

Prevalence and Risk Factors Associated with Low Back Pain Among Health Care Providers in a District Hospital

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ABSTRACT

Study design: A cross-sectional study among health care providers working at one hospital. **Objective:** To investigate the prevalence, the consequences and the risk factors associated with low back pain (LBP) among hospital staff. **Materials and Methods:** The study sample consisted of 931 health care providers who answered a pre-established questionnaire including 30 items in two languages. **Results:** The cumulative life-prevalence of LBP was 72.5% and the yearly prevalence was 56.9%. Chronic LBP prevalence was noted 5.1% of the cases. Treatment was sought in 34.1% of LBP sufferers and 7.3% required sick leave or absence from work due to LBP. Risk factors associated with LBP were professional categories, bad body posture, lifting objects or patients and the increased levels of lifting, levels of job satisfaction and stressful job demands. **Conclusion:** There was a high prevalence of LBP among hospital staff, resulting in significant medical and socio-professional consequences. Many risk factors were identified that would necessitate multidisciplinary involvement to reduce the LBP incidence and related costs.

Key Words:

Low Back Pain (LBP); Hospital Members of Staff; Prevalence; Consequences; Risk Factors

INTRODUCTION

Low back pain (LBP) is a very frequently occurring phenomenon. Among adults in the general population, 70–85% were believed to experience at least one episode of low back pain at some time during their lives¹. The direct and indirect costs of LBP in terms of quality of life, productivity, and employee absenteeism are enormous, making this common condition the single largest contributor to musculoskeletal disability world wide². LBP is associated with multiple risk factors, including gender, age, lifestyle, psychosocial profile, physical demands of the workplace, social support, and pain perception³. Hospital workers seem to have higher rates of LBP compared to the general population due to physical and emotional factors involved in their occupation, such as stress^{4,6}. These rates are not well established in Malaysia. Hence, this purpose of this study was to estimate the prevalence of LBP among hospital

workers in a hospital, query as to its consequences and to identify the risk factors associated with the LBP in this population.

MATERIALS AND METHODS

Self-administered questionnaires were used in this survey. For the purposes of this study, health professionals were defined as the 8 largest groups of direct care providers in this hospital: doctors, staff nurses, community nurses, assistant medical officers, attendants, radiographers, physiotherapists and occupational therapists. Staff members in these categories were invited to complete a standardized questionnaire composed of 30 items. The investigation took place over a period of 2 months (from Jan to February 2010). For the survey, LBP was defined as a mechanical pain of the lower part of the back. LBP associated with thigh or buttock pain radiating down the lower limb was also acceptable. Chronic LBP was defined by pain lasting for more than 12 weeks. Cumulative lifetime prevalence of LBP was defined as having lower back pain at least at one time in their life. Yearly LBP prevalence represents occurrence of LBP during the last 12 months preceding the investigation. The term “LBP sufferers” included all those who had experienced LBP at any time. All the collected data have been analysed using the chi square analysis in SPSS software version 17.0 for Windows. The statistical significance level was set at 0.05.

RESULTS

Prevalence

The response rate was 61.2% (570/931). However, only 493 (53.1%) questionnaires were analyzed because 43 respondents were excluded from the study as they were pregnant or childbirth in the past 3 months, and 34 questionnaires were not completed. In the present study, LBP cumulative lifetime prevalence was 72.5% and the LBP prevalence in the past year was 56.9%. Chronic LBP prevalence was 5.1%.

Demographic characteristics

Out of the 493 respondents, 78.1% were women and 21.9% were men. Most respondents fell in the younger age groups

with 83.2% between the age of 20-40 years old. As for ethnicity, more than one quarter of the staffs was Iban (28.7%), followed by Chinese (25.3%) and Malay (23.7%). The staff nurses' response rate was the highest (35.2%), followed by doctors (20.9%) and community nurses (17.8%). Most of the respondents' working experience was of less than 5 years duration (53.5%).

Perceptions and Consequences of LBP

More than 2/3 (84.1%) of the LBP sufferers developed LBP only after starting work in the hospital and 84.3 % of those claimed that the LBP was work related. Most respondents described their LBP as localized (64.2%), whereas 35.8% complained of LBP associated with numbness or pain radiating to the lower limb. The consequences of LBP on personal life and work were moderate according to most LBP sufferers (42.5% and 45% respectively). Of LBP sufferers, 34.1% sought treatment for their symptom; of those who sought treatment, 60.5% received traditional treatments, 27.7% modern treatments and 11.8% both. Most were never diagnosed by a health care professional (88.0%) and only 5 persons (1.4%) underwent surgical procedures related to their LBP.

Risk Factors Associated with LBP

Factors associated with LBP were separated into demographic factors and workplace/employment factors. Demographic factors were age groups, sex, smoking and exercise, all of which showed no association to LBP in our study ($P>0.005$). The workplace/employment factors associated with LBP were the seniority in the establishment, professional categories, level of direct patient contact, work posture, necessity to lift objects or patients, previous LBP

training, self reported knowledge of LBP, job satisfaction and job stress. Of these professional categories ($P<0.05$), bad body posture (<0.001), lifting objects or patients, increased levels of lifting ($P<0.001$), levels of job satisfaction ($P<0.001$) and job stress ($P=0.001$) revealed significant correlation to LBP. However, seniority in the establishment ($P=0.164$), direct patient contact ($P=0.061$), levels of self reported knowledge on back care ($P=0.11$) and previous training in back care ($P=0.831$) did not appear to be correlated to LBP.

DISCUSSION

Pregnancy is closely associated with LBP with the prevalence rate ranging from 14% 42 to 89.9% 43. Therefore 43 respondents who had experienced pregnancy or childbirth in the past 3 months had been excluded from the results. The cumulative lifetime prevalence of LBP (72.5%) and the LBP prevalence in the past year (56.9%) in our survey were comparable to major LBP prevalence rates reported in the literature, which varies from 32% to 74%^{11,12,13,14,15} and 6% to 62.4%^{16, 17} respectively. The variability in LBP prevalence may be explained by the methodological heterogeneity used for the assessment of LBP as well as by differences in the gender, profession, and age group of the other study populations. The onset of LBP in the present study is significant ($P<0.001$) in that 84.1 % of LBP sufferers developed symptoms only after starting work at the hospital. With its high prevalence, LBP among hospital staffs results in a certain degree of medical and professional consequences. The rates of treatment (34.1%) seemed low compared to other studies^{19,20} (42.1% –79%), considering

Table I: Demography of the study samples

	LBP sufferers (N=358)	No LBP (N=135)	P Value
Sex			0.222
Male	69(19.3%)	39(28.9%)	
Female	289(80.7%)	96(71.1%)	
Age			0.051
20-30	169(47.2%)	81(60.0%)	
31-40	129(36.0%)	32(23.7%)	
41-50	31 (8.7%)	11 (8.1%)	
51-60	29 (8.1%)	11 (8.1%)	
Race			<0.005
Malay	91(25.4%)	26(19.3%)	
Chinese	71(19.8%)	54(40.0%)	
Indian	6 (1.7%)	4 (3.0%)	
Iban	116(32.4%)	25(18.5%)	
Others	74(20.7%)	26(19.2%)	
Professions			<0.005
Doctor	49(13.7%)	54 (40%)	
Staff nurse	139(38.8%)	35(25.9%)	
Community nurse	68(19.0%)	20(14.8%)	
Assistant Medical Officer	20 (5.6%)	8 (5.9%)	
Radiographer	6 (1.7%)	1 (0.7%)	
Attendant	60(16.8%)	12 (8.9%)	
Physiotherapist	8 (2.2%)	4 (3.0%)	
Occupational Therapist	8(2.2%)	1 (0.7%)	

Table II: Perceptions and Consequences of LBP

	LBP sufferers (N=358)
Develop LBP before or after working	
Before working	57(15.9%)
After working	301(84.1%)
Related to work	
Yes	302(84.4%)
No	56(15.6%)
Characteristic of LBP	
Localised LBP	230(64.2%)
LBP with numbness or pain of the leg/buttock	128(35.8%)
Frequency of LBP	
Daily	36(10.0%)
Weekly	72(20.1%)
Monthly	154(43.0%)
Yearly	96(26.8%)
Recovery of LBP	
< 3 weeks	291(81.3%)
3-6 weeks	32 (8.9%)
6-12 weeks	10 (2.8%)
> 12 weeks	25 (7.0%)
Effect of LBP on personal Life	
No Effect	43(12.0%)
Little Effect	139(38.8%)
Moderate Effect	152(42.5%)
Severe Effect	24 (6.7%)
Effect of LBP on Work	
No Effect	46(12.8%)
Little Effect	122(34.1%)
Moderate Effect	161(45.0%)
Severe Effect	29 (8.1%)
Sick Leaves	
Yes	26 (7.3%)
No	332(92.7%)
Modified job due to LBP	
Yes	151(42.2%)
No	207(57.8%)
Treatment for LBP	
Yes	122(34.1%)
No	236(65.9%)
Types of treatment	
Modern	33(27.7%)
Traditional	72(60.5%)
Both	14(11.8%)
Receive any spine surgery	
Yes	5 (1.4%)
No	353(98.6%)
Diagnosis from health care professionals	
Yes	43(12.0%)
No	315(88.0%)

that health care professionals would be expected to seek treatment as they have easier access to health care services. Interestingly, traditional treatments (60.5%) were preferred over modern treatments (27.7%) among LBP sufferers, even with their easy access to modern treatments. This is likely due to the lack of knowledge (71.2% claimed little or no knowledge of back care) and training among the staff (77.9% untrained). In fact, according to Gatchel *et al*⁴¹, access to health services in the acute phases of LBP episodes can have an important effect in reducing the long-term effects of LBP.

In this study, only 7.3% of LBP sufferers had ever taken sick leave due to their symptoms. This work absence rate is lower than such results in other studies, which range from 24.1% to 93%^{18,19,20,21}. Association between advanced age and the seniority of working experience was not a significant factor for LBP in our survey ($P>0.05$), but was reported as significant in other studies²²⁻²⁴. This is probably due to the younger age distribution of respondents in the present study.

Tobacco consumption was not significantly associated with LBP ($P = 0.139$), a result that differs from that of Frank *et al*²⁷ study where they showed that tobacco consumption was significantly associated with LBP and herniated disc conditions²⁶⁻²⁸. This deviance may be due to the low number of smokers among the respondents in the current study (4.5%).

Exercise or sports did not show as a protective role against LBP ($P=0.332$) in our survey. Of note, in the Demblans-Dechans *et al*³⁰ study, sports activity was considered a risk factor for LBP, whereas Fanello *et al*²⁹ and Henchoz *et al*³⁵ found that regular sports practice was associated with lower rate of LBP prevalence and was effective for primary and secondary prevention of LBP. Several factors can cloud these results namely, the competition level, nature of sports activity^{30, 31} as well as the volume and the intensity of the exercises³⁵.

Several professional risk factors have been identified that contribute to the prevalence of LBP in our survey. There was significant interrelationship between professional categories

Table III: Individual Risk Factors Associated With LBP

Risk Factors	LBP sufferers (N=358)	P Value
Smoking		0.139
Yes	19 (5.3%)	
No	339(94.7%)	
Exercise		0.332
None	116(32.4%)	
Few time per week	103(28.8%)	
Few times per month	139(38.8%)	
Gender		0.021
Female	289(80.7%)	
Male	69(19.3%)	
Age groups		0.051
20-30	169(47.2%)	
31-40	129(36.0%)	
41-50	31 (8.7%)	
51-60	29 (8.1%)	

Table IV: Professional risk factors associated with LBP

Risk Factors	LBP sufferers (N=358)	P Value
Profession category		<0.001
Doctor	49(13.7%)	
Staff nurse	139(38.8%)	
Community nurse	68(19.0%)	
Assistant Medical Officer	20 (5.6%)	
Radiographer	6 (1.7%)	
Attendant	60(16.7%)	
Physiotherapist	8 (2.2%)	
Occupational Therapist	8 (2.2%)	
Direct Patient Contact		0.061
Yes	340(95.0%)	
No	18 (5.0%)	
Perform Lifting patient or objects		<0.001
Yes	334 (93.3%)	
No	24 (6.7%)	
No of lift/Transfer		<0.001
None	24 (6.7%)	
1-5	209(58.4%)	
6-10	83(23.2%)	
11-15	19 (5.3%)	
>15	23 (6.4%)	
Bad body posture		<0.001
Yes	222(62.0%)	
No	136(38.0%)	
Knowledge		0.11
Not Knowledgeable	43(12.0%)	
Little Knowledgeable	212(59.2%)	
Knowledgeable	103(28.8%)	
Training		0.831
Yes	79(22.1%)	
No	279(77.9%)	
Job Satisfaction		<0.001
Poor	59(16.5%)	
Neutral	226(63.1%)	
High	73(20.4%)	
Stressful		0.001
Agree	205(57.3%)	
Neutral	128(35.8%)	
Disagree	25 (7.0%)	
Working Experience		0.164
0-5 years	182(50.8%)	
6-10 years	74(20.7%)	
11-15 years	43(12.0%)	
16-20 years	16 (4.5%)	
>20 years	43(12.0%)	

and LBP ($P<0.001$) with staff nurses (38.8%) and community nurses (19%) most commonly reporting LBP. The high LBP prevalence among nurses can be explained by the high workloads and work conditions, particularly the requirement for heavy lifting. Some studies^{32, 33, 34} showed that administrative staff members were more affected by LBP than nurses due to the necessity to be in a seated position for prolonged periods of time and the sedentary nature of their activities³³. This is a limitation of this study as this group was not included in the survey. Of those respondents who were required to lift heavy loads and frequent lifts/transfers, 87.4% shown to have a higher likelihood of developing LBP ($P<0.001$). This result was in accordance with the results of Barrero *et al*¹⁹ and Smedley *et al*²⁵ where both studies reported that lifting was an important exposure variable associated with LBP. Similarly, poor work posture was also significantly correlated with LBP prevalence in this survey ($P<0.001$). In the literature, prolonged standing position and leaning forward are frequently associated with LBP^{36, 20, 33}.

Our survey showed that respondents who experience higher levels of stress in their work and who had poor job satisfaction demonstrated significant association with complaints of LBP ($P<0.005$). An unsettled psychological profile has previously been well documented to be associated with LBP, especially among chronic LBP sufferers^{37, 38, 39}. Previous training in back care and the level of knowledge of back care showed no protective roles against LBP in the present study ($P>0.005$). According to Burton *et al*⁴⁰, knowledge of proper ergonomics may not translate to prevention of LBP. Additionally, since this study is a cross sectional study, our finding may be reflective of those LBP sufferers who sought training in back care.

CONCLUSION

LBP has a high prevalence among hospital staff members and causes significant medical and socio-professional consequences. Individual risk factors and the professional risk factors noted in this survey were in accordance with most literature findings. The high prevalence of LBP requires multidisciplinary involvement in order to reduce the disability and cost imposed.

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