# Prevalence and Risk Factors Associated with Low Back Pain among Bank Employees in Kuala Lumpur

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**Abstract**

**Introduction & Background:** Low back pain (LBP) is a prevalent health problem affecting people worldwide. It is one of the leading causes of disability, absenteeism, and reduced productivity among workers, resulting in significant economic burden to society. Among occupational groups, bank employees are at a higher risk of developing LBP due to prolonged sitting, poor ergonomics, and psychosocial factors associated with their job demands. According to the Global Burden of Disease study, LBP is the leading cause of years lived with disability worldwide, with a prevalence of 9.4% among the global population. In Malaysia, the prevalence of LBP is estimated to be around 24%, with a higher incidence among occupational groups, including bank employees.

**Method:** a descriptive cross-sectional study was performed on a sample of 171 bank employees selected from branches of HSBC, Public bank, CIMB, and Maybank. The study was conducted using a questionnaire survey distributed to the employees, and data was collected through Google form. The data collected was subsequently entered into Microsoft Excel and analysed using SPSS version 21.

**Results:** The results of this study indicated that 79.2% of bank employees suffered from low back pain. A higher prevalence of LBP was found in female employees than male employees. Additionally, work-related stress was associated with a higher prevalence of LBP. Other risk factors for LBP among bank employees included inadequate physical activity, poor sitting posture, and prolonged sitting hours.

**Conclusion:** The prevalence of low back pain among bank employees in Kuala Lumpur is high. According to this study, most of the respondents believe that inadequate rest intervals at work are a cause of the back pain. Psycho-social factors plays an important role in developing low back pain as stress increases the occurrence of musculoskeletal disorder.

**Keywords:** Low back pain, Bank employees, Risk factors, Prevalence

## Introduction

Low back pain (LBP) is a prevalent health problem affecting people worldwide. It is one of the leading causes of disability, absenteeism, and reduced productivity among workers, resulting in significant economic burden to society[1]. Among occupational groups, bank employees are at a higher risk of developing LBP due to prolonged sitting, poor ergonomics, and psychosocial factors associated with their job demands. Despite the high prevalence of LBP among bank employees, there is a lack of research on the subject, particularly in the Kuala Lumpur region[2]. Therefore, the current study aimed to investigate the prevalence of LBP and associated risk factors among bank employees in Kuala Lumpur.

LBP is a multifactorial condition that affects people of all ages and occupations, causing significant disability and economic burden. According to the Global Burden of Disease study, LBP is the leading cause of years lived with disability worldwide, with a prevalence of 9.4% among the global population. In Malaysia, the prevalence of LBP is estimated to be around 24%, with a higher incidence among occupational groups, including bank employees[3.]

Bank employees are exposed to various physical and psychosocial risk factors that may contribute to the development of LBP. Prolonged sitting, poor posture, and repetitive movements are some of the common physical risk factors associated with their job demands. Psychosocial factors such as high job demands, low job control, and low social support have also been linked to an increased risk of LBP among bank employees.

Despite the high prevalence of LBP among bank employees, there is a lack of research on the subject, particularly in the Kuala Lumpur region. Therefore, the current study aims to investigate the prevalence of LBP and associated risk factors among bank employees in Kuala Lumpur. The findings of this study could provide important insights into the burden of LBP among bank employees and inform the development of targeted interventions to prevent and manage LBP in this population.

## Methodology

The study was conducted in Kuala Lumpur the capital city of Malaysia. We conveniently selected seven banks such as Public bank, HSBC bank, Maybank and CIMB to collect data from their employees. The employees' consent was taken before conducting the survey. This study obtained the ethical approval from AIMST Ethical Committee (AIMST/2022/FAHP/0345). Eligible study participants had to be adult bank employees from selected branches of Public bank, HSBC bank, CIMB, and Maybank, capable of providing informed consent, and without a history of back injury or pregnancy.

During the study period, 171 online-based questionnaires were distributed to bank employees via Google Forms. Participants were invited to complete the questionnaire through an app called WhatsApp, which was sent to employees working at the time of the survey administration on April 29, 2022. Two reminders were sent to all potential participants spaced one month apart after the

initial message. The survey closed on July 29, 2022, and only fully completed questionnaires were included in the study. To ensure anonymity, no personal details or images of participants were presented in the study's results.

## Questionnaires & Procedure of data collection

The questionnaire consisted of 31 questions grouped into 5 sections covering socio-demographic data, pain features, physical factors at work, psychosocial factors, and general health. Questionnaire used in the study had previously undergone validity and reliability testing to ensure its effectiveness in measuring the intended variables. Participants were required to respond to both open-ended and closed-ended questions. Only fully completed and submitted surveys were included in the data analysis, presented as percentages. Responses were limited to one per participant, and closed-ended questions required a specific response, while open-ended questions allowed for free-form responses.

After the completion of data collection, the investigators reviewed each questionnaire for accuracy and completeness, and made any necessary amendments. The data was then entered into Microsoft Excel and transferred to SPSS version 21 for analysis. Prior to analysis, the data was cleaned and coded for accuracy.

## Results

The results of the descriptive statistics were expressed as mean, standard deviation, percentage, and frequency using tables, graphs, and charts. Binary logistic regression was employed to identify factors associated with LBP. Those variables with a p-value less than or equal to 0.2 from the bivariable analysis were a candidate for multivariable analysis. The multivariable analysis was used to control potential confounders and to declare the significance of the association, p-value <0.05 was used. Moreover, the magnitude of the association between different independent variables with dependent variables was measured using odds ratios with a 95% confidence interval.

**Table1 – Demographic characteristics of Bank workers in Kuala Lumpur**

| Variables | Category | Frequency (n= 171) | Percentage (100%) |
|---|---|---|---|
| Gender | Male | 45 | 26.3 |
| | Female | 126 | 73.7 |
| Age | 21-29 | 88 | 51.5 |
| | 30-39 | 76 | 44.4 |
| | 40 over | 7 | 4.1 |
| Marital Status | Married | 79 | 46.2 |
| | Single | 84 | 49.1 |
| | Divorced | 8 | 4.7 |
| Level of | Secondary Level | 13 | 7.6 |

| | | | |
|---|---|---|---|
| Education | | | |
| | Diploma | 33 | 19.3 |
| | Degree | 98 | 57.3 |
| | Masters | 27 | 15.8 |
| Job Designation | Customer Service | 70 | 40.9 |
| | Cashier | 24 | 14.0 |
| | Auditor | 36 | 21.1 |
| | Manager | 23 | 13.5 |
| | HR | 7 | 4.1 |
| | Project Coordinator | 7 | 4.1 |
| | IT Engineer | 2 | 1.2 |
| | Credit Controller | 2 | 1.2 |
| Weight | 50-60kg | 45 | 26.3 |
| | 60-70kg | 39 | 22.8 |
| | 70-80kg | 59 | 34.5 |
| | 80-90kg | 21 | 12.3 |
| | 90-100kg | 7 | 4.1 |

Results showed the frequency of back pain among male and female participants. Out of 171 participants, 138 reported having back pain, with 31 males and 107 females. This table displays the frequency of back pain among participants based on smoking status. Out of 171 participants, 138 reported back pain, with 26 smokers and 112 non-smokers. It showed the frequency of back pain among participants based on their alcohol consumption. Out of 171 participants, 51 reported drinking alcohol and 41 of them reported having back pain. Among the 120 non-drinkers, 97 reported back pain. It shows the relationship between back pain and work-related stress. Out of 171 participants, 138 reported having back pain, with 113 reporting experiencing work-related stress sometimes, 20 often, and 5 rarely.

**Backpain * Type_of_Chair * Arm_rest Crosstabulation**

Count

| Arm_rest | | | Type_of_Chair | | | Total |
|---|---|---|---|---|---|---|
| | | | Movalble | Fixed | 11.00 | |
| yes | Backpain | Yes | 92 | 12 | 1 | 105 |
| | | No | 25 | 2 | 0 | 27 |
| | Total | | 117 | 14 | 1 | 132 |
| no | Backpain | Yes | 21 | 12 | | 33 |

|  |  | | | |  |
|---|---|---|---|---|---|
|  | No | 3 | 3 |  | 6 |
|  | Total | 24 | 15 |  | 39 |
| Total | Backpain Yes | 113 | 24 | 1 | 138 |
|  | No | 28 | 5 | 0 | 33 |
|  | Total | 141 | 29 | 1 | 171 |

This table shows the frequency of back pain with respect to the type of chair and armrest. Out of 171 participants, 138 reported having back pain. Of those, 105 used a chair with armrests, while 33 did not. Additionally, out of the 132 participants who used a chair with armrests, 92 reported back pain.

| Variables | | | LBP | | OR with 95% CI | | P-value |
|---|---|---|---|---|---|---|---|
|  | | | Yes | No | Crude | Adjusted | |
| Gender | Female | | 107 | 20 | 1.63 (1.01, 2.69) | 3.05 (1.60, 5.82)* | 0.001 |
| | Male | | 31 | 13 | 1 | 1 | |
| Stress | Sometime | | 113 | 26 | 3.71 (1.91, 7.24) | 4.94 (2.29, 10.67)* | < 0.001 |
| | Often | | 20 | 1 | | | |
| | Rarely | | 5 | 6 | 1 | 1 | |
| Physical activity | Yes | | 129 | 29 | 2.18 (1.32, 3.59) | 2.96 (1.59, 5.53)* | 0.001 |
| | No | | 9 | 4 | 1 | 1 | |
| Type of Chair | Fixed | | 25 | 5 | 11.98 (5.25,27.35) | 11.29 (4.73, 27.01)* | < 0.001 |
| | Movable | | 113 | 28 | 1 | 1 | |
| Having a chair with an armrest | No | | 60 | 21 | 3.09 (1.75, 5.45) | 2.65 (1.37, 5.12)* | 0.004 |
| | Yes | | 98 | 106 | 1 | 1 | |
| Position at work | Sitting | | 95 | 93 | 1 | 1 | |
| | Standing | | 6 | 3 | 0.51 (0.25, 4.65) | 4.13 (0.67, 25.34) | 0.125 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Bending | 57 | 31 | 0.56 (0.33, 0.94) | 1.09 (0.56, 2.09) | 0.805 |
| Sitting position | Back straight | 42 | 56 | 1 | 1 | |
| | Back twisted | 9 | 2 | 0.17 (0.03, 0.81) | 0.57 (0.06, 5.39) | 0.622 |
| | Back bent | 107 | 69 | 0.48 (0.07, 1.64) | 0.77 (0.41, 1.47) | 0.433 |
| Lifting heavy objects | Yes | 82 | 48 | 1.78 (1.10, 2.86) | 2.42 (1.34, 4.37)* | 0.003 |
| | No | 76 | 79 | 1 | 1 | |

The risk of developing LBP among female bank workers was nearly three times higher than male bank workers, with an adjusted odds ratio (AOR) of 3.05 and 95% confidence interval (CI) of (1.60, 5.82). Work-related stress increased the odds of LBP by nearly five times, with an AOR of 4.94 and 95% CI of (2.29, 10.67). Bank workers who did not engage in physical activity had a nearly three times higher risk of developing LBP compared to those who exercised, with an AOR of 2.96 and 95% CI of (1.59, 5.53). Sitting on a fixed chair put bank workers at a much higher risk of developing LBP compared to sitting on a movable chair, with an AOR of 11.29 and 95% CI of (4.73, 27.01). The odds of LBP were nearly three times higher for bank workers who did not have a chair with an armrest, with an AOR of 2.65 and 95% CI of (1.37, 5.12). Lastly, bank workers who lifted heavy objects had nearly two times higher odds of developing LBP compared to those who did not lift heavy objects, with an AOR of 2.42 and 95% CI of (1.34, 4.37).

The occurrence of low back pain in bank workers seems to be influenced by the population under study and the geographical location of the study. The current research indicates that females are more likely to suffer from low back pain than males, which is consistent with the results from studies carried out in other countries such as Kuwait, Northwest Ethiopia, and Southwest Nigeria. This could be attributed to gender-specific factors such as premenstrual syndrome, premenstrual dysmorphic disorder, dysmenorrhea, and pregnancy.

According to this study, individuals who do not engage in physical activity have twice the risk of developing low back pain compared to those who do. A sedentary lifestyle can result in a lack of exercise and decrease in muscular strength and power, as well as a decrease in the spine's ability to maintain a normal water concentration. Lack of physical exercise and prolonged inactivity

can lead to LBP by making the back weak, rigid, and deconditioned.

## Conclusion

The study revealed a high prevalence of LBP among bank workers in Kuala Lumpur. Female bank workers, those with work-related stress, insufficient physical activity, using fixed chairs and chairs without armrests, and lifting heavy objects had significantly higher odds of developing LBP. To mitigate this risk, it is recommended to establish a health screening team, provide movable chairs and chairs with armrests, and prioritize the health of female workers and those experiencing work-related stress. Encouraging physical activity, including walking at least 150 minutes per week, is also recommended.

## References

1. Workneh, B. S., & Mekonen, E. G. (2021). Prevalence and Associated Factors of Low Back Pain Among Bank Workers in Gondar City, Northwest Ethiopia. Orthopedic Research and Reviews, Volume 13, 25–33. https://doi.org/10.2147/orr.s300823

2. Agten, A., Stevens, S., Verbrugghe, J., Timmermans, A., & Vandenabeele, F. (2020). Biopsy samples from the erector spinae of persons with nonspecific chronic low back pain display a decrease in glycolytic muscle fibers. The Spine Journal, 20(2), 199–206. https://doi.org/10.1016/j.spinee.2019.09.023

3. Akinbode Ogundele, O. (2017). Prevalence and Management Practices of Low Back Pain Among Commercial Motorcyclists in Ilesa Southwest, Nigeria. Science Journal of Public Health, 5(3), 186. https://doi.org/10.11648/j.sjph.20170503.15

4. Baldwin, K. M., & Haddad, F. (2001). Invited Review: Effects of different activity and inactivity paradigms on myosin heavy chain gene expression in striated muscle. Journal of Applied Physiology, 90(1), 345–357. https://doi.org/10.1152/jappl.2001.90.1.345

5. Hodges, P. W., James, G., Blomster, L., Hall, L., Schmid, A., Shu, C., Little, C., & Melrose, J. (2015). Multifidus Muscle Changes After Back Injury Are Characterized by Structural Remodeling of Muscle, Adipose and Connective Tissue, but Not Muscle Atrophy. Spine, 40(14), 1057–1071. https://doi.org/10.1097/brs.0000000000000972

6. Warnakulasuriya, S. S. P., Peiris-John, R. J., Coggon, D., Ntani, G., Sathiakumar, N., & Wickremasinghe, A. R. (2012). Musculoskeletal pain in four occupational populations in Sri Lanka. Occupational Medicine, 62(4), 269–272. https://doi.org/10.1093/occmed/kqs057

7.  SPIE. (2017). Charles Gay: A Brief History of Photovoltaics: Yesterday, Today, and Tomorrow. SPIE Newsroom. https://doi.org/10.1117/2.3201708.06

8.  PREVALENCE OF LOW BACK PAIN AMONG BANKERS OF LAHORE, PAKISTAN. (2018). Khyber Medical University Journal, 101–104. https://doi.org/10.35845/kmuj.2018.17948

9.  Kanyenyeri, L., Asiimwe, B., Mochama, M., Nyiligira, J., & Habtu, M. (2017). Prevalence of Back Pain and Associated Factors among Bank Staff in Selected Banks in Kigali, Rwanda: A Cross Sectional Study. Health Science Journal, 11(3). https://doi.org/10.21767/1791-809x.1000505

10. K Abledu, J. (2012). Multiple Logistic Regression Analysis of Predictors of Musculoskeletal Disorders and Disability among Bank Workers in Kumasi, Ghana. Journal of Ergonomics, 02(04). https://doi.org/10.4172/2165-7556.1000111

11. Dagne, D., Abebe, S. M., & Getachew, A. (2020). Work-related musculoskeletal disorders and associated factors among bank workers in Addis Ababa, Ethiopia: a cross-sectional study. Environmental Health and Preventive Medicine, 25(1). https://doi.org/10.1186/s12199-020-00866-5

12. Ali, M., Ahsan, G. U., & Hossain, A. (2020). Prevalence and associated occupational factors of low back pain among the bank employees in Dhaka City. Journal of Occupational Health, 62(1). https://doi.org/10.1002/1348-9585.12131

13. Akrouf, Q., Crawford, J., al Shatti, A., & Kamel, M. (2010). Musculoskeletal disorders among bank office workers in Kuwait. Eastern Mediterranean Health Journal, 16(01), 94–100. https://doi.org/10.26719/2010.16.1.94

14. Sulaiman, S., P, K., Ibrahim, A., & Nuhu, J. (2015). Musculoskeletal disorders and associated disabilities among bank workers. International Journal of Research in Medical Sciences, 3(5), 1153. https://doi.org/10.5455/2320-6012.ijrms20150523