Work-related Factors of Chronic Low Back Pain among Nurses Working in Tehran Hospitals

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Abstract

Aim: The objective of this study was to determine the relationship between chronic mechanical low back pain and work-related risky behaviors of nurses at hospitals in Tehran.

Methods: In order to determine the relationship between chronic mechanical low back pain and work-related risky behaviors of nurses, a cross-sectional was conducted among nurses in general hospitals in Tehran- Iran from April 17, 2014 to July 16, 2014. Five hundred eligible nurses, who were working in the different wards of under study hospitals, were included in this study. A researcher- designed 50 - item questionnaire was used to collect data. The Cronbach's alpha coefficient (alpha=0.91), and test-retest evaluation (ICC=0.94) of the scale confirmed reliability of the questionnaire. Data were analyzed using SPSS.v16 through descriptive and analytic tests. P-value < 0.05 was considered significant in both analyses.

Findings: In total, five hundred nurses with mean age of 37.71+ 6.75 years took part in the study. 168 nurses (33.6%) were male and 332 nurses were (64.4%) female. The majority of nurses who were working more than 15 years (75%) were suffering from low back pain. Low back pain was more prevalent among female nurses (68%) compared to male nurses (32%). Most participants believed that excessive physical tension and hard work at their worksite were the causes of their chronic low back pain. There were no significant differences between two genders in this regard (P>0.5). In contrast with men, the majority of females (N= 222, 66.8%) believed that psychological tensions at work have been the reasons for their chronic low back pain.

Conclusion: Iranian nurses believed that work – related physical and psychosocial factors could result in low back pain.

Keywords: Low Back Pain, Nurses, Work-related factor, Hospital, Iran

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Introduction

Chronic Low back pain (cLBP) is one of the most prevalent musculoskeletal problems. It affects almost everyone during their lifetime and has become a major socioeconomic problem in western countries [1]. It is reported that the 80% of individuals, at least once, experienced low back pain (LBP) in their lifetime [2]. Some research in Iran has shown that more than half of the Iranian nurses suffer from low back pain [3, 4].

The epidemiological studies provide evidence that the prevalence of cLBP and disability has been increased and accounts for approximately 29 - 70% of all disorders in nurses and other health care workers [5, 6]. According to a study, 91% of work related low back pain were shown among physiotherapists [7] and the lifetime prevalence of LBP was found to be slightly higher - varying between 56% and 90- among nurses [8, 9]

Low back pain is a well-recognized cause of morbidity in the industrialized world, where several studies [9, 10] have reported the occurrence of LBP in general population and occupational settings [11, 12]. LBP is a common cause of morbidity in health care workers. Nurses are among the occupational groups within the health service that are vulnerable to LBP [13].

According to Cesena and colleagues [14], mechanical hazards in the hospitals include LBP, from manual lifting (patients in particular), which makes nursing as one of the occupations most affected by LBP. Describing the extent of musculoskeletal injury among nurses, the surveys showed that nurses lost 750,000 days a year as a result of back pain [15].

Previous researchers [13] stated that LBP is the most common cause of early retirement on ground of ill health, sickness absence, job changes and a fall in the work speed among the working population. In addition to individual and psychosocial variables such as age, gender, physical status, smoking and workplace stress [16, 17] ,main ergonomic factors that endanger nurses to develop LBP include awkward postures, carrying and repositioning patients, prolonged standing, and working without sufficient breaks [9, 18].

Most popular strategies in management and prevention of LBP in healthcare facilities focus on work-related interventions, which often include ergonomic interventions and also exercise; however, the role of psychosocial factors, has not been fully highlighted in preventive measures [19] Nurses who work in developed countries often participate in periodic regular health inspections and are being assessed in terms of occupational safety and health. In developing countries, access to such services is often overlooked probably because of low economic resources [20-22]. It seems that Iran is in the latter group. In

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developing nations, nurses are required to lift and transport patients or equipment's in a very challenging context, where lifting aids are always not available or even faulty. Therefore this study aimed to explore work-related factors of chronic low back pain among nurses, who were working in Tehran hospitals.

Material and method

This cross-sectional study was designed and conducted to determine the relationship between chronic mechanical low back pain and work-related risky behaviors of nurses, who working in Tehran hospitals, from April 17, 2014 to July 16, 2014.

In all, 500 eligible nurses, who were working in Tehran hospitals, agreed to take part into this study. First, 10 hospitals were randomly selected in different geographical regions of Tehran. Then, from each hospital fifty eligible nurses, who were working in different wards, were randomly selected. The inclusion criteria included being volunteer to take part in the study, being 18 year old or more, suffering from chronic low back pain for more than 90 days. However, nurses who had spine surgery within the past 2 years and suffering from diseases such as neck pain, congenital abnormalities of the spine, back pain, inflammation and tumors of the spine, being pregnant and getting as well as those who incompletely completed research questionnaire were excluded from the study.

Statistical analysis was performed using SPSS 16 (SPSS Inc., USA). Chi square was used to determine the association between independent variables and chronic low back pain risky behaviors.

The questionnaire consisted of two sections. Section one was specified for personal and demographic characteristics. The second section included questions about LBP and some work –related factors. These factors included excessive physical tension /hard work at worksite, excessive psychological tension at worksite and excessive social tension at worksite. The demographic questions dealt with socio-economic characteristics, employment/working status, lower back pain characteristics, and healthy preventive behaviors due to back pain.

Administration of the instrument

The investigators administered the questionnaires to 500 nurses, who volunteered to participate in the study. The questionnaires were retrieved as soon as they were fully completed.

Data analysis

The coded responses on the questionnaire were then entered on the computer general purpose coding forms. They were analyzed using Statistical Package for the Social Sciences (SPSS) (Windows Version 16.0 Chicago IL,

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USA). The results were presented with the use of simple percentage (%) to show the distribution of the variables, mean and standard deviation (SD) to show the mean score of the variables. Chi square (X2) was used to determine the association between nonparametric variables. A probability level of 0.05 or less was considered statistically significance.

Results

In total, 500 nurses, who were suffering from chronic low back pain with mean age of 37.71+ 6.75 years, took part in this study. 332 (66.4%) of them were female with mean age of 28-38 year old and 168(33.6%) were male with mean age of 28-38 year old. Table 1 shows the other demographic characteristics of the participants.

Table 1: Descriptive statistics on general characteristics of study participants (n=500)

	Female		Male		Total	
Socio-demographic factors	**N**	**(%)**	**N**	**(%)**	**N (%)**	***p* value* (χ^2)**
Age (years)						
18-28	29	56.9	22	43.1	51(10.2)	0.308
28-38	149	64.8	81	35.2	230(46)	
38-48	143	74.9	48	25.1	191(38.2)	
48-58	11	42.3	15	57.7	26(5.2)	
≥58	0	0	2	100	2 (0.4)	
Education						
Bachelor' Degree	213	77.7	61	22.3	274(54.8)	<0.001
Associate's Degree	53	54.6	44	45.4	97(19.4)	
Diploma Degree	66	51.2	63	48.8	129(25.8)	
BMI**						
Underweight	12	80	3	20	15(3)	0.025
Normal	157	62.8	93	37.2	250(52)	
Overweight	124	66	64	34	188(37.6)	
Overweight 1	29	78.4	8	21.6	37(7.4)	
Overweight 2	5	100	0	0	0(0)	
Overweight 3	4	100	0	0	0(0)	
Exercise/Games activities						
Yes	50	66.7	25	33.3	75(15)	0.05
No	282	66.4	143	33.6	425(85)	
Total work experience (years*)*						
≤ 5	70	61.4	44	36.6	114(22.8)	0.314
5-10	104	66.2	53	33.8	157(31.4)	
10-15	144	72.7	54	27.3	198(39.6)	
≥10	14	45.2	17	54.8	31(6.2)	
Duration of CLBP						
≤ 5	253	68.5	117	31.6	370(74)	0.018
5-10	69	64.5	38	35.5	**107(21.4)**	
10-15	10	43.5	13	56.5	**23(4.6)**	
LBP with Sciatica						
Yes	90	73	33	26.8	123(24.6)	**0.016**
No	242	64.2	135	35.8	377(75.4)	
Treatment for LBP						
Yes	99	70.3	42	29.8	141(28.2)	**0.045**
No	233	64.9	126	35.1	359(71.8)	
Educated for LBP prevention						
Yes	79	64.2	44	35.8	123(24.6)	0.272
No	251	66.9	124	33.1	375((75.4)	

*χ^2 test for the difference between sex categories; Significant at $p<0.05$
**Underweight from 16.5 to 18.5; Average of 18.5 to 25; Weight gain of 25 to 30;Obesity class 1 to 35 of 30; Obesity class 2 from 35 to 40; Obesity class 3 40

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Studied participants' beliefs regarding work-related factors that contribute to the occurrence of CLBP are shown in Table 2. As it is shown in table 2, the majority of studied female and male nurses believed that the excessive physical tension or hard work at their worksite was the cause of their CLBP. There were no significant differences between two genders in this regard (P= 0.258).Moreover, 66.8% of female nurses (n= 222) believed that psychological tensions at work had been the reasons for their CLBP. However the minority of men expressed psychological forces at work as the reason of their LBP. There were significant differences between two genders in this regard (P <0.001). Differences between both genders regarding association between social tension at works and CLBP are shown in Table 2.

Table 2: Studied participants' beliefs regarding work factors that contributing to the occurrence of LBP (n=500)

Causes of CLBP	Female		Male		Total	*p* value* (χ^2)
Excessive physical tension /hard work at worksite	N	%	N	%	N (%)	
Yes, I Completely believe	165	68.2	77	31.8	242(48.4)	0.258
Yes, I believe	117	63.9	66	36.1	183(36.6)	
I almost believe	42	70	18	30	60(12)	
I less believe	8	53.3	7	46.7	15(3)	
Not at all, I do not believe	0	0	0	0	0(0)	
Excessive Psychological tension at worksite						
Yes, I Completely believe	104	83.2	21	16.8	125(25)	<0.001
Yes, I believe	118	65.9	61	34.1	179(35.8)	
I almost believe	77	53.8	66	46.2	143(28.6)	
I less believe	27	65.9	14	34.1	41(8.2)	
Not at all, I do not believe	6	50	6	50	12(2.4)	
Excessive social tension at worksite						
Yes, I Completely believe	72	72.7	27	27.3	99(19.8)	0.002
Yes, I believe	102	71.8	40	28.2	142(28.4)	
I almost believe	72	67.3	35	32.7	107(21.4)	
I less believe	33	52.4	30	47.6	63(12.6)	
Not at all, I do not believe	53	59.6	36	40.4	89(17.8)	

*χ^2 test to explore significant differences between men and women beliefs regarding work – related factors of associated factors low back pain. Significant at level of <0.05

Discussion

LBP is a very common health problem. About, 70-85% adults indicated that they had experienced at least one episode of LBP in former times during their life [12]. The direct and indirect costs of LBP, in terms of quality of life, productivity and employee absenteeism are considerable and make this common condition the single largest contributor to musculoskeletal disabilities worldwide [13]. LBP is associated with multiple risk factors, including sex, age, lifestyle and psychosocial profile, physical demands at workplace, social support, and pain perception [4]. Hospital

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workers seem to have higher rates of LBP compared with the general population because physical and emotional factors are permanently present in their occupational worksite.

In this study, the majority of studied men and women believed that their hard work in workplace is the reason for their back injuries. Considering anatomical, physiological and structural differences between males and females, sprain and strain are more common in females than males [23, 24]. Back muscles weakness, low back sprain and strain have been implicated as causes of LBP somewhere else [15, 25, 26].

The findings of this study revealed that men were less blamed work – related psychological factors. In contrast, the majority of studied women in the present study stated that work – related psychological stress would be one of main causes of their chronic low back pain. This finding is in the line with previous studies which reported different opinions of men and women regarding psychological factors in worksite environment which resulted in their low back pain However, there are opposite findings in some other studies too. In them the relationship between psychosocial tension and muscular skeletal disorder among males [1, 20, 25, 26] and women [26-28] was similar.

The present study showed that the majority of females in contrast to men believed that social and interpersonal relationships in their workplace had been leading to their prolonged low back pain. This difference between men and women may be because of different organizational and social supporting structures for different genders in Iranian work places. A previous study also reported the effects of different social environment for different genders, which could affect their health and morbidity [29]. The other study argued that different bio psycho social factors in work environment may cause work - related occupational problems that may be different between two genders [30]. According to these results, providing socially supportive worksites for Iranian nurses, to prevent their low back pain, is strongly recommended.

In present study, BMI was identified as one of the significant positive associated factors with LBP complaints among nurses. This result is consistent with that of other researchers [31], who reported that BMI was one of anthropometric factors associated with LBP among nurses. These researchers also reported other factors like age, female sex, extra professional activities, duration of employment, and heavy weight lifting could affect low back pain. In consistent with previous study [22-33] this study revealed a significant positive association between low back pain and duration of being nursing staff respectively. Furthermore, this finding is in the line with what was reported in the study, which was conducted by Byrns and colleagues [34]. However, the other researchers did not confirm this

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relationship [35].

The study revealed the beliefs of Iranian nurses regarding the work related low back pain factors. Accordingly, the women more than the men, believed that psychosocial stress in worksites might affect their low back pain. In addition, the majority of men and women believed that physical stresses in their work place had most impact on their low back pain.

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