

## PREVALENCE OF LOW BACK PAIN AND ITS ASSOCIATED FACTORS AMONG DOCTORS IN A HOSPITAL IN SELANGOR

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### ABSTRACT

**Background:** Low back pain is relatively a major cause of disability among the working population and has a significant socioeconomic impact. This study was done to determine the prevalence and associated factors of low back pain among doctors in a hospital.

**Materials and Methods:** A cross-sectional study was done to determine the prevalence and associated factors of low back pain among doctors in a hospital in Selangor, Malaysia. Except for one hospital in Kuala Lumpur, no similar study has been done on medical doctors. Respondents' information include on socio-demographic (age, gender, race and marital status), occupational factors (length of service, average daily working duration, prolonged sitting, prolonged standing, awkward posture, static posture, sudden movement, lifting and forceful movement, physical factors, back care training) and psychosocial factors (job satisfaction, problems with colleagues, problems with employer, boredom in work and stress).

**Result:** There were 63 respondents from 90 (70%) approached, after simple random selected among doctors. The prevalence of low back pain among respondents was 65.1%. There were significant associations ( $p < 0.05$ ,  $n=63$ ), between low back pain and race, prolonged sitting, prolonged standing, awkward posture, lifting and forceful movement, and heavy physical work.

**Conclusion:** Since the prevalence was high, training on back care, proper sitting, standing and manual handling should be emphasized to reduce the problem.

**Keywords:** Low back pain, doctor, hospital

## 1.0 Introduction

Low back pain was described as a multifactorial biopsychological problem (Mitchell et al., 2008), affecting approximately 80% of people (Chiodo, 2003). Low back pain is a major cause of disability among the working population and has a significant socioeconomic impact (Andersson, 1979; Frymoyer et al, 1983; Kelsey et al, 1975). It is the most common and the most expensive source of compensated work related injury in industrialized countries (Frank et al, 1996; Injury Statistics, 1998).

Work related low back pain has been little studied among the medical doctors, especially in developing countries. It is pertinent then to enumerate its prevalence and identify the associated factors among doctors. The general objective of this study is to determine the prevalence of low back pain and its associated factors among doctors in a hospital in Selangor. The factors examined include socio-demographic factors (age, gender, race and marital status), occupational factors (length of service, average daily working duration, prolonged sitting, prolonged standing, awkward posture, static posture, sudden movement, lifting and forceful movement, physical factors, back care training) and psychosocial factors (job satisfaction, problems with colleagues, problems with employer, boredom in work and stress).

## 2.0 Methodology

A cross sectional study using questionnaires was conducted on medical doctors in a hospital in Selangor, on 11<sup>th</sup> May through 28<sup>th</sup> May 2009. Doctors who worked there for less than 12 months, or are pregnant, had previous direct injury of the back or had previously being diagnosed with spinal diseases, were excluded from the study.

The sampling frame was the list of all doctors minus those excluded. The sampling unit was a doctor chosen using the systematic random sampling method. By using the 70.5% prevalence of low back pain among doctors at Hospital Kuala Lumpur (Normadiah, 2005), a sample size of 80 was calculated.

The height and weight of subjects were measured. The questionnaire used was modified from the standardized Nordic questionnaire for the analysis of musculoskeletal symptoms, and subsequently validated. The questions include socio-demographic (age, gender, race and marital status), occupational factors (length of service, average daily working duration, prolonged sitting, prolonged standing, awkward posture, static posture, sudden movement, lifting and forceful movement, physical factors, back care training) and psychosocial factors (job satisfaction, problems with colleagues, problems with employer, boredom in work and stress).

The data was collected and analyzed using the Statistical Package for Social Sciences (SPSS) version 19.0, with cross-tabulation, Chi-square, and Fisher's Exact tests done to identify the associations between low back pain and the factors involved.

## 3.0 Results and Discussion

The response rate is 70% (63 out of 90 respondents). The prevalence of low back pain among doctors is 65.1% i.e. 41 out of 63 reported that they had low back pain in the last 12 months.

The non-respondents could not be contacted at their office within the specified time of research due to busy with clinical or surgical work.

**Table 1:** Socio-demographic factors of respondents

Socio-demographic characteristics (n= 63)	Frequency	Percentage (%)
Age groups (year)		
<40	41	65.1
≥40	22	34.9
Gender		
Male	35	55.6
Female	28	44.4
Race		
Malay	46	73.0
Chinese	7	11.1
Indians	10	15.9
Marital Status		
Single	10	15.9
Married	52	82.5
Divorced	1	1.6

Most of our respondents are in the age group <40 years (65.1%). There are 46 (55.6%) male respondents and 28 (44.4%) female respondents. They were 46 Malays (73.0%) followed by 10 Indians (15.9%) and 7 Chinese (11.1%). More than half of our respondents, 52 (82.5%), are married, with 10 (15.9%) single and 1 (1.6%) divorcee.

**Table 2:** Association between low back pain and socio-demographic factors

Variables (n= 63)	Low Back Pain		$\chi^2$ /Fisher exact test	P value
	Yes n (%)	No n (%)		
Age groups (year)				
<40	34(68.0)	16(32.0)	0.909	0.304
≥40	7(53.8)	6(46.2)		
Gender				
Male	23(65.7)	12(34.3)	0.014	0.906
Female	18(64.3)	10(35.7)		
Race				
Malay	34(73.9)	12(26.1)	6.685	0.032
Others	7(41.2)	10(58.8)		
Marital Status				
Single	6(60.0)	4(40.0)	2.091	0.347
Married/Divorced	35(66.0)	18(34.0)		

$p$  value < 0.05

The association between race and low back pain was significant ( $p < 0.05$ ). The prevalence of low back pain was 73.9% in Malays, followed by others (Indians and Chinese) 41.2%. This concurs with the previous study in Malaysia (Normadiah, 2005). The prevalence of low back pain was 66.0% in married/divorced respondents, hence is higher than the 60.0% in single

respondents. This result is again consistent with the findings of study done in Kuala Lumpur Hospital (Normadiah, 2005; Beija et al., 2005; Feldman et al., 1999). However, the association involving marital status is not statistically significant in our study. There was also no significant association between low back pain and age, in consistence with the study done in Kuala Lumpur Hospital. There were studies which found association between gender and low back pain (Normadiah, 2005; Mortimer et al., 2001; Smedley et al., 1995; Tiwari et al., 2003). However, no similar association was obtained in this study.

**Table 3:** Association between low back pain and occupational factors

Variables n= 63	Low Back Pain		$\chi^2$ / Fisher exact test	P value
	Yes n (%)	No n (%)		
Length of service (month)				
less than 24*	12(52.2)	11(47.8)	2.655	0.103
24 and above	29(72.5)	11(27.5)		
Duration of working hour (hours)				
less than 9*	10(52.6)	9(47.4)	1.855	0.173
9 and above	31(70.5)	13(29.5)		
Training on back care				
No*	11(55.0)	9(45.0)	1.310	0.252
Yes	30(69.8)	13(30.2)		
Prolonged sitting				
No*	33(60.0)	22(40.0)	4.917	0.042
Yes	8(100.0)	0(0.0)		
Prolonged Standing				
No*	19(46.3)	22(53.7)	18.139	0.001
Yes	22(100.0)	0(0.0)		
Wrong or awkward posture				
No	19(46.3)	22(53.7)	18.139	0.001
Yes	22(100.0)	0(0.0)		
Static Posture				
No	35(61.4)	22(38.6)	3.558	0.083
Yes	6(100.0)	0(0.0)		
Sudden Movement				
No	34(60.7)	22(39.3)	4.226	0.086
Yes	7(100.0)	0(0.0)		
Lifting and forceful movement				
No	24(52.2)	22(47.8)	12.493	0.001
Yes	17(100.0)	0(0.0)		
Heavy physical work				
No	30(57.70)	22(42.3)	7.151	0.006
Yes	11(100.0)	0(0.0)		
Other physical factors				
No	31(58.5)	22(41.5)	6.378	0.011
Yes	10(100.0)	0(0.0)		

Notes:  $p$  value < 0.05

Tiwari (Tiwari et al, 2003; Ghaffari et al., 2006) showed association between low back pain and prolonged sitting. This is also proved in our study. Prolonged standing, especially with a lordotic posture, produces strain on the facet joints and increased annular pressure, particularly in afternoon. The study by Karahan et al (2009) showed that there was an association between prolonged standing and low back pain.

Our study also found association between low back pain and prolonged standing. In our study, the association between awkward or wrong posture and low back pain is significant,  $p$  value  $<0.001$ . Among the respondents with low back pain, 51.2% has wrong or awkward posture. Forceful static or repetitive contraction of muscles may cause their corresponding tendons to stretch, thereby compressing their vascular epitenon, peritenon and endotenon microstructures. This in turn can cause ischaemia, fibrillar tearing and inflammation.

In our study, we found out that static posture and low back pain does not have a significant association,  $p$  value  $> 0.05$ . Back pain is most likely to occur when switching from one job to another, and not after pursuing a specific job for a long period of time, that is sudden movement. In our study, the association between low back pain and sudden movement is not significant,  $p > 0.05$ . There are only 7 out of 41 respondents with low back pain are exposed to sudden movement. Lifting and forceful movement is found to have a significant association with low back pain,  $p < 0.001$ . This is consistent with the previous studies (Yip et al., 2001; Karahan et al., 2009; Ghaffari, 2006; Omokhodan et al., 2004) found that heavy physical work (45%) was the most frequent activities reported to be associated with low back pain among these workers. Low back pain correlates with pain duration and place of work (Salameh et al., 2013), while in this study, significant association was found between low back pain and heavy physical work.

**Table 4:** Association between low back pain and psychosocial factors

Variables n= 63	Low Back Pain		$\chi^2$ /Fisher exact test	P value
	Yes n(%)	No n(%)		
Job Satisfaction				
No	7(63.6)	4(36.4)	0.012	1.000
Yes	34(65.4)	18(34.6)		
Problems with colleague				
No	37(67.3)	18(32.7)	0.917	0.434
Yes	4(50.0)	4(50.0)		
Problems with employer				
No	37(63.8)	21(36.2)	0.532	0.650
Yes	4(80.0)	1(20.0)		
Boredom in work				
No	34(64.2)	19(35.8)	0.127	1.000
Yes	7(70.0)	3(30.0)		
Stress				
No	25(67.6)	12(32.4)	0.244	0.621
Yes	16(61.5)	10(38.5)		

Notes:  $p < 0.05$

In this study, we found that there is no significant association between low back pain and job satisfaction. This is consistent with the studies by both Cunningham et al., (2006) and Yip et al., (2001) contrarily from the findings in the study done by Hoogendoorn et al., (2002). In addition, there is also no significant association between problems with colleagues and low back pain in this study, and supported by studies of Yip et al. (2001), Lefevre-Colau et al. (2009) and Hoogendoorn et al. (2002).

There is no significant association found in between problems with employers and low back pain in this study. This is consistent with some previous studies (Yip et al, 2001; Lefevre-Colau et al, 2009). Besides, this study does not show any significant association between low back pain and boredom at work, different from the study of Yip et al (2001) and Ghaffari (2006). This study found no association between low back pain and stress, consistent to the study by Cunningham et al., (2006) and Yip et al., (2001). However, in study by Karahan et al., (2009), there was a significant association between perceived stress level and low back pain. Factors associated with disability due to low back pain are work situation, low self-efficacy and depression (Marina et al., 2012). A study among health care providers in a Sibu District Hospital found that risk factors associated with low back pain were professional categories, bad body posture, lifting objects or patients and the increased levels of lifting, levels of job satisfaction and stressful job demands (Wong et al., 2010).

From the Chi-square and Fisher's Exact tests, race, prolonged sitting, prolonged standing, wrong or awkward posture, lifting and forceful movement, and heavy physical work were each significantly associated with low back pain. There was no association between low back pain and age, gender, marital status, length of service, average duration of working hours per day, static posture, sudden movement, training back care, job satisfaction, problems with colleagues, problems with employer, boredom in work, or stress.

#### **4.0 Conclusion and recommendation**

In conclusion, the prevalence of low back pain among doctors in the hospital is 65.1%. This value is close to the prevalence of low back pain among doctors in Kuala Lumpur Hospital, which was 70.5%.

In this study, no significant association between low back pain and length of service and duration of working hours. Also no significant association between low back pain and training on back care. This might be due to lack of practice of good posture during working regardless of the knowledge about back care.

The prevalence of low back pain was high, and it was associated with race, prolonged sitting, prolonged standing, wrong or awkward posture, lifting and forceful movement, and heavy physical work. Therefore, training on back care and proper sitting, standing and manual handling should be emphasized to reduce the problem.

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### Declaration

Authors declare that there is no conflict of interest regarding publication of this article.

### Authors' contribution

Author 1: Prepared draft of manuscript

Author 2: Prepared draft of manuscript

Author 3: Prepared draft of manuscript

Author 4: Editing draft manuscript

Author 5: Editing draft and final manuscript

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