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HIGH PREVALENCE OF LOW BACK PAIN AMONG MEDICAL STUDENTS IN MALAYSIA – A CONCERN FOR INTERVENTION

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Abstract: *This study aimed to determine prevalence and to identify factors associated with Low Back Pain (LBP) among medical students in a public university in Selangor, Malaysia. This is cross sectional study among undergraduate medical students in a public university in Selangor, Malaysia, conducted from May until June 2019 using a universal sampling via online questionnaire. The prevalence of ever having LBP since studying in medical school was 64.5% while the prevalence of having LBP is the past 12 months was 54.0%. Having current LB is associated with body mass index (p=0.031) and there was no significant difference between gender, pre vs clinical years, average sitting and standing hours, ways of carrying daily items and perceived stress scale. The prevalence of LBP among medical students in this medical school is high with obesity as a significant risk factor. Early personal and environmental intervention will be of benefit to the students.*

Keywords: *Low Back Pain, Malaysia, Medical Students.*

1. INTRODUCTION

Low back pain (LBP) is defined as pain in the lumbar region or as pain between the inferior margin of the 12th ribs and inferior gluteal folds (Ehrlich, 2003) and it is one of the commonest ailments globally (Hoy et al., 2012). LBP is also prevalent among graduate students and professionals. Studies among allied health students showed that the prevalence of LBP ranges from as low as 32% to 80% (Smith and Leggat, 2004; Brennan et al., 2007; Kędra et al., 2016).

Meanwhile, the prevalence among medical students worldwide was similarly high, ranging from 43% to 75.8% (Kennedy et al., 2014; Vujcic et al., 2018; Moroder et al., 2011; Aggarwal et al., 2013). In Malaysia, a cross-sectional study among a private Malaysian medical

college reported that near half (46.1%) of medical students had LBP in the past twelve months and associated with being in the clinical years, history of trauma and daily hours use of computers (Alshagga et al., 2013).

LBP is a multifactorial condition that can be divided into personal and environmental factors (Brennan et al., 2007). Several associated factors for medical students have been identified such as long class hours and taxing study curriculum (Moroder et al., 2011; Aggarwal et al., 2013), as well as heavy strain on the body from heavy bags, long-standing hours and awkward posture (Vujcic et al., 2018; Nyland and Grimmer, 2003).

Furthermore, LBP can be associated with a sedentary lifestyle and lack of physical activities (Moroder et al., 2011; Hendrick et al., 2011). Mental stress among medical students is common and such psychological factors can manifest as somatic sensations in the form of LBP (Hoy et al., 2012). LBP can affect students' performance hence early detection and intervention would be advantageous. This study aimed to determine the prevalence and to identify factors associated with LBP among medical students in a public university in Selangor, Malaysia.

2. METHODOLOGY

Study Design and Participants

This is a cross sectional study among undergraduate medical students in a public university in Selangor, Malaysia, conducted from May until June 2019 using universal sampling.

Study Tool

The questionnaire was constructed in English and consisted of four sections; Section A: socio-demographic information, Section B: prevalence, past history and characteristics of LBP, Section C: risk factors of LBP including ways of carrying daily items, perceived severity of carried items, average hours of sitting down and standing up per week, frequency of awkward sitting and history of trauma, and Section D: perceptions of LBP among medical students. Content validity was checked by orthopaedics and a family medicine specialist. Face validity was conducted by a pre-test with 20 undergraduate dental students with no changes made.

Data Collection

The questionnaire was distributed to all medical students via a web link to an online questionnaire. Respondents were briefed at the beginning of the questionnaire regarding the objective of the study, confidentiality and the respondents' rights to participate or refuse the survey.

Definition of Variables

LBP was defined as pain in the lumbar region or as pain between the inferior margin of the 12th ribs and inferior gluteal folds (Ehrlich, 2003). LBP in the past 12 months is defined as any episode of LBP that occurred in the past year. 'Ever LBP' is defined as any episode of LBP experienced by respondents since the enrolment of medical degree study. Body mass index was calculated using the WHO body mass index for Asian populations. The stress score was calculated using the total score of the Perceived Stress Scale 4 (PSS-4).

Statistical Analysis

Data were analysed using the IBM SPSS Statistics version 24. Chi square test was used to detect differences in proportions for factors associated with LBP.

Ethical Approval

This study was approved by the research ethics committee of Universiti Sains Islam Malaysia; project code USIM/JKEP/2019-45.

3. RESULTS

Three hundred and thirty-five students participated in this survey with a response rate of 76.0% (335/441). More than three quarters were females and the distribution between pre and clinical years was similar (Table 1). The prevalence of ever having LBP while studying at the medical school was 64.5% (216/335). The prevalence of current LBP (having LBP in the past 12 months) was 54.0% (181/335).

Table 1: Respondents' Characteristics

Variable	N (%)
Age (mean, s.d)	22.5, 1.65
Gender	
Male	94 (28.1)
Female	241 (79.1)
Studying Years	
Pre-clinical years	88 (48.6)
Clinical years	93 (51.4)
Body Mass Index	
Underweight	42 (12.5)
Normal	172 (51.3)
Overweight	96 (28.7)
Obese	25 (7.5)
Family History of LBP	
Yes	83 (24.8)
No	252 (75.2)

Among those who have current LBP, 70.2% cited dull pain as the typical pain characteristic of the last LBP episode (Figure 1) with a median pain score of 4 out of 10 (Figure 2). The majority (81.2%) of the current LBP lasted less than 7 days, although 11 students reported LBP lasting more than three months (Table 2). Only 6 (3.3%) students missed one or two days of classes due to current LBP while 175 (96.7%) did not miss any class day at all.

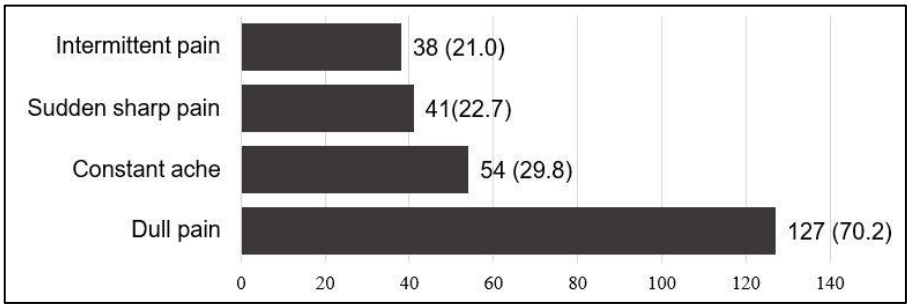

Figure 1: Pain Characteristics During The Last Episode of LBP (Percentage Are Not Mutually Exclusive)

Table 2: Duration of The Current LBP

Duration	n	%
Less than 7 days	147	81.2
1 to 4 weeks	18	9.9
1 to 3 months	5	2.8
More than 3 months	11	6.1

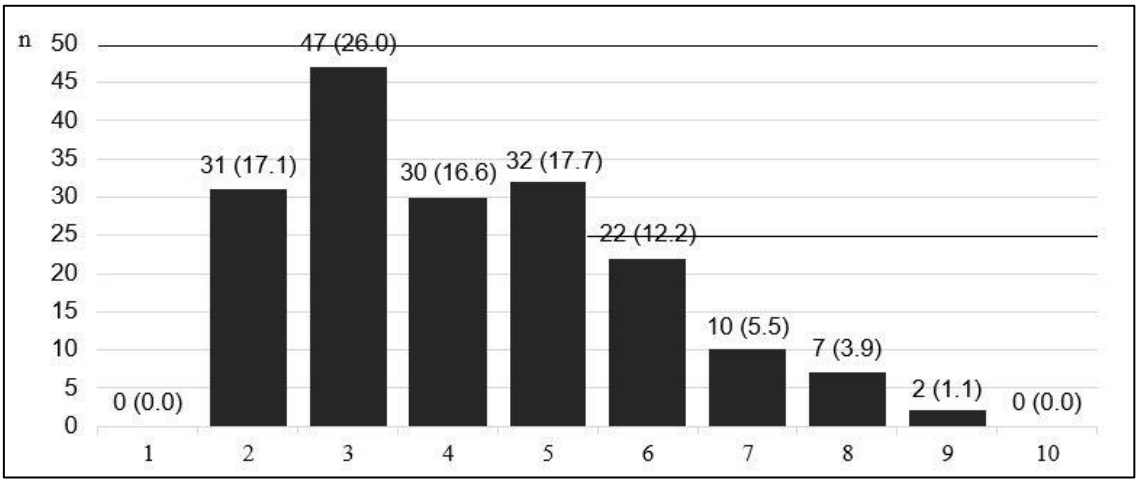

Figure 2: Pain Score of The Last Episod of Current LBP

Table 3: Medical Students' Perception Towards LBP

No	Statement	Response, n (%)				
		Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
1.	LBP is a self-limiting condition which does not require professional medical assessment.	96 (28.7)	119 (35.5)	75 (22.4)	38 (11.3)	7 (2.1)
2.	If I have LBP, it will not affect mydaily activities as a medical student	123 (36.7)	119 (35.5)	55 (16.4)	33 (9.9)	5 (1.5)
3.	I am not likely to get an episode ofLBP in the next 12 months.	37 (11.0)	71 (21.2)	125 (37.3)	74 (22.1)	28 (8.4)
4.	Active participation in sports / exercise will reduce the risk ofgetting LBP.	11 (3.3)	33 (9.9)	100 (29.9)	135 (40.3)	56 (16.7)
5.	I need to practice the correct wayof lifting heavy object to prevent LBP	1 (0.3)	1 (0.3)	21 (6.3)	64 (19.1)	248 (74.0)
6.	The chairs and tables in lecture halls are ergonomic which minimizes the risk of getting LBP.	132 (39.4)	84 (25.1)	63 (18.8)	29 (8.7)	27 (8.1)

Table 4 demonstrated factor(s) associated with current LBP. There was no significant difference between gender and having current LBP. Similarly, the distribution of current LBP was similar between the pre-clinical and clinical year students. With regards to body mass index based on WHO Asian classifications, obese students had a higher prevalence of current

LBP and the difference was significant (p-value = 0.031). There was no other significant factor associated with current LBP found in this study.

Table 4: Factors Associated With Current LBP Among Medical Students

Variable	Current LBP		X^2 Value	P Value
	Yes, n (%)	No, n (%)		
Gender			0.003	0.959
Male	51 (54.3)	43 (45.7)		
Female	130 (53.9)	110 (46.1)		
Body mass index			8.899	**0.031[a]**
Underweight	14 (33.3)	28 (66.7)		
Normal	98 (57.0)	74 (43.0)		
Overweight	53 (55.2)	43 (44.8)		
Obese	16 (64.0)	9 (36.0)		
Underweight	14 (33.3)	28 (66.7)		
Studying years			0.137	0.711
Pre-clinical years	88 (53.0)	78 (47.0)		
Clinical years	93 (55.0)	76 (45.0)		
Family history of LBP			0.300	0.584
Yes	47 (56.6)	36 (43.4)		
No	134 (53.2)	118 (46.8)		
Average sitting hours per day			1.740	0.187
Less than 8 hours	111 (53.4)	97 (46.6)		
8 hours or more	70 (55.1)	57 (44.9)		
Slouching when sitting down			2.170	0.338
Seldom	33 (46.5)	38 (53.5)		
Sometimes	47 (54.7)	39 (45.3)		
Frequently	101 (56.7)	77 (43.3)		
Ways of carrying items			1.452	0.484
Shoulder back pack	143 (53.6)	124 (46.4)		
Sling bag	32 (53.3)	28 (46.7)		
Hand carry	6 (75.0)	2 (25.0)		
Perceived heaviness of carried items			0.618	0.734
Light	38 (56.7)	29 (43.3)		
Moderate	96 (54.2)	81 (45.8)		
Heavy	45 (50.6)	44 (49.4)		
Average vigorous physicalactivities per week			0.101	0.751
Less than 2 hours per week	85 (53.1)	75 (46.9)		
More the 2 hours per week	96 (54.9)	79 (45.1)		
Perceived Stress Scale				
Mean : 7.02				
Standard Deviation : 28.86				
Exp (B): 1.04				
P-Value : 0.306				

4. DISCUSSION

The prevalence of LBP in the past 12 months among medical students in this study was high. LBP was similarly high among medical students in Pakistan (38.6%) (Haroon et al., 2018),India (47.5%) (Aggarwal et al., 2013), and Serbia (59.5%) (Vujcic et al., 2018) but not as high as reported in France (72.1%) (Amelot et al., 2019). Although, majority of students in our study suffered short duration, self-limiting and dull pain LBP. The high prevalence of LBP

is a legitimate concern for intervention as it has been shown to affect medical students' work, sleep pattern and quality of life (Amelot et al., 2019). In the current study, majority of students perceived that having LBP will affect their daily activities and learning.

Obesity has been shown to be a significant predictive factor of LBP (Zhang et al., 2018). The findings from our study is consistent with findings from other studies among students (REF). Additional body weight may increase the mechanical load on the spine or LBP can manifest through systemic chronic inflammation (Shiri et al., 2010). Furthermore, high amount of adipose tissue around the muscles and joints can limit a person's movements, thereby stressing musculoskeletal tissues potentially resulting in pain (van den Berg et al., 2008). Promoting ideal weight management will benefit students in many ways including reducing the risk of developing backache.

This study found that gender is not a factor associated with LBP. A previous study in Malaysia also found no association between gender and musculoskeletal pain among medical students. However, other studies (Amyra Natasha et al., 2018; Smith and Leggat, 2007; Vujcic et al., 2018) indicated that female students are at higher risk of getting LBP. Females have less muscle mass and strength than males and thus are more prone to strain-induced muscle pain (Wirth et al., 2013).

Poor ergonomic factors were not significantly associated with LBP in this study. Nonetheless, nearly two thirds of students believed that the chairs and tables provided could be more ergonomic and comfortable. Unlike a previous study in Malaysia (Alshagga et al., 2013), there was no difference in prevalence of LBP between pre- clinical and clinical year students found in this study. It is possible that both groups have their own risks for LBP, with the pre-clinical students having to endure long sitting hours while the clinical students were exposed to prolonged standing and awkward posture during clinical procedures.

5. STUDY LIMITATIONS

This study is limited by recall bias on the experience of LBP in the past. The use of an online survey has yielded a lower response rate in this study. This may be affected by the anonymity and volunteerism in an online survey. Reduction in the power of study may result in failure to detect real differences in the sample. The online survey also lacks detailed measurement of LBP risk factors such as ergonomics.

6. CONCLUSION

The prevalence of LBP among medical students in this medical school is high with obesity as an associated risk factor. Further evaluations of risks and complications of LBP are warranted. The early personal and environmental intervention will be of benefit to the students.

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