

PREVALENCE OF NECK PAIN AMONG POSTGRADUATE PHYSIOTHERAPY STUDENTS IN RAWALPINDI AND ISLAMABAD

Bushra Azeem Awan^{*1}, Umm-e Habiba², Noori Riaz³, Muneeza Arshad⁴,
Abeera Tul Jannat Satti⁵, Sadia Ilyas⁶, Khadija Akbar⁷, Mahrukh Naz⁸

^{*1,2,4,7,8}Physiotherapist University of Lahore, Islamabad Campus

³Lecturer Iqra National University Odigram Swat

^{5,6}Physiotherapist Ibadat International University, Islamabad

^{*1}bushramalik151@gmail.com, ²Umme.habi01@gmail.com, ³nooririaz91@gmail.com,

⁴muneeza888@gmail.com, ⁵tuljannatabeera@gmail.com, ⁶Sadiaphysio18@gmail.com,

⁷Khadijaakbar777@gmail.com, ⁸Mahrukhnaz2001@gmail.com

DOI: <https://doi.org/10.5281/zenodo.17255239>

Keywords

Neck pain, Posture,
Musculoskeletal disorders

Article History

Received: 11 August 2025

Accepted: 21 September 2025

Published: 03 October 2025

Copyright @Author

Corresponding Author: *

Bushra Azeem Awan

Abstract

Objective:

This study aimed to determine the prevalence of neck pain among postgraduate physiotherapy students in Rawalpindi and Islamabad, assess its severity, and examine its association with different postures during digital device use.

Methods:

A descriptive cross-sectional study was conducted between January and June 2023. Using the Slovin formula, a sample size of 352 students was selected from an estimated population of 3000. Participants aged 25–40 years, enrolled in postgraduate physiotherapy programs, and using digital devices for at least two hours daily were included. Data was collected through a semi-structured questionnaire and analyzed using SPSS version 25.

Results:

Of the 352 participants, 78.6% were female and 21.3% male, with a mean age of 31.63 ± 4.07 years. The overall prevalence of neck pain was 51.1%. Pain severity, measured by the Numeric Pain Rating Scale, revealed 40.0% experienced mild, 31.4% moderate, and 28.3% severe pain. Positions involving neck flexion and slouching both forward and backward were significantly associated with higher pain scores ($p < 0.005$), whereas neutral and extended neck positions resulted in lower pain levels.

Conclusion:

Neck pain is highly prevalent among postgraduate physiotherapy students and is strongly linked to non-neutral postures during device use. These findings highlight the urgent need for ergonomic education and targeted interventions to promote healthier posture and reduce musculoskeletal discomfort in academic settings.

INTRODUCTION

Neck pain is one of the most prevalent and widespread musculoskeletal disorders globally and

represents a considerable economic burden on healthcare systems. It not only leads to personal

discomfort and reduced quality of life but also places a substantial economic burden on healthcare systems worldwide due to increased healthcare utilization, loss of productivity, and long-term disability. The Global Burden of Disease Report (2018) identified it as a leading cause of long-term disability, highlighting its significant impact on public health (1). The causes of neck pain are often related to irritation of the muscles and ligaments in the neck, frequently resulting from poor posture. This poor posture can restrict neck movement, decrease the range of motion, and disrupt normal muscle activation patterns. Additionally, weakened neck muscles can compromise the stability of the cervical spine, contributing further to discomfort and dysfunction (2). The widespread use of electronic devices has become essential in modern life, but it also contributes to various health issues, particularly musculoskeletal disorders (3). The adult head typically weighs between 4.5 and 5.5 kilograms when held in a neutral position, placing a manageable load on the cervical spine. However, when the head bends forward, the pressure on the neck increases dramatically, reaching around 12 kilograms at a 15-degree tilt and escalating to nearly 27 kilograms at 60 degrees of flexion. This added strain can overwork the neck muscles and support tissues, often resulting in pain and musculoskeletal problems. Children and adolescents are especially at risk due to their larger head-to-body ratio, which places greater biomechanical stress on their still-developing cervical spine (4).

In the general population, the average prevalence of neck pain is approximately 23.1%. However, its occurrence is notably higher among college students, with reported incidence rates ranging from 48% to 78% (5). Recent studies indicate that over 170 million people globally are affected by conditions such as lower back pain, neck pain, and bone fractures (6). These disorders significantly impact quality of life across all age groups. With the rise of distance learning, concerns about these health problems have grown, especially in educational settings. Among students and educators, neck pain has been reported more frequently than lower back pain, making it one of the most prevalent musculoskeletal issues in this context (7). The transition from in-person to online learning during the COVID-19 pandemic significantly impacted students' musculoskeletal

health, as home-based study environments became the norm (8). The greater use of online education has resulted in students spending extended periods using electronic devices for both academic and recreational purposes. This prolonged forward head posture while seated at desks has been associated with an increased prevalence of neck pain among students (9). Currently, there is no generally accepted treatment protocol for neck pain. However, a range of pharmacological and non-pharmacological interventions have been proposed to manage symptoms effectively. These include therapies such as low-level laser treatment, therapeutic massage, acupuncture, yoga, and hydrotherapy (10). The purpose of this study was to determine the prevalence of neck pain among post graduate physiotherapy students in Rawalpindi and Islamabad. Moreover, to find the severity of neck pain and its association with different postures.

Methods:

A descriptive cross-sectional study was conducted from January 2023 to June 2023 after getting approval from the university ethical committee (IRB/DPT/1120-1001). Sample size was calculated using Slovin formula with a confidence interval (CI) of 95% and a margin error (a-error) of 0.05. The formula, $n = \frac{1 + Ne^2}{N}$, where n represents the sample size, N the actual population, and e the margin of error, was applied to the total population of 3000 students. The calculated sample size was 352. A non-probability convenience sampling technique was applied to select participants. Data collection was carried out using a semi-structured. The inclusion criteria were postgraduate physiotherapy students who are currently enrolled in university, aged between 25-40 years, been using digital devices (laptop, mobile phone, tablet, etc.) for academic purposes for at least 2 hours/day. Students with history of recent trauma or surgery, not enrolled in academic coursework, undergoing treatment for neck pain were excluded from study. Written informed consent was taken from all the participants.

Descriptive statistics were applied. For quantitative variable mean and standard deviation and for qualitative variables frequency and percentages were calculated. Data was then presented in the form of tables. Chi square was used to assess the association

p,0.05 was considered significant. Data was analyzed by using SPSS version 25.

Results:

Out of 352 participants there were 277 females and 75 males. The mean age of participants was 31.63 ± 4.07 years. Regarding BMI, 57.0% had a normal body weight, 32.4% were underweight, and only 10.6% were in the overweight category. Among those reporting pain, the numeric pain rating scale revealed that 40.0% experienced mild pain, 31.4% moderate, and 28.3% severe levels of discomfort (table1). The prevalence of neck pain was found to be 51.1%,

indicating that more than half of the participants reported experiencing neck pain, while 48.9% had no pain (Figure 1).

Most of the participants reported they preferred doing work in flexed position of 95 (27.0%) whereas 80 (22.7%) mentioned neutral. 70 (19.9%) participants reported they use slouching forward, flexed, 55 (15.6%) in slouching backward, flexed and 52 (14.8%) in lying on bed, extended. Table 2 showed that significant association of different positions with neck pain while using laptop among participants $p < 0.05$.

Table1: Characteristics of study participants and Numeric Pain Rating Scale.

Variable	Categories	Frequency	Percentage
Gender	Female	277	78.6%
	Male	75	21.3%
BMI categories	Under weight	114	32.4%
	Normal	201	57.0%
	Over weight	37	10.6%
Numeric pain rating	Mild	72	40.0%
	Moderate	57	31.4%
	Severe	51	28.3%

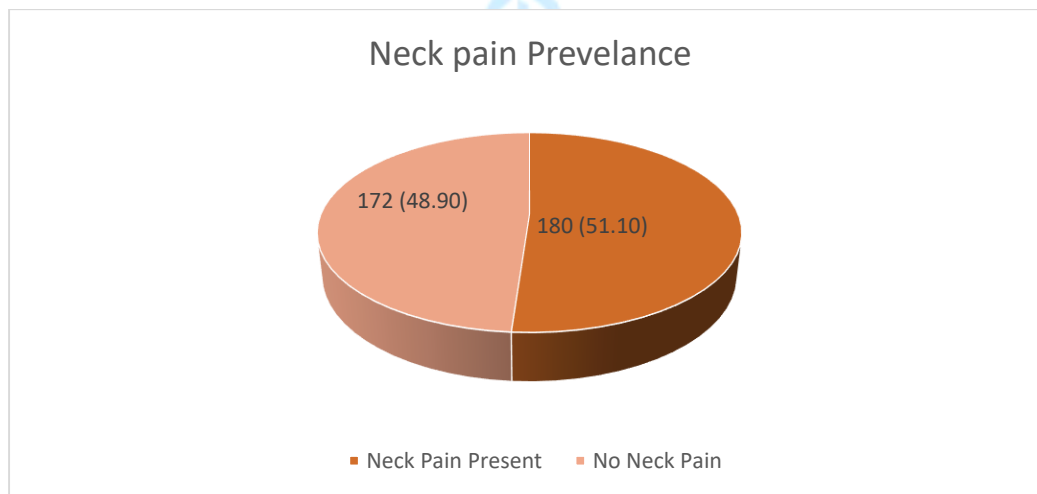


Figure 1: Prevalence of Neck Pain Among Study Participants (N = 352)

Table 2: Association of neck pain with different positions while using digital device (laptop)

Neck Position	No Pain (n, %)	Pain (n, %)	χ^2	p-values
Neutral	55 (68.8%)	25 (31.2%)	42.56	0.001*
Flexed	32 (33.7%)	63 (66.3%)		
Slouching forward, neck flexed	25 (35.7%)	45 (64.3%)		
Slouching backward, neck flexed	20 (46.3%)	35 (63.6%)		

Lying on bed, neck extended	27 (52.0%)	25 (48.0%)		
-----------------------------	------------	------------	--	--

Discussion:

The present study was conducted to determine the prevalence of neck pain in post graduate physiotherapy students at different universities in Rawalpindi and Islamabad. The current study results indicate a high prevalence of neck pain among digital device users, with 51.1% of participants reporting neck discomfort. In contrary to our results, a large survey of Chinese undergraduate healthcare students in 2021 reported a prevalence of 41.6% and found

that neck pain was more in females (44.4%) than males (36.7%) (11). A cross-sectional study at Mekelle University, Ethiopia, found a 12-month neck pain prevalence of 49.2% among medical students. Significant factors associated with neck pain included previous history, lack of physical exercise, prolonged reading, and awkward neck posture. Regular physical activity showed a protective effect. The study recommended daily exercise of 20–30 minutes to reduce neck pain risk (9).

Eldad et al. conducted a cross-sectional study among university students, to find out the prevalence of neck pain and its impact on daily functioning. Out of 255 participants aged 19–28, approximately 30% reported experiencing neck pain, with no significant age-related differences. The findings indicated that students with neck pain experienced limitations in daily mobility and sleep quality. Moreover, their ability to carry out routine tasks was notably reduced (12). Similarly, a study conducted on Iranian adolescents of age between 11 to 19 years, reported neck pain prevalence to be 21.5%. They also found that it was higher in girls in comparison to boys. The possible reason of high prevalence in girls was related to use of mobile for more than six hours (13). The increase prevalence of neck pain is probably due to increase in age as spinal deformities and postural habits during use of technological devices affect pain experience.

We found that neck pain was more common in females with 78.6% and 21.3% in male students. A study conducted by Ruilong Wang et al. in Chinese college students also found that neck and shoulder pain was common in female students. They also found that neck pain was significantly related to extended use of digital device, poor posture of neck and gender

(14). A cross-sectional study was conducted in 2021 to find the prevalence of neck pain among medical students in Sialkot. The results of 465 students included had 58.1% prevalence of neck pain. Furthermore, they also found that 58.1% had mild disability, 19.4% moderate, 6.7% severe, and only 15.9% had no disability. Contributing factors included prolonged reading, awkward posture, lifting heavy objects, and occasional sleep disturbances (15). In a screening-based study of Bangladeshi workers, neck pain prevalence was approximately 49.2%, with a significant association found between neck pain and factors such as prior neck discomfort, physical inactivity, and age over 41 years, highlighting the compounded impact of sedentary work styles and inadequate ergonomic practices. These findings also revealed gender differences in neck pain prevalence, emphasizing the role of both biological and occupational factors (16).

One of the key findings of our study was that certain postures of neck correlate with more pain like neck in flexed position or slouch forward/ backward with neck in flexed position when compared to neutral or less extreme positions. An observational cross-sectional study was conducted by Hana et al. to assess the frequency and risk factors of neck pain among 378 adolescent students in Karachi. They found a very high prevalence of neck pain (93.6%), with higher rates in females (96.7%) compared to males (90.8%). They also reported that contributing factors were poor sitting postures, extended study hours without breaks, and flexed neck posture while sitting. These findings highlight the strong link between non-ergonomic study habits and neck pain in adolescents (17). A cross-sectional study was conducted among college students evaluated how different sitting and standing postures during smartphone use affect head and neck alignment, as well as the severity of neck pain. This study strongly supports the fact that faulty posture can cause neck pain in students. The study found that using a chair with back support resulted in the most optimal head, neck, and gaze angles, placing less strain on the cervical spine. In contrast, sitting without back support led to the poorest posture, marked by increased neck flexion and more pronounced forward head posture. These findings showed that

unsupported sitting positions significantly increase mechanical load on the neck, which may intensify pain symptoms over time (18). Another study by Ayanniyi et al. investigated the prevalence and characteristics of neck pain among 1,069 undergraduate students in Nigeria. They found that 34.9% students had neck pain, female students had more pain when compared to males and an increase in symptoms observed after admission to the university. The major risk factors they reported were prolonged sitting on chairs without back support or neck support, extended study hours, poor posture habits, and inappropriate pillow use. This neck pain was also affecting students' academic performance and attention to studies (19).

Zheng et al. in a recent observational study, including 426 participants, found that 62.7% of students had neck pain who were engaged in prolonged online learning activities. The study also reported that posture and sedentary behavior during virtual classes played a significant role in the significant number of neck pain participants. These findings emphasize the need for posture education and ergonomic interventions in academic settings, particularly as remote learning becomes more common (20).

Since it was a cross-sectional study, the long-term impact of neck pain could not be assessed over time. The study relied on self-reported data, which may be subject to recall bias and subjective interpretation of posture and pain intensity. The sample primarily included young adults and was predominantly female, limiting the generalizability of findings to other age groups. Additionally, only general posture categories were used without objective measurements, which may affect the accuracy of posture related associations.

Conclusion: Neck pain was more prevalent among young female digital device users. Most participants reported mild to moderate pain intensity, particularly when using devices in non-neutral neck positions. Significant association was found between neck pain and posture habits during device use.

Reference:

1. James SL, Abate D, Abate KH, Abay SM, Abbafati C, Abbasi N, et al. Global, regional, and national incidence, prevalence, and years lived with disability for 354 diseases and injuries for 195 countries and territories, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017. *The Lancet*. 2018;392(10159):1789-858.
2. Akshaya R, Mohanraj KG. Knowledge, perception, and awareness of text neck syndrome among young adults South Indian population. *Drug invention today*. 2019;12(9).
3. Zirek E, Mustafaoglu R, Yasaci Z, Griffiths MD. A systematic review of musculoskeletal complaints, symptoms, and pathologies related to mobile phone usage. *Musculoskeletal Science and Practice*. 2020;49:102196.
4. Chan LLY, Wong AYL, Wang MH, Cheung K, Samartzis D. The prevalence of neck pain and associated risk factors among undergraduate students: A large-scale cross-sectional study. *International Journal of Industrial Ergonomics*. 2020;76:102934.
5. Nawrocka A, Mynarski W, Powerska-Didkowska A, Grabara M, Garbaciak W. Musculoskeletal pain among Polish music school students. *Medical Problems of Performing Artists*. 2014;29(2):64-9.
6. Hawamdeh M, Altaim TA, Shallaan A, Gaowgzeh RA, Obaidat SM, Alfawaz S, et al. Low back pain prevalence among distance learning students. *International journal of environmental research and public health*. 2022;20(1):342.
7. Kazeminasab S, Nejadghaderi SA, Amiri P, Pourfathi H, Araj-Khodaei M, Sullman MJ, et al. Neck pain: global epidemiology, trends and risk factors. *BMC musculoskeletal disorders*. 2022;23(1):26.
8. Fallon N, Brown C, Twiddy H, Brian E, Frank B, Nurmikko T, et al. Adverse effects of COVID-19-related lockdown on pain, physical activity and psychological well-being in people with chronic pain. *British journal of pain*. 2021;15(3):357-68.
9. Weleslassie GG, Meles HG, Haile TG, Hagos GK. Burden of neck pain among medical

- students in Ethiopia. BMC musculoskeletal disorders. 2020;21(1):14.
10. Corvillo I, Armijo F, Álvarez-Badillo A, Armijo O, Varela E, Maraver F. Efficacy of aquatic therapy for neck pain: a systematic review. International journal of biometeorology. 2020;64(6):915-25.
11. Zheng Be, Zheng L, Li M, Lin J, Zhu Y, Jin L, et al. Sex differences in factors associated with neck pain among undergraduate healthcare students: a cross-sectional survey. BMC Musculoskeletal Disorders. 2022;23(1):842.
12. Kaljić E, Jurišić M, Katana B, Trtak N, Vranešić AE, Jevtić N, et al. Incidence and impact of neck pain on daily life activities of the student population. Journal of Health Sciences. 2022;12(2):116-21.
13. Azadvari M, Sarzaeim M, Rajabi S, Yahyaee A, Razavi SZE, Haghparast A, et al. Associations between exposure to common technology devices and reported neck pain among Iranian school-age adolescents: a cross sectional study. BMC musculoskeletal disorders. 2023;24(1):883.
14. Wang R, Yin Y, Zhang Y, Liu Y, Wang X, Lv C, et al. Digital devices usage and neck and shoulder pain among college students: a cross-sectional study in China. International Journal of Environmental Health Research. 2025:1-13.
15. Ghafoor S, Faiz R, Pervaiz A, Yousaf A, Basit H, Arshad A, et al. Prevalence of Neck Pain and Disability in Medical Students of Sialkot: Neck Pain and Disability. Pakistan BioMedical Journal. 2024:16-20.
16. Nafisa HT-Z, Islam S, Eva II, Rimti FH, Rimu FH, Siam NH, et al. Prevalence and Risk Factors of Neck Pain: A Cross-Sectional Screening-Based Study of 7,919 Bangladeshi Workers. European Journal of Medical and Health Sciences. 2025;7(3):10-6.
17. Aziz H, Siddique F, Aziz S, Nawaz U, Alam M, Paracha H. Self-Reported Neck Pain and Associated Risk Factors Among Adolescent Madrassa Students in Karachi, Pakistan; A Cross-Sectional Study: Self-Reported Neck Pain & Factors in Madrassa Students. The Healer Journal of Physiotherapy and Rehabilitation Sciences. 2023;3(5):524-31.
18. Sarraf F, Varmazyar S. Comparing the effect of the posture of using smartphones on head and neck angles among college students. Ergonomics. 2022;65(12):1631-8.
19. Ayanniyi O, Mbada CE, Iroko OP. Neck Pain Occurrence and Characteristics in Nigerian University Undergraduates. TAF Preventive Medicine Bulletin. 2010;9(3).
20. Zheng D-D, Li D, Cheng J-X, Jin R-H. The prevalence of neck pain among online learning students: An observational study. Medicine. 2024;103(32):e39264.