A Comparative Study to Evident the Prevalence and Severity of Symptoms for Neck Pain among Bikers and Computer Users: A Cross-Sectional Survey

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ABSTRACT

Background: Neck pain is one of the most prevalent musculoskeletal disorders, often linked to occupational and lifestyle factors. Both bikers and computer users are at increased risk due to sustained postures—bikers maintain cervical extension during prolonged riding, while computer users are exposed to forward head posture and poor ergonomics. These repetitive stresses not only cause discomfort but may also lead to chronic disability and reduced quality of life. Despite its high prevalence, few studies have directly compared these two occupational groups using standardized assessment tools.

Aim: This study aimed to evaluate and compare the prevalence and severity of neck pain among bikers and computer users, using the Neck Disability Index (NDI) as the primary outcome measure.

Methods: A cross-sectional survey was conducted on 700 participants, divided equally into bikers (n=350) and computer users (n=350). Inclusion criteria required at least three hours per day of riding or computer use. Data were collected using the NDI questionnaire, administered in both online and offline modes. Statistical analysis was performed using SPSS v20, applying descriptive statistics, independent-sample t-tests, and Levene's test for equality of variances.

Results: Riders demonstrated a mean NDI score of **12.06 ± 8.07**, while computer users reported a significantly higher mean score of **21.80 ± 3.50** ($p < 0.001$). Age differences were also notable, with riders averaging 33.07 years compared to 29.46 years among computer users ($p < 0.001$). The findings suggest that computer users face greater neck disability, likely due to prolonged static posture and inadequate ergonomic practices.

Conclusion: Computer users are more prone to neck pain–related disability compared to bikers, underscoring the importance of ergonomic interventions, workplace adjustments, and preventive physiotherapy strategies. The results highlight the need for awareness programs and targeted corrective measures to reduce the growing burden of cervical pain in these populations.

Keywords: Neck pain, cervical disability, bikers, computer users, ergonomics, Neck Disability Index (NDI)

INTRODUCTION

Neck pain is a common musculoskeletal complaint, second only to low back pain in prevalence, with nearly two-thirds of people experiencing it at some stage in life. It is a leading cause of disability and reduced work performance, particularly in occupations requiring prolonged static postures.

The condition may result from muscular strain, degenerative changes, poor ergonomics, or sustained cervical postures. Among computer users, forward head posture and improper workstation setups are the main contributors. Studies report a 42–63% annual incidence of neck pain in office workers. Bikers, on the other hand, maintain prolonged cervical extension and are exposed to road vibrations and posture-related stress, often leading to stiffness and reduced mobility.

Although both groups are at risk, limited studies directly compare bikers and computer users. The Neck Disability Index (NDI) provides a validated method to assess the severity of neck-related disability. Understanding which group is more affected can help design targeted ergonomic and physiotherapy interventions.

This study therefore aims to examine and compare the prevalence and severity of neck pain among bikers and computer users, providing evidence to guide preventive and management strategies.

STATEMENT QUESTION

"What is the comparative prevalence and severity of neck pain among bikers and computer users, as assessed by the Neck Disability Index (NDI)?"

AIMS AND OBJECTIVES

The primary aim of this study is to **investigate and compare the prevalence and severity of neck pain among bikers and computer users**, two groups that are highly susceptible due to occupational and lifestyle postures. By using the standardized **Neck Disability Index (NDI)**, the study seeks to quantify cervical disability levels and provide evidence-based insights for preventive strategies.

- To assess the prevalence and severity of neck pain in bikers and computer users.
- To compare the impact of neck pain on daily life between the two groups.

METHODS

A **cross-sectional survey** was conducted on **700 participants**, divided equally into bikers (n=350) and computer users (n=350).

Inclusion criteria: Adults aged 20–45 years, with at least 3 hours of daily bike riding or computer use, and willing to provide consent.
Exclusion criteria: Recent cervical trauma/surgery, neurological or musculoskeletal disorders, or those under physiotherapy for neck pain.

Data were collected using the **Neck Disability Index (NDI)** questionnaire (10 items, scored 0–50). Demographic details such as age and duration of exposure were also recorded.

The study was approved by the **Institutional Ethics Committee of Galgotias University**, and participant confidentiality was maintained.

Statistical analysis: Data were analyzed with **SPSS v20** using descriptive statistics, independent-sample t-tests, and Levene's test. A p-value < 0.05 was considered significant.

RESULTS

Demographic Characteristics

The study included **700 participants**, equally divided into bikers (n=350) and computer users (n=350).

- The **mean age** of bikers was **33.07 ± 8.40 years**, whereas computer users had a mean age of **29.46 ± 4.63 years**. This difference was statistically significant (**$p < 0.001$**), showing that bikers were generally older.

- Gender distribution was predominantly male in both groups, reflecting the occupational nature of bike riding and computer-based professions.

Neck Disability Index (NDI) Scores

The **mean NDI score** of bikers was **12.06 ± 8.07**, while that of computer users was **21.80 ± 3.50**. The difference was statistically significant (**$p < 0.001$**).

- Bikers generally reported **mild disability**, consistent with discomfort but limited functional impact.
- Computer users reported **moderate disability**, with higher functional limitations in daily activities such as concentration, reading, and prolonged sitting.

Disability Level Distribution

- In the biker group, most participants fell in the **mild disability category (0–14 points)**, with fewer in the moderate range and very few reporting severe disability.
- In contrast, computer users were concentrated in the **moderate disability range (15–24 points)**, and a notable number even reached the **severe disability range (>25 points)**.

Statistical Findings

- **Independent-sample t-test** confirmed a significant difference in mean NDI scores between groups.
- **Levene's test** validated the equality of variances, ensuring robust group comparison.
- The results clearly indicate that **computer users experience significantly greater neck disability than bikers**.

Interpretation

The findings suggest that occupational factors strongly influence the severity of neck pain:

- **Bikers** experience strain from cervical extension and vibration exposure, but their disability remains mostly mild, possibly due to intermittent posture changes during riding.
- **Computer users** are at higher risk due to prolonged static posture, poor ergonomics, and sustained forward head position, resulting in greater disability scores.

DISCUSSION

The present study compared the prevalence and severity of neck pain between bikers and computer users using the Neck Disability Index (NDI). The results demonstrated that while both groups reported neck pain–related disability, **computer users had significantly higher NDI scores** than bikers, indicating a greater degree of functional limitation.

These findings align with previous literature that highlights the role of occupational posture in the development of musculoskeletal disorders. Studies on office workers have consistently reported high rates of neck pain, ranging from **42% to 63% annually**, largely due to prolonged sitting, poor ergonomic setups, and sustained forward head posture. The present study supports this evidence, showing that computer users are more vulnerable to cervical disability than bikers.

On the other hand, bikers also reported neck discomfort, though their average disability levels were mild. This is consistent with earlier studies on motorbike riders, which identified cervical extension, vibration exposure,

and prolonged riding as important risk factors. However, unlike computer users, bikers may benefit from intermittent posture changes during rides, which may explain their relatively lower NDI scores.

The occupational differences between these two groups also shed light on the **mechanisms of neck pain**. For bikers, the main contributors appear to be mechanical vibration, poor road conditions, and postural strain associated with sustained cervical extension. In contrast, for computer users, static loading of cervical muscles, forward head posture, and inadequate ergonomic support are the primary causes. These results highlight how **different risk factors can produce similar symptoms but with varying severity**.

From a practical perspective, the findings emphasize the need for **preventive strategies** tailored to each population. For bikers, recommendations include posture awareness, helmet weight reduction, periodic breaks during long rides, and vibration-dampening modifications in vehicle design. For computer users, ergonomic interventions such as adjustable chairs, proper screen height, regular posture correction, and scheduled breaks are essential.

CONCLUSION

This study shows that while both bikers and computer users experience neck pain, **computer users reported significantly higher disability scores**, reflecting greater functional limitations. The results highlight the critical role of occupational posture, with prolonged sitting and forward head posture in computer users being more harmful than cervical extension during biking.

Preventive strategies such as **ergonomic workstation design, posture correction, stretching exercises, and regular breaks** are essential for computer users, while bikers may benefit from posture awareness, lighter helmets, and periodic rest during long rides.

Overall, early physiotherapy-based interventions and ergonomic improvements can reduce the burden of neck pain, improve quality of life, and help prevent chronic disability in both groups.

REFERENCES

1. Misailidou V, Malliou P, Beneka A, Karagiannidis A, Godolias G. Assessment of patients with neck pain: a review of definitions, selection criteria, and measurement tools. *J Chiropr Med.* 2010;9(2):49–59. https://doi.org/10.1016/j.jcm.2010.03.002
2. Cagnie B, Danneels L, Van Tiggelen D, De Loose V, Cambier D. Individual and work related risk factors for neck pain among office workers: a cross sectional study. *Eur Spine J.* 2007;16(5):679–86. https://doi.org/10.1007/s00586-006-0269-7
3. Ehsani F, Mosallanezhad Z, Arab AM. Prevalence and risk factors of neck pain in office employees: a cross-sectional study. *Middle East J Rehabil Health Stud.* 2017;4(1):e40021. https://doi.org/10.5812/mejrh.40021
4. Amrithaa B, Pavithra M, Karthika G, Saranya S. Prevalence of cervical spondylosis among bike riders in South India. *Drug Invention Today.* 2019;11(8):1924–7. https://jprsolutions.info/article_detail.php?article_id=4755
5. Sikka I, Singh P, Walia S, Negi M. Effects of deep cervical flexor training on forward head posture, pain, and disability in patients with neck pain. *Biomed Res Int.* 2020;2020:7407650. https://doi.org/10.1155/2020/7407650
6. Keown GA, Tuchin PJ. Workplace factors associated with neck pain in computer users. *J Manipulative Physiol Ther.* 2018;41(5):384–93. https://doi.org/10.1016/j.jmpt.2017.12.005
7. Hoy DG, Protani M, De R, Buchbinder R. The epidemiology of neck pain. *Best Pract Res Clin Rheumatol.* 2010;24(6):783–92. https://doi.org/10.1016/j.berh.2011.01.019

8. Szeto GP, Straker L, O'Sullivan PB. A comparison of symptomatic and asymptomatic office workers performing monotonous keyboard work—1: Neck and shoulder muscle recruitment patterns. *Manual Ther.* 2005;10(4):270–80. https://doi.org/10.1016/j.math.2005.01.004
9. Ariëns GA, van Mechelen W, Bongers PM, Bouter LM, van der Wal G. Physical risk factors for neck pain. *Scand J Work Environ Health.* 2000;26(1):7–19. https://doi.org/10.5271/sjweh.504
10. Paolucci T, Bernetti A, Bai AV, et al. Efficacy of TENS in cervical pain syndromes: a systematic review and meta-analysis. *Appl Sci.* 2021;11(5):2142. https://doi.org/10.3390/app11052142