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Relationship Between Neck Disability and Poor Eyesight Among Madrassa Students

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Disclaimers

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ABSTRACT

Background: Madrassa students often engage in prolonged reading with poor posture, which may lead to musculoskeletal issues and visual impairments. The impact of such activities on neck disability and eyesight needs exploration. **Objective**: This study aimed to determine the association between neck disability and poor eyesight among madrassa students. **Methods**: An analytical cross-sectional study was conducted on 235 madrassa students aged 7 to 15 years in Lahore. A convenience sampling technique was used. The Neck Disability Index (NDI) questionnaire and a self-structured questionnaire assessed neck disability and poor eyesight, respectively. Data were analyzed using SPSS v25, employing descriptive statistics and the Chi-square test to determine associations. **Results**: Of 235 students, 59 (25.1%) had poor eyesight, and 138 (58.7%) had no neck disability, while 78 (33.2%) had mild, 11 (4.7%) moderate, and 8 (3.4%) severe disability. A significant association was found between poor eyesight and neck disability (p = 0.00). **Conclusion**: A significant association exists between poor eyesight and neck disability among madrassa students, emphasizing the need for ergonomic interventions and regular health screenings.

INTRODUCTION

Musculoskeletal disorders have become increasingly prevalent among children, particularly those who spend extended periods in static positions, such as madrassa students. A madrassa is an Islamic educational institution where students, predominantly children, dedicate long hours to reading the Quran and other Islamic texts while sitting on the ground with furniture that is lower than typical school furniture. This necessitates sitting in positions that involve tilting the head forward and downward for extended periods, which can lead to significant musculoskeletal strain, particularly affecting the neck (1). The extended hours in these positions, often from early morning until evening, can have adverse effects not only on the musculoskeletal system but also on the visual system, as poor posture has been associated with both neck pain and visual impairments (2). Visual impairments, a prevalent issue among madrassa students, are often characterized by a degree of vision loss that may require corrective aids and, in some cases, may not be correctable by any means (3).

Neck pain, particularly in children, can result from poor posture sustained over prolonged periods. The most common spine-related problem in madrassa students is cervical pain due to their continuous study posture (4). This situation is further compounded by malnutrition, a common issue among madrassa students who often belong to middle-class families and live away from home for extended periods. The lack of proper nutrition may exacerbate musculoskeletal problems, including neck pain, due to weakened muscles and bones (5). Moreover, maintaining a forward head posture for long periods, as is common in these students, has been consistently linked with neck pain, muscle strain, and discomfort, highlighting the detrimental effects of such postures (6). A systematic review reported that forward head posture significantly correlates with neck pain, reinforcing the impact of poor posture on musculoskeletal health (7).

Visual impairments are another critical issue among madrassa students. In children under the age of 15, it is estimated that around 19 million have some form of visual impairment, of which 12 million are due to refractive errors (8). Visual impairments in children can have a profound impact on their daily functioning and quality of life, affecting not only their educational performance but also their interactions and participation in daily activities. A study conducted in Ethiopia among children with an average age of 13 years found that 89% of visual impairments were due to refractive errors, demonstrating the prevalence and impact of these conditions in similar settings (9). Various factors, including stress, age, shoulder stiffness, and poor eyesight, have been associated with neck pain, suggesting a complex interplay between visual and musculoskeletal health (10).

Moreover, physical factors such as inappropriate school furniture, excessive homework, difficulty seeing the board, and poor posture are strongly linked to neck pain. Cervical pain is exacerbated by the use of desks and seats that are not appropriately adjusted for the child's height, leading to awkward postures that further strain the neck and upper back muscles (11). A review of literature has highlighted that an improper thoracic posture can contribute significantly to mechanical neck pain, underscoring the need for ergonomic considerations in educational settings (12).

This study aims to explore the association between neck disability and poor eyesight among madrassa students,

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where both issues are suspected to be interlinked due to prolonged poor posture and lack of ergonomic seating arrangements. Understanding the relationship between these conditions will provide evidence-based information on the impacts of prolonged sitting and poor posture on both the spine and eyesight among madrassa students. It will also underscore the importance of early intervention and corrective measures to prevent long-term musculoskeletal and visual problems in this vulnerable population (13). The primary objective of this study is to determine the relationship between neck disability and poor eyesight among madrassa students, with a focus on understanding the contributing factors and potential implications for their overall health and well-being (14).

MATERIAL AND METHODS

An analytical cross-sectional study was conducted among madrassa students registered at Jamia Amna Badar Ul Aslam Kanzul Aman High School in Sheikhupura, Lahore. The study was completed over a period of six months and aimed to explore the relationship between neck disability and poor eyesight in students who engage in prolonged reading of the Quran in specific postures that may predispose them to musculoskeletal disorders. A convenience sampling technique was employed to select participants from the madrassa. The inclusion criteria were students aged between 7 to 15 years who were involved in reading the Quran for more than three hours during madrassa timings. Students with underlying pathologies such as cancer, cardiovascular diseases, congenital abnormalities, or those with any traumatic injuries were excluded from the study. Data collection was conducted on-site at the madrassa, where eligible students were identified and assessed according to the inclusion and exclusion criteria (10).

For data collection, a Neck Disability Index (NDI) questionnaire, a widely recognized tool for measuring neck pain and associated disability, was administered to participants to assess the severity of neck disability. Additionally, a self-structured questionnaire was used to evaluate poor eyesight among the students, as the use of standard tools like the Snellen chart was not permissible for physiotherapists. The questionnaires were administered by trained researchers, ensuring that students understood the questions and provided accurate responses. Students' demographic information, including age and gender, was also recorded. The questionnaires were filled out under direct supervision to maintain the integrity of the data collection process (11).

Ethical approval for the study was obtained from the Institutional Review Board, and all ethical considerations adhered to the Declaration of Helsinki for research involving human subjects. Consent was obtained from the madrassa administration and from the parents or guardians of the participants where necessary. Participants' confidentiality and privacy were strictly maintained, and they were assured that their responses would be used solely for research purposes. All data were anonymized to protect the identity of the participants (12).

Data analysis was conducted using IBM SPSS Statistics version 25. Descriptive statistics, including mean and standard deviation for continuous variables like age, were calculated, while frequencies and percentages were used for categorical variables such as gender, presence of neck disability, and poor eyesight. The relationship between neck disability and poor eyesight was assessed using the Chi-square test to determine the association between these variables. A p-value of less than 0.05 was considered statistically significant, indicating a meaningful association between neck disability and poor eyesight among the participants (13).

The results were analyzed in detail to provide insights into the distribution of neck disability and poor eyesight among madrassa students and to identify any significant associations between these two conditions. This analysis provided a comprehensive understanding of the extent of the problem and its potential impact on the students' quality of life. Findings from this study are expected to inform future interventions aimed at improving musculoskeletal and visual health among madrassa students.

RESULTS

A total of 235 madrassa students participated in this study, with an age range between 5 to 15 years and a mean age of 8.77 years (±2.739). Out of the total participants, 99 (42.3%) were male, and 135 (57.7%) were female., while 29.8% experienced some pain during these activities in table 4

Table 1: Age and Gender Distribution of Participants

Variable	Minimum	Maximum	Mean (SD)	Frequency (n)	Percentage (%)
Age	5	15	8.77 (±2.739)		
Gender					
Male				99	42.3
Female				135	57.7

Regarding the history of eye checkups, 107 (45.5%) students reported having a prior eye examination, while 128 (54.5%) did not. Among the participants, 59 (25.1%) had poor eyesight, whereas 176 (74.9%) had normal eyesight. Out of the 235 participants, 138 (58.7%) had no neck disability, 78 (33.2%) had mild disability, 11 (4.7%) had moderate disability, and 8 (3.4%) had severe disability in table 2 Most students (60.0%) reported having no neck pain at the time of

Table 2: Variables Related to Eyesight and Neck Disability

Variable	Frequency (n)	Percentage (%)
History of Eye Checkup		
Yes	107	45.5

Variable	Frequency (n)	Percentage (%)
No	128	54.5
Poor Eyesight		
Yes	59	25.1
No	176	74.9
Neck Disability		
No Disability	138	58.7
Mild Disability	78	33.2
Moderate Disability	11	4.7
Severe Disability	8	3.4
Complete Disability	0	0.0

Table 3: Variables Related to Neck Pain Intensity

Pain Intensity	Frequency (n)	Percentage (%)
Have no pain at the moment	141	60.0
The pain is mild at the moment	85	36.2
The pain comes and goes and is moderate	4	1.7
The pain is moderate and does not vary much	2	0.9
The pain is severe but comes and goes	3	1.3
The pain is severe and does not vary much	0	0.0

Table 4: Variables Related to Personal Care

Personal Care (Washing, Dressing, etc.)	Frequency (n)	Percentage (%)
Can look after myself without causing extra pain	151	64.3
Can look after myself normally but it causes extra pain	70	29.8
It is painful to look after myself and I am slow and careful	4	1.7
Need some help, but manage most of my personal care	7	3.0
Need help every day in most aspects of self-care. I do not get dressed	3	1.3
Wash with difficulty and stay in bed	0	0.0

assessment, while 85 (36.2%) had mild pain and 7 (3.9%) had varying degrees of moderate to severe pain in table 3 A majority (64.3%) of participants were able to perform personal care without additional pain, while 29.8% experienced some pain during these activities. About 62.8% of participants could lift heavy weights without extra pain, while 37.2% experienced some difficulty lifting heavy weights due to pain. Out of the 59 students with poor eyesight, 26 (44.1%) had no neck disability, 21 (35.6%) had mild disability, 6 (10.2%) had moderate disability, and 6 (10.2%) had severe disability. Conversely, among the 176 students with normal eyesight, 112 (63.6%) had no disability, 57 (32.4%) had mild disability, 5 (2.8%) had

Table 5: Variables Related to Lifting

Lifting	Frequency (n)	Percentage (%)
Can lift heavy weights without extra pain	147	62.8
Can lift heavy weights, but it causes extra pain	69	29.5
Pain prevents me from lifting heavy weights off floor, if not conveniently positioned	5	2.1
Pain prevents me from lifting heavy weights	10	4.3
Can lift very light weights	2	0.9
Cannot lift or carry anything at all	1	0.4

Table 6: Association of Poor Eyesight with Neck Disability

Neck Disability	Poor Eyesight (Yes)	Poor Eyesight (No)	Total (n)	Percentage (%)	p-value
No Disability	26 (44.1%)	112 (63.6%)	138	58.7	0.00
Mild Disability	21 (35.6%)	57 (32.4%)	78	33.2	
Moderate Disability	6 (10.2%)	5 (2.8%)	11	4.7	
Severe Disability	6 (10.2%)	2 (1.1%)	8	3.4	
Total	59 (100%)	176 (100%)	235	100%	

Most students (60.0%) reported having no neck pain at the time of assessment, while 85 (36.2%) had mild pain, and 7 (3.9%) had varying degrees of moderate to severe pain. Overall, these results indicate a significant relationship between poor eyesight and neck disability among madrassa students, with an increased trend of neck disability observed in participants with poor eyesight.

DISCUSSION

The present study explored the association between neck disability and poor eyesight among madrassa students who spend extended periods in static postures while reading the Quran. The findings indicated a significant association between neck disability and poor eyesight, suggesting that prolonged reading in a forward-tilted position may contribute to both musculoskeletal strain and visual impairments. This aligns with previous research demonstrating that forward head posture, often seen in students engaged in lengthy reading sessions, is associated with neck pain and disability (1). The high prevalence of mild to moderate neck disability among students with poor eyesight further supports the hypothesis that poor postural habits and inadequate ergonomic arrangements in madrassas could have compounding effects on both neck health and vision.

The study's results showed that 25.1% of students had poor eyesight, and a significant proportion of these students also reported varying degrees of neck disability. This finding is consistent with previous studies highlighting that poor posture and extended periods of reading or screen time can lead to both visual and musculoskeletal problems (2, 3). The study conducted by Zhao and Zhang, which reported a high degree of myopia associated with reduced physical activity, further emphasizes the impact of prolonged static postures on both eyesight and physical health (6). The current findings align with these observations and highlight the need for addressing posture-related factors in educational settings, especially in institutions where students engage in prolonged study sessions without proper ergonomic support.

The strengths of this study include its focus on a relatively under-researched population, providing insights into the specific health challenges faced by madrassa students. The use of standardized and validated tools, such as the Neck Disability Index (NDI), ensured reliable measurement of neck disability. However, several limitations should be acknowledged. The study's cross-sectional design limited the ability to establish causality between poor eyesight and neck disability. Moreover, the reliance on self-reported measures for eyesight assessment may have introduced bias, as standard visual acuity tests like the Snellen chart were not permissible for physiotherapists to use in this context. This limitation may have affected the accuracy of the eyesight data (11). Future studies should aim to incorporate objective measures of visual acuity to provide a more comprehensive understanding of the relationship between visual impairments and neck disability.

The study also highlighted the broader issue of malnutrition among madrassa students, which may exacerbate musculoskeletal problems, including neck pain. Previous literature has reported that malnutrition, particularly in children from middle-class families living away from home, can significantly impact their musculoskeletal health (5). Addressing nutritional deficiencies should therefore be a key component of any intervention aimed at reducing the prevalence of neck pain and visual impairments in this population. Ensuring adequate nutritional support for students, along with ergonomic interventions, may help mitigate the risk of both visual and musculoskeletal problems.

Recommendations for future research include longitudinal studies to better understand the causal pathways linking poor posture, visual impairments, and neck disability. Interventions that incorporate ergonomic training, posture correction, and regular eye check-ups could be beneficial in reducing the burden of these health issues among madrassa students. Implementing ergonomic improvements, such as appropriately sized desks and chairs, and encouraging regular breaks during study sessions could also help reduce the risk of developing neck pain and visual impairments. Furthermore, educational programs targeting both students and teachers could promote awareness of the importance of good posture and eye care practices, which may help prevent the development of these conditions (12).

CONCLUSION

In conclusion, this study provides evidence of a significant association between neck disability and poor eyesight among madrassa students, underscoring the importance of addressing ergonomic and nutritional factors in this population. While the study contributes valuable data to the existing literature, its limitations highlight the need for further research to establish causality and to develop targeted interventions that can effectively reduce the prevalence of these health problems in madrassa settings.

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