International Journal of Physiotherapy Research and Clinical Practice

Original Article

Prevalence of Lower Back Pain and Disability Due to Improper Sitting Posture Among Non-Medical Employees

Resminder Kaur[1], **Rajan Balakrishnan**[2,*]

[1] *Senior Physiotherapist, MAHSA University, Malaysia*
[2] *Lecturer, MAHSA University, Malaysia*

ARTICLE INFO

Article history:
Received 08.01.2024
Accepted 13.01.2024
Published 25.02.2024

* *Corresponding author.*
Rajan Balakrishnan
rajanb007@gmail.com

https://doi.org/10.54839/ijprcp.v3i1.24.2

ABSTRACT

This study examines lower back pain among Malaysian non-medical workers and its link to poor sitting posture. The frequency of lower back discomfort, sitting posture habits, and potential contributing factors in this population are examined to improve workplace well-being and productivity. This study could inform ergonomic health therapies, policies, and practices. A detailed survey of 385 non-medical personnel yields critical findings. The statistics show that 90.1% of respondents reported lower back discomfort in the prior six months. Back discomfort frequency varied, with 37.1% reporting weekly and 31.7% monthly. Importantly, the study links poor sitting position to lower back discomfort. Leaning forward or slouching increased back pain, emphasizing the necessity of appropriate sitting posture. The consequences of these discoveries are broad. Workplace ergonomics should include good seating posture teaching and ergonomic furniture. Healthcare providers can customize solutions to non-medical employees' needs, while lawmakers can include ergonomics into workplace legislation to protect workers. The study also guides future research. Cross-cultural and longitudinal research may reveal cultural differences in ergonomic practices and the long-term repercussions of bad sitting positions. The financial impact of ergonomic improvements and psychosocial factors on sitting posture and lower back pain needs additional study. Thus, this study supports the growing need for employee-centric workplaces. Stakeholders can work together to promote ergonomic knowledge, interventions, and regulations that improve workplace health and productivity by understanding the substantial link between poor sitting posture and lower back pain. The research emphasizes proactive lower back pain management, improving non-medical workers' work lives.

Keywords: Non Medical workers; Google Qwestry questionnaire; Low back pain

1 INTRODUCTION

Lower back pain is a prevalent health issue that affects a substantial number of individuals globally. It is characterized by pain, discomfort, and stiffness in the lumbar region of the spine, often leading to functional limitations and disability[1]. Improper sitting posture has been identified as one of the contributing factors to the development and exacerbation of lower back pain. In today's modern society, non-medical employees, such as office workers, spend a significant amount of time sitting at their desks or workstations. Unfortunately, many individuals adopt incorrect sitting postures, which can contribute to the increased risk of chronic back pain and functional disabilities[2]. This section provides an in-depth exploration of the background information related to lower back pain, its prevalence, causes, and the impact of improper sitting posture among non-medical employees. Lower back pain is a widespread musculoskeletal condition that affects individuals of all ages and backgrounds. According to the Global Burden of Disease Study, lower back pain is the leading cause of disability worldwide, affecting over 540 million people at any given time[3]. It is estimated that approximately 80% of individuals will experience lower back pain at some point in their lives[4]. The prevalence of lower back pain varies across different populations and is influenced by factors such as age, gender, occupation, and lifestyle. Improper sitting posture is a significant risk factor for the development and exacerbation of lower back pain among non-medical employees. Prolonged sitting in a position that lacks proper support or alignment can place excessive stress on the

spinal structures, including the intervertebral discs, muscles, ligaments, and joints[3]. This can lead to muscle imbalances, reduced spinal stability, increased pressure on the discs, and postural deviations. Over time, these factors can contribute to the development of chronic back pain and functional limitations, impacting the individual's ability to perform daily activities and adversely affecting their quality of life. On-medical employees, particularly those in sedentary occupations such as office work, are prone to spending extended periods in a seated position. These individuals often work long hours at a desk or workstation, relying heavily on computers and other technological devices[3]. Unfortunately, many non-medical employees adopt poor sitting postures, characterized by slouching, hunching, or maintaining awkward positions for prolonged durations. According to[2], factors such as lack of awareness, inadequate ergonomics, and minimal access to ergonomic resources may contribute to the prevalence of improper sitting habits among non-medical employees.

2 RESEARCH OBJECTIVE

2.1 Primary Research Objective

To study the prevalence of lower back pain and disability in non-medical employees who sit Incorrectly.

2.2 Secondary Research Objectives

1. To find out the prevalence of lower back pain and impairment caused by poor seated position among non-medical employees.
2. To determine the improper sitting posture that might cause pain in the future
3. To determine the functional disabilities with participants' functional daily activities

2.3 Conceptual and Theoretical Framework

Underpinning theories provide a theoretical framework for understanding the relationship between lower back pain and improper sitting posture among non-medical employees. These theories help explain the mechanisms and factors that contribute to the development and persistence of lower back pain. This section discusses relevant underpinning theories that shed light on the understanding of this relationship.

2.4 Conceptual Framework

A conceptual framework provides a visual representation of the key concepts, relationships, and variables relevant to the study. It helps organize and guide the research process by illustrating the theoretical framework within which the study is conducted. Figure 1 provides the conceptual framework employed in the current study:

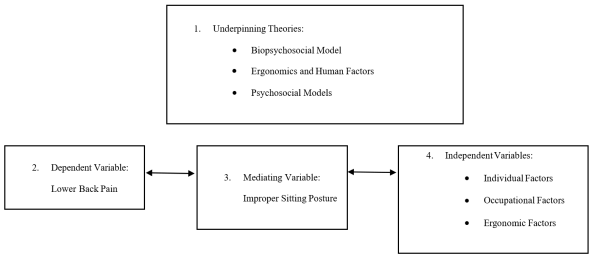

Fig. 1: Conceptual Framework for the Relationship between Lower Back Pain and Improper Sitting Posture among Non-Medical Employees

3 METHODOLOGY

1. Study Design: A cross-sectional study design
2. Study Population: Non-medical workers
3. Sampling: Simple random sampling
4. Sample Size: 385 participants:

- Inclusion Criteria

The study focused solely on non-medical employees in administration, finance, marketing, and human resources.

- Exclusion Criteria

Healthcare workers, doctors, nurses, and others in clinical responsibilities were excluded from the research.

3.1 Data Collection

The data collection involved the administration of the Google Qwestry questionnaire, a validated tool for assessing musculoskeletal symptoms and ergonomic risks. The online questionnaire was self-administered, and participants were given clear instructions on how to complete it. To ensure data quality and accuracy, participants were encouraged to answer all questions and seek clarification if needed.

3.2 Data Analysis

The collected data was analyzed using appropriate statistical methods. Descriptive statistics, such as frequencies, percentages, means, and standard deviations, were used to summarize demographic characteristics, prevalence rates of lower back pain, and improper sitting posture habits among non-medical employees. To assess the associations between improper sitting posture and lower back pain.

4 RESULTS AND DISCUSSION

4.1 Demographics

4.1.1 Gender

The above output reveals that about 48.8% of the 188 responses were female. This gender classification was most

What is your gender?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	188	48.8	48.8	48.8
	Male	155	40.3	40.3	89.1
	Non-Binary/Other	27	7.0	7.0	96.1
	Prefer not to say	15	3.9	3.9	100.0
	Total	385	100.0	100.0	

Fig. 2: Frequency distribution was run on the respondents' gender data, yielding the following

prominent. Following closely, 155 replies were male, 40.3% of the total. This group was the second-largest by gender. A smaller subset of 27 respondents, or 7.0%, identified as non-binary or "Other". Additionally, 15 respondents (3.9%) preferred not identifying their gender.

4.1.2 Age

What is your age/age range?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20-30	100	26.0	26.0	26.0
	31-40	110	28.6	28.6	54.5
	41-50	76	19.7	19.7	74.3
	Above 50	51	13.2	13.2	87.5
	Under 20	48	12.5	12.5	100.0
	Total	385	100.0	100.0	

Fig. 3: Frequency distribution was run on the respondents' age data, yielding the following

The analysis has revealed that about 26.0% of the participants were 20–30 years old. Age- based participant representation was highest in this age bracket. In quick succession, 110 respondents, or 28.6% of the total, reported ages between 31 and 40. This group has the second-largest age distribution. On the other hand, 76 participants, 19.7% of the total, were 41–50 years old. This age group became a significant portion of participants. A unique group of 51 respondents over 50 made up 13.2% of the total. Lastly, about 12.5% of the responders were under 20, including 48.

4.1.3 Occupation

The above output reveals that in terms of respondents' occupation, administrative assistants make up 0.3% of participants, followed by customer service reps (4.9%) and engineering/technical support personnel (10.4%). Health information management professionals (8.3%), hospital operations coordinators (9.4%), and hospital support workers (8.1%) are also represented. Human resources coordinators (1.6%), hospital unit clerks (5.7%), and IT support workers (10.4%) are also included. Marketing/communications (8.1%), medical billing/coding (5.5%), patient services (9.9%), quality assurance/compliance officers (9.4%), and supply

What is your occupation?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Administrative Assistant	1	.3	.3	.3
	Customer Service Representative	19	4.9	4.9	5.2
	Engineering/Technical Support Staff	40	10.4	10.4	15.6
	Finance/Accounting Specialist	1	.3	.3	15.8
	Health Information Management Specialist	32	8.3	8.3	24.2
	Hospital Operations Coordinator	36	9.4	9.4	33.5
	Hospital Support Staff (e.g., Housekeeping, Maintenance)	31	8.1	8.1	41.6
	Hospital Unit Clerk	22	5.7	5.7	47.3
	Human Resources Coordinator	6	1.6	1.6	48.8
	Information Technology (IT) Support Staff	40	10.4	10.4	59.2
	Marketing/Communications Specialist	31	8.1	8.1	67.3
	Medical Billing/Coding Specialist	21	5.5	5.5	72.7
	Patient Services Representative	38	9.9	9.9	82.6
	Quality Assurance/Compliance Officer	36	9.4	9.4	91.9
	Supply Chain/Purchasing Specialist	31	8.1	8.1	100.0
	Total	385	100.0	100.0	

Fig. 4: A frequency distribution was run on the respondents'occupation data, yielding the following

chain/purchasing (8.1%) professionals are also included.

4.1.4 Years Worked in Current Job

What is the number of years you have worked in your current job?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 – 5 years	75	19.5	19.5	19.5
	11 – 15 years	89	23.1	23.1	42.6
	15 years and above	92	23.9	23.9	66.5
	6 – 10 years	89	23.1	23.1	89.6
	Below 1 year	40	10.4	10.4	100.0
	Total	385	100.0	100.0	

Fig. 5: A frequency distribution was run on the respondents' years of experience in the current job data, yielding the following

The analyzed dataset revealed a variety of job experiences categorized by years in their current roles: About 19.5% of participants indicated 1 to 5 years of experience in their present roles. Another 23.1% worked 11–15 years. A significant amount of professional involvement was shown by 23.9% of individuals who had 15 years or more of experience in their current jobs. Another 23.1% reported a 6-to-10-year job tenure. A final category of 10.4% of participants had worked less than a year in their current positions.

4.1.5 Highest Education Qualification

Going by the above output, the dataset included a variety of educational achievements, separated by members' greatest degree of education: A bachelor's degree was held by 37.4% of participants. This category includes a significant number of study participants who finished undergraduate programs. Another 35.1% had a high school diploma or equivalent.

What is your highest educational qualification?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bachelor's degree	144	37.4	37.4	37.4
	High school diploma or equivalent	135	35.1	35.1	72.5
	Master's degree or higher	106	27.5	27.5	100.0
	Total	385	100.0	100.0	

Fig. 6: A frequency distribution was run on the respondents' years of experience in the current job data, yielding the following

Participants who completed secondary school fall into this category. About 27.5% of participants had master's degrees. This category includes those who have completed graduate school, suggesting specialized knowledge and academic achievement.

4.2 Prevalence of Lower Back Pain

4.2.1 Experiences of Lower Back Pain

Have you ever experienced lower back pain in the past six months?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	38	9.9	9.9	9.9
	Yes	347	90.1	90.1	100.0
	Total	385	100.0	100.0	

Fig. 7: A frequency distribution was run on the respondent's experiences of lower back pain, yielding the following output

The frequency distribution analysis of participants' six-month-old lower back discomfort shows that most have experienced it. In particular, 347 participants (90.1% of the sample) reported lower back pain within six months. However, 38 responders (9.9%) reported no lower back pain during this period. These studies demonstrate the prevalence of lower back discomfort in non-medical employees. The high percentage of respondents who experienced lower back discomfort in the past six months suggests this is a widespread concern. The significant prevalence of lower back pain in the workplace emphasizes the need to understand its causes, effects, and prevention methods. Thus, these data can be used to study lower back pain causes and devise ways to reduce its influence on non-medical workers' well-being and productivity.

4.2.2 Experiences of Lower Back Pain

The frequency distribution analysis of respondents' lower back pain shows significant trends. The respondents reported varying frequencies of lower back discomfort, indicating its prevalence. The largest frequency of lower back discomfort is weekly, with 143 people (37.1%) reporting it. After that, 122 respondents (31.7%) reported monthly lower back pain, demonstrating that many individuals had this issue. Additionally, 100 people (26.0%)

How often do you experience lower back pain?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Daily	20	5.2	5.2	5.2
	Monthly	122	31.7	31.7	36.9
	Occasionally	100	26.0	26.0	62.9
	Weekly	143	37.1	37.1	100.0
	Total	385	100.0	100.0	

Fig. 8: A frequency distribution was run on the respondent's experiences of lower back pain, yielding the following output

experienced occasional lower back discomfort, indicating less than monthly suffering.Only 20 responders (5.2%) complained of daily lower back pain. This implies that while everyday lower back pain is less common among participants, it nevertheless affects a significant portion of the population. The variety of lower back pain experiences among non-medical staff emphasizes the need to investigate the causes of varying frequencies. The study shows the complexity of issues non-medical personnel encounter and the need of designing solutions to meet these demands by assessing the frequency distribution of lower back pain.

4.3 Sitting Posture

How would you describe your typical sitting posture?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Leaning backward	84	21.8	21.8	21.8
	Leaning forward	102	26.5	26.5	48.3
	Slouched	102	26.5	26.5	74.8
	Upright	97	25.2	25.2	100.0
	Total	385	100.0	100.0	

Fig. 9: A frequency distribution was run on the respondent's sitting posture, which is hypothesized to be a contributor to the lower back pain, yielding the following output

The frequency distribution study of respondents' habitual sitting positions shows distinct patterns that may contribute to lower back pain. The findings reveal non-medical workers' sitting habits and lower back pain risk factors. The most prevalent sitting posture was "leaning forward," reported by 102 participants (26.5%). This posture involves forward tilting, which may strain lower back muscles and cause discomfort over time. Following closely, 102 (26.5%) reported a "slouched" posture, a rounded or curved back. This posture can also cause lower back pain by putting strain on it. Additionally, 84 (21.8%) reported sitting "leaning backward" as their usual posture. While less popular than the other two, this stance nonetheless represents a considerable number of participants. "Upright" posture, which maintains spinal alignment, was noted by 97 responders (25.2%). This suggests that many participants adopt an ergonomic, lower-back-healthy posture. These findings show that many non-medical workers may be sitting in ways that could

cause lower back pain. The distribution of sitting postures emphasizes the need for ergonomics interventions and education regarding posture's effects on lower back health. The study highlights the relevance of treating posture-related risk factors to reduce lower back pain in non-medical workers by identifying common sitting positions.

4.4. Chi-Square Analysis

As mentioned in the methodology part of the study, assessing the associations between improper sitting posture and lower back pain, called for performing inferential statistical analyses, using chi-square tests.

Lower Back Pain Experiences and Use of Ergonomic Furniture

A chi-square analysis was run to establish the possibility of an association between lower back pain experiences and the use of ergonomic furniture. That is, to tell if the use of ergonomic furniture at the workplace is a contributory factor or instead a solution to lower back pain experiences among the employees. The chi-square analysis yielded the following output:

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	12.202[a]	1	.000		
Continuity Correction[b]	11.032	1	.001		
Likelihood Ratio	13.298	1	.000		
Fisher's Exact Test				.000	.000
N of Valid Cases	385				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 17.17.

b. Computed only for a 2x2 table

Fig. 10: Pearson Chi-Square test between ergonomic furniture and lower back pain

The Pearson Chi-Square test statistic was 12.202 with one degree of freedom. The asymptotic significance, which measures the chance of such a relationship, was.000. This low p- value shows a statistically meaningful association between ergonomic furniture and lower back pain. Continuity Correction showed a value of 11.032 with one degree of freedom and a p-value of.001. The Likelihood Ratio statistic was 13.298 with one degree of freedom, producing a p-value of.000. Fisher's Exact Test, designed to measure statistical significance in smaller sample numbers, yielded exactly.000 for both two-sided and one-sided tests. All cell expected counts were above 5, with the least expected count being 17.17, indicating a good condition for chi-square analysis. The chi-square analysis shows a statistically significant link between ergonomic workplace furniture and lower back pain. This finding motivates additional investigation into this link, which may reveal how ergonomic furniture affects lower back pain in employees. The findings show a link between these two parameters among study participants. However, whether ergonomic furniture causes lower back discomfort or alleviates it needs further study. The statistically significant connection has numerous implications: First, ergonomic furniture may help reduce lower back pain. Ergonomic furniture may reduce lower back pain in employees by improving postural support and alignment.

Second, the findings may emphasize the relevance of ergonomic workplace furnishings. This emphasizes that ergonomic furniture can provide a healthier and more comfortable workplace, which may reduce lower back discomfort among employees. Additionally, the results may highlight the importance of training staff on ergonomics and ergonomic furnishings. Borrowing from [2], knowledge of ergonomic concepts and how to optimize such furniture may reduce lower back discomfort in employees. The statistical significance suggests a link, but the chi-square analysis cannot determine its direction. A more thorough study is needed to determine if ergonomic furniture reduces lower back discomfort. This may involve longitudinal studies, qualitative inquiries, or full ergonomic examinations to better understand ergonomic furniture and lower back discomfort. In summation, ergonomic workplace furniture is linked to lower back pain. While the implications may differ, the results emphasize the importance of ergonomic practices and may provide insights for improving employee well-being and reducing lower back discomfort.

4.5 Lower Back Pain Experiences and Taking Breaks at Workplace

A chi-square analysis was run to establish the possibility of an association between lower back pain experiences and taking breaks at the workplace. That is, to tell if taking breaks at the workplace is a contributory factor or instead a solution to lower back pain experiences among the employees. The chi-square analysis yielded the following output:

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	.084[a]	2	.959
Likelihood Ratio	.083	2	.959
N of Valid Cases	385		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 8.09.

Fig. 11: Chi-square analysis between workplace breaks and lower back pai

The chi-square analysis shows no statistically significant link between workplace breaks and lower back pain. This suggests that taking breaks does not affect lower back discomfort in study participants. The p-value is.959, significantly above the statistical significance level of.05.

This finding has multiple meanings, with the first one being the lack of association. The lack of statistical significance shows that working breaks may not directly affect lower back discomfortin employees. This suggests that employee break frequency and duration may not affect lower back pain prevalence. While the investigation found no significant correlation, lower back pain is influenced by many factors. Other factors including posture, ergonomic furnishings, physical activity, and predispositions may affect lower back discomfort more than breaks.

The other meaning is the need for further research. This analysis's lack of statistical significance does not prove a link between breaks and lower back pain. Future research could examine new variables, factor interactions, or research methods to acquire a better understanding.

The above findings in the study come with significant implications, especially on matters of workplace lower back pain knowledge, as well as treatment. For instance, the study has demonstrated that breaks alone are not a reliever of lower back discomfort. Besides, breaks may not directly reduce or do away with lower back discomfort, and instead, they are encouraged to prevent strain, while at the same time offering relief. Prevention as well as management of loweback discomfort calls for a holistic strategy, through the adoption of consider ergonomic furniture and appropriate sitting posture[3]. The list extends to frequent physical activity. The lack of a meaningful relationship emphasizes the need for a complete lower back pain treatment plan. This strategy should include ergonomics, employee education, and health promotion. As argued[5] by Karwowski and Marras , breaks improve well-being but may not solve lower back discomfort. The findings highlight the need for more research into the complex interaction between breaks, other factors, and lower back pain. Longitudinal or qualitative research could better explain how breaks, together with other factors, affect occupational lower back pain and management. In conclusion, taking breaks is crucial for overall health, but it may not be enough to prevent or relieve lower back discomfort in employees, requiring a more holistic approach to well-being.

5 CONCLUSION

The research paper examined lower back discomfort and incorrect sitting position among Malaysian non-medical workers, a major occupational health issue. A well-developed research methodology, including demographic analyses, chi-square tests, and frequency distributions, revealed substantial discoveries with far-reaching consequences for this employment group's well- being. The survey showed that many non-medical workers experience lower back pain monthly or weekly. This suggests that specific interventions and systemic adjustments are needed to ease these persons' physical discomfort and functional constraints. Sitting positions revealed a more important finding. The prevalence of lower back pain-causing positions like leaning forward or slouching highlights the need to address ergonomic issues in the workplace.

5.1 Implications

This study has far-reaching effects beyond lower back discomfort. The findings stress the importance of ergonomic awareness and practices for non-medical workers. Educational programmes should teach correct posture, ergonomic furniture use, and the importance of regular movement breaks. Such therapies relieve pain and promote musculoskeletal health and well-being. Second, company culture promotes employee wellness, according to the study. Ergonomic furniture, regular breaks, and a health-conscious culture show a dedication to employees' physical and mental wellbeing. Establishing such practices into corporate culture can boost productivity and retention by fostering loyalty, engagement, and job happiness. According to the study, interventions must be tailored to individual roles and responsibilities. Job functions require different ergonomics. Customized advice for each employee can boost intervention efficacy, making workers more spinal health aware. Healthcare systems and governments are affected by this study. Lower back pain in non-medical workers underlines the economic and social strain on healthcare and the economy. Preventive interventions can lower healthcare costs and boost industry productivity for governments and healthcare providers.

5.2 Recommendations and Areas of Future Research

Based on the study's findings, ergonomic education, ergonomic furnishings, and workplace movement breaks are recommended. These preventive steps can reduce lower back discomfort and improve employee well-being. Future research has numerous avenues. Chronic lower back pain may be affected by poor sitting position over time, hence longitudinal studies may be useful. We could learn more about this issue by studying how technology affects sitting posture and cross-cultural ergonomic practices. Compare ergonomic interventions and their productivity effects to make evidence-based workplace design decisions. Future research should also examine psychosocial aspects and ergonomic treatments' financial effects on sitting posture and lower back pain.

REFERENCES

1. Manchikanti L, Singh V, Datta S, Cohen SP, Hirsch JA. Comprehensive review of epidemiology, scope, and impact of spinal pain. 2014. Available from: https://pubmed.ncbi.nlm.nih.gov/19668291/.
2. Abolfotouh SM, Mahmoud K, Faraj K, Moammer G, El-Sayed AA, El-Hazmi. Prevalence, consequences and predictors of low back pain among nurses in a tertiary care setting. 2015. Available from: https://doi.org/10.1007/s00264-015-2900-x.

3. Dsouza A, Burke AL, Hlavenka TM. The prevalence of low back pain in working populations: A systematic review and meta-analysis. *Occupational and Environmental Medicine*. 2020;77(4):237–245.
4. Osullivan P, Caneiro JP, Okeeffe M, Sullivan K. Unraveling the complexity of low back pain. *Journal of Orthopaedic & Sports Physical Therapy*. 2018;48(6):451–453. Available from: https://doi.org/10.2519/jospt.2018.0605.
5. Marras WS, Karwowski W. Managing low-back disorder risk in the workplace. In: Salvendy G, Karwowski W, editors. Handbook of Human factors and ergonomics. CRC Press. 2019. Available from: https://doi.org/10.1002/9781119636113.ch22.