

Mental Workload in Healthcare Providers and its Relationship to Job Boredom

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ABSTRACT

Background: Mental workload and job boredom proneness in female health care providers attenuate the quality of provided health cares. The relationship between mental workload and job boredom proneness in female health care providers at Ardabil-based health centers in 2019 were examined.

Methods: The study was carried out as an analytical cross-sectional study with 234 participants selected randomly. The participants were female health care providers working at 48 health centers. Data gathering tools were a demographics form, NASA TLX, and job boredom proneness questionnaire.

Results: The results showed that health care providers had a severe mental workload and moderate job boredom proneness. Mental workload increased job boredom proneness in terms of temporal demand aspect and decreased job boredom proneness in terms of performance aspect.

Conclusion: Mental workload aspects temporal demand that has to do with time pressure and performance that has to do with the satisfaction with performance prevented the intensification of job boredom proneness. Therefore, managers can control mental workload through creating a balance between personnel's work capacity and workload and increasing the number of female health care providers.

Keywords: mental workload, job boredom proneness, female healthcare providers

INTRODUCTION

Healthcare providers (HCPs) are experts in the health field and recruited by health centers to provide health care services to target groups like infants, children, teenagers, adults, elderly, and pregnant women. According to the World Health Organization (WHO), a healthy work environment is a place where workers and managers cooperate using a continuous improvement process to preserve and improve health, safety and welfare of the personnel¹. Several studies have been conducted on mental workload health care providers. Their results have shown that HCPs have been under severe work pressures like tight schedule, low social support at work, heavy workload, and dealing with numerous clients^{2,3,4}. Health care providers are under considerable work pressure and this causes severe anxiety, burnout, and physical and mental diseases^{5,6,7}. Mental workload (MWL) is one of the main issues of ergonomics and engineering of humanistic factors. The new technologies have enabled individuals to have less physical activity, while people at work deal with tasks of high cognitive demand. Therefore, it is essential to perceive how MWL affects performance⁸. The workload is defined as the total load of work that an individual or a group of individuals needs to handle in a specific time frame. The general concept of workload has to do with the mental capabilities of an individual who receives and processes information and makes a decision or takes an action afterwards⁹. The workload is not limited to physical tasks and encompasses cognitive tasks as well. The evaluation of the workload experienced by (HCPs) is highly essential. It is notable that stress can affect how the excessive workload is managed¹⁰. Heavy workload

degrades occupational satisfaction, lowers motivation, and decreases capability not to mention the negative effects on communications performance. These negative consequences have an indirect effect on employees' performance¹¹. Park (2013) studied nursing and showed that work accidents and MWL might increase the probability of cognitive failures¹². To measure physical or mental workload pilots, the NASA TLX index was designed and what makes it popular in research areas is that it is an easy tool to administer. Comparing to other techniques to rank MWL, NASA TLX yields more accurate analyses¹³.

Job boredom is defined as relatively constant feelings caused by lack of interest or obstacles to concentrate on tasks at hand. Such feelings make the individual to have extensive intentional attempts to concentrate on the task¹⁴. On the main outcomes of job boredom proneness (JBP) are attention problems¹⁵. With experience job boredom, individuals start to complain about inability to concentrate on tasks and that they have to try harder to stay concentrated. A key factor in JBP is the attempt to stay concentrated¹⁶. Researchers like Kass et al. Have found a significant relationship between JBP and cognitive failure, which is defined as one's failure to handle the tasks that they can easily handle in a normal condition. Cognitive failure encompasses perception, memory, and performance disorders¹⁷. Teixeira (2013) showed that 77% of workers had a high level of job burnout¹⁸. Portuguese et al. Indicated that job burnout in health care providers is coincident with relative inefficiency at work and low job satisfaction. It is essential to find the organizational stresses that affect job burnout and then introduce solutions to prevent or attenuate them¹⁹. Job burnout in the

HCPs is a key factor affecting the quality of services so that it lowers the quality of health care and safety provided to the clients. Studies have highlighted the importance of job burnout intervention for HCPs²⁰.

Several studies have been conducted on JBP and MWL, while there is a paucity of studies on the relationship between MWL and job boredom in female HCPs (FHCPs). Therefore, the present study is an attempt to survey the relationship of the aspects of MWL and JBP in FHCPs working in Ardabil-based health centers in 2019.

MATERIALS AND METHODS

The study was carried out as an analytical and cross-sectional study on FHCPs working in Ardabil-based health centers in 2019. The inclusion criteria were FHCPs working in health centers and interest in participation; the only exclusion criterion was having psychoneurological disorders. There were 600 FHCPs in Ardabil city (there were a few male HCPs so that they were excluded). Using Cochran's formula, 234 individuals were selected randomly out of 48 health care centers in the city. Hard copies of the questionnaires were distributed among 243 FHCPs and recollected in two weeks. Three questionnaires were used in the study. The demographics form included age, gender, work record and BMI.

NASA Task Load Index (NASA TLX): This tool measures WML with an acceptable sensitivity and it has an acceptable validity²¹. Validity and reliability of the tool were measured and supported by Mohammadi et al in Iranian language. (2011)²². The NASA TLX is a multi-aspect index including mental demand, physical demand, temporal demand, performance, effort, and frustration at work that are measured on a scale from 0 to 100. Mental demand has to do with perceptual activities like thinking, decision making, computing, memorizing, and searching. The physical demand has to do with physical works like pushing, pulling, controlling, and doing other physical activities. The temporal demand is about time pressure and performance has to do with satisfaction with performance. The effort deals with the energy used for doing an activity and frustration has to do with feeling unsafe, disappointed, stressed, and sad²³.

Job boredom proneness questionnaire: Designed by Vodanovich, the questionnaire contains 28 seven-alternative questions (1=completely disagree, 2= relatively disagree, 3=disagree, 4= no idea, 5= agree, 6 = relatively agree, and 7 = completely agree). Total score ranges from 28 to 196 and score range 28-56 is interpreted as low job boredom and 56-113 as moderate job boredom. Scores above 113 are interpreted as high job boredom²⁴⁻²⁹. Internal

consistency of the questionnaire was measured and supported by Davis, Watt, and Vodanovich among many^{30,31,32}. Reliability and validity of the questionnaire were supported by Naami et al. (2011)³³. The validity of the relationship between this questionnaire and job satisfaction questionnaire was measured by Spector et al. And it was at a significant level³⁴.

Data analyses were done in SPSS19 and the mean scores of the qualitative variables were measured using independent t-test. One-way ANOVA was used with normal variables and Kruskal Wallis test was used with non-normal variables. The relationship between quantitative variables was examined using Pearson's Correlation and the relationship between qualitative variables was examined using a chi Squared test. The effect of different aspects of MWL on JBP was measured using multiple linear regression.

Research Ethics Certificate taken from Ardabil University of Medical Sciences. This study complies with all regulations and confirmed that informed consent was obtained.

RESULTS

The mean age of 234 FHCPs was 34±6 years and the mean work records were 8±7 years. In addition, 75% of the participants had a bachelor's degree. The mean score of total MWL was 72±16 and as to the aspects, performance and effort with a mean score of 76 and physical demand with a mean score of 47 were the highest and lowest scores. The mean score of JBP was 105±16, which is interpreted as a moderate level JBP (Table 1). There was an inverse and significant relationship between JBP and MWL in terms of performance and a direct and significant relationship between them in terms of temporal demand (Table 2). In addition, temporal demand and performance aspects of MWL increased JBP; physical demand of MWL increased mental demand; temporal demand of MWL increased mental demand and physical demand; performance of MWL increased physical demand; the effort of MWL increased mental demand, physical demand, and temporal demand; and the frustration of MWL increased temporal demand and effort (Table 3). The JBP was significantly related to education and work record so that workers with lower education had a higher JBP. In addition, participants with work record of 5-15 years had a higher JBP (Table 4). The individuals with higher JBP had a higher BMI than others so that an increase in BMI increased JBP. This relationship was not significantly with age, work record, and the aspects of MWL (Table 5).

Table 1: Demographic information, JBP and MWL

Variables	Mean	Std. Deviation	Minimum	Maximum
Age	34.81	6.038	25	61
Work record	8.54	7.08	1	28
BMI	26.50	3.91	19.84	37.50
Job boredom proneness	105.09	16.11	66	148
Mental Demand	70.67	26.62	10	100
Physical Demand	47.04	27.61	10	100
Temporal Demand	72.33	28.29	10	100
Performance	76.58	21.02	10	100
Effort	76.00	24.64	10	100
Frustration	73.13	29.35	10	100

Total	72.18	16.58	28.66	100
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Table 2: The relationship between the dimensions of MWL and JBP

Variables	B	Beta	t	P-value
Total	0.062	0.063	0.958	0.339
Frustration	-0.008	-0.015	-0.228	0.820
Effort	0.038	0.058	0.885	0.377
Performance	0.118	0.155	2.387	0.018
Temporal Demand	0.112	0.194	3.019	0.003
Physical Demand	0.046	0.078	1.194	0.234
Mental Demand	0.045	0.074	1.124	0.262

Table 3: The relationship between the dimensions of MWL and JBP

Variables	Job boredom proneness	Mental Demand	Physical Demand	Temporal Demand	Performance	Effort	Frustration
Job boredom proneness	1	0.074	0.078	0.194**	-0.155*	0.058	-0.015
Mental Demand		1	0.417**	0.485**	-0.026	0.290**	0.113
Physical Demand			1	0.302**	0.146*	0.236**	0.101
Temporal Demand				1	-0.007	0.402**	0.315**
Performance					1	-0.025	-0.015
Effort						1	0.249**
Frustration							1

Table 4: Relationship between Age, Education, job experience and JBP

Variables	N	Mean	Std	P-value
Age	<30	66	103.18	0.56
	30-40	126	105.44	
	>40	42	106.19	
Education	Diploma	14	118.14	0.001 nonparametric
	High Diploma	24	101.50	
	College/ University	176	103.08	
	High College/ University	20	116.20	
Work record	<5	96	102.42	0.049
	5-15	84	108.26	
	>15	52	103.65	

Table 5: The relationship between Age, Job Experience, BMI and MWL dimensions with the level of JBP

Variables	Total	Medium	High	P-value
Age	34.81(6.03)	34.89(5.5)	34.28(7.35)	0.66
Work record	8.54(7.08)	8.55(6.92)	9.03(7.71)	0.65
BMI	26.50(3.91)	26.27(3.89)	27.45(3.93)	0.046
Mental Demand	70.67(26.62)	71.02(26.9)	70.34(26.42)	0.867
Physical Demand	47.04(27.61)	48.81(27.66)	42.76(27.89)	0.151
Temporal Demand	72.33(28.29)	71.31(30.13)	76.38(21.63)	0.237
Performance	76.58(21.2)	76.82(20.89)	75.52(22.41)	0.687
Effort	76.00(24.64)	77.67(23.21)	71.55(28.22)	0.101
Frustration	73.13(29.35)	73.92(29.48)	69.66(29.34)	0.340
Total	72.18(16.58)	72.74(17.05)	70.83(14.88)	0.445

DISCUSSION

The relationship between the aspects of MWL and JBP in FHCPs working in health centers was examined. The total mean MWL was 72±16 and in terms of the aspect, performance and effort had the highest score and physical demand had the lowest score. Therefore, the subjects had a severely high MWL level as they dealt with a variety of tasks and workload levels. This finding is consistent with Soewardi and Carayon^{35,36}. Rafiee et al. Measured MWL

uses NASA TLX and consistent with our findings, they reported a high MWL in their subjects³⁵. In addition, Boultinghouse et al. (2007) studied job satisfaction and MWL and found that MWL score was high³⁶. The level of JBP in the study was at a moderate level and temporal demand and performance aspects of MWL increased JBP in the subjects. Asgari et al. (2016) showed that workload increased job burnout and emotional burnout in particular³⁷. Beheshti et al. (2014) reported that there was no significant relationship between job satisfaction and workload and

general health; still, there was a significant relationship between the elements of the workload and job satisfaction³⁸. Portoghese et al. [2014] reported that there was a significant relationship between workload and job burnout in hospital personnel³⁹. In addition, Zakerian et al. (2013) reported that workload was effective in the quality of life and job satisfaction⁴⁰.

The JBP was significantly related to demographic variables education and work record so that the workers with lower education levels had a higher JBP. In addition, workers with 5-15 years of work record had a higher JBP. Lee et al. (2019) argued that JBP was a predictor of depression and stress in adults. The results showed JBP was significantly related to demographic variables like low age, low education level, and unemployment. In addition, they noted that JBP was not significantly related to gender, marital status, and meditation practices⁴¹.

As the results showed, an increase in BMI increased JBNP. Bakhshi et al. (2014) reported that physical demand aspect was significantly related to work record, age; temporal pressure was significantly related to BMI and work record; and an effort was significantly related to BMI³⁸.

The MWL was higher in the subjects in terms of the aspects mental demand, temporal demand, performance, effort, and frustration. High MWL in HCPs due to high workload is rooted in the large number of clients and high diversity of the tasks (e.g. Infant vaccination, pregnancy care, hypertension and diabetes screening, elderly care, and health education). A study by Grace et al. (2019) showed that job burnout was high among the workers, which was due to high work demand, irregular work hours, and high work pressure⁴².

Here, temporal demand of MWL increased JBP and performance of MWL decreased JBP. Schaufeli et al. (2014) showed that boredom usually is rooted in monotone work, workload, poor utilization of skills, and absence of meaning⁴³. According to job demand-resources theory, the difference between job demands and available resources affects the well-being of the practitioners. An increase in job demands leads to burnout and an increase in job resources improves organizational output. Therefore, boredom and fatigue are expected when the both demand and resource are less than enough⁴⁴.

The workload is one of the main elements in providing services in a health system so that it plays a detrimental role in emotional burnout, depersonalization, and job burnout³⁷. Sa'nchez Cardona et al. (2019) surveyed the effect of a meaningful job on attenuating job boredom in Spain and argued that organizations need to create opportunities for employees to find a meaning in their job⁴⁵. There was a significant relationship between workload and job burnout as this relationship was stronger when the job control is low. Workload plays a key role in the improvement of work condition. Advances and achievements in organizational management have improved job control so that workers have more resources and this lowers the risk of burnout³⁹.

Although, our findings supported the proposed hypotheses, the study is not free of limitations and future studies with a larger sample group including male HCPs are needed.

CONCLUSION

A decrease in the temporal demand aspect of MWL, which has to do with organizational pressures, and an increase in the performance aspect of MWL, which has to do with performance satisfaction can prevent intensification of JBP. In general, a decrease in MWL experienced by the individual can control JBP notably and prevent the side-effects of job burnout in long-run. In addition, through decreasing stress, increasing work satisfaction, improving work environment, providing welfare services, creating motivation, and utilizing novel management techniques, it is possible to delay JBL and improve the quality of provided services to clients. In conclusion, managers can lower MWL of the employees through creating a balance between workload capacity and workload and increasing the number of available staff.

Conflicts of interest: None of the authors have any conflict of interest associated with this manuscript.

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