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Full Length Research Paper

A study on the prevalence rates of backache and occupational stress among nurses

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To gain more insight into the prevalence rates of backache and to determine the relation between occupational stress among the Nurses. In this cross-sectional study a questionnaire was carried out among 400 nursing personnel in three general hospitals in Amol, Iran. The questionnaire had 3 sections: demographic information, psychosocial stress related to work, and of psychological stress related to work. The annual prevalence was 80% of the cases. Results indicated that, there was a significant relationship between low back pain and female gender (OR=2.8), exercise (OR=0.4), height (OR=1.06) and weight (OR=1.4). Also a significant relationship existed between LBP relationship with colleagues (OR=1.8) and hastiness at work (OR=0.6). Out findings show that low back pain was common and a serious problem among nurses. Moreover, we found positive association between low back pain and job stresses.

Key words: Low back pain, demographic factors, psychological, psychosocial, nurses.

INTRODUCTION

Low back pain is the second most common diagnosis after upper respiratory diseases (Karahan and Bayraktar, 2004). The impact of LBP for nurses include time off work, increased risk of fatigue, as well as associated personal and economic cost (Mitchell et al., 2008). From the low back pain prevalence point of view, nurses are placed in the third place among the employed people (Yip, 2001).The yearly low back pain prevalence which has been informed up to now is 73 to 76% between the German nurses (Maul et al., 2003) 86% between the Italian nurses (Corona et al., 2005) and 80.9% between the nurses in Hong Kong. The result of a survey has disclosed that 16.2% of nurse sick leave is because of low back pain (Yip, 2001). In Hong Kong, 68.7% of nurse activities have been limited because of their low back pain and 7.9% of the nurses have been shifted to another nursing responsibility (French et al., 1997).

Heavy physical activities play an important role in nurses low back pain (Yip, 2001). Activities like displacing and lifting the patients are the most important factors causing low back pain in nurses (Yip, 2001; French et al., 1997). But most of the researchers believe that the physical factors justify only a portion of the prevalent cause of upper part of low back pain and the relationship between the social mental activities and low back pain has been mentioned as an important finding in most recent essays. Most of the researches have concluded that there is a connection between the psychosocial activities with low back pain and disabilities resulted from that (Yip, 2001,2004; Feyer et al., 2000; Corona et al., 2004; Violante et al., 2004).

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Despite the studying that Verbeek did, no significant difference between low back pain and social factors were shown in the personnel (Verbeek and van der Beek, 1999). Besides, the result of a review article showed that there are not enough evidences to confirm the relationship between job stress and low back pain so more research is needed to find out the connection between job stresses with the low back pain (Hartvigsen et al., 2004).

Despite this, there is no precise statistics related to the prevalence, susceptive factors, expenses and the low back pain consequences of nurse in Iran. It is necessary to mention that identifying the psychological reasons related to physical illnesses and making the patients and the authorities aware can play an important role in preventing this illness. As the relevant research in Iran is few, and according to the available contradictory statistics, the researcher was made to do such a research Relationship between Low back pain and stressful job factors among the Nurses.

MATERIALS AND METHODS

Defining lower back pain

LBP was defined as discomfort in the spinal area (between the lower costal margins and gluteal fold), with or without radiation into the leg to blow the knee for at least one day during the past 12 months. The study focused on examining non-specific LBP. Therefore, pain caused by previous back surgery, cancer, vascular disease or menstruation was excluded (Feyer et al., 2000).

Methods

Amol, which is in the north of Iran has the population of one million, has 3 hospitals and the hospitals contain 438 nurses, and the researcher has successfully been able to study 91.3% of these nurses through Census sampling. The ones who answered were 400.

Data quality

A kind of questionnaire which had 3 parts was used to gather the required information. The first section contained questions about the personal specification and demographic factors (Socio-demographic information included age, sex, weight, height, BMI, number of children and pregnancy, marital status, educational level, doing exercise and smoking). The second section contained 6 questions in connection with psychosocial stress related to work which were ranged from completely satisfied to completely dissatisfy (Bigos et al., 1991). Questions on psychosocial related to work covered relationships with colleagues, relationships with the patient companions, relationships with supervisor, satisfaction of the workplace, satisfaction of nursing occupation, and satisfaction of doing jobs for patient (completely satisfy/ satisfied/ dissatisfy/ completely dissatisfy). The third section contained 8 questions of psychological stress related to work which has been classified from always to never (Smedley et al., 1995). Participants were also asked to indicate how often (frequently, often, occasionally, and never) they experienced headaches, period pain, constant tiredness, low mood and feelings of tension or of being under stress, feeling of pressure in your head. The validity of the questionnaire was assigned by content validity, its reliability by internal consistency, cronbach's alpha calculation r=0. 89, Test-retest reliability in the psychosocial related to work section was r = 0.81and in the psychological stress related to work was r=0.83 respectively. After explaining how to fill in the questionnaire the researcher asked the participants to fill it in. The questionnaires were collected after a few days.

Analysis

Descriptive statistics were produced for the dependent variable and independent variables, (to describe the socio-demographic information, psychosocial stress related to work and psychological stress related to work of the participants). Chi-square statistics were used to examine the prevalence of LBP and independent variable. Also Chi-squire statistics were used to examine psychosocial and psychological stress related to work. Backward stepwise multivariate logistic regression was used to estimate the effect of all 15 study factors, with controlling for other covariates found to be significant in the univariate analysis. All variables that had a probability value of $p<0.02$ in the univariate analyses were included in the initial backward stepwise multivariate logistic regression. The backward stepwise multivariate selection procedure was based on p-value for entry and removal was 0.05 and 0.10. Body mass index (BMI) was calculated as the ratio of body weight (kg) to the square of the height (m). Values for BMI were divided into four groups:≤ 18.5 (thin), 18.5-24.9 (normal), 25-29.9 (obese) and ≥ 30 (overweight). A probability level of $p<0.05$ was accepted as statistically significant. The analyses were performed using SPSS 16.0.

RESULTS

According to the gained results of the research, 80% (CI 95%: 77 to 84) of the nurses experienced low back pain at least once during the previous year. Most of the participants were females (78.5%). The age average was 32.39 (SD=6.2) years old. 36% of the participants weighs between 61 to 70 kilos (65/71± 10.9) and the average mass of their bodies (BMI) was 24.44 (SD=3.8). 54.5% had normal bodies (18.5 to 24.9). The average height of the participants was 164(SD=6.3 cm). 67.5% of the participants were married. Eventually the researched showed that 26.5% of the participants exercise regularly. It also appeared that 4% of the nurses who has low back pain are used to smoking cigarette.

Among the individual specifications, only female gender (OR=2.8), exercise (OR=0.4), height (OR=1.06) and weight (OR=1.4) showed significant relationship with the low back pain. No significant relationship between the other individual specifications (age, BMI, smoking, and marriage) were observed. According to Table 1, 178 patients (54.9%) of nurses that back pain have experienced from contact with colleagues expressed were satisfied if only 49 (64.5%) of nurses who experienced back pain not from this relationship expressed satisfaction were (p =0.009). 48 patients (14.8%) of nurses during the past year back pain were compared with supervisor said were completely satisfied and 17 (22.3%) who experienced back pain not from this

Table 1. Psychosocial factors related to low back pain among nurses.

Psychosocial stress related to work	LBP	Level of satisfaction				X^2	P -value
		Completely satisfied	Satisfied	Dissatisfied	Completely dissatisfied		
		N(%)	N(%)	N(%)	N(%)		
Relationships with colleagues	Y	102(31.5)	178(54.9)	16(4.9)	28(8.7)	11.6	0.009
	N	27(35.5)	49(64.5)	0	0		
Relationships with the patient companions	Y	27(8.3)	224(69.2)	67(20.7)	6(1.8)	6.4	0.09
	N	10(13.1)	57(75)	7(9.2)	2(2.7)		
Relationships with supervisor	Y	48(14.8)	213(65.7)	41(12.7)	22(6.8)	9.5	0.02
	N	17(22.3)	54(71.1)	5(6.6)	0		
Satisfaction of the workplace	Y	33(10.2)	175(54)	93(28.7)	23(7.1)	4.3	0.2
	N	11(14.5)	46(60.5)	17(22.4)	2(2.6)		
Satisfaction of nursing occupation	Y	53(16.3)	176(54.4)	83(25.6)	12(3.7)	10.4	0.01
	N	23(30.2)	40(52.7)	10(13.2)	3(3.9)		
Satisfaction of doing jobs for patient	Y	99(30.5)	166(51.3)	14(4.4)	45(13.8)	10.3	0.1
	N	27(35.6)	46(60.5)	2(2.6)	1(1.3)		

relationship satisfied were (p =0.02). 53 (16.3%) of nurses with back pain reports were satisfied with the nursing profession and 23 (30.2%) of those who experienced back pain have said were completely satisfied (p=0.01). According to Table 2, significant relationship between psychological stress associated with job experience back pain at work and the subjects during the past year there were: headache in the workplace (p =0.01), too tired from work (p =0.04), pressure head (p =0.02), anxiety at work (p =0.006), work in a hurry (p <0.001), impatience and create low (P=0.004).

Table 3, crude and adjusted odds ratio risk of back pain in univariate and multivariate model shows. As the multivariate model, being a woman comes over 180% increase in height to 6% per cm, weight gain per kg of 4% incidence of back pain and increase exercise to 60% less. Among the psychosocial factors related to work was observed for each one degree increase in the intensity of dissatisfaction with colleagues 80% greater risk of low back pain is among the factors and stressful job for every one degree increase in the range (always, often, sometimes, never) in a hurry to work 40% less risk of pain is.

DISCUSSION

Musculoskeletal disorder related to the job is one of the main health difficulties among the health care personnel. Low back pain which is the most subgroup of muscular disorder relates to the skeleton and nursing is known as one of the most risky occupations. Low back pain in nurses differs in different countries; this might have either different definitions of low back pain or different research in low back pain prevalence in different periods of time, for instance a period of 3, 6 or 12 months. In some researches similar to my research, the prevalence of one year low back pain has been defined as: 77% (Squadroni and Barbini, 2003), 86% (Corona et al., 2005), 64% (Martinelli et al., 2004). In return for 39% (Yip, 2004), 31.1% (Smedley et al., 1995) and 37% (Corona et al., 2004). This research showed that Amol hospital nurses are at the high risk of low back pain occupation injury.

Researches results also did not show any significant relationship between age and suffering from a low back pain (Yip, 2001; Maul et al., 2003); but other researchers showed significant relationship between age and low back pain (Corona et al., 2004; Squadroni and Barbini, 2003; Martinelli et al., 2004; Marena et al., 1997). One of the reasons for having different results between age and low back pain in different researches is probably the choice of different places for the research and different range of age. It also was proved that there is a significant relationship between sex and suffering low back pain as more women suffer low back pain than men. Yip did not show any significant relationship between sex and low back pain (Yip, 2004). In some similar essays, having low back pain in women was more reported than men (Violante et al., 2004; Smedley et al., 1995; Marena et al., 1997). The growing prevalence of LBP in women might be the cause of factors such as pregnancy and delivery. It should be mentioned that the subjects in most investigated

Table 2. Psychological stress related to work among nurses.

Psychological stress related to work	LBP	Never N (%)	Occasionally N (%)	Often N (%)	Always N (%)	X^2	P
Headache at work	Y	35(10.8)	193 (59.5)	64(19.8)	32 (9.9)	11	0.01
	N	13(17.1)	54 (71)	5(6.6)	4 (5.3)		
Fatigue of too much work	Y	14 (4.3)	137 (42.4)	122 (37.6)	51 (15.7)	8	0.04
	N	5(6.6)	44 (57.9)	18(23.7)	9 (11.8)		
Low mood	Y	56(17.3)	201 (62)	48(14.8)	19 (5.9)	13.2	0.004
	N	26(34.3)	43 (56.5)	5(6.6)	2 (2.6)		
Pressure in head	Y	76(23.4)	160 (49.4)	42 (13)	46 (14.2)	9.3	0.02
	N	29(38.1)	31 (40.8)	4(5.3)	12 (15.8)		
Anxiety at work	Y	75(23.1)	160 (49.3)	6(1.8)	28 (8.6)	12.3	0.006
	N	29(38.2)	37 (48.7)	4(5.3)	6 (7.8)		
Hastiness at work	Y	71(21.9)	138 (42.6)	86(26.6)	29 (8.9)	19.1	<0.001
	N	34(44.7)	25 (32.9)	16(21.1)	1 (1.3)		

Table 3. The relationship between low back pain and independent variables in logistic regression model.

Logistic regression / Risk factors [a]	Univariate OR	95 CI (%)	P	Multivariate OR	95 CI %	P
Gender (female/male)	3.6	1.80-7.10	<0.001	2.8	1.35-5.28	0.006
Height (cm)	1.07	1.01-1.08	0.008	1.06	1.02-1.10	0.001
Weight (kg)	1.03	1.006-1.07	0.01	1.04	1.01-1.08	0.01
Exercise (Regular / irregular)	0.4	0.24-0.68	0.001	0.4	0.22-0.74	0.003
Relationships with colleagues**	1.6	1.10-2.30	0.01	1.8	1.10-2.70	0.005
Satisfaction of nursing occupation**	1.6	1.10-2.30	0.007			
headache at work***	0.5	0.40-0.80	0.004			
Fatigue of too much work***	0.6	0.40-0.90	0.01			
Low mood***	0.5	0.30-0.70	0.001			
Anxiety at work***	0.6	0.40-0.80	0.007			
Hastiness at work***	0.5	0.30-0.70	0.001	0.6	0.40-0.80	0.008

[a] Risk factors calculated simultaneously using logistic regression and expressed as odds ratios (OR) with 95% confidence intervals (95%CI) and Probability (P) values, ** Satisfaction levels based on the spectrum completely satisfied, satisfied, dissatisfied, completely dissatisfy, *** Based on the spectrum always, often, occasionally, never.

places in this research were females.

The result in this research showed that there is a significant relationship between weight, height and doing exercise with nurse low back pain in Amol hospitals. Researches show that keeping body in a normal weight reduces the pressure to the spinal column and the extra stomach weight exerts some pressure to the vertebras that can cause chronic spasms in the back. When the muscles in the back contract to hold the abdomen up, the abnormal forces on the vertebras cause degenerative changes in vertebras (Mandel and Lohman, 1987).

The height average showed a significant relationship with low back pain. In the last 18 months, a research showed that the prevalence of low back pain in nurses higher than 157 cm had a high rate. But the results did not show any significant relationship (Stubbs et al., 1983). Different researches have shown the symptom of low back pain in people who do regular exercise is less.

Every day exercise strengthen the back muscles so that they can cope much better with the sudden forces so the serious low back pains are reduced against unnatural forces (Mandel and Lohman, 1987). Some other researches show that exercise is not effective in low back pains (Violante et al., 2004; Martinelli et al., 2004; Burdorf and Sorock, 1997). In some other done researches a significant relationship between height, weight and BMI has been observed (Stubbs et al., 1983). It was also specified that there was no significant relationship between pregnancy occasions, having children under 3, number of children and education with nurse low back pain in Amol hospitals. Yip showed no significant relationship between low back pain and pregnancy occasions either (Yip, 2001). Some researches, on the other hand, have confirmed the connection between low back pain, the number of pregnancy and the number of giving birth (Ostgaard et al., 1991; Worku, 2000). This differentiation might be because of taking care during pregnancy, different bodily physiological specification of pregnant women, different definition and causes of low back pain during pregnancy.

Most of the researches have not reported anything related to smoking. It was proved that there was no significant relationship between smoking and low back pain. Related to the role of smoking and low back pain, Leboeuf, after studying the 47 published articles related to low back pain and smoking came to the conclusion that smoking can be a slight hazard to low back pain but it cannot be considered as the cause of low back pain (Leboeuf, 1999). Yip research results did not show any significant relationship between low back pain and smoking either (Yip, 2001).

The results of the present research showed that there is a significant relationship between low back pain and psychological factors of occupation. The result of Hoogendoorn and Johnston research showed that there is a relationship between psychological factors of work place and low back pain (Hoogendoorn et al., 2001; Johnston et al., 2003). Some other researchers have also shown the relationship between low back pain and psychological factors (Corona et al., 2004, 2005; Violante et al., 2004; Squadroni and Barbini, 2003). Yip, on the other hand showed no relationship between low back pain and job psychiatric stress (Yip, (2004). Verbeek research showed no significant relationship between low back pain and psychological factors (Verbeek and Van der beek, 1999).

The difference between the result of this research and mine might be because the subjects of the above research were office personnel while the subjects in my research were hospital nurses. It should be mentioned that the amount and sort of psychological stress in nurses and university personnel differs; the apparatus used to measure the amount of stress in work place might have been different in different researches. Psychological demands at work forced the workers to work fast, to work hard, and to do excessive work in an insufficient amount of time (Feng et al., 2007). The result of a research has shown no enough evidence to confirm the relationship between low back pain and twisting job so more research is needed (Charnley, 1999).

The result of the present research eventually showed that there is a significant relationship between psychiatric stress related to job, work place and the rate of suffering from low back pain. Yip also showed that there is a significant relationship between the feelings of enjoyment of the work, head ache, fatigue and low mood at work place with low back pain (Yip, 2001). Frymoyer showed that the patients who suffer from anxiety, neurosis, depression and psychosomatic disorder get low back pain more than the others (Frymoyer et al., 1983). Another study showed the relationship between mental factors and low back pain. By investigating among the nurses, he realized the ones who are filled with stress suffer low back pain more and have less tolerance against the pain so he concluded that the best predictor factor of low back pain has been the mental distress (Mannion et al., 1996). It has been proved in several researches that there is a relationship between agitation, depression and work place factors with low back pain (Dunn and Croft, 2004; Haggman et al., 2004).

In the whole, the findings of this research which was done on a considerable group of nurses working in different wards showed that low back pain is one of the most serious problems of these groups of employees and different factors can affect on it. The most important findings of this research were the relationship between low back pain with the stressful factors. This finding suggests that one of the strategies to control the start of low back pain and its return is done through controlling the psychic stresses in work place. Disability due to low back pain can be reduced by taking preventive actions such as adjustment or reformation of psychological place, work place and teaching stress reducing techniques. As nurses spend most of their lives under different conditions in work places so the kind of job activities can be the creative factors of stress and can have a serious effect both on their health and on the service they present. It must be considered that the prevention program for reducing the possibility of stressful events not only must be planned but also the nurse skills must be enhanced to be able to face such situations so that both the direct and indirect expenses for low back pain can be reduced.

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