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Investigating The Relationship Between Mental Workload And Professional Performance Of Nurses Working In Izeh And Bagh Malek Hospitals

Amir faraji[1] , Simin Tahmasebi[2*]
[1]Master Student of Health Services Management Faculty of Medical Sciences, Shahrekord Branch, Islamic Azad University, Shahrekord, Iran
Email:faraji.amir1397@gmail.com
[2]Assistant Professor Department of Nursing Faculty of Medical Sciences Shahrekord Branch Islamic Azad University, Shahrekord, Iran Email: tahmas.s2004@gmail.com
*Corresponding author : Assistant Professor Department of Nursing Faculty of Medical Sciences Shahrekord Branch Islamic Azad University, Shahrekord, Iran Email:tahmas.s2004@gmail.com

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Abstract:

Nowadays, organizations strive for their survival, order, and maturity to achieve rapid growth, continuous improvement, and efficiency of a privileged position in their field of activity through educated human resources on a global scale. The purpose of this study was to investigate the relationship between mental workload and the professional performance of nurses working in Izeh and Bagh Malek hospitals. The research method is a descriptive-analytical correlation. In this study, we used the Mohammadi Nurses' Professional Performance Questionnaire (2013) and the NASA TLX Mental Workload Questionnaire. The statistical population consists of all nurses of Izeh and Bagh Malek hospitals. The total size of the statistical population is 160 people, examined using the census of the whole population. Correlation tests and analysis of variance were used to examine the questions. The results showed that there was a significant negative correlation between mental workload and nurses' professional performance (P = 0.000, R = -0.791). There is also a significant relationship between nurses' professional performance and marital status (t = 2.303, P = 0.012). Also, education has a significant relationship with nurses' mental workload (t = 3.374, P = 0.004)

This study showed that one of the factors affecting the behavior and professional performance of people in the workplace and as a result affects the efficiency and productivity of people in the mental workload.

Keywords: *mental workload, professional performance, nurse, Izeh hospitals ,Bagh Malek hospital*

Introduction:

The largest number of hospital staff is nurses (Mosadeghrad, 2004). In Iran, 80% of people working in the health care system are nurses and 80% of the work in these centers is performed by nurses (Malekpour et al., 2014). The US National Occupational Safety and Health Association has ranked nursing among the top 40 occupations with a high prevalence of work-related illnesses (Lee, I., &

Wang, 2002). In this work environment, factors such as high work speed, high workload, and lack of social support can cause stress in a person (Mackie, 2008).

One of the stressors that affect nurses' behavior and performance in the workplace is mental workload (Donaldson et al., 2002). Mental workload is defined as the level of intellectual and cognitive need or analytical effort required of the worker or employees to fulfill the physical time and environmental demand of a particular task (Neill, 2011). A mental burden has a multidimensional and complex structure that is influenced by off-duty needs, environment, organizational and psychological factors, and administrative and cognitive abilities of a person (Weinger et al., 2004). Various studies have shown that in jobs where there are a lot of mental workloads, due to fatigue and improper schedule, efficiency decreases and reduces memory, damage to the thought process, irritability and irritability, and reduced performance (Mohammadi et al., 2013). Tired people are more likely to choose risky behaviors, such as doing the least effortful task (Young et al., 2008). High mental workload, which has been reported as the main source of stress and burnout in nurses (Owens, 2007) can have direct and indirect negative consequences for nurses and patients. The direct effects of a high workload on patient care may be accompanied by a lack of time to perform care tasks which can increase patient mortality (Morris et al., 2007). It can also indirectly affect patients' safety by affecting communication and reducing job satisfaction, motivation, and burnout of nurses (Kiekkas et al., 2008). Excessive workload causes increased stress, fatigue at rest, burnout, lack of motivation and decrease job satisfaction (Arab et al., 2015). In jobs where there are a lot of workloads, due to fatigue and improper scheduling, efficiency decreases. It reduces memory, causes damage to the thought process, irritability, and reduced learning (Young et al., 2008).

Given that mental workload is directly related to individual performance, it is one of the components affecting the health, safety, and comfort of individuals (Baggs et al., 1999). Myny et al. (2012), who in their study examined the factors affecting the workload of nurses in the intensive care unit, considered the work interruptions in the performance of nurses as one of the most important factors causing workload in nurses in this ward. Holden et al. (2009) also stated that mental workload is associated with interruptions in work, insufficient attention and hasty action of nurses, and on the other hand with burnout. Although there is much disagreement about the nature of the workload, the workload is still important and measurable. Many studies show that in jobs where there are a lot of workloads, due to fatigue and improper schedule, efficiency decreases and reduces memory, damage to the thought process, irritability and irritability, and reduced learning. Many methods have been developed to measure workload, which can be classified into 3 groups. (Holden et al., 2009).

Due to the lack of nursing staff, as well as the number of visits to hospitals, nurses face a large workload. Evaluating the mental workload of these nurses who deal with human lives is very important because a heavy workload not only affects the health of nurses but also their performance. In recent decades, the issue of mental workload and its effects on organizations has become one of the main topics of organizational behavior. Kicks et al. (2005) emphasize that it is essential to evaluate the mental workload of hospital intensive care personnel. Because different stressful stimuli can affect their ability to work, it also reduces the speed of action in vital decisions and their mental ability and the person cannot react in time to the emergency. Sarsangi et al. (2015) in their study examined mental workload and its effective factors on nurses. Sönmez et al. (2017) examined the mental workload of nurses, while no study examined the mental workload and its relationship to the performance of nursing

professionals. Therefore, this study aimed to investigate the relationship between mental workload and professional performance of nurses working in hospitals in Izeh and Bagh Malek counties.

Research method:

The present research is applied in terms of purpose, descriptive-analytical in terms of nature and implementation, and is of correlation type. The statistical population consists of all nurses of Izeh and Bagh Malek hospitals. The total size of the statistical population is 160 people. Through the census, all 160 available nurses are used as a statistical sample.

Research tools:

Nurses' Professional Performance Questionnaire

This questionnaire has 3 terms: nurse autonomy (questions 1 to 3), control beyond performance (questions 4 to 7), and how the doctor and nurse cooperate (questions 8 and 9). This questionnaire is set based on a scale of five Likert options (very low code 1, low code 2, medium (intermediate) code 3, high code 4, and very high code 5). Mohammadi reported the reliability coefficient of the test for each factor and the whole questionnaire above 0.7. It also confirmed the validity of the questionnaire through construct validity and convergent validity (Mohammadi, 2013).

Introducing mental workload questionnaire:

This questionnaire has 6 terms: mental needs, physical needs, time needs, performance, effort, and level of frustration. For each of these six subscales, an explanation is given that must be read by the user before scoring. This questionnaire is divided for each field of activity in the range of 100 points with 5-point steps, and then these rankings are placed in TLX. These explanations are as follows:

Mental pressure: How much mental and perceptual activity is required? Was this activity hard or easy, simple or complex?

Physical pressure: How much physical activity is required? Was it easy or difficult? Was it with rest or did it require strenuous physical activity?

Time pressure: How much time pressure did you feel given the speed of each activity? Was the speed of events and the pace of activity slow or fast?

Overall performance: How successful were you in doing this work? How satisfied were you with your performance?

Levels of failure and frustration: How much did you feel resentment, anger, and stress as opposed to feelings of satisfaction, calm, and satisfaction during work?

Effort: Mentally or physically, how hard did you have to work hard to reach the level of performance you wanted?

The questionnaire consists of two parts. In the first part, the subject evaluates each of the axes (dimensions) on a scale of zero to 100. Each scale is marked on a 10 cm line with a title (for example, time pressure. The outlines of the scale are expressed by a bipolar description (high, low), In the second part, the axes were compared with each other in pairs and identifies the central subject who has the most impact and importance for him, the mental workload evaluation process also uses three steps, In

the first stage, the weighting of the load (Weighting) and in the second stage, the degree of loading (Rating) of each of the six scales is done by the subject. Then the product of weight and degree of dimensions is determined, average scores below 50 are considered acceptable and scores above 50 are considered high.
Table 1 shows the results of Cronbach's alpha of the questionnaire.

Table 1: Cronbach's alpha value of the Professional Performance Questionnaire

Cronbach's alpha	Subscales	Total
0/801	Nurse autonomy	0/762
0/750	Control beyond performance	
0/744	How doctor and nurse work together	
Cronbach's alpha	Subscales	Total
0/733	Mental needs	0/740
0/744	Physical needs	
0/742	Time needs	
0/870	Performance	
0/741	amount of effort	
0/762	Level of disappointment	

Data analysis was performed by using the Pearson correlation coefficient test and SPSS software version 24.

Findings:

The results showed that 45 nurses are male and 115 are female. 140 of the sample have a bachelor's degree and 20 have a master's degree, 75 of the nurses are single and 85 are married. 52 nurses were under 25 years old, 74 were between 25 and 30 years old and 34 were over 30 years old. The results of descriptive statistics are presented in Table (2).

Table 2: Mean and standard deviation of research variables

Factor	Elongation	skewness	Standard deviation	Average	Sample size
Mental needs	-0.949	-0.316	8.351	75.84	160
Physical needs	-1.198	-0.355	10.777	79.53	160
Time **needs**	-0.920	-0.085	10.201	77.91	160

Performance	-1.106	0.120	11.069	77.23	160
amount of effort	-1.202	0.249	8.500	82.86	160
Level of disappointment	-0.969	0.042	9.335	83.01	160
Nurse autonomy	-0.591	0.167	0.639	2.831	160
Control beyond performance	-1.258	0.082	1.108	2.941	160
How doctor and nurse work together	-1.103	0.115	1.185	2.891	160

According to the table above, it can be seen that the values of skewness and kurtosis are all in the range of +2 to -2, which indicates that the data is normal. According to the average scores obtained, it is clear that nurses have a relatively high mental workload and moderate professional performance.

Table 3: Relationship of some demographic characteristics with the average performance score of nurses' professions

Statistical indicators	Standard deviation	average score	Number	Groups	Variable
t = 1.887 Sig = 0.062	0.439	3.012	45	Man	Gender
	0.104	2.951	115	Female	
t = 2.303 Sig = 0.012	0.930	2.991	163	Single	marital status
	0.588	3.031	77	Married	
t = 1.374 Sig = 0.414	0.719	2.947	20	MA	education
	0.882	2.894	140	Bachelor	
F = 1.266 Sig = 0.287	0.538	2.831	52	Under 25 years	Age
	0.855	2.841	74	Between 25 and 30 years	
	1.185	2.751	34	More than 30 years	

Table (3) examined the relationship between some demographic characteristics and the mean score of nurses' professional performance. For the variables of gender, education, and marital status, we used a comparison test of two independent populations and for the variables of age, we used a one-way analysis of variance. It is observed that there is no significant relationship between gender, education,

and age with the professional performance of nurses.

Table 4: Relationship of some demographic characteristics with the average mental workload score

Statistical indicators	Standard deviation	average score	Number	Groups	Variable
t = 0.674 Sig = 0.412	5.139	79.39	45	Man	Gender
	5.139	78.36	115	Female	
t = 0.903 Sig = 0.112	4.412	79.21	163	Single	marital status
	3.394	80.41	77	Married	
t = 3.374 Sig = 0.004	4.121	82.71	20	MA	education
	4.121	79.44	140	Bachelor	
F = 1.444 Sig = 0.300	4.714	79.64	52	Under 25 years	Age
	5.124	78.65	74	Between 25 and 30 years	
	6.333	80.4	34	More than 30 years	

Table (4) examined the relationship between some demographic characteristics and the mean score of nurses' mental load. (For the variables of gender, education, and marital status, the test of comparison of two independent societies, for the variable of age, one-way analysis of variance was used). As shown in this table, at an error level of 0.05, only the educational status is related to the mental workload of nurses It was also observed that gender, education, and age had no significant relationship with mental workload score.

Table 5: Pearson correlation coefficient between mental workload and nurses' professional performance

nurses' professional performance	mental workload		Variable
-0/791	1	*correlation* coefficient	mental workload
0/000	-	significance level	
1	-0/791	***correlation***	nurses' professional

		coefficient	performance
-	0/000	significance level	

According to the above Pearson correlation coefficient (-0.791), it is observed that there is a negative relationship between mental workload and nurses' professional performance. The significance level of the above table (0.000) indicates the significance of this correlation coefficient at the error level of 5%. In general, the results confirm the relationship between mental workload and nurses' professional performance. That is, the mental workload and performance of nurses' professions are inversely related.(table 5)

Table 6: Investigating the relationship between mental needs and nurses' professional performance

How doctor and nurse work together	Control beyond performance	Nurse autonomy		Variable
-.552**	-.686**	-.213**	***correlation* coefficient**	Mental needs
.000	.000	.007	significance level	
-.602**	-.713**	-.161*	***correlation* coefficient**	Physical needs
.000	.000	.042	significance level	
-.587**	-.652**	-.212**	***correlation* coefficient**	Time **needs**
.000	.000	.007	significance level	
.596**	.708**	.127	***correlation* coefficient**	Performance
.000	.000	.110	significance level	
-.555**	-.699**	-.251**	***correlation* coefficient**	amount of effort
.000	.000	.001	significance level	
-.483**	-.623**	-.218**	***correlation* coefficient**	Level of disappointment

.000	.000	.006	significance level	

According to the Pearson correlation coefficient (-0.213), there is a significant negative relationship (0.007) between the mental needs and autonomy of the nurse. In general, the results confirm the relationship between mental needs and the autonomy of nurses. The results confirm the relationship between mental needs and the cooperation of physicians and nurses. The results of the table show that there is a relationship between physical needs, time needs, performance, effort, and level of frustration with nurses' professional performance.(table6)

Discussion:

The results showed that there is a significant negative relationship between mental workload and nurses' professional performance. Maleki et al. (2014) in their research showed that there is a significant positive relationship between structural empowerment and performance in the nursing profession (P <0.05). Also, the three subscales of structural empowerment, i.e. general empowerment, access to opportunity, and access to resources, we're able to explain 51.1% of the changes in the performance of the nursing profession. In this regard, Baethge et al. (2016) in their study entitled Nursing performance under high mental workload examined the effect of the mental workload of nurses on their performance. The results showed that nurses' mental workload had a significant effect on their performance (P <0.05).

Considering the level of significance, it was observed that the average mental needs are 75.84, The average response to physical needs is 79.53 and the average response to time needs is 77.91, the average response to performance is 77.23 and the average response to the effort is 82.86. The average response to frustration level is 83.01, which shows that the mental workload of nurses in Izeh and Bagh-e-Malek hospitals is in good condition**.**

It was also observed that the average response to nurse autonomy is 2.831, the average response to control over performance is 2.941 and the average response to the physician-patient cooperation index is 2.891, which shows that the professional performance of nurses in Izeh and Bagh-e-Malek hospitals is in good condition.

According to the Pearson correlation coefficient, it was observed that there is a significant negative relationship between mental workload and nurses' professional performance. Maleki et al. (2014) in their research confirmed a significant positive relationship between structural empowerment and performance of the nursing profession (P <0.05). Also, the three subscales of structural empowerment, i.e. general empowerment, access to opportunity, and access to resources, we're able to explain 51.1% of the changes in the performance of the nursing profession. In this regard, Baethge et al. (2016) in their study entitled Nursing performance under high mental workload examined the effect of the mental workload of nurses on their performance. The results showed that nurses' mental workload had a significant effect on their performance (P <0.05).

In the study of the relationship between demographic factors and the mean score of mental workload,

the results showed that education has a significant relationship with the mental workload of nurses. In line with the results of the study, Sarsangi et al. (2015) showed the mean mental workload (69.54 71 15.71). There was also a significant relationship between mental workload dimensions with age, type of contract, and shift work. However, there was no significant relationship between mental workload with history, working hours, gender, and service department (P <0.05). As shown in this study, there is a significant relationship between education and mental workload. Safari et al. (2013) showed that there was no significant relationship between contextual variables and mental load (0.431), but a significant direct relationship was found between the number of patients under each supervision in each shift and nurses' mental load score (05 / 0> P). Arqami et al. (2015) in their research showed that the total score of nurses' mental load has a significant relationship with age (0.001), work experience (0.001), shift work (0.02), and ward (0.001).

Conclusion: The results showed that there was a significant negative correlation between mental workload and nurses' professional performance There is also a significant relationship between nurses' professional performance and marital status Also, education has a significant relationship with nurses' mental workload Given that the questionnaire measures individuals' perceptions of reality, this perception may not be entirely consistent with reality. Due to the high mean score of mental workload in the nursing staff of this study, it is suggested that more attention be paid to planners and decision-makers in the field of nursing in order to reduce the fatigue of the heavy workload of this group. Considering that the time pressure of the three dimensions of the work process was also high in this study, the use of tools such as triage, which is used to classify and organize patients in this ward more quickly, could be one of the other suggested solutions. Familiarity of the staff of this department with teamwork through holding workshops and defining the job description of the staff working in this department will be effective in reducing the workload and reducing the feeling of failure of the nurses of this department.

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