"Prevalence of Mechanical Low Back Pain among College Going Students by Use of Bike"

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ABSTRACT

To finding out the prevalence of mechanical low back pain among college-going students who regularly use bikes for commuting, and to identify contributing factors such as duration of riding and posture. It is a cross-sectional observational study was conducted among 68 college-going students aged 18–26 years who use bikes regularly. A self-structured questionnaire and Oswestry Disability Index (ODI) were used to assess the presence and severity of low back pain.The study aimed to assess the level of disability related to low back pain using the Oswestry Disability Index among participants. A total of 68 subjects were evaluated. The majority, 67.64% (n=46), reported minimal disability (0–20%), with a mean score of 3.37. Moderate disability (21–40%) was observed in 20.58% (n=14) with a mean score of 32.14. Severe disability (41–60%) affected 10.30% (n=7), showing a mean score of 47.42. Only 1.47% (n=1) were categorized as bed-bound (81–100%) with a score of 88. No participants fell into the severely crippled category (61–80%). These findings indicate that the majority of individuals experienced minimal to moderate levels of disability due to low back pain. The prevalence of mechanical low back pain among bike-using students was 30.88%.

Keywords: Low Back Pain, Oswestry Disability Index, Disability Score, Minimal Disability, Moderate Disability, Functional Limitation, Musculoskeletal Disorder, Bed-bound.

INTRODUCTION

Bike-sharing has also become a popular travel option for many people including college students in China.[1] LBP towards identifying underlying causes of pain in the low back, namely, structural and/or functional impairments or sensory impairments associated with chronic pain, and treating these impairments to alleviate the pain and improve a person's health state. Rehabilitative and preventive medicine conceive pain in the low back as a medical condition associated with a person's impaired functioning and health state.[3] Low back pain (LBP) is the most common orthopedic problem worldwide. According to some estimates approximately 60-80% of the general population will suffer from LBP at some point in their lifetime and 20-30% are suffering from LBP at any given time. Cross-sectional data demonstrate that initial onset of lower back pain commonly occurs around the age of 30 and peaks in occurrence between the ages of 45 and 60 years. LBP is no longer the disease of the old. Surprisingly, 39.8% of the adolescent population is also found to suffer from LBP.It limits daily activities in 10-40% of adolescents. In the US, LBP has been reported as the major factor responsible for limiting peoples' activities in those aged below 45 years and is a common patient complaint in clinics and frequent reason for hospitalization and surgery.[4,5,6] In adolescents, LBP has been found to be associated with growth spurts, hamstring and abdominal muscle flexibility, and smoking. It has also been correlated with discomfort in bed, physical inactivity, poor posture, and heavy back-packs. Medical schools tend to have demanding curricula, making students prone to a sedentary lifestyle and possibly increasing the risk of LBP[7]. Lifestyle factors, including smoking behaviour, lack of physical exercise, long travelling in bike and short sleep hours, are also considered to be risk factors of LBP.[8] LBP is also the leading cause of activity limitation that results in an economic burden on individuals, communities, and government, according to the World

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Health Organization (WHO, 2020).[9] LBP onset remains obscure, and the diagnosis is difficult to make even though several risk factors have been identified, such as depressive moods and body height or age (WHO, 2020).[10] It can begin suddenly due to an accident or by lifting something heavy or developing over time as a personage. Inactivity followed by a strenuous workout also can cause back pain. Student lifestyle tends to make them vulnerable to back pain.[11] Moreover, several studies found that there are many factors that could contribute to musculoskeletal pain in university students engaging in E-learning methods, including psychosocial and environmental factors. These factors could contribute to musculoskeletal pain either directly or indirectly[13,14]In addition, university students with musculoskeletal pain such as low back pain may experience some interference with their academic performance.[15]

LITERATURE REVIEW

Chen's study builds on this notion, suggesting that the integration of the internet with bicycle-sharing programs creates an effective and innovative form of transportation that not only supports environmental sustainability but also fosters a more efficient, flexible transportation system. This aligns with broader literature that highlights the potential of digital platforms to drive the success of the sharing economy, particularly in urban settings, where bike-sharing programs contribute to reduced traffic congestion and carbon emissions.[16] Kett et al.'s findings add to this body of knowledge by demonstrating that both the quality of sitting posture and the level of postural activity significantly affect muscle stiffness. Their study reinforces the importance of improving posture and integrating movement into daily routines to mitigate the risk of musculoskeletal disorders, particularly in individuals with sedentary lifestyles. By emphasizing these factors, the research provides insights into potential strategies for reducing low back discomfort and offers valuable guidance for ergonomics in workplaces or settings with prolonged sitting.[16]

METHODOLOGY

A total 68 subjects were included in the present study according to inclusion and exclusion criteria. All the students were taken from Career Point University Kota, Rajasthan

It is a Cross Sectional Study.

Inclusion Criteria

- College students aged [18-26] years.
- Regular use of a bike/motorcycle as primary transport (e.g., at least 3 days per week).
- Subject uses bike and scooty since 2 years with minimum riding of 20 Km
- Reported mechanical low back pain in the last [6 months].
- Willing to give informed consent.

Exclusion Criteria

- Fractures, infections and malignancy.
- Recent spine/back surgery or injury (within the last 12 months).
- Chronic conditions (e.g., arthritis, osteoporosis).
- Pregnancy
- Irregular bike riders (less than 3 days per week).

Instrumentations/Outcome Measures

- Pen
- Paper
- Patient consent form
- Data collecting sheet
- Google form.

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Outcome measures for the analysis of prevalence, the scores obtained from **oswestry Disability Questionnaire (ODQ)** were examined. The mean scores and their standard deviations were calculated for the entire sample, as well as for different subgroups based on demographic variables such as age, gender, and year of study.

Higher scores indicate greater disability, with scores ranging from 0% (no disability) to 100% (complete disability).

Levels of Disability based on ODI scores:

0-20%: Minimal disability.

21-40%: Moderate disability.

41-60%: Severe disability.

61-80%: Crippled.

81-100%: Bed-bound.

The use of the Oswestry Disability Index (ODI) allowed for the classification of disability levels based on the impact of back pain on various aspects of daily living. The data indicated the67.64% of the respondents had minimal disability, 10.30% experienced severe disability, 20.58% of the respondents had moderate disability and 1.47% were classified under the bed – bound category. This distribution not only confirms the presence of back pain but also emphasizes the extent to which it interferes with normal functioning, including sitting, standing, lifting, traveling, and social life. The ODI's specific domains helped identify which daily activities were most affected and contributed to a clearer understanding of how low back pain is experienced by this group.

RESULT

In this study, a total of 68 college going students participated in the study. The Oswestry Disability Questionnaire was standardized questionnaire used to measure the level of disability related to low back pain. Out of 68 participants, 21 reported mechanical low back pain.

Prevalence (%) = 21/68 × 100 = 30.88 %.

The prevalence of mechanical low back pain among bike-using students was 30.88%.

- Minimal disability was reported in 46students out of 68 students (67%)
- Moderate to severe disability was reported in 21 students out of 68 students (30.88%)
- Crippled disability was reported in 0 students
- Bed bound disability was reported in 1students out of 68 students (1.47%).

CONCLUSION

In conclusion, this research contributes to the growing body of evidence regarding musculoskeletal health in young populations and calls for proactive measures to prevent the chronic progression of mechanical lower back pain among students. Future studies with larger and more diverse populations are recommended to further explore associated risk factors and the long-term implications of early-onset back pain.

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