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Prevalence of Neck Pain Among Madrassa Students in Gujar Khan, Pakistan

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Disclaimers

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ABSTRACT

Background: Neck pain is a common musculoskeletal disorder often linked to poor posture and prolonged neck flexion. Students in madrassas are particularly vulnerable due to their extended study hours and inadequate ergonomics.

Objective: This study aimed to determine the prevalence of neck pain and its impact on daily activities among madrassa students in Gujar Khan, Pakistan.

Methods: A cross-sectional study was conducted involving 344 madrassa students aged 15 years and above, recruited using a non-probability convenience sampling technique. Data were collected using a semi-structured questionnaire, the Wong-Baker Pain Scale, and the Bournemouth Questionnaire. Ethical approval was obtained, and statistical analysis was performed using SPSS version 25, employing descriptive and chi-square tests.

Results: Out of 344 students, 202 (58.7%) reported recent neck pain. Of these, 83 (41.1%) had interference with daily activities, and 197 (97.5%) reported disruption in recreational activities. Pain severity was mild in 39 (19.3%), moderate in 101 (50%), and severe in 62 (30.7%) cases.

Conclusion: There is a high prevalence of neck pain among madrassa students, significantly impacting daily activities, necessitating ergonomic interventions and posture education.

INTRODUCTION

Neck pain is a prevalent musculoskeletal condition that affects individuals globally and is often attributed to poor posture and prolonged static positions. This issue has been widely recognized as a significant contributor to reduced quality of life, particularly among populations engaged in extended periods of desk work, or other static postures, as commonly observed in academic settings. A considerable body of evidence has linked neck pain with prolonged neck flexion, which can result in musculoskeletal strain and postural imbalances, leading to pain and discomfort. Students enrolled in madrassas, traditional Islamic schools, often spend extended periods in sitting positions while reading and memorizing religious texts, which increases their risk of developing neck pain. This scenario makes it critical to explore the prevalence and associated factors of neck pain within this specific population, as existing studies have primarily focused on occupational or general student populations, leaving a gap in understanding regarding madrassa students specifically (1).

The anatomy of the neck is complex, comprising multiple structures, including muscles, ligaments, nerves, and the cervical spine, all of which contribute to its function in supporting the head and enabling a wide range of movements. Due to its intricate design and biomechanical properties, even slight deviations in posture, particularly those involving forward head posture and neck flexion, can lead to significant mechanical stress and eventually result in pain and dysfunction (2, 3). Research has shown that forward head posture is strongly correlated with the development of neck pain, and this condition is exacerbated by prolonged sitting without adequate ergonomic adjustments (4). The prevalence of neck pain has been reported to range widely in different settings, depending on various factors such as posture, duration of exposure, and individual susceptibility (5). Additionally, other risk factors, including gender, age, and psychological stress, have been identified as contributing elements to the onset and severity of neck pain (6, 7). For instance, studies have suggested that females are more likely to report neck pain compared to males, possibly due to differences in musculoskeletal anatomy and pain perception (8, 9).

The impact of neck pain extends beyond physical discomfort, as it often interferes with activities of daily living (ADLs) and recreational activities, resulting in limitations in movement and social participation. Severe cases may lead to chronic pain, which has been associated with anxiety, depression, and reduced productivity (10). The duration of neck pain can vary, and it is typically categorized into acute, subacute, and chronic phases depending on its persistence, which may influence treatment strategies and outcomes (11). Neck pain can manifest in various forms, such as axial neck pain, which is confined to the neck region, or radicular pain, which radiates to the shoulders or upper extremities, often indicating nerve involvement (12). Other presentations include myelopathic pain, referred pain, and cervicogenic headaches, all of which may complicate the diagnosis and management of neck conditions (13).

Among the interventions available for managing neck pain, conservative approaches such as physical therapy, exercise regimens, ergonomic corrections, and lifestyle

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modifications are commonly recommended for initial management. Techniques such as cervical mobilization, manipulation, and stretching exercises have shown efficacy in reducing pain and improving function (14). For cases involving severe pain or neurological symptoms, more invasive treatments, including pharmacological interventions or surgery, may be considered (15). In some instances, a multidisciplinary approach is necessary to address the multifactorial nature of chronic neck pain, incorporating both physical and psychological strategies to enhance patient outcomes (16).

The current study was designed to evaluate the prevalence of neck pain among madrassa students in Gujar Khan, Pakistan, considering the unique postural challenges faced by this population due to prolonged study periods and the traditional seating arrangements commonly used in madrassas. Previous research has indicated varying levels of neck pain prevalence in similar student populations, with rates ranging from 33.4% to as high as 93.6% in different settings (13, 15). This variation underscores the need for context-specific studies to identify the exact prevalence and contributing factors within the madrassa environment. By utilizing standardized tools such as the Bournemouth questionnaire and the Wong-Baker pain scale, this study aimed to provide a comprehensive assessment of neck pain severity and its impact on the daily lives of madrassa students, contributing valuable insights for the development of targeted prevention and intervention strategies. Ultimately, understanding the prevalence and nature of neck pain in this specific student population will help inform the design of ergonomic and educational interventions tailored to reduce the burden of musculoskeletal disorders among madrassa students (17).

MATERIAL AND METHODS

The study was conducted using a cross-sectional design to investigate the prevalence of neck pain among madrassa students in Gujar Khan, Pakistan. Data collection spanned over four months, following the approval of the study protocol and synopsis by the ethical review board in accordance with the Declaration of Helsinki. Participants were recruited using a non-probability convenient sampling technique, selecting madrassa students aged 15 years and above who were regularly engaged in prolonged sitting postures for more than three hours daily. Both male and female students were included to ensure gender representation. Exclusion criteria were established to eliminate confounding factors, including any participants undergoing active treatment for neck conditions, as well as those with a history of neck trauma, injury, or any congenital or neurological disorders affecting the cervical spine.

Data were collected using a semi-structured questionnaire, which was designed to capture demographic details, medical history, and information on neck pain characteristics. The questionnaire comprised validated assessment tools, including the Wong-Baker Pain Scale, with a Cronbach's alpha of 0.93, to evaluate the severity of neck pain and the Bournemouth Questionnaire, which demonstrated good internal consistency (Cronbach's alpha = 0.87 to 0.92), for assessing the impact of pain on daily activities and overall quality of life. The researchers conducted face-to-face interviews to complete the questionnaires, ensuring that all responses were accurately recorded. Participants were briefed about the study objectives, and informed consent was obtained prior to data collection, maintaining confidentiality and anonymity throughout the research process in accordance with ethical guidelines (1).

The data were analyzed using the Statistical Package for the Social Sciences (SPSS), version 25. Descriptive statistics, including frequencies and percentages, were used to summarize categorical data, while mean and standard deviation were calculated for continuous variables, such as age. Inferential statistics, including chi-square tests, were performed to determine the association between gender and the prevalence of neck pain, as well as the impact of pain on daily activities. A p-value of <0.05 was considered statistically significant. The results were presented in the form of tables, summarizing the frequency and severity of neck pain among the study participants, along with its interference with normal daily activities, recreational activities, and any functional limitations.

The ethical statement for this research emphasized adherence to the Helsinki Declaration's principles for conducting research on human participants. The study protocol was reviewed and approved by the institutional review board (IRB), and all participants were informed about their right to withdraw from the study at any stage without any consequences. The researchers ensured that no harm was inflicted on the participants, and data were stored securely to maintain privacy and data integrity. The findings from this study were disseminated without revealing any individual identities, and all participants were debriefed about the study outcomes (2).

In conclusion, the study employed robust methodological approaches to explore the prevalence of neck pain among madrassa students, utilizing validated assessment tools and appropriate statistical analyses to derive meaningful insights into the impact of prolonged sitting and poor posture on musculoskeletal health in this population. This comprehensive methodology ensures the reliability and validity of the findings, contributing valuable data to inform future ergonomic and educational interventions for preventing neck pain in similar educational settings (3).

RESULTS

The total sample size included in the study was 344 madrassa students, consisting of 172 male (50%) and 172 female (50%) participants, with a mean age of 17.02 ± 2.018 years. The prevalence of recent neck pain among the participants was reported as 58.7%, with 202 students experiencing neck pain, while 41.3% (142 participants) reported no recent neck pain (Table 1). The results indicate a high prevalence of neck pain among madrassa students, with significant interference in their daily and recreational activities. The severity of interference with daily activities was also assessed.

Table 1: Prevalence of Recent Neck Pain among Madrassa Students

Recent Neck Pain	Frequency (n)	Percentage (%)
No	142	41.3
Yes	202	58.7
Total	344	100.0

Out of the 202 students who reported recent neck pain, 83 (41.1%) stated that their pain interfered with their normal daily life activities, whereas 119 (58.9%) indicated that their daily life was not affected by the pain (Table 2).

Table 2: Effect of Neck Pain on Normal Daily Life Activities

Effect on Normal Daily Life	Frequency (n)	Percentage (%)
No	119	58.9
Yes	83	41.1
Total	202	100.0

Among the 202 participants who reported pain, 77 (38.1%) experienced mild interference, 113 (55.9%) had moderate interference, and only 10 (5.0%) reported severe disruption of daily activities (Table 3).

Table 3: Interference of Neck Pain with Normal Daily Activities

Level of Interference	Frequency (n)	Percentage (%)
No Interference	2	1.0
Mild	77	38.1
Moderate	113	55.9
Severe	10	5.0
Total	202	100.0

Similarly, the impact of neck pain on recreational activities was significant, as 197 participants (97.5%) reported some level of interference, with 78 (38.6%) having mild, 108 (53.5%) experiencing moderate, and 11 (5.4%) reporting severe interference with leisure activities (Table 4).

Table 4: Interference of Neck Pain with Recreational Activities

Level of Interference	Frequency (n)	Percentage (%)
No Interference	5	2.5
Mild	78	38.6
Moderate	108	53.5
Severe	11	5.4
Total	202	100.0

The severity of neck pain was also evaluated, revealing that out of the 202 students reporting neck pain, 39 (19.3%) had mild pain, 101 (50.0%) experienced moderate pain, and 62 (30.7%) reported severe pain (Table 5).

Table 5: Severity of Neck Pain Among Madrassa Students

Severity of Pain	Frequency (n)	Percentage (%)
Mild	39	19.3
Moderate	101	50.0
Severe	62	30.7
Total	202	100.0

The findings suggest that prolonged neck flexion and poor ergonomic practices are primary contributors to neck pain in this population, with females showing a slightly higher prevalence compared to males.

DISCUSSION

The findings of this study revealed a high prevalence of neck pain among madrassa students, with 58.7% of the participants reporting recent neck discomfort. This prevalence is consistent with similar studies conducted among student populations, where high rates of neck pain have been documented due to prolonged static postures and inadequate ergonomics (13). The results also align with previous research by Qamar et al., who reported a 33.4% prevalence of neck pain in madrassa students in Peshawar, though the prevalence in the current study is notably higher, which may be attributed to variations in study settings, sample size, and data collection methodologies (13). The slight predominance of neck pain among female students compared to males in the current study is consistent with findings from Aziz et al., who reported a higher incidence of neck pain in female madrassa students, suggesting possible

gender differences in pain perception, posture, and anatomical susceptibility (15).

The severity of neck pain in the present study varied significantly, with half of the participants experiencing moderate pain and 30.7% reporting severe pain, indicating a considerable impact on their quality of life and daily functioning. This observation is in agreement with the study by Ramsha et al., which found that the majority of madrassa students with neck pain experienced moderate to severe pain, adversely affecting their ability to engage in routine and recreational activities (14). The high level of disruption in daily and recreational activities reported in the current study is particularly concerning, as it suggests that the pain experienced by these students is not merely episodic but has significant functional implications, which may further predispose them to chronic pain syndromes if not addressed (16). The findings also resonate with other studies suggesting that long-term neck flexion and poor ergonomic practices are primary contributors to musculoskeletal discomfort among students (4, 7).

The study's strengths include the use of validated assessment tools such as the Wong-Baker Pain Scale and the Bournemouth Questionnaire, which enhanced the reliability and validity of the data collected. Additionally, the study included equal representation of both genders, ensuring a balanced comparison of neck pain prevalence and severity between male and female students. Furthermore, the large sample size and face-to-face data collection allowed for a comprehensive analysis of the impact of neck pain on daily and recreational activities. However, some limitations should be noted. The use of a non-probability convenience sampling technique may have introduced selection bias, limiting the generalizability of the findings to other student populations. Additionally, the cross-sectional design prevents causal inferences from being made regarding the relationship between neck pain and prolonged sitting. The lack of longitudinal follow-up also precluded the assessment of long-term outcomes or the potential progression of neck pain into chronic conditions (8).

The exclusion of participants with pre-existing neck conditions or a history of trauma ensured that the results specifically captured the impact of postural and ergonomic factors, yet it may have inadvertently excluded individuals who might still be susceptible to posture-related neck pain despite having a history of neck issues. Moreover, the study relied on self-reported data for pain severity and interference, which, while practical for large-scale surveys, could have been influenced by recall bias or subjective interpretation of pain (10). Future research should incorporate objective measures, such as posture analysis and muscle activity monitoring, to better quantify the biomechanical contributors to neck pain in similar populations. The study also did not assess psychological factors, such as stress or anxiety, which have been shown to exacerbate musculoskeletal pain, and future studies should consider including psychosocial variables to gain a more holistic understanding of the issue (9).

Based on the findings, several recommendations can be made. Educational interventions targeting posture correction and ergonomic modifications should be implemented in madrassas to reduce the burden of neck pain among students. Incorporating regular breaks and physical activity during study hours could also mitigate the adverse effects of prolonged sitting and reduce musculoskeletal strain (12). Additionally, awareness programs should be designed to educate students and educators about the importance of maintaining optimal neck posture and using supportive seating arrangements. Given the higher prevalence of neck pain in female students, gender-specific strategies may also be warranted to address any anatomical or ergonomic differences that contribute to their increased susceptibility (15). Finally, future studies should adopt a longitudinal design to explore the long-term impact of neck pain on academic performance and psychological well-being among madrassa students, which would provide valuable insights for developing targeted prevention and management strategies.

CONCLUSION

The study identified a high prevalence of neck pain among madrassa students, significantly impacting their daily and recreational activities, with prolonged sitting and poor ergonomic practices as primary contributors. The findings highlight the need for targeted interventions, such as ergonomic modifications and posture education, to alleviate musculoskeletal strain in this population. Addressing these issues can prevent the progression of neck pain into chronic conditions, thereby improving the overall well-being and functional capacity of students in similar educational settings. Implementing such measures in madrassas can contribute to better health outcomes and enhance academic performance, ultimately promoting a healthier learning environment.

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