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Original Research

Prevalence and Factors Affecting Lower Back Pain Among Nurses in Rehabilitation Hospital Cheras, Malaysia

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ABSTRACT

Background: Nurses are a high-risk profession group that experiences lower back pain (LBP). Nurses who suffer from LBP may have difficulty standing up from a sitting position and lifting patients. One of the reasons that cause a high number of cases of lower back pain among nurses is the constant handling of patients manually, such as moving or transferring patients using the nurses' body strength. This study was conducted to determine the number of nurses who have lower back pain in Cheras Rehabilitation Hospital as well as the factors contributing to their LBP. **Methods:** A quantitative, cross-sectional, and, survey-based design was used as the research methodology to conduct this study. A total of 211 nurses in Cheras Rehabilitation Hospital were selected for this study. **Results:** The outcome indicated that the frequency of LBP occurrences is indeed higher among nurses, with 60.7% reporting LBP due to their job involving prolonged patients lifting. The problem of LBP developed among them after they began working as nurses, and most of them did not seek treatment to cure their LBP. Among the factors that contribute to the problem of LBP are lifting patients frequently, standing for long periods, the type of discipline work in, and working hours per week. **Conclusions:** Addressing these issues through ergonomic interventions, safe patient handling practices, and policies to reduce prolonged standing and excessive work hours is crucial for improving nurses' occupational health and well-being.

Keywords: Nurses; low back pain; rehabilitation centers; LBP

1. INTRODUCTION

Nursing is a profession that is commonly associated with a higher exposure to the risk for LBP and this phenomenon frequently happens among healthcare professionals. To reinforce this statement, several studies have been conducted regarding this topic. Nurses are among the category who have a higher probability of facing back injuries, which is 5 times higher compared to other health professionals.[1,2] It can be truly understood that pain is an uncomfortable and unpleasant emotional state of mind when it is being experienced by an individual, even though the pain can be easily identified in a certain part of the body. From the perspective of biology, pain is recognized as a defense mechanism or signal that is designed to prevent the injured part from further damage.[3] To be more specific, LBP can

also be referred to as lumbosacral pain or lumbago, which occurs between the human's 12th rib and the gluteal folds. LBP can lead to major disruptions in social, physical, and mental well-being, affecting an individual's daily activities. To a greater extent, LBP can lead to the loss of bodily function, deterioration of general health, and also a decrease in participation in social activities for individuals.(4)

LBP is one of the most serious health problems occurring in society and prolonged LBP can lead to disability.(2) LBP occurs when there is a sign of lumbar sprains or strains due to stretching of ligaments, tendons, or muscles in the lower back region. LBP is defined as pain occuring below the 12th rib and above the gluteal fold and the standard prevalence rate stands at 39%. LBP is considered critical if the pain persists for more than three months.(5) Besides, it can occur due to overuse, trauma, or improper use of the back. Nurses have been identified as one of the high-risk occupational groups for LBP. This is supported by statistics showing that 72% of Korean hospital nurses are experience LBP, and nurses who manually handle patients are 7.2 times more likely to report musculoskeletal symptoms.(6)

To be more specific, LBP ranks among the top 10 conditions leading to illness and disability, ranking higher than human immunodeficiency virus (HIV, or AIDS), road traffic accidents, lung cancer, tuberculosis, and chronic obstructive pulmonary disease.(7) If a nurse experiences LBP, several consequences may occur, including taking time off from work for more rest, and an increased risk of chronic pain. In the long run, it will affect the quality of health of an individual as it will affect the work output. Hence, LBP has been identified as one of the top causes of disability as it is estimated more than half of the total population will seek for the medical care for their back pain suffering over their lives. Hence, it is estimated that 12% of nurses quit their jobs every year due to the issue of back pain and more than half of the total registered nurses are complaining for their chronic back pain, and resulting to early retirement.(8) Such scenario has clearly explained why healthcare industry always encounters the problem of nursing shortage. In United Kingdom, 12% of nursing workers will have the consideration of job transfer each year to minimize their exposure on LBP.(9)

Besides, LBP can also lead to some psychosocial effects such as insomnia, anxiety, and depression. Nevertheless, those who suffer from LBP can back to normal activities upon recovery. Commonly, the symptoms of LBP will be experienced when the nurses are standing up from a sitting position or when lifting the patients. One of the reasons causing LBP among nurses is the high frequency of manual handling of patients, such as moving or repositioning a patient using the nurses' body strength. Approximately 80% of active nurses are currently suffering from LBP which imposes limitations on their professional activities. According to Ibrahim et al. on the study of prevalence of LBP among nurses in public hospitals in Penang and the outcome showed 76.5% of total respondents selected are suffering and haunted by the problem of LBP.(10) Among the contributors of occurrence of LBP discovered are longer working hours, persistent twisting of body while working, and prolonged manual patients handling in wards. While the study from Sah et al. on 101 nurses in National Medical College and Teaching Hospital Birganj, Nepal, 79 nurses or 78.2% are reported to experience LBP where half of them (50 respondents or 49.5%) are having mild pain, 24 respondents or 23.8% ae having moderate pain while only 5% are having severe LBP.(11)

Among the nurses, rehabilitation nurses have higher exposure to LBP when they are engaging in physically demanding tasks in handling disabled patients. This study is important for researchers to find out the number of nurses that have lower back pain and determine the occurrence of the phenomenon of LBP among nurses as well as its contributing factors among nurses at Cheras Rehabilitation Hospital. This research hopes to prevent LBP among nurses by raising awareness among nurses and hospital administrators in preparation for effective strategies as well as prevention measures to avoid LBP.

Based on the issues outlined above, this research has three specific objectives: to determine the prevalence of LBP among hospital nurses at Cheras Rehabilitation Hospital; to investigate the association between sociodemographic factors and LBP among nurses at Cheras Rehabilitation Hospital; and to identify the relationship between work-related factors and LBP among nurses at Cheras Rehabilitation Hospital.. In terms of the significance of the study, the Ministry of Health aims to investigate the prevalence of nurses with LBP and identify the risk factors that result in LBP among nurses. The study will administer effective strategies to reduce occurrences of LBP by providing a budget to buy equipment to help in patient transfer, organizing education programs on the prevention of

LBP, and increasing the number of nursing staff. Subsequently, in terms of nursing, the study will enable nurses to understand the factors leading to LBP. Hence, nurses can take early precautions to prevent the LBP from occurring. The study also will improve the knowledge of the nurses when performing their duties and handling patients by attending educational programs on LBP prevention and can improve the quality of their care. Nurses will be more aware to take responsibility for their health by taking preventive measures and coping strategies against work-related injuries, especially for LBP.

2. METHODS

2.1 Research Setting

The study setting is Cheras Rehabilitation Hospital, Kuala Lumpur, Malaysia. It is a government rehabilitation facility under the care of the Ministry of Health Malaysia that provides rehabilitation services to patients after an acute stage of illness or trauma. Cheras Rehabilitation Hospital commenced its business operations on 2 July 2012 and it is a national referral center that provides comprehensive rehabilitation medicine services in Malaysia. The hospital consists of six wards: Ward 1A (Geriatric ward), Ward 1B (Neuro Stroke Ward), Ward 1C (Spinal Ward), Ward 2A (Pediatric Ward), Ward 2B (Neuro Brain Injury Ward), Ward 2C (Musculoskeletal & Amputee Ward), and 4 clinics.

2.2 Study Design

A quantitative study was selected as the study design, where data were gathered from respondents and a series of statistical analyses were performed using the statistical software to analyze the data. A convenience sampling method was used in this study, whereby staff nurses in the ward, clinic, and units were selected based on their availability. The design is frequently used to assess the prevalence of health outcomes, understand health factors, and identify population characteristics. A cross-sectional study was chosen to observe the outcome at a specific point in time.

2.3 Population

There is a total of 315 nurses work in Cheras Rehabilitation Hospital. Inclusion criteria: Nurses who work in Cheras Rehabilitation Hospital and are willing to participate in this study and have signed the consent. Exclusion criteria: Nurses who refused to participate or who cubmitted incomplete survey forms. Nurses who were on leave were excluded.

2.4 Sample and Sampling Method

In this study, a convenience sampling method was used, whereby staff nurses in the wards, clinic, and units were selected based on their availability. A Google questionnaire was distributed to all nurses through WhatsApp with a total sample of 211 respondents based on their availability. The study included all respondents who met the inclusion criteria.

2.5 Research Instrument

The instrument used for data collection was adopted from validated questionnaires used in studies carried out by Gim (2017) after obtaining permission from the author.[2] An English version of the questionnaire in the form of Google Forms was distributed to the respondents. The questionnaire was divided into 3 sections. Section A consists of demographic information such as age, gender, level of education., and working experience as a nurse. Section B relates to the phenomenon of LBP encountered by the respondents, while Section C focuses on the treatment options for LBP.

2.6 Data Analysis

In this study, the data gathered were analyzed using the Statistical Package for Social Sciences (SPSS) version 27. For Section A, descriptive analysis was used to examine the prevalence of LBP based on the frequency, percentage, means, and standard deviation of the collected data. For Sections B and C, the Chi-Square test will be used to identify the p-value to determine the association between various factors and LBP among nurses at Hospital Rehabilitation Cheras.

2.7 Ethical approval

Ethical approval was granted by the University Ethics Committee, Universiti Teknologi MARA (Ref. Number: FERC/FSK/MR/2024/00174). To safeguard the participants. ethical principles including informed consent, confidentiality, and anonymity were strictly adhered to. Before distributing the questionnaire, the researcher explained the purpose of the survey and emphasized to the respondents that all the information gathered was solely for research purposes and would remain anonymous. All personal and private

information was protected and not disclosed without the consent of the owners. The information was stored properly to protect the data from any forms of unauthorized access or misuse in the meanwhile to protect against all relevant privacy regulations. The purpose of doing so is to ensure the respondents are fully informed on what they have filled out and for what purpose they fill up the questionnaire. Additionally, participation was entirely voluntary, and participants were free to withdraw at any time without facing any negative consequences. To ensure voluntary participation, the disclaimer was included on the preface of the questionnaire before respondents began filling it out. Hence, by submitting the questionnaires, respondents were deemed to have read and agreed on all the statements.

3. RESULTS

3.1 Socio-Demographic Characteristics of the Respondent

Table 1 shows the age distribution presented in ascending order where the largest age group is nurses who are aged between 31 years old to 40 years old which constitute 131 respondents or equivalent to 62.1%. It is followed by 55 respondents (26.1%) are aged between 20 years old to 30 years old. The remaining 25 respondents (11.9%) are aged more than 41 years old and they formed the minority participants group in this study. The findings indicate that the majority of workforces are in the early to mid-career stage. For BMI, more than 40% of respondents have normal BMI. There are 38.9% of respondents are overweight, 18.5% respondents are obese, and the remaining 1.4% are underweight. In terms of marital status, the majority of respondents (153 respondents or 72.5%) are married while the remaining 27.5% are single. When the nurses are married, they will have a higher tendency for work-life balance, and eventually, this will reduce the probability of suffering from lower back pain due to their social and family issues. In terms of education background, 201 respondents, or 95.3% possess a diploma in nursing, there are 9 respondents or 4.3% possess a bachelor's degree certificate. There is only 1 respondent who possesses a master's degree certificate. It indicates the majority of nurses only possess a basic education level and only a significant small of them possess a high education level.

Table 1. Socio-demographic characteristics of respondents

Demographic	Frequency	Percentage (%)
Gender		
Male	20	9.5
Female	191	90.5
Age		
20-30 years	55	26.1
31-40 years	131	62.1
More than 41 years	25	11.9
Height (Mean±SD)	159.36 (±5.68)	
Weight (Mean±SD)	66.26 (±10.81)	
BMI category		
Underweight	3	1.4
Normal	87	41.2
Overweight	82	38.9
Obese	39	18.5
Marital status		
Single	58	27.5
Married	153	72.5
Education achievement		
Diploma	201	95.3
Bachelor	9	4.3
Master	1	0.5

SD = Standard deviation

Table 2 shows majority of responders (69.7%) disclose that they have a higher frequency of lifting patients during their working hours, while 77.3% of respondents disclosed that the LBP is due to extended periods of standing while working. Of the total respondents, 26.5% are working in the neuro department, 14.7% are working in the musculoskeletal department, 10.9% are from the pediatric department, 12.8% are from the geriatric department, 16.6% are from the spinal department, while the remaining 18.5% are from other units. In terms of working hours, 62.6% of respondents reported that they work more than 40 hours each week, while 37.4% of respondents worked between 31 hours to 40 hours. 82.5% of respondents revealed that they did not encounter any issue of back pain for more than one day before entering nursing. There are only 17.5% of respondents reported that they experienced back discomfort for more than one day before joining as nurses. It clearly shows that LBP developed among the respondents after they joined as nurses.

Table 2. Factors of lower back pain

Factor	Frequency	Percentage (%)
Lifting patients frequently		
Yes	147	69.7
No	64	30.3
Standing for long periods		
Yes	163	77.3
No	48	22.7
What type of discipline do you work in?		
Neuro	56	26.5
Musculoskeletal	31	14.7
Pediatric	23	10.9
Geriatric	27	12.8
Spinal	35	16.6
Others	39	18.5
Working hours per week		
31 to 40 hours	79	37.4
More than 40 hours	132	62.6
Before entering nursing, did you ever suffer from back pain, lasting for more than one day?		
Yes	37	17.5
No	174	82.5

3.2 Prevalence of Lower Back Pain among Nurses in Hospital Rehabilitation Cheras

Table 3 below shows the phenomenon of the prevalence of LBP among nurses in Cheras Rehabilitation Hospital. The result shows that 128 respondents out of a total of 211 respondents or 60.7% are suffering from LBP currently. The remaining respondents do not face the problem of LBP for the moment. The result indicates that LBP is indeed a common general problem encountered by nurses since more than half of the total respondents are facing a similar problem.

Table 3. Prevalence of lower back pain

Status	Frequency	Percentage (%)
LBP	128	60.7
No LBP	83	39.3

3.3 Association Between Demographic and Lower Back Pain Among Nurses in Hospital Rehabilitation Cheras

Table 4 shows that age group, marital status, and education status have significant associations with lower back pain among nurses, with a p-value less than 0.05. However, gender and BMI showed no significant association with lower back pain. The result was revealed from Pearson Chi-Square. However, for education status demonstrated using Fisher's Exact Test. The decision to use Fisher's Exact Test for analyzing the education status data likely stems from the characteristics of the data itself. For Chi-Square expected cell frequency should ideally be 5 or more. If some expected frequencies are less than 5, Fisher's Exact Test provides a more accurate p-value.

3.4 Association Between Work-Related Factors and Lower Back Pain Among Nurses in Hospital Rehabilitation Cheras

Table 5 represents the test of association between lower back pain status with work-related factors. All of the factors stated except the current working discipline showed significant results. Lifting patients often and standing for long periods was significantly associated with lower back discomfort, (p-value < 0.001). Working hours per week had a statistically significant connection with lower back pain issues (p-value < 0.001). However, the current working discipline showed no significant result with lower back pain issues (p-value = 0.054). There was a significant between before entering nursing with lower back pain (p-value < 0.001).

4. DISCUSSION

The study found that 60.7% of nurses working at Cheras Rehabilitation Hospital reported experiencing LBP, while 17.5% indicated they began experiencing LBP after starting their nursing careers. Nursing, known for its physically demanding nature, consistently ranks as a high-risk profession for musculoskeletal disorders.[2,12,13] These findings align with previous research. 85% of nurses surveyed reported having experienced LBP at some point during their careers.[13,14] High prevalence of LBP among nurses, with a cumulative prevalence of 82.9%. Besides, the study by Almaghrabi et al. on 234 nurses working across nine different departments at King Abdulaziz University Hospital, Saudi Arabia reflected the cumulative prevalence of LBP of 82.9%, the annual prevalence of LBP was 85.5% and the one-week prevalence of LBP was 53.6% where the statistics were worrying.[9] Most respondents voiced out that the main reason leading to LBP was due to the manual lifting of patients. And it was discovered that the nurses who work in surgical wards are facing a higher prevalence of

Table 4. Association between demographic and lower back pain among nurses in hospital rehabilitation Cheras

Demographics	LBP n (%)	No LBP n (%)	Pearson chi square	p-value
Gender				
Male	12 (5.7)	8 (3.8)	0.004	0.949
Female	116 (55.0)	75 (35.5)		
Age				
20-30 years	19 (9.0)	36 (17.1)	75.40	<0.001*
31-40 years	108 (51.2)	23 (10.9)		
More than 41 years	1 (0.5)	24 (11.4)		
BMI category				
Underweight	2 (0.9)	1 (0.5)	0.82	0.845
Normal	52 (24.6)	35 (16.6)		
Overweight	48 (22.7)	34 (16.1)		
Obese	26 (12.3)	13 (6.2)		
Marital status				
Single	23 (10.9)	35 (16.6)	14.79	<0.001*
Married	105 (49.8)	48 (22.7)		
Education status				
Diploma	126 (59.7)	75 (35.5)		0.015[a,]*
Bachelor and master	2 (0.9)	8 (3.8)		

* Significant level at 0.05; a Fisher exact test

Table 5. Association between work-related factors and lower back pain among nurses in Hospital Rehabilitation Cheras

Factors	LBP n (%)	No LBP n (%)	Pearson chi square	p-value
Lifting patients frequently				
Yes	117 (55.5)	30 (14.2)	72.77	<0.001*
No	11 (5.2)	53 (25.1)		
Standing for long periods				
Yes	117 (55.5)	46 (21.8)	37.10	<0.001*
No	11 (5.2)	37 (17.5)		
Current working discipline				
Neuro	35 (16.6)	21 (10.0)	10.86	0.054
Musculoskeletal	20 (9.5)	11 (5.2)		
Pediatric	11 (5.2)	12 (5.7)		
Geriatric	21 (10.0)	6 (2.8)		
Spinal	24 (11.4)	11 (5.2)		
Others	17 (8.1)	22 (10.4)		
Working hours per week				
31 to 40 hours	6 (2.8)	73 (34.6)	149.04	<0.001*
More than 40 hours	122 (57.8)	10 (4.7)		
Before entering nursing, did you ever suffer from back pain, lasting for more than one day?				
Yes	37 (17.5)	0 (0)	20.09	<0.001*
No	91 (43.1)	83 (39.3)		

*Significant level at p-value-< 0.05

LBP. While the study from Asadi et al. also gives the same outcome where 246 respondents or 70.3% of total respondents disclosed a history of low back pain.[15] There is no difference in the occurrence of LBP based on gender, marital status, smoking, occupation, and family history. Furthermore, the phenomenon is backed by a study from Tosunoz & Oztunc that the frequency of LBP in nurses is relatively high which is between 40% and

97.9% and it is more frequently to be happened among nurses compared to other individuals.[16] Hence, it can be regarded as LBP is one of the occupational health problems. In the meanwhile, the study from Bimol et al. showed out of the total respondents of 220 nurses, the 12-month prevalence of LBP was 69.8% which is due to the reasons of higher working stress levels, higher frequency in lifting heavy objects, prolonged standing hours, and less walking time during working.[17]

Based on the data gathered age, marital status, and education status are significantly associated with LBP.[18] Age appears to be a factor related to LBP, these findings indicate that younger nurses are more likely to report back pain compared to older nurses who are possibly stationed in less physically demanding roles. Marital status also shows an association and marital status suggests that married nurses might experience greater physical and emotional stress due to family responsibilities.[19] Education status is also significantly linked to LBP.[20] The significant domination of females in the profession depicts the common norm in nursing. Meanwhile, gender and BMI were found not to be associated with LBP in this study. Females with a BMI over 25 kg/m² were more common for LBP.[21] Higher prevalence of LBP among female nurses, which may be attributed to the predominance of females in the nursing profession and differences in physical work demands and tasks between genders.[20] This also may have been due to differences in physical work demands and male and female nursing tasks. Yet, the prevalence of LBP appears to be higher for nurses if compared to women of similar age in the same general population.[8] To eradicate or relieve the problem of LBP, the nurse needs to have the accessibility to assistive devices for patient care when conducting their role, have a balanced body weight, and work together with other nurses.[22]

Based on study findings, frequent lifting of patients is significantly associated with LBP. The major contributor to the occurrence of LBP is to manual lifting of patients.[18] On the other hand, the researchers had pointed out also those nurses who work in surgical wards will have a higher tendency to suffer LBP. Additionally, identified factors such as frequent bending or twisting, working in awkward positions, prolonged standing, and heavy workloads as contributing significantly to LBP among nurses in healthcare settings in Nigeria.[23] The unavailability of assistive devices for patient handling has also been identified as a reason contributing to LBP. In most developing countries where assistive devices are not available, nurses encounter difficulties in lifting and transporting patients.[1] The circumstances become more challenging for those nurses who work in intensive care units (ICU).[24] When the nurse suffers from LBP and no longer has the capacity to work, it will lead to an increase in the workload of other staff.

There is no significant association between workplace discipline and LBP that contrasts with the previous findings that shows who suggested that working in a specific ward is related to LBP.[2] Workplace is one of the risk factors of LBP, in which nurses working in the ICU are particularly susceptible to LBP due to the demanding nature of their tasks involving patient handling and transfers.[3] Working hours are significantly associated with LBP among nurses in Cheras Rehabilitation Hospital, which indicates that nurses who work more than seven hours per day are more likely to experience LBP.[10] Nurses with total working hours between 31-40 hours per week had higher occurrences of LBP.[2] Nurses have been identified as one of the most challenging professional healthcare sectors as it is the main duty and responsibility of nurses to provide 24-hour service to patients. Hence, they are always at risk for developing many occupational health problems due to the physically demanding nature of work such as working in the same position for longer periods where the task will bring a strenuous effect on the back, leading the nurses to encounter different health problem, particularly on the musculoskeletal part.[25] Standing for long periods and working hours per week had a statistically significant connection with LBP. Specifically, indicated that nurses who work for more than seven hours, frequently twist their bodies while working, manually handle patients in wards, as well as fatigue are among the reasons which led to the problem of LBP among nurses in Penang public hospitals.[22]

There was a significant between before entering nursing with LBP. On the other hand, there was a significant between before entering nursing with LBP. It is important to note this statistic because a proportion of the nurses entering the workforce could already be exhibiting some form of back injury or pain which may contribute to exasperating their condition due to the physical demands of the job at hand. This emphasizes the importance of early interventions and pre-

employment health assessments for employees entering these roles.[7]

LBP among nurses is a serious issue worldwide. Identifying the prevalence of LBP can help detect LBP before it takes hold through trials of early intervention. It has been suggested in previous studies that preventive measures by regular physical checks, identifying the risk factors, and promoting healthy lifestyles can reduce LBP risk and help in adopting protective behaviors.[19] Furthermore, the detection and intervention of chronic pain conditions is not only the most economical but the most effective approach to the condition.[13] It has been discovered that nurses were found to have 6 times the prevalence of back injuries if compared to other health professionals and the problem of LBP will lead to the problem of increasing work absenteeism and high costs incurred on occupational disability. A standard lead time required to recover from LBP is 7 days. LBP will result in a serious global economic impact. In the United States, patients with musculoskeletal conditions or any form of LBP problem have incurred a total annual medical fee of approximately $77 billion in 2018.[26]

Besides, this provides an opportunity to continuously improve processes by adapting to changing evidence and best practices. That is, review and update policies and interventions regularly according to the latest information to ensure that they are beneficial and effective.[21] Feedback from staff can also inform continuous improvement processes by providing insight regarding the practicalities of interventions and whether they work from the team's perspective.

5. CONCLUSION

Lower back pain (LBP) is a prevalent issue among nurses working in rehabilitation hospitals, significantly affecting their quality of life and work efficiency. The study highlights that a considerable proportion of nurses experience LBP, with factors such as prolonged standing, frequent patient handling, improper posture, and psychological stress contributing to its occurrence. Additionally, demographic characteristics like age, years of experience, and BMI play a role in the prevalence of LBP. To mitigate the impact of LBP, hospitals should implement preventive strategies, including ergonomic training, workplace modifications, and regular physical activity programs for nurses. Encouraging proper lifting techniques, adequate rest periods, and stress management interventions can also help reduce the incidence of LBP. Future research should focus on long-term interventions and policy implementations to improve the working conditions of nurses, ensuring both their well-being and optimal patient care. This study found that 60.7% of nurses at Cheras Rehabilitation Hospital suffer from LBP, highlighting significant risk factors such as age, marital status, education level, frequent patient lifting, prolonged standing, and extended working hours. These factors contribute significantly to LBP among nurses, reflecting the physical demands and workplace hazards they face. Addressing these issues through ergonomic interventions, safe patient handling practices, and policies to reduce prolonged standing and excessive work hours is crucial to improving nurses' occupational health and well-being. Implementing these measures could potentially lower LBP prevalence, enhance job satisfaction, increase productivity, and improve overall care delivery quality. It is also important for individuals to look into the matter of LBP seriously as there is the possibility where that LBP might develop into chronic pain or disability. It can be seen that one year after LBP recovery, 62% of respondents are found to still have pain and 16% of those LBP patients are still unable to work.

Ethical Approval

Ethical approval was granted by the University Ethics Committee, Universiti Teknologi MARA (Ref. Number: FERC/FSK/MR/2024/00174).

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Competing Interests

All the authors declare that there are no conflicts of interest.

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Underlying Data

Derived data supporting the findings of this study are available from the corresponding author on request.

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