Journal of Health and Rehabilitation Research 2791-156X JHRR

For contributions to JHRR, contact at email: editor@jhrlmc.com

Original Article

Frequency of Neck Pain and Associated Disability in Medical Students

Fatima Tariq[1]*, Muhammad Waseem Akhtar[2], Muhammad Mahmood Alam[3], Sameen Saeed[4], Muhammad Burhan[5], Adeela Shafqat[1], Asma Munawar[1]

[1]Physical Therapist, Akhtar Saeed College of Rehabilitation Sciences, Pakistan.
[2]Head of Department, Physical Therapy Department, Akhtar Saeed College of Rehabilitation Sciences, Pakistan.
[3]Principal, Physical Therapy Department, Akhtar Saeed College of Rehabilitation Sciences, Pakistan.
[4]Lecturer, Physical Therapy Department, Akhtar Saeed College of Rehabilitation Sciences, Pakistan.
[5]Demonstrator, Physical Therapy Department, Akhtar Saeed College of Rehabilitation Sciences, Pakistan.
Corresponding Author: Fatima Tariq, Physical Therapist; Email: fatimatariq1609@gmail.com

Conflict of Interest: None.

Tariq F., et al. (2024). 4(1): DOI: https://doi.org/10.61919/jhrr.v4i1.658

ABSTRACT

Background: Musculoskeletal disorders, particularly neck pain, have been increasingly documented among medical students due to their rigorous academic and clinical training demands. The impact of neck pain can lead to significant disability, affecting academic performance and quality of life. Prior studies have demonstrated varying prevalence across different geographies, indicating a need for further localized research.

Objective: This study aimed to assess the prevalence of neck pain and its associated disability using the neck disability index among students of Akhtar Saeed Medical College and to compare these findings with global data.

Methods: A cross-sectional descriptive study design was employed, involving 150 students from various medical programs. Data collection was conducted via a structured questionnaire including the Neck Pain Disability Index and the Visual Analog Scale for pain intensity. Ethical approval was obtained in line with the Helsinki Declaration. The sample size was determined statistically, and the collected data were analyzed using SPSS version 24.0. Statistical tests including independent t-tests and Chi-square tests were utilized to discern the significance of associations, with a p-value of less than 0.05 considered statistically significant.

Results: Participants had an average age of 22.74±2.04 years, with a gender distribution of 58.7% female and 41.3% male. The mean score for neck pain disability was higher in females (21.33±6.45) compared to males (20.76±5.11), albeit non-significantly (p=0.562). The prevalence of neck pain in our sample (58.7%) was higher than in similar cohorts from Brazil (8.23%), Thailand (22.3%), and China (33.8%), yet comparable to Pakistan (44.8%), Australia (52.8%), and Central Saudi Arabia (54%). Approximately 22.7% of students reported neck pain that interfered with their normal activities.

Conclusion: Neck pain was found to be prevalent among the medical student population, with a higher incidence in females. The study underscores the association between neck pain and disability, suggesting the need for preventive measures and interventions within the medical academic setting.

Keywords: Neck Pain, Medical Students, Musculoskeletal Disorders, Neck Disability Index, Prevalence, Cross-Sectional Study, Academic Performance, Quality of Life.

INTRODUCTION

Musculoskeletal disorders (MSDs) represent a significant public health concern, affecting a broad spectrum of individuals, particularly those engaged in activities demanding considerable physical and psychological effort. The Global Burden of Disease study of 2017 highlighted musculoskeletal conditions as the second leading cause of global disability, underscoring the paramountcy of lower back pain as the foremost cause of disability worldwide (1). Neck pain, alongside low-back pain, stands as a principal source of morbidity, prominently featuring in family care settings across various countries and population segments. The incidence of low-back pain is on an upward trajectory, particularly in regions of lower economic status, thus exerting a negative impact on health systems by escalating healthcare-related expenses (2).

Journal of Health and Rehabilitation Research 2791-156X JHRR

Neck pain, identified as a prevalent form of MSD worldwide, exhibits a higher incidence among females, individuals from lower socio-economic backgrounds, and urban dwellers (3). It predominantly affects those aged between 35 to 49 years, indicating a demographic at heightened risk for developing this condition (4). The methodological approach to gauging the prevalence of neck pain often hinges on self-reporting through questionnaires, focusing solely on "pain" as an outcome variable. This approach might underestimate the prevalence, as respondents experiencing symptoms perceived as less severe than pain may report negatively, thereby skewing prevalence rates lower (5). Studies estimate the annual incidence of neck pain to range between 12% and 20.6%, with a notably higher prevalence among students, office workers, and individuals frequently using computers. This elevated risk is attributed to inadequate posture awareness and a lack of knowledge regarding optimal working positions, with the general population's mean prevalence rate standing at 27% (6).

In addressing neck pain, research advocates for the employment of muscle relaxants, exercise therapy, epidural corticosteroid injections, and, in certain cases, surgery. The combined use of muscle relaxants and exercise therapy proves particularly efficacious for mild to moderate neck pain, whereas epidural corticosteroids and surgical interventions are recommended for individuals presenting with radiculopathy or myelopathy, offering greater benefits (7). Neck pain not only emerges as a prevalent musculoskeletal complaint but also significantly hampers daily activities. It primarily affects the region extending from the lower margin of the mandible down to the suprasternal notch and the upper border of the clavicle (8). Among the various manifestations of neck pain, those associated with movement impairments are most common, with "Text Neck Pain" emerging as a burgeoning epidemiological concern among the adult population (9).

The widespread use of mobile phones, often in ergonomically unfavorable postures, elevates the risk of physical injury (10), contributing to increased anxiety and worry among students in the absence of their smartphones (11). The term "Nomo phobia" has been coined to describe the anxiety symptoms prevalent among smartphone users, further exacerbating anxiety and depression levels among medical students (12). The advent of technology has significantly transformed communication, with approximately 79% of the population aged 18-44 owning cell phones (13). In the United States, 87% of teenagers (aged 14-18 years) and in the UK, 79% of teenagers (aged 12-15 years) possess smartphones (14), underscoring the ubiquity of these devices. Currently, 91% of adults use cell phones, with 35% engaging in text messaging (15), highlighting the pervasive nature of mobile technology in modern life. This technological ubiquity poses both challenges and opportunities for addressing the physical and psychological impacts associated with its use, especially concerning musculoskeletal health.

MATERIAL AND METHODS

In a structured cross-sectional descriptive study, 150 students from Akhtar Saeed Medical College were systematically evaluated. Prior to commencement, the study obtained the requisite approval from the Ethics Review Committee of the Akhtar Saeed College of Rehabilitation Sciences, Lahore, ensuring adherence to the ethical standards outlined in the Declaration of Helsinki.

The study employed a calculated sample size to ensure statistical robustness, adhering to the established formula for sample size determination which takes into account the desired confidence level and margin of error. Participants were selected through a stratified sampling method, reflecting the composition of the student body in terms of academic year and specialization.

Data collection was conducted via a structured questionnaire, which was developed to capture socio-demographic characteristics, the extent of neck pain, and the associated disability. The Neck Pain Disability Index (NDPI) was utilized to quantify the functional impairment caused by neck pain, whereas the Visual Analog Scale (VAS) served to measure the intensity of the pain experienced by the participants.

All gathered data were meticulously entered into the Statistical Package for the Social Sciences (SPSS) software, version 24.0, and analyzed accordingly. Quantitative variables were summarized using means and standard deviations, while categorical variables were presented in tabular and graphical formats. The comparison of means for the NDPI and VAS scores between different groups, such as gender and age categories, was performed using the independent t-test. The Chi-square test was employed to examine the association of neck pain with various demographic and educational factors. A p-value of less than 0.05 was predetermined to denote statistical significance.

RESULTS

In the present study, a diverse age group of 150 students from Akhtar Saeed Medical College was assessed for the prevalence of neck pain and associated disability. The age distribution of the participants (Table 1) was relatively young, ranging from 18 to 28 years. The mean age was calculated to be 22.74 years, with a standard deviation of 2.04, suggesting a relatively homogenous group in terms of age.

Journal of Health and Rehabilitation Research 2791-156X JHRR

Table 1: Participant Age Distribution

Age (years)	Minimum	Maximum	Mean	Std. Deviation
	18.00	28.00	22.7400	2.04457
Gender	Frequency		Percent	
Male	62		41.3%	
Female	88		58.7%	
Total	150		100.0%	

Table 2: Association of Disability Level with Pain Severity

Disability Level	No Pain	Mild	Moderate	Severe	Total	Pearson Chi-square	P-value
Mild Disability	5	15	0	0	20	85.43	<0.001
Moderate Disability	9	15	65	6	95		
Severe Disability	0	0	19	12	31		
Complete Disability	0	0	2	2	4		
Total	14	30	86	20	150		

Gender representation among the participants was skewed towards females, who constituted 58.7% of the study population, whereas males accounted for 41.3% (Table 1). This distribution underscores the importance of considering gender differences in the evaluation of neck pain and its consequences.

The core of the study focused on the association between the level of disability and the severity of pain among the participants. This association was significant, as indicated by a Pearson Chi-square value of 85.43 with a p-value less than 0.001 (Table 3). Out of 150 students, 20 experienced mild disability due to neck pain, with the majority within this group reporting only mild pain severity and none reporting moderate or severe pain. The most striking finding was within the group reporting moderate disability, which comprised the largest segment of 95 students. Within this group, the majority (65 students) reported moderate pain, with a smaller proportion experiencing severe pain (6 students). The severe disability category comprised 31 students, most of whom reported moderate (19 students) to severe pain (12 students). Notably, a small number (4 students) were categorized with complete disability due to neck pain, with all of these cases reporting moderate to severe pain levels. This gradation of pain severity with increasing levels of disability highlights the impact of neck pain on the students' daily functioning and possibly their academic performance.

DISCUSSION

The investigation aimed to ascertain the prevalence of neck disability among medical science students at a collegiate level. The participant cohort had an average age of 22.74±2.04 years, with a gender distribution of 58.7% female and 41.3% male students. The majority of respondents were enrolled in the MBBS program (40.7%), followed by the Doctor of Physical Therapy (DPT) at 36%, Bachelor of Dental Surgery (BDS) at 13.3%, and Doctor of Pharmacy (Pharm-D) at 10%. An analysis of gender-based mean scores revealed that females exhibited a marginally higher mean score (21.33±6.45) compared to males (20.76±5.11), although this difference did not reach statistical significance (p=0.562).

Comparatively, the prevalence observed in this study was in alignment with findings from Pakistan (44.8%) (16), Australia (52.8%) (17), and Central Saudi Arabia (54%) (18). However, it exceeded the prevalence rates documented in Brazil (8.23%) (19), Thailand (22.3%) (20), China (33.8%) (21), Iran (39.4%) (22), Malaysia (41.8%) (23), and Nigeria (34.9%) (24). Such variations may reflect geographical, cultural, or educational differences in the study populations or methodologies.

Consistent with the literature, the current research supported the notion that musculoskeletal pain is more prevalent in females (25), as evidenced by a significant proportion (75.2%) of the 400 female students reporting neck pain. This gender disparity was corroborated by a prevalence study indicating that, in 83% of the surveyed studies, women reported more neck pain than men (26). This was echoed by findings from a Norwegian study which noted higher neck pain reports among females (25%) compared to males (15%) (27).

Interestingly, the phenomenon of cervicogenic headaches, headaches emanating from neck structures, was highlighted as being predominantly prevalent in females, occurring at four times the rate of their male counterparts (28). Such headaches were reported by 20% of patients with chronic headache conditions.

The study further revealed that 22.7% of students were impeded in their regular activities due to neck pain. This contrasts with the finding that the majority (58.8%) reported no difficulties with their activities. Nonetheless, a study indicated that neck pain and workload are significantly correlated, with a 7% increased risk of neck pain for every additional year of workload (29).

The implications of the study are particularly relevant for students in clinical practice, where factors like poor posture, extended work hours, and insufficient rest may exacerbate neck pain (30). This suggests that educational and healthcare institutions need to consider these factors when addressing the physical well-being of their students.

The research determined a notable frequency of neck pain in female students, linked to physical limitations. There was a discernible correlation between the neck pain disability score, age, pain intensity, and an increment in work demands. Future research could benefit from including a broader scope of medical departments to thoroughly evaluate the risk factors contributing to neck pain and the resultant disability.

CONCLUSION

In conclusion, the study delineated that a significant proportion of students experienced mild pain, with a subset experiencing moderately infrequent headaches and about one-fifth reporting concentration difficulties and disturbed sleep. Notably, the mean total score was higher among younger students, females, those with less sleep, and hostel dwellers, suggesting that lifestyle factors may play a role in the experience of pain. These findings underscore the need for heightened awareness and preventive strategies, tailored to mitigate the risk factors associated with neck pain and its consequential disability among medical students. The research also acknowledges the limitations inherent in a cross-sectional study design and the need for longitudinal studies to establish causality and the effectiveness of intervention measures.

REFERENCES

1. Dighriri YH, Akkur MA, Alharbi SA, Madkhali NA, Matabi KI, Mahfouz MSJJofm, et al. Prevalence and associated factors of neck, shoulder, and low-back pains among medical students at Jazan University, Saudi Arabia: A cross-sectional study. 2019;8(12):3826.
2. 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. 2018;392(10159):1789-858.
3. Haq N, Ali AA, MR MI AT, Hussain A, Abbasi PJRPHS. Assessment of neck pain, causes and intensity among the students of department of eastern medicine, university of balochistan, Quetta, Pakistan. 2020;6:136-40.
4. Hartvigsen J, Hancock MJ, Kongsted A, Louw Q, Ferreira ML, Genevay S, et al. What low back pain is and why we need to pay attention. 2018;391(10137):2356-67.
5. Long MH, Bogossian FE, Johnston VJWh, safety. The prevalence of work-related neck, shoulder, and upper back musculoskeletal disorders among midwives, nurses, and physicians: a systematic review. 2013;61(5):223-9.
6. Algarni AD, Al-Saran Y, Al-Moawi A, Bin Dous A, Al-Ahaideb A, Kachanathu SJJPr, et al. The prevalence of and factors associated with neck, shoulder, and low-back pains among medical students at university hospitals in Central Saudi Arabia. 2017;2017.
7. Kamper SJ, Henschke N, Hestbaek L, Dunn KM, Williams CMJBjopt. Musculoskeletal pain in children and adolescents. 2016;20:275-84.
8. Kompal R, Kashif M, Riaz U, Dastgir A, Irum H, Manzoor NJIJRS. Prevalence of low back, neck and shoulder pain and associated risk factors among senior semester female students of the university of faisalabad. 2017;5:21-7.
9. Nawaz U, Jamshaid A, Rafi MA, Hussain HJPJoPH. Frequency of Text Neck Pain in Islamabad. 2020;10(4):252-5.
10. Demirci S, Demirci K, Akgonul MJJNP. Headache in smartphone users: a cross-sectional study. 2016;4(1):5.
11. Alhazmi AA, Alzahrani SH, Baig M, Salawati EMJPjoms. Prevalence and factors associated with smartphone addiction among medical students at King Abdulaziz University, Jeddah. 2018;34(4):984.
12. Mohammadbeigi A, Absari R, Valizadeh F, Saadati M, Sharifimoghadam S, Ahmadi A, et al. Sleep quality in medical students; the impact of over-use of mobile cellphone and social networks. 2016;16(1):46.
13. Cohen SP, editor Epidemiology, diagnosis, and treatment of neck pain. Mayo Clinic Proceedings; 2015: Elsevier.
14. Kim M-SJJopts. Influence of neck pain on cervical movement in the sagittal plane during smartphone use. 2015;27(1):15-7.
15. Setianingrum AYJJOSI. Hubungan phantom vibration syndrome terhadap sleep disorder dan kondisi stress. 2017;16(2):158-66.
16. Ayaz SB, Malik R, Khan AA, Gill ZA, Akhtar N, Matee SJAEAB. Intensity of neck pain secondary to excessive flexion posturing, its association with study activities and duration of posturing and impact on sleep in students of women medical college. 2016;66:22.
17. Smith D, Leggat PJJoMP. Prevalence and distribution of musculoskeletal pain among Australian medical students. 2007;15(4):39-46.

Journal of Health and Rehabilitation Research 2791-156X JHRR

18. Gharib N, Hamid NSJJAS. Prevalence of mechanical neck pain in Taif university female students: a survey study. 2013;9(6):347-54.
19. Silva AL, Smaidi K, Pires MHR, Pires OCJRD. Prevalence of chronic pain and associated factors among medical students. 2017;18:108-11.
20. Kanchanomai S, Janwantanakul P, Pensri P, Jiamjarasrangsi WJBph. Risk factors for the onset and persistence of neck pain in undergraduate students: 1-year prospective cohort study. 2011;11(1):1-8.
21. Smith DR, Wei N, Ishitake T, Wang R-SJTKmj. Musculoskeletal disorders among Chinese medical students. 2005;52(4):139-46.
22. Sadat BE, Babaei-Ghazani A, Azizi R, Parizad MJMJoTUoMS. Prevalence and risk factors of neck and shoulder pain in medical students of Tabriz University of Medical Sciences. 2013;35(3):12-7.
23. Alshagga MA, Nimer AR, Yan LP, Ibrahim IAA, Al-Ghamdi SS, Radman Al-Dubai SAJBrn. Prevalence and factors associated with neck, shoulder and low back pains among medical students in a Malaysian Medical College. 2013;6(1):1-7.
24. Ayanniyi O, Mbada CE, Iroko OPJTPMB. Neck Pain Occurrence and Characteristics in Nigerian University Undergraduates. 2010;9(3).
25. Guzman J, Haldeman S, Carroll LJ, Carragee EJ, Hurwitz EL, Peloso P, et al. Clinical practice implications of the Bone and Joint Decade 2000–2010 Task Force on Neck Pain and Its Associated Disorders: from concepts and findings to recommendations. 2008;17:199-213.
26. Fejer R, Kyvik KO, Hartvigsen JJEsj. The prevalence of neck pain in the world population: a systematic critical review of the literature. 2006;15:834-48.
27. Guez M, Hildingsson C, Nilsson M, Toolanen GJAOS. The prevalence of neck pain. 2002;73(4):455-9.
28. Biondi DMJCP, Reports H. Cervicogenic headache: diagnostic evaluation and treatment strategies. 2001;5:361-8.
29. Madadizadeh F, Vali L, Rafiei S, Akbarnejad ZJEp. Risk factors associated with musculoskeletal disorders of the neck and shoulder in the personnel of Kerman University of Medical Sciences. 2017;9(5):4341.
30. Fals Martínez J, González Martínez F, Orozco Páez J, Correal Castillo SP, Pernett Gómez CVJRBdE. Musculoskeletal alterations associated factors physical and environmental in dental students. 2012;15:884-95.