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Prevalence Of Low Back Pain And Its Associated Risk Factors Among AIMST Students: A Cross-Sectional Study

[1]Lee Soon Wei, [2] Nurhazrina Binti Noordin,
[3] Loon Yen Ying, [4] Lee Aik Chuan,
[5] Chong Miin Yi, [6]Yu Chye Wah,
[7]Raja Regan. [8]Esha Arora

[1]soonwei.lee98@gmail.com,
[2]nurhazrina@aimst.edu.my,
[3] loonyenying@aimst.edu.my, [4] leeaikchuan@aimst.edu.my,
[5]chong@aimst.edu.my
[6] chyewah@aimst.edu.my, [7]rajaregan@aimst.edu.my,
[8]esha@aimst.edu.my,
[1,2,3,4,5,6,7,8] School of Physiotherapy,
Faculty of Allied Health Professions,
AIMST University, Malaysia
Corresponding Author:
esha@aimst.edu.my

Abstract

Background: Low back pain (LBP) has been recorded as a disease with the most numbers to cause the disability and postural condition. This study aimed to determine the prevalence and to identify risk factors associated with low back pain among students in AIMST University in Bedong, Malaysia.

Methods: This cross-sectional study investigated 108 young adults, aged between 18 and 30 years of both sexes of AIMST University. The questionnaire included questions regarding demographic data, type of transportation, position maintained in the longest duration, body mass index and low back pain. The outcome was defined as discomfort localized below the costal margin and above the inferior gluteal folds in the last 6 months.

Results: The prevalence of LBP since past 6 months was 53.7%. The demographic data was not linkable to risk factors due to

insufficient of data collected. Driving as transportation method (61.1%) and sitting position as position maintained the longest (77.8%) had the largest number students and students who complaint of experience pain at the lower back. Only few of the students are of high risk (3.7%) to have LBP affecting their activities of daily living.

Conclusion: The prevalence of LBP among AIMST students is high with driving and in prolonged sitting position as a significant risk factor. Awareness of associated risk factors should be raised to prevent the occurrence of LBP in the future.

Keywords: Low back pain, AIMST students, prevalence, risk factors.

Introduction

Pain or soreness in the lumbar region, below the costal margin and above the gluteal fold, that may or may not radiate to the thigh, is what is known as low back pain (LBP) or lumbago. LBP is a sensorial and mental experience that could be trauma related. Since many different factors (such as physiological, emotional, and cultural ones) can cause an individual to experience pain stimuli, this condition is challenging to identify. It is difficult to characterize and describe this multidimensional experience, as well as to quantify it in figures or measurable data, due to the subjective nature of the complaints. Depending on the cause, there are various meanings of low back pain. Low back pain is described as "pain and discomfort, localized below the costal margin and above the inferior gluteal folds, with or without leg pain," in the Burton et al. (2006) European Guidelines for the Prevention of Low Back Pain. Low back pain is defined as "pain that occurs posteriorly in the region between the lower rib margin and the proximal thighs," according to Kinkade S. (2007), which is similar to the European recommendations. The term "non-specific low back pain," which is described as "low back pain not attributed to recognizable, known specific pathology," is used to describe the type of low back pain that is most frequently experienced. According to estimates, low back pain affects anywhere between 10% and 31% of people in industrialized nations. Back pain was ranked as the ninth and fifth most frequent complaint in public and private primary healthcare clinics, respectively, in Malaysia, between August and November

2012. Back pain prevalence was found to be 12%. (SS Hani and SM Liew, 2018). Low back pain had been separated into different groups for easier handling by health care workers. Acute, sub-acute, and chronic low back pain are the three categories that low back pain is typically divided into. This division is made based on how long the back discomfort has persisted. A low back pain incident that lasts less than six weeks is considered acute, one that lasts between six and twelve weeks is subacute, and one that lasts for twelve weeks or longer is chronic. The condition of the patients is first determined so that the following treatment plan can be suitable for the patients. Numerous factors, some of which may be present at the same time and interact to produce chronic low back pain, can cause back pain. These might include issues with the spine's mechanics or structure, inflammatory diseases, and other illnesses. It's also conceivable that the origin of your back pain has no known cause. Low back pain had been further divided into mechanical low back pain and structural low back pain or non-mechanical low back pain. Mechanical low back pain means the pain can be worsen, lighten or reproduced by movement, body positioning, or activity executed. Structural low back pain or non-mechanical low back pain is pain at the lower back which is constant and unaffected by movement, body positioning, or activity executed. Since the pain has a clear cause (congenital, neoplastic, inflammatory, infectious, metabolic, traumatic, degenerative, or functional), the first two diagnoses have a specified aetiology. Additionally, less than 15% of the adult, adolescent, and paediatric populations are affected by these types of pain. On the other hand, the cause of non-specific LBP is a mystery. The importance of this kind of research lies in the likelihood that adolescents in general will use computers and related technologies for work-related purposes. As a result, they will be exposed to risk factors that affect their quality of life in addition to assisting in the understanding of its underlying global causes and may reveal whether the factors vary depending on sociocultural characteristics. Thus, the objective of this study was to verify the prevalence of low back pain in students and its relationship with their daily life activities.

Methodology

The online survey form was created through google form and was being circulated within AIMST University. The study design was

Survey/ Cross sectional design. 200, 20% of 1000, AIMST students were chosen through random sampling method and survey link was sent to them through email and WhatsApp application. Inclusion criteria were Students study in AIMST University in Bedong, Malaysia, Age range between 18 to 30 years, which can be considered as young adults, either gender, male or female**,** ability to understand English, to be able to answer the survey form. Exclusion criteria were Students with recent injury or orthopedic surgery, Students with any other musculoskeletal problems such as pain at ankle or ankle sprain, wrist injury, knee injury, and elbow injury. Outcome measures taken were Acute Low Back Pain Screening Questionnaire to analyse the risk of having LBP affecting activities of daily living and Oswestry Low Back Pain Disability Questionnaire to analyse how many students was affected by LBP in their daily living.Questionnaires was sent to approximate 200 random students of AIMST university. Consent was included in the questionnaires as well as the Acute Low Back Pain Screening Questionnaire and Oswestry Low Back Disability Questionnaire. Other details such as demographic data (weight, height, age, and gender), transportation or nature of work done (sitting or standing position longer than 2hour) were included as well to identify the risk factors. Acute Low Back Pain Screening Questionnaire was used to screen for low back pain and Oswestry Low Back Disability Questionnaire was used to identify how severe is the low back pain affecting their daily life. The data was collected through online google forms and throughout the duration only 108 responses was able to be collected. The data collected was analyzing using IBM SPSS Statistics 25 and Microsoft excel.

Results

Table 1 Sample distribution according to demographic data of the students.

Demographic data	**Number of students**
Age (Mean±SD)	21.98±1.9
BMI(Mean±SD)	21.13±3.6
Gender (M:F)	19:89

Table 2 Sample distribution according to type of transportation to school associated with number of student's complaint of LBP.

Transportation	Number of students (%)	Number of student's complaint of LBP (%)
Walking	28(25.9)	14(24.1)
Carpooling	6(5.6)	2(3.5)
Driving	66(61.1)	38(65.5)
Public transport	8(7.4)	4(6.9)
Total	108(100)	58(100)

Table 3 Sample distribution according to position AIMST students stayed in the longest associated with number of student's complaint of LBP.

Position	Number of students (%)	Number of student's complaint of LBP (%)
Lying facing upward	5(4.6)	3(5.2)
Lying on your side	5(4.6)	1(1.7)
Sitting	84(77.8)	48(82.8)
Standing	14(13.0)	6(10.3)
Total	108(100)	58(100)

Table 4 Sample distribution according to Acute LBP Screening Questionnaire.

Acute LBP Screening	Number of students (%)
High risk	4(3.7)
Low risk	104(96.3)
Total	108(100)

Table 5 Sample distribution according to Oswestry Low Back Pain Questionnaire.

Oswestry	**Number of students (%)**
Minimal disability	96(88.9)
Moderate disability	7(6.5)
Severe disability	5(4.6)
Crippled	0 (0)
Bed bound	0(0)
Total	108(100)

Table 6 Sample distribution according to prevalence of low back pain among AIMST students.

Students' complaint	Number of students (%)
With LBP	58(53.7)
Without LBP	50(46.3)
Total	108(100)

This cross-sectional study assessed 200 students attending AIMST University in 2022 and 2023. A minimum of 132 responses were estimated to be collected among 200 students. Sample loss when collecting the survey responses was 24 students. The loss occurred due to some not responding or responses not valid. The final sample included 108 AIMST students, with a greater number of female students, a mean age ranges from 20 to 24, and a mean BMI of normal weight students (Table 1). More than half of the student's responded drove to university, most of the students had maintained sitting position the longest, and almost half of the students claim to have pain over the lower back. These characteristics are shown in Table 2, Table 3, and Table 6.A total of 108 responses were included in the data analysis. Most the students were female (82.4%) followed by males (17.6%). The mean age of the study participants was 21.98±1.9 years, while the mean BMI of the participants was 21.13±3.6 kg/m^2. (Table 1)Method of transportation had been classified into 4 type which is walking, carpooling, driving, and public transport. Most of the

students drove to school (61.1%) followed by walking (25.9%). Only a few chose carpooling (5.6%) and public transport (7.4%). The number of students complaint of experienced pain in the lower back were the most for driving (65.5%) compared to the other method. (Table 2)The duration to be count for the longest was fixed at more than 2 hours. 4 type of position were selected which is lying facing upward or supine lying, lying on your side or side lying, sitting, and standing. Most of the students had stayed in sitting position for the longest (77.8%) which followed by standing (13.0%). The least were supine lying (4.6%) and side lying (4.6%) which shared the same results. The number of students complaint of experienced pain in the lower back were the most for sitting (82.8%) compared to the other position. (Table 3)According to the questionnaire used, the results shows that only a minimum of 4 students (3.7%) among 108 respondents were having high risk while the other 104 students (96.3%) only have low risk. (Table 4)According to the questionnaire used, the results shows that most of the students experienced pain at the lower back were not affected by the pain during their activities of daily living (88.9%). Only a few students were determined as having moderate disability (6.5%) and severe disability (4.6%) followed by the outline. (Table 5)The results show that more than half of the student's complaint of experience pain at the lower back (53.7%). (Table 6)

Discussion

The prevalence of LBP in the past 6 months among AIMST students in this study was high (53.7%). 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 high prevalence of LBP is a legitimate concern for intervention, majority of students (88.9%) in the current study perceived experience pain at lower back does not affect too much of their daily activities and learning. Only a minority of the students (4.6%) perceived that having LBP was affecting their daily activities and learning. The other students (6.5%) only had mild disability due to the LBP. (Table 5) A total of 108 responses were included in the data analysis. Most the students were female (82.4%) followed by males (17.6%). The mean age of the study participants was 21.98±1.9 years, while the mean BMI of the participants was 21.13±3.6 kg/m^2. (Table

1) Age group, BMI and gender were not taking into consideration due to age group fall under young age range, BMI of majority are normal, and imbalance number of male and female respondents. In this study, the demographic data of the students were not able to count as risk factor for LBP. In this study, method of transportation showed that most of the students were driving to university compared to other method. The number of students complaint of experience pain at lower back were 38 students (65.5%) which was the highest compared to the students (34.5%) using other method with complaint. Walking has the second highest number which is 28 students (25.9%) and 14 of them complaint of pain (24.1%). Public transport and carpooling has the least which is 8 students (7.4%) and 6 students (5.6%) respectively. The number of students complaint of pain are 4 students for public transport (6.9%) and 2 students for carpooling (3.5%). The other potential risk factor was sitting position for a long duration. The number of students maintained in this position was the highest (77.8%). The complaint number also reached the highest (82.8%) compared to the other position maintained. The number was followed by standing position which had 14 students (13.0%) although seem less compare to standing but still the second highest with 6 students complaint of pain (10.3%). Supine lying or lying facing upward and lying on your side or side lying had the same least number which is 5 students (4.6%) each but students complaint of pain are 3 for supine lying or lying facing upward (5.2%) and 1 for side lying or lying on your side (1.7%). Other study such as (Bontrup et al., 2019) suggest that the levels of LBP are only partially linked to sitting behaviour itself, and that the multifactorial nature of LBP is therefore possibly more associated with sedentary lifestyle or other factors such as daily working hours, general fitness, and psychological stress. The study showed that maintaining a position in long duration can be a risk factor due to the multifactorial nature of LBP not only in sitting position. The results showed that driving had a maximum number of students complaint of LBP which is 38 students (65.5%) according to Table 2. This showed that driving had a high chances to contribute to the risk factor of having LBP compared to walking, carpooling, and public transport. Carpooling had the lowest chance to contribute to LBP which is only 2 out of 58 students (3.5%). Other study (Sakakibara et al., 2006) also indicated that the risk for LBP increased as the lumbar spine load accumulated day by day while driving a car almost every day without a holiday. These results showed that method of

transportation can be a risk factor leading to LBP. Out of all the factors chosen in the study, prolonged sitting position had been showing the highest number of students which was 84 (77.8%). It had the most students complaint of LBP which was 48 (82.8%) out of 58. Prolonged sitting provided the maximum number of students complaint of LBP showing that sitting for a long time might result in exaggeration of LBP or risk of having LBP. Although it might be a potential high-risk factor but according to the study (Kripa et al., 2021) claimed that association between posture and pain is only meager since pain can lead to poor posture but not poor posture can lead to pain. This meaning that students staying in sitting position may or may not have poor posture which can cause other issues in the future. The use of an online survey has yielded a lower response rate in this study. The collection of data was not very successful due to some of the students not able to fill in or filled in irresponsibly. 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.

Conclusion

To summarise, the current study found that the prevalence of LBP was high among AIMST students at 53.7%. Demographic data of the study were found not linkable to the prevalence and risk factor due to certain issues. Transportation and Position contributed in the risk factors according to the results of the data collection and analysis which driving and sitting had the highest percentage among other factors. Although both factor ended in sitting posture but studies mentioned that other factors such as duration, habit, nature of work might be the main factor causing sitting to be resulting in LBP. Therefore, further studies are needed to confirm and identify the main factors resulting in LBP. Even though this study is only a questionnaire based, it contributes to the knowledge about the risk factors of LBP and prevalence. The outcome measure used were proved to be able to collected certain data and determined the prevalence as well as the risk factor. Even though the data collected might only had low credibility due to the reduce number of participants. Risk factors that were expected was found and confirmed in the study. Although the students who had their daily

activities limited were less, awareness of the factors associated with LBP during study should be raised to prevent the occurrence of LBP in students in the future.

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