25	
	Relatively optimal	82.64 \pm 7.51	
	Optimal	80.00 \pm 15.21	

SD: Standard deviation

The findings of the study by Al Zamel et al.¹⁶ and Wang et al.²⁵ show that the nurses of the teaching hospitals have an average level of quality of life.

Faraji et al. also evaluated the quality of life of nurses in university hospitals in Kurdistan Province at 48%.¹³ According to Khanzadeh et al., the average quality of professional life of nurses in their statistical population was equal to 133.75, which according to the one-sample t-test was in an acceptable condition and was above the average of 105. Generally, it could be concluded that the quality of professional life of nurses working in the hospital of Urmia University of Medical Sciences, Urmia, Iran, was in an acceptable condition,¹⁵ which is contrary to the results of the present study.

Since the quality of work life is a multi-dimensional concept and many factors such as personnel health, professional competence, motivation, attitude, workplace, management style, and family affect this concept, supporting nurses and colleagues to improve the quality of work life is necessary and nursing managers can improve the clinical and professional performance of nurses within the work environment.

Incorrect responses or incomplete responses to the questionnaire items were one of the limitations of this study; by assuring the participants about the confidentiality of their personal information, using an anonymous questionnaire, and providing the necessary explanations about the research, the researcher minimized the error rate.

More studies should be done in this field. It is suggested that in future studies, the relationship between the mental workload and the quality of work life in other groups of medical personnel be investigated and other factors affecting the quality of work life of nurses be evaluated.

Conclusion

The results of the present study show that the

quality of work life of most nurses is average and this issue is related to the mental workload; therefore, paying attention to the factors related to this index and taking measures that can reduce the mental workload and subsequently improve the quality of nurses' working life is necessary.

Conflict of Interests

Authors have no conflict of interests.

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