

Prevalence and Predictors of Low Backache among Office Workers: A Cross Sectional Observational Study**Baby Archana Rajulapati¹, P.T.V. Kiran Kumar ², S. Siva Kumar³, Bethala Suresh⁴, Santhosh Karunakar Dodda⁵**¹Assistant Professor, Department of Orthopaedics, Government Medical College, Srikakulam, Andhra Pradesh, India²Assistant Professor, Department of Orthopaedics, King George Hospital, Andhra Medical College, Visakhapatnam, Andhra Pradesh, India.³Assistant Professor, Department of Orthopaedics, King George Hospital, Andhra Medical College, Visakhapatnam, Andhra Pradesh, India.⁴Junior Resident, Department of Orthopaedics, Government Medical College, Srikakulam, Andhra Pradesh, India⁵Assistant Professor, Department of Orthopaedics, Government Medical College, Srikakulam, Andhra Pradesh, India

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Abstract:**Background:** Low backache is a common complaint among office workers, potentially linked to various occupational and lifestyle factors. This study investigates the prevalence and predictors of low backache in this population.**Methods:** A cross-sectional observational study was conducted with a sample of 100 office workers. Data on backache prevalence and potential predictors—such as sitting duration, ergonomic furniture availability, physical activity level, age, gender, workstation setup, stress levels and duration of employment—were collected through a structured questionnaire and analyzed.**Results:** The prevalence of low backache among participants was 48%. Prolonged sitting emerged as a significant predictor, with 82.86% of those sitting for more than 6 hours continuously reporting backache. Lack of ergonomic furniture was associated with a 60% prevalence of backache. Participants with a sedentary lifestyle reported a higher incidence (80%) compared to those with moderate (20%) and high (10%) activity levels. Age-wise, the highest prevalence was observed in the 51+ years group (73.33%). Gender-wise, females reported a higher incidence (60%) than males (40%). Participants using standard workstation setups had higher backache prevalence (60%) compared to those with standing desks (20%). High stress levels were associated with an 80% prevalence of backache. Employees with over 10 years of service reported 70% prevalence, which was higher than those with shorter employment durations.**Conclusion:** The study highlights the significant impact of occupational and lifestyle factors on the prevalence of low backache among office workers. Key predictors include prolonged sitting, lack of ergonomic furniture, low physical activity, older age, female gender, standard workstation setups, high stress levels, and longer duration of employment.**Keywords:** Low Backache, Office Workers, Occupational Health, Ergonomics, Physical Activity, Stress, Workplace Environment.

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Introduction

Low backache stands as a significant occupational health concern, particularly prevalent among office workers [1]. This prevalence is often attributed to unique factors inherent in their occupational environment and lifestyle. The onset of backache in this demographic is frequently linked to prolonged periods of sedentary work, inadequate ergonomic practices, and a range of work-related psychosocial

factors [2]. The impact of low backache extends beyond individual discomfort, influencing workplace productivity and contributing to increased absenteeism and healthcare costs globally [3]. The typical office work environment, characterized by extended hours of sitting, often in less-than-ideal postures, contributes to the development of musculoskeletal issues. Although

the benefits of ergonomic interventions in reducing the incidence of low backache have been well-documented, many office settings continue to operate with insufficient ergonomic support [4,5]. This gap highlights an area of concern and an opportunity for improvement in occupational health management.

Moreover, the influence of additional factors such as physical activity levels, age, gender, and stress on the prevalence of low backache among office workers is not fully understood. While these factors have been identified as potential contributors to backache, their specific impact within the office work environment requires further investigation [6,7]. The recent evolution in workplace dynamics, particularly the rise of remote and hybrid work models, underscores the need to reevaluate these predictors in contemporary office settings. The shift to working from home, for instance, brings new ergonomic challenges and lifestyle changes that could affect the prevalence and predictors of low backache [8].

This study is designed to investigate the prevalence of low backache among office workers and to identify and analyze key predictors. These predictors include prolonged sitting, the availability and use of ergonomic furniture, physical activity levels, age, gender, workstation setup, varying levels of stress, and the duration of employment. Understanding the interplay of these factors is vital for developing targeted strategies to reduce the risk and manage the impact of low backache in this population.

By providing comprehensive insights into the factors influencing low backache among office workers, this study aims to contribute significantly to the field of occupational health. The findings are expected to guide employers, policymakers, and health professionals in crafting more effective, evidence-based strategies for the prevention and management of low backache in office environments. In doing so, the study hopes to improve not only the health and well-being of office workers but also the overall efficiency and productivity of the workplaces they inhabit.

Methodology

Study Setting: This cross-sectional observational study was conducted at Government Medical College, Srikakulam, a key educational institution in the region. The college's office environment provided a suitable setting to investigate the prevalence and predictors of low backache.

Study Duration: The study spanned over a period of ten months, from March 2022 to December 2022. This duration allowed for comprehensive data gathering across different seasons and work patterns.

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Study Population and Selection Criteria: The study population included office workers employed at Government Medical College, Srikakulam.

Inclusion Criteria:

- Full-time office workers employed at the college.
- Age 18 years and above.
- Employment in an office setting for at least one year at the time of the study.

Exclusion Criteria:

- Individuals with a history of chronic back pain due to known non-occupational medical conditions such as congenital spinal disorders or rheumatologic diseases.
- Part-time workers or those employed for less than a year.
- Employees on long-term leave during the study period.
- Workers with a history of significant trauma or surgery to the back.

Sample Size and Sampling Technique

A sample of 100 office workers was determined to be statistically significant for this study. Systematic random sampling was employed, where every *n*th individual from the office worker roster was invited to participate, ensuring a representative and unbiased sample from the entire office workforce.

Data Collection Methods: Data were collected through a structured questionnaire, designed to capture demographic details (age, gender, duration of employment), and variables relevant to the study: prolonged sitting durations, ergonomic furniture usage, physical activity levels, workstation setup, and stress levels. The questionnaire was validated through a preliminary pilot study to refine its effectiveness and relevance.

Ethical Considerations: The study was conducted in accordance with ethical guidelines and standards. Informed consent was obtained from all participants. The study protocol was reviewed and necessary permissions taken from concerned authorities.

Data Analysis: Collected data were analyzed using appropriate statistical software. Descriptive statistics provided an overview of the participant demographics and prevalence rates. Inferential statistics, including chi-square tests for categorical data and logistic regression for predictor analysis, were applied to identify significant associations and predictors of low backache.

Results

Prevalence of Low Backache: Our study encompassed 100 office workers. Out of these, 48

reported experiencing low backache, establishing a prevalence rate of 48%.

Predictors of Low Backache

Prolonged Sitting: The duration of continuous sitting emerged as a significant predictor of low backache. Among participants sitting for over 6 hours continuously, 82.86% (29 out of 35) reported low backache. This prevalence was considerably lower among those sitting for 3-6 hours (37.5%, 15 out of 40) and less than 3 hours (16%, 4 out of 25).

Ergonomic Furniture: Access to ergonomic furniture was inversely related to low backache occurrences. Sixty percent (36 out of 60) of participants without ergonomic chairs experienced low backache, compared to 30% (12 out of 40) of those with ergonomic chairs.

Physical Activity Level: The level of physical activity was also a crucial predictor. A high incidence of low backache was reported by sedentary participants (80%, 40 out of 50), while only 20% of moderately active (6 out of 30) and 10% of highly active participants (2 out of 20) reported such issues.

Age Distribution: Age was directly proportional to the prevalence of low backache. Participants aged

51 years and above showed the highest prevalence (73.33%, 11 out of 15), followed by the 41-50 years age group (60%, 15 out of 25), 31-40 years (40%, 14 out of 35), and 20-30 years (32%, 8 out of 25).

Gender: A higher percentage of female participants (60%, 24 out of 40) reported low backache compared to male participants (40%, 24 out of 60).

Workstation Setup: Participants using standard setups had a higher incidence of low backache (60%, 42 out of 70) than those with standing desks (20%, 6 out of 30).

Stress Levels: Participants with high stress levels reported a significantly higher incidence of low backache (80%, 32 out of 40) compared to those with moderate (30%, 12 out of 40) and low stress levels (20%, 4 out of 20).

Duration of Employment: The duration of employment was positively correlated with low backache. Participants employed for more than 10 years reported the highest prevalence (70%, 21 out of 30), followed by those employed for 5-10 years (40%, 16 out of 40) and less than 5 years (36.67%, 11 out of 30).

Table 1: Prevalence of Low Backache

Description	Count	Percentage
Total Participants	100	-
Participants Reporting Low Backache	48	48%

Table 2: Predictors of Low Backache - Prolonged Sitting

Sitting Duration	Number of Participants	Number Reporting Low Backache	Percentage
>6 hours	35	29	82.86%
3-6 hours	40	15	37.5%
<3 hours	25	4	16%

Table 3: Predictors of Low Backache - Ergonomic Furniture

Furniture Type	Number of Participants	Number Reporting Low Backache	Percentage
Without ergonomic	60	36	60%
With ergonomic	40	12	30%

Table 4: Predictors of Low Backache - Physical Activity Level

Activity Level	Number of Participants	Number Reporting Low Backache	Percentage
Sedentary	50	40	80%
Moderately Active	30	6	20%
Highly Active	20	2	10%

Table 5: Predictors of Low Backache - Age Distribution

Age Range	Number of Participants	Number Reporting Low Backache	Percentage
20-30	25	8	32%
31-40	35	14	40%
41-50	25	15	60%
51+	15	11	73.33%

Table 6: Predictors of Low Backache - Gender

Gender	Number of Participants	Number Reporting Low Backache	Percentage
Male	60	24	40%
Female	40	24	60%

Table 7: Predictors of Low Backache - Workstation Setup

Setup Type	Number of Participants	Number Reporting Low Backache	Percentage
Standard setup	70	42	60%
Standing desks	30	6	20%

Table 8: Predictors of Low Backache - Stress Levels

Stress Level	Number of Participants	Number Reporting Low Backache	Percentage
High	40	32	80%
Moderate	40	12	30%
Low	20	4	20%

Table 9: Predictors of Low Backache - Duration of Employment

Employment Duration	Number of Participants	Number Reporting Low Backache	Percentage
>10 years	30	21	70%
5-10 years	40	16	40%
<5 years	30	11	36.67%

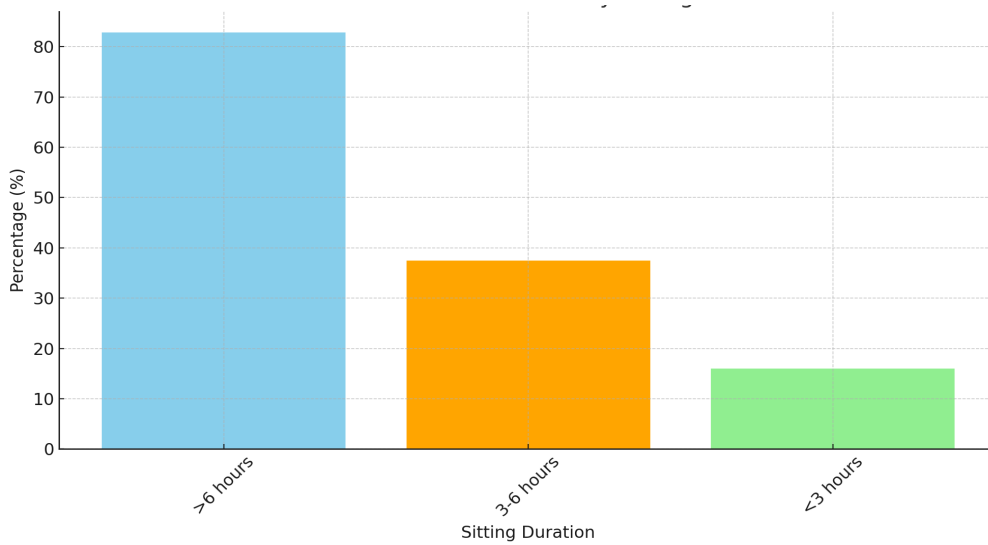


Figure 1: Prevalence of Low Backache by Sitting Duration

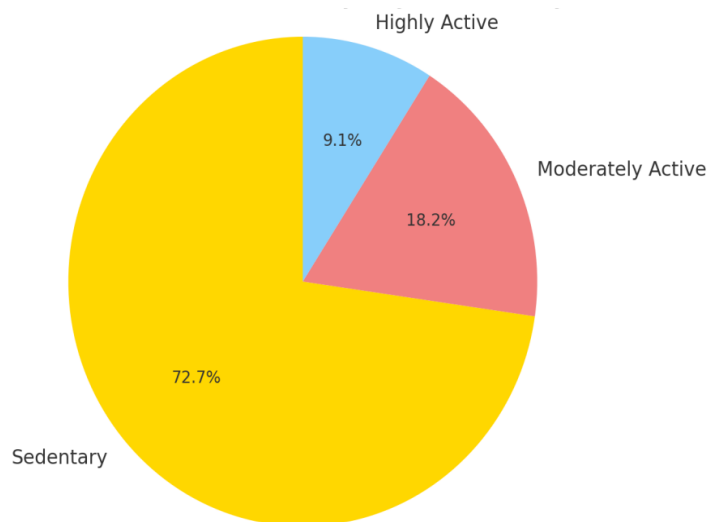


Figure 2: Prevalence of Low Backache by Physical Activity Level

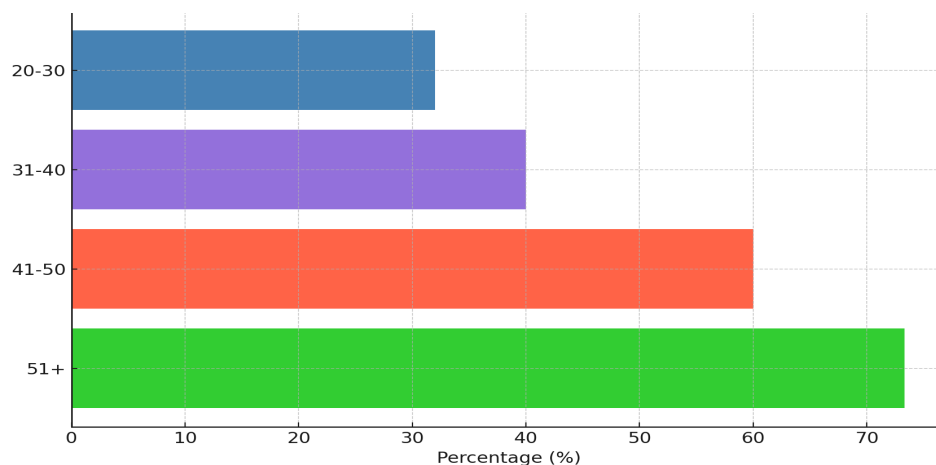


Figure 3: Prevalence of Low Backache by Physical Activity Level

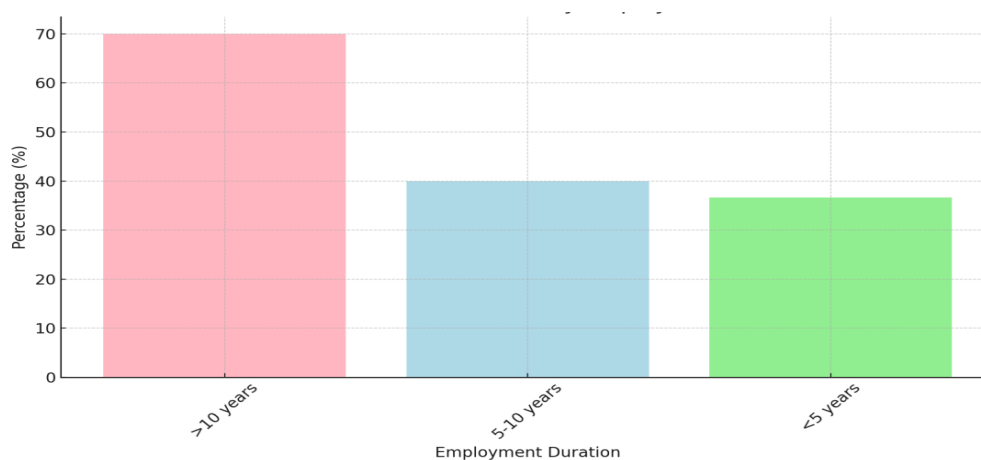


Figure 4: Prevalence of Low Backache by Employment Duration

Discussion

This study's aim was to elucidate the prevalence of low backache in office workers and unravel the key contributing factors. A notable finding was that nearly half of the study population (48%) reported low backache, a figure aligning with existing literature that highlights the pervasive nature of backache in office settings. This substantial prevalence points to an urgent need for addressing occupational health more effectively.

Prolonged Sitting and Ergonomic Factors: A pivotal discovery of this study was the strong link between prolonged sitting and low backache. The data clearly support the hypothesis that extended periods of sedentary behavior are a significant contributor to back pain in office environments.

This finding is in harmony with a growing body of research underscoring the negative impact of prolonged sitting on musculoskeletal health⁹. Furthermore, the lack of ergonomic furniture emerged as a noteworthy factor. Participants without ergonomic chairs reported backache more frequently, suggesting a pressing need for ergonomic solutions in the workplace. This indicates a gap in current occupational health

practices and underscores the importance of ergonomic assessments and interventions in office settings [10].

Physical Activity: The inverse correlation between physical activity and the prevalence of low backache observed in our study reflects findings from similar research. It appears that regular physical activity serves as a protective factor against backache. This finding has significant implications for workplace wellness programs [11]. It suggests that encouraging regular exercise and physical activity could be a valuable strategy in mitigating the risk of low backache, thereby enhancing overall employee health and productivity [12].

Age, Gender, and Stress: Our study's demographic analysis revealed that older age groups and female employees were more susceptible to low backache. These results are congruent with literature indicating age-related degenerative changes and a potential gender predisposition to musculoskeletal conditions [13].

Additionally, a strong association between high stress levels and increased incidence of backache was observed. This highlights the multidimensional

nature of back pain, where psychological factors play a crucial role [14]. Implementing stress management strategies and mental wellness programs could therefore be beneficial in reducing backache prevalence [15].

Limitations

The study is not without limitations. Its cross-sectional design limits the ability to establish causality between the observed factors and low backache. The reliance on self-reported data might also lead to bias, as participants' perceptions and recall may influence their responses. Future research should consider longitudinal studies to better understand the causative relationships and dynamics over time.

Implications for Workplace Health Policy: The findings of this study carry substantial implications for workplace health policies. The need for ergonomic workstations and the promotion of regular movement breaks are evident. Additionally, the importance of fostering a workplace culture that supports physical activity and stress management cannot be overstated.

These interventions could play a crucial role in reducing the prevalence of low backache, leading to improved employee health, satisfaction, and overall productivity.

Conclusion

Our study highlights the significant role of various adjustable factors in the occurrence of low backache among office workers. Implementing specific interventions that focus on these areas, especially ergonomic improvements, the encouragement of physical activity, and effective stress management, has the potential to greatly enhance occupational health outcomes. Concentrating efforts on these key areas can enable employers and health policymakers to cultivate a work environment that is not only healthier but also more vibrant and productive.

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