ORIGINAL ARTICLE

PREVALENCE OF BACK PAIN AMONG NURSES WORKING IN GOVERNMENT HEALTH CLINICS AND HOSPITAL IN PORT DICKSON, MALAYSIA

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ABSTRACT

Introduction : Nursing is an occupation associated with high risk of developing back pain due to their nature of work practices. The aim of this study was to determine the prevalence of back pain among nurses working in government health clinics and hospitals in Port Dickson and the factors associated with it.

Methods : A cross sectional study was conducted involving 126 nurses working in government health clinics and district hospital in Port Dickson. They were universally sampled. A self-administered questionnaire, assessing personal and socio-demographic characteristics, back pain, work factors and psychosocial factors.

Results : The prevalence of back pain among nurses was 79.4% and factors that showed significant association were workplace (p=0.026) and carried heavy load (p=0.043).

Conclusion : Where one work and nature of work one does has been shown in this study to be important issues to be considered in helping to manage back pain related to work. It is also recommended that staff need to be encouraged to do exercise to strengthen the back muscles, increase spinal flexibility and blood circulation to the spine as well as need to be reminded regarding ergonomic adjustment at work.

Keywords : Back pain, nurses, work place, workload

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INTRODUCTION

Workplace factors, including physical and psychosocial factors and their interaction, are strong determinants of back pain. Psychosocial risk factors at work (perceived high pressure on time and workload, low job control, job dissatisfaction, monotonous work, and low support from co-workers and management) appear to independently increase the risk of hospitalization for back disorders, with a 3.2 fold increase in a low-control job compared with a high-control job[16]. Other factors such as heavy physical work, night shifts, lifting, bending, twisting, pulling, and pushing have often been associated with low back pain[17].

Back symptoms are the most common cause of disability for persons under age 45[9]. Many back injuries are occupational in nature. Occupational back injury is clearly related to lifting and repeated activities. Persons in occupations that require lifting such as nursing are especially at risk[10]. Patient transfer involves adjusting the patient in bed, transferring a patient from bed or chair to toilet[11]. These manoeuvres have consistently been related to low back injuries in nurses, and are perceived to be the most stressful tasks performed by these occupations[12]. Not surprisingly, efforts have been made to prevent low back injuries following patient handling, including education in lifting techniques, ergonomic interventions and mechanical equipment and individually designed physical training programs and stress management[13,14,15].

Low back pain is a major public health problem throughout the world, and the prevalence of low back pain appears to be even higher for nurses than for woman of similar age in the general population[1,2]. Back pain is defined as any discomfort or pain at the back in the past 12 months[3,4]. Several authors report annual prevalence of low back pain in nurses varying between 45%-58%[5,6,7,8].

Despite this high prevalence of low back pain among nurses, the aetiology and the nature of back pain are not yet well understood. Many studies have been performed in various occupational settings, indicating a strong association between musculoskeletal disorders and work related factors[18]. This was also found among nurses[1]. The contribution of psychosocial factors and work pressure was also evident, but not as clear as has been shown for the physical factors[19,20,21].

Risk indicator for back pain includes sex, age, weight, height, right or left handed, number of children, smoking habits, regular physical exercise, driving time, job, duration of work time, work time a week, manual lifting of weights heavier than 10kg, and uncomfortable working positions[22].

In summary, risk factors of back pain can be divided into 3 groups which are socio demographic factors (Age, gender, education level, smoking, body mass index, number of children), physical and work factors (Static and awkward body position, heavy physical work, night shifts, lifting, bending, twisting, pulling, and pushing) and psychosocial factors (Perceived high pressure on time and workload, low job control, job dissatisfaction, monotonous work, and low support from co-workers and management)[23].

This study was conducted to determine the prevalence and factors associated with back pain among nurses working in all health clinics and district hospital in Port Dickson. .

METHODOLOGY

This study was conducted among nurses working in all health clinics and district hospital in Port Dickson. Nurses who were pregnant or with known history of prolapsed inter-vertebral disc were excluded. It was carried out in the month of Mac to April 2007. Nurses were universally sampled. Self-administered questionnaire in Bahasa Melayu were used to elicit the information with regards to respondents' personal and socio-demographic characteristics, back pain, work characteristic and psychosocial factors. Some of the questions were developed by researcher based on literature and some were adopted directly from previous studies. However the questionnaires were validated through pre-test which was done among nurses in the nearby district. Study design was cross sectional and data collected was analysed using SPSS Version 11.5.

RESULTS

Personal and socio-demographic characteristic

A total of 126 nurses participated in this study with a response rate of 88.3%. Majority were Malay (85.7%) and the rest were Indian (9.5%), Chinese (1.6%) and others (3.2%). A larger proportion (54.8%) were 40 years old or less,

were married (87.3%), had more than two children (53.2%). Majority were working in health clinics (54%) and had been working for more than ten years (55.6). In general majority of the respondents' BMI fell into the obese and overweight category (72.2%). However none of these factors showed a significant association with back pain.

Table 1 Personal and socio-demographic characteristics and back pain (n=126)

Factors	Back pain		χ^2	P
	Yes	No		
Age				
≤ 40	54(78.3)	15(21.7)	0.114	0.736
> 40	46(80.7)	11(19.3)		
Marital status				
Married	87(79.1)	23(21.0)	0.000	1.000*
Unmarried	13(81.3)	3 (18.7)		
No of children				
0-2	43(72.9)	16(27.1)	2.848	0.091
>2	57(85.1)	10(14.9)		
Abnormal BMI				
Yes	73(80.2)	18(19.8)	0.146	0.702
No	27(77.1)	8(22.9)		

*continuity correction

Back pain

The prevalence of back pain was 79.4% (100 of the 126) where back pain was defined as having back pain at least once in the past one year. Table 2 showed that the most common site to develop back pain was at low back (50%). 51 respondents (51%) claimed to have mild pain and 72 respondents (72%) claimed it was work related. Only 10 respondents (10%) required to change workplace due to back pain.

Table 2 Characteristic of back pain over the past one year (n=100)

Variables	f	%
Site of back pain		
Upper Back	4	4
Middle Back	8	8
Low Back	50	50
More than 1 site involved	38	38
Severity of back pain		
Mild	51	51
Moderate	46	46
Severe	3	3
Work related back pain		
Yes	72	72
No	28	28
Change of workplace because of back pain		
Yes	10	10
No	90	90

Work characteristic

Table 3 shows the association between work characteristic and back pain. Only two factors have significant association with back pain. These are workplace and having carried heavy load. For workplace nurses working in health clinic (86.8%) have higher rates of developing back pain than those working in hospital (70.7%). For lifting load too heavy, nurses who answered yes (89.7%) have higher rates of developing back pain than those who answered no (74.7%) Both factors were statistically significant with p-values of 0.026 and 0.043 respectively.

Table 3 Association between work characteristic and back pain (n=126)

	Back pain			
Factors	**Yes**	**No**	χ^2	**p**
Workplace				
Health clinic	59(86.8)	9(13.2)	4.939	**0.026**
Hospital	41(70.7)	17 (29.3)		
Service duration				
≤10	43(76.8)	13 (23.2)	0.409	0.522
>10	57(81.4)	13(18.6)		
Manual handling activities at work				
Yes	41(71.9)	16(28.1)	3.514	0.061
No	59(85.5)	10(14.5)		
Weight load (kg)				
<10	61(74.4)	21(25.6)	3.549	0.060
>10	39(88.6)	5(11.4)		
Lifting heavy load				
Yes	36(70.6)	15(29.4)	4.030	0.050
No	64(85.3)	11(14.7)		
Heavy lifting technique				
Self lifting	15(100)	0	3.112	0.078*
Assisted lifting	85(76.6)	26(23.4)		
Carry heavy load				
Yes	35(89.7)	4(10.3)	4.103	**0.043**
No	65(74.7)	22(25.3)		
Change position of patient in bed				
Yes	27(75.0)	9(25.0)	0.586	0.444
No	76(81.1)	17(18.9)		
Carry the patient between bed and chair				
Yes	24(75.0)	8(25.0)	0.495	0.480
No	76(80.9)	18(19.1)		
Carry the patient to and from the toilet				
Yes	22(73.3)	8(26.7)	0.875	0.350
No	78(81.3)	18(18.7)		
Monotonous work posture				
Yes	85(79.4)	22(20.6)	0.000	1.000*
No	15(78.9)	4(21.1)		
Standing at work				
Yes	58(77.3)	17(22.6)	0.467	0.494
No	42(82.4)	9(17.6)		
Walking at work				
Yes	75(78.1)	21(21.9)	0.379	0.538
No	25(83.3)	5(16.7)		
Sitting at work				
Yes	61(80.3)	15(19.7)	0.094	0.759
No	39(78.0)	11 (22.0)		

Awkward body position at work				
Yes	64(82.1)	14(17.9)	0.902	0.342
No	36(75.0)	12(25.0)		
Bending				
Yes	39(81.3)	9(10.7)	0.168	0.682
No	61(78.2)	17(21.8)		
Body Twisting				
Yes	44 (81.5)	10(18.5)	0.258	0.611
No	56(77.8)	16(22.2)		
Neck extension				
Yes	18(81.8)	4(18.2)	0.001	0.982*
No	82(78.8)	22(21.2)		
Neck flexion				
Yes	48(82.8)	10(17.2)	0.756	0.385
No	52(76.5)	16(23.5)		
Neck twisting				
Yes	46(78.0)	13(22.0)	0.133	0.716
No	54 (80.6)	13(19.4)		

*continuity correction

Psychosocial factors

Nurses who have higher psychosocial factors involvement were those who claimed to have higher workload, frequently not satisfied with their job, do not get help from colleagues as well as employer. However from Table 4, it is shown that none of these psychosocial factors were significantly associated with back pain.

Table 4 Association between psychosocial factors and back pain (n=126)

Factors	Back pain		χ^2	p
	Yes	No		
Work psychosocial factors involvement				
Yes	37(82.2)	8(17.7)	0.349	0.555
No	63(77.8)	18(22.2)		
Perceived workload				
Normal	2(79.6)	21(20.4)	0.210	0.885
Overload	18(78.3)	5(21.7)		
Work dissatisfaction				
Yes	16(88.8)	2(11.2)	0.054	0.445*
No	84(77.8)	24(22.2)		
Low support from co-workers				
Yes	10(90.9)	1(9.1)	0.360	0.548*
No	90(78.3)	25(21.7)		
Low support from management				
Yes	20(86.9)	3(13.1)	0.504	0.478*
No	80(77.7)	23(22.3)		

*continuity correction

DISCUSSION

The prevalence of back pain in was 79.4%, which is high compared to other studies such as back pain in garbage collector workers which showed prevalence of 27.3% and in palm oil estate workers which was 67%[24,25]. Several researches on back pain among nurses found prevalence of back pain varying between 45%-58%[5,7,8].

Most respondents claimed the commonest site to develop back pain was at the

lower back area. This could be due to lumbar region received the highest pressure when a person manually lifting weight[26]. About 10% of these nurses in this study had to change workplace because of back pain which was higher than other study whereby only 6% of the general population of Dutch needed to change work due to back pain[26].

Prevalence of back pain is higher among older nurses compared to younger nurses where nurses aged > 40 years old has higher prevalence of backache which is 80.7%, although statistically it is not significant. Several studies conclude that age factor is a risk for back pain[25,27]. Starting from age 30 and above, the risk for sciatic symptoms in workers with backache is higher[27]. A series of clinical research found that incidence of backache is highest at age around 40 year old[28]. Workers at later age have more spinal damage which occurs while they are working. These accumulations of micro trauma fasten the degeneration process which occurs naturally as we aged[29].

Nurses who work in health clinic have higher prevalence of backache compared to those in hospital (p 0.026). This could be the result of the healthy workers effect (workers with back pain leave a job, resulting in a surviving workforce with healthier backs). Furthermore in this study, 48.5% of nurses in health clinic aged >40 compared to only 41.4% in hospital nurses causing the result to be skewed towards health clinic.

In this study, nurses who have to do manual handling activities have lower prevalence (71.9%) of back pain compared to those who job task involve manual handling (85.5%) however this relationship was statistically not significant. Other study among nurses found that manual handling of patients is associated with increase risk of back pain[7,30].

Nurses who perceived that they were lifting heavier weight than they should, have higher prevalence of back pain. The association is statistically significant (p = 0.043). Tissue resistant during manual heavy lifting differs between individual persons in whom it is not only related to weight of the load but also other factors such as the distance load being moved, load lifting technique and frequent weight lifting[27]. Theoretically, ability to handle weight and risk of injury depend on individual strength. It is related to acute effect of physical load in which pain occurs when the load exceeds the tissue resistant. Lifting weight exceeding person ability will increase the risk of back injury[28].

Other risk factors such as monotonous work posture and awkward body position showed insignificant relationship (p>0.05). Monotonous work position in this study consists of prolonged sitting, standing or walking at work. All these three factors showed no significant relationship with back pain (p>0.05). Awkward body position is measured subjectively on several body movements; bending, body twisting, neck extension, flexion and twisting. However all these awkward body movement have no significant relationship with back pain (p>0.05). Other studies found significant relationship between bending and back pain[25]. Bending increases 6 times risk of having back pain and found that awkward body posture is a risk factor for back pain[26,31,32].

Results for psychosocial factors showed prevalence of back pain was higher in those who have work dissatisfaction, low support from colleague and employer. Even though they were not significant statistically, there were other studies that showed relationship between these factors and back pain[30,33]. Psychological factors are important as it affect the risk of injury, severity and healing process[34].

Although this research was unable to conclude significant result to several factors, other research has concluded association between those factors with back pain such as age, bending posture, weight lift, number of children and etc. The reasons could be due to small sample size and this study was also homogenous in term of gender. Furthermore, working women such as staff nurses are exposed to factors such as childbearing, house chores and other common factors such as improper posture at work and weight lifting.

CONCLUSION

This research showed that prevalence of back pain among nurses was 79.4%. This figure was high compared to other studies done previously. Nevertheless it still provides some insight into this problem.

Factors that have significant relationship with back pain in this study were workplace (nurses working in health clinic have higher prevalence of back pain compared to nurses working in hospital) and perceived that the load they carried at work was too heavy. Nurses can be advised to do regular exercise to strengthen their back muscles, employer to ensure ergonomic adjustment to reduce risk of back pain such as manual handling, awkward

body position at work and monotonous work posture.

For future studies several suggestions for improvement in order to get a better and reliable association between back pain and its associated factors would be to increase the number of sample, matching the sample to reduce the healthy workers effect bias and more precise definition of back pain.

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