Comparison of Job Stress Dimensions in Iranian Nurses with Those from other Countries Based on the Demand-Control-Support Model

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Abstract

Background: Evidence shows that job stress potentially has adverse effect on individuals' health and organizational productivity. It has, therefore, become an important issue in the occupational health context. The aims of this study were to investigate job stress dimensions among nurses of Shiraz University of Medical Sciences (SUMS) hospitals and comparing the results with the findings of the previous studies conducted in other countries.

Methods: In this cross-sectional study, 385 randomly selected nurses of SUMS participated. The Persian version of Job Content Questionnaire (P-JCQ) and demographic questionnaire were used for data collection. The linguistic validity and psychometric properties of P-JCQ have been assessed and approved in a previous study. One sample t-test was used to examine the differences between means of job stress dimension scores of the present and those of the previous studies carried out in other countries.

Results: The means (SD) of decision latitude, psychological job demands, social support, physical job demands and job insecurity were found to be 58.15 (6.50), 38.19 (5.14), 22.67 (3.67), 16.03 (2.58), and 7.74 (3.85), respectively. The results revealed that decision latitude and social support dimensions were in a low level among the study subjects. In contrast, psychological job demand, physical job demand, and job insecurity dimensions were shown to be in a high level.

Conclusion: The SUMS hospital environment collectively imposes higher job stress on the nurses as compared to that of other countries. To prevent harmful effects of job stress on the nurses' health and job performance, developing macro-ergonomic strategies in this working environment, such as enhancing job control, reducing job demands, and providing supportive climate, seem necessary.

Introduction

With development of globalization, enhancing competition, more mobility between nations, and changing conditions of employment, stress has become an important occupational health problem and a major cause of economics loss.[1-2]

In recent decades, the costs of work-related chronic diseases have been growing. Such diseases are believed to be related to job stress in the workplace.[3] A study in the USA has found that 13% of the disability in labor is associated with job stress.[4]

Many studies have been conducted to examine the relationship between job stress and its consequences in the health sector.[5] In these studies, issues such as productivity, occupational accidents, absenteeism and increasing physical and mental disorders in different occupational groups have been investigated.[5] Among various occupational groups, health care workers, particularly those working in the hospital environment, experience higher job stress.[6] In health care jobs, research has shown that nursing is a high risk occupation for developing fatigue and chronic diseases.[5,7,8]

Studies have indicated that job stress may cause a number of somatic and mental disorders among nurses. Furthermore, nurses' job turnover associated with high job stress decreases the quality of health care services.[9]

A common method for assessing job stress dimensions is the Demand-Control-Social support Model (DCSM) developed by Karasek et al.[2,3,10] In this model, fatigue and disorders are caused by the interaction between high psychological demand and low control over the job.[5] The Job Content Questionnaire (JCQ) which is developed based on DCSM has been widely used to measure social and psychological structure of the working conditions.[11] The core scales of the JCQ consist of 3 elements including decision latitude, psychological job demand, and social support. In DCSM, according to the interaction between demand and control, 4 conditions including high strain (high demand and low control), low strain (low demand and high control), passive job (low demand and control), and active job (high demand and control) are experienced.[5] A number of studies have indicated that high psychological job demand and low decision latitude together with low social support would increase job stress and consequently the occurrence of adverse health outcomes among the workforce.[1,12-16] For instance, the findings of some studies indicated that job strain increased the risk of insomnia,[13] and low social support was associated with mental disorders.[14,15] These results suggest that higher social support reduces job stress, increases job satisfaction and prevents insomnia, depression and anxiety and may serve as a protective factor against workplace stressors.[15]

Given the above mentioned points, since a few studies have been conducted on job stress among Iranian nurses using DCSM, the present study was carried out on this population with the following objectives:

- To investigate job stress dimensions in the SUMS hospitals nurses

- To compare the results of this study with the findings of the previous studies from other countries

It is believed that the results of this study can provide a basis for planning macro-ergonomics interventional programs in the hospitals and improving nurses' health, performance and quality of healthcare services in the SUMS hospitals.

Methods

In this cross-sectional study conducted from August 2011 to March 2012 in 14 educational hospitals affiliated to SUMS, data were collected via anonymous self-administered questionnaires.

1. Study population

A random sample of 385 nurses (about 20% of all nurses employed in 14 SUMS hospitals) with at least one year of job tenure participated in this study. Systematic random sampling method was used to select the subjects from the corresponding personnel list of all hospitals. All subjects voluntarily participated in the study after receiving written information about the aims and protocol of the research. Additionally, the study was conducted in accordance with the Helsinki Declaration of 1964 as revised in 2008.[17] All participants signed an informed written consent before the commencement of the study. The research protocol was reviewed and approved by the ethics committee of SUMS.

2. Data collection

Questionnaires used to collect the required data were as follows:

- Demographic questionnaire

This questionnaire consisted of items about age, job tenure, gender, marital status, education, second job and work schedule.

- Job Content Questionnaire (JCQ)

The JCQ was used to measure job stress dimensions.

As the questionnaire was intended to be used in the occupational health content, 30 relevant items, covering the core set of items, were selected from the full version of the JCQ.[18] They included decision latitude (9 items), psychological job demand (5 items), social support (8 items), physical job demand (5 items) and job insecurity (3 items). Items were in Persian language and their linguistic validity and psychometric properties were assessed and approved in Choobineh et al.'s study, reporting Cronbach's alpha coefficients for different scales and sub-scales to be 0.54 to 0.85.[19] Each item was scored based on a four-point scale ranging from 1(strongly disagree or never) to 4 (strongly agree or often). The scale calculations

were performed in accordance to the "JCQ User's Guide".[18]

Statistical analyses were performed using SPSS software, version 11.5. One sample t-test was used to examine the differences between mean scores of job stress dimensions of the present study and those of the previous ones. The level of significance was set at 0.05.

Results

Table 1 summarizes the demographic characteristics and working conditions of the nurses participating in the study. The mean scores for each P-JCQ scale and subscale are shown in table 2. The minimum and the maximum attainable scores for each scale and subscale are also presented for comparison. In this table, lower scores in decision latitude (control) and social support dimensions indicate higher stress. On the contrary, higher scores in psychological and physical job demands as well as job insecurity dimensions show higher stress. As shown in this table, mean scores of control support are low while those of psychological and physical job demands and job insecurity are high among the nurses.

These findings indicate that the subjects are exposed to relatively high levels of job stress.

Table 3 demonstrates means and standard deviations of job stress dimensions among the present study subjects as well as those of nurses in other countries. It is to be noted that in the previous studies all job stress dimensions and their subscales have not been examined.

Discussion

The study population was relatively young (32.10±7.30 years) with a mean job tenure of 8.40±7.03 years. The majority of the participants were female (81.8%), married (60.5%) with BSc. or higher education (91.4%) and worked in shift schedule (81.6%).

The results revealed that decision latitude scale and its subscales (i.e. skill discretion and decision authority) were low among the subjects, showing that decisions about how to do or handle the job were not performed by the individuals. This situation might increase job stress in the nurses.[4,11] Additionally, the results demonstrated that the subjects experienced high levels of psychological demand which could result

Table 1: Demographic characteristics of the nurses studied (n=385)

Age (year)	Mean (SD)	32.10 (7.30)
	Min-Max	22-56
Job tenure (year)	Mean (SD)	8.40 (7.03)
	Min-Max	1-29
Sex	Female	81.8%
	Male	18.2%
Marital status	Single	39.5%
	Married	60.5%
Education	Associate's diploma	8.6%
	BSc.	90.1%
	MSc.	1.3%
Second job	Yes	3.4%
	No	96.6%
Work schedule	Shift working	81.6%
	Day working	18.4%

Table 2: Mean scores of the job content questionnare scales in the nurses studied (n=385)

Job stress dimensions (n=items in each dimension)	Score		
	M (SD)	Min-Max	Min-Max attainable[*]
Decision latitude (n=9)	58.18 (6.50)	40-86	24-96
Skill Discretion (n=6)	27.38 (3.32)	16-40	12-48
Decision Authority (n=3)	30.77 (4.68)	20-48	12-48
Psychological Job Demand (n=5)	38.19 (5.14)	26-48	12-48
Social support (n=8)	22.67 (3.67)	13-40	8-48
Coworkers Support (n=4)	11.56 (1.54)	6-16	4-16
Supervisor Support (n=4)	11.10 (2.91)	4-28	4-32
Physical Job Demand (n=5)	16.03 (2.58)	10-20	5-20
Physical Effort (n=3)	9.54 (1.68)	4-12	3-12
Physical Isometric Load (n=2)	6.49 (1.26)	4-8	2-8
Job Insecurity (n=3)	7.74 (3.85)	3-17	3-17

[*]Based on the job content questionnaire user's guide[18]

Table 3: Means (SD) of job stress dimensions among the subjects of the present and the previous studies

Country (occupational group)	Job stress dimensions								
	Skill Discretion	Decision Authority	Decision Latitude	Psychological Job Demand	Coworker Support	Supervisor Support	Social Support	Physical Job Demand	Job Insecurity
	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)
Iran (nurses) (present study) (n=385)	27.38 (3.32)	30.77 (4.68)	58.15 (6.50)	38.19 (5.14)	11.56 (1.54)	11.10 (2.91)	22.67 (3.67)	16.03 (2.58)	7.74 (3.85)
Iran (nurses)[19†] (n=107)	33.7 (5.0)	30.5 (4.3)	64.2 (7.3)	*	11.2 (2.0)	10.6 (2.9)	21.7 (4.1)	*	*
Canada (nurses)[20†] (n=34)	32.7 (4.5)	33.7 (4.6)	66.4 (8.1)	31.8 (4.6)	*	*	*	*	*
Canada (nurse aides)[20†] (n=64)	33.4 (4.2)	30.2 (5.6)	63.6 (7.7)	34.7 (5.8)	*	*	*	*	*
Japan (nurses)[21†] (n=301)	*	*	68.88 (6.91)	37.35 (4.81)	12.24 (1.99)	12.57 (2.10)	*	*	*
South Korea (nurses)[22†] (n=338)	32.1 (3.9)	28.5 (5.3)	60.6 (7.8)	36.9 (4.0)	12.0 (1.1)	11.3 (1.7)	23.3 (2.3)	*	8.2 (4.1)
China (nurses)[1†] (n=369)	32.02 (4.11)	28.82 (6.22)	60.84 (9.16)	34.05 (4.36)	11.99 (1.35)	10.61 (2.12)	22.59 (2.94)	*	*
China (health care workers)[1†] (n=774)	33.03 (4.25)	29.81 (6.29)	62.84 (9.11)	33.66 (4.39)	11.84 (1.45)	10.55 (2.14)	22.39 (3.08)	*	*
Taiwan (nurses)[9†] (n=373)	*	*	62.12 (8.41)	35.71 (4.89)	*	*	22.61 (3.40)	*	*
Taiwan (nurses)[23†] (n=408)	33.5 (4.0)	33.5 (5.2)	66.9 (7.7)	32.9 (4.6)	12.3 (1.7)	11.3 (2.2)	23.7 (3.3)	*	*
Colombia (nurses)[24†] (n=294)	37.3 (4.9)	33.3 (6.4)	70.6 (9.8)	34.0 (3.7)	12.0 (2.0)	10.9 (2.4)	22.9 (3.5)	*	7.0 (2.3)

*No data available; †Reference number

in high level of job stress. Furthermore, social support scale and its subscales (i.e. coworkers and supervisor supports) were low in the study population. This could increase job stress level among the subjects.[4,11]

Based on the results, the level of physical job demand was high. This might enhance the risk of physical disorders (i.e. musculoskeletal disorders) among the subjects.[4,11,16] Job insecurity dimension had also high levels in this study population. Research has revealed that in high job insecurity situation, an employee is seeking for a solution to leave his/her job and find a better, permanent job.[4,9,11] Studies have shown that in this high stress condition, the risk of psychological disorders increases.[4,11,25]

According to DCSM, most of the nurses were categorized in high strain condition (i.e. high demand, low control and low support) which was considered as the worst macro-ergonomic condition. This indicated that the subjects were encountering high levels of job stress and increased risk of psychological and physical disorders.[4,9,11,25]

In the following paragraphs, job stress dimensions in the study population are discussed in comparison with those of the previous studies.

- *Decision latitude (control)*

The mean score of decision latitude dimension in the study population (58.15±6.5) was significantly lower than that of Chinese nurses and health care workers,[1] Taiwanese nurses,[9,23] Choobineh et al.'s subjects,[19] Canadian nurses and auxiliary nurses,[20] Japanese nurses,[21] and South Korean nurses[22] (P<0.05). Based on this comparison, it can be concluded that in the present study, the nurses' control over their jobs is totally lower than that of those working in other countries.

- *Psychological job demand*

The mean score of psychological job demand dimension in the nurses studied (38.19±5.14) was higher than the score obtained in the other studies.[1,9,20-24] This indicated higher psychological job demand and subsequently higher job stress in the study population as compared to nurses from other countries.

- *Social support*

The mean score of social support dimension in the study population (22.67±3.67) was significantly lower than that of South Korean nurses,[22] but higher than that of Choobineh et al.'s subjects[19] (P<0.05). The mean score of this dimension in the study population was not significantly different from that of Chinese nurses and health care workers,[1] Taiwanese[23] and Colombian nurses.[25] Based on these findings, it can be indicated that social support in the population of this study is in an intermediate level as compared to nurses from other countries.

- *Physical job demand*

The mean score of physical job demand dimension in the study population (16.03±2.58) was evaluated to be high since it was nearly equal to 80% of the maximum attainable score (20.00). As there was no

available data for the score of this dimension in other studies, no comparison was made for this dimension.

- Job insecurity

The mean score of job insecurity dimension in the SUMS hospital nurses (7.74±3.85) was significantly lower than that of South Korean nurses,[22] but it was higher than that of Colombian nurses[24] (P<0.05). Based on these findings, it can be stated that job insecurity in the study population is in an intermediate level as compared to nurses from other countries.

Since the analysis was limited to currently employed nurses, those who had left their jobs due to job stress could have been excluded from the study and healthy worker effect might occur. Thus, the data may underestimate the problem of job stress. Furthermore, due to the large number and variety of the hospital wards in which the study was carried out, the findings could not be generalized to each single ward.

Conclusion

Based on the results, the nurses studied experienced relatively low control, high job demand, and low social support. In accordance to DCSM, it is a relative high job stress situation in which the occurrence of psychological and physical disorders can be expected.
In conclusion, the SUMS hospital environment collectively imposes higher job stress on the nurses as compared to other countries. To prevent harmful effects of job stress on the nurses' health and job performance, developing macro-ergonomic strategies in this working environment such as enhancing job control, reducing job demands, and providing supportive climate seem necessary.

Acknowledgments

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