



RESEARCH ARTICLE

OPEN ACCESS

ARTICLE INFO

Date Received:

August 18, 2022

Date Revised:

October 29 2022

Date Published Online

December 25, 2022

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Prevalence of Postural Neck Pain Among Under - graduate Female Students of BIHS Islamabad

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ABSTRACT

Background: Postural neck pain is a prevalent condition characterized by neck discomfort, occurring in the absence of notable tissue damage or trauma. Individuals afflicted by this condition typically encounter an ache or pain when engaging in activities that impose prolonged stress on normal tissue. Poor posture is often the root cause of strained neck muscles, leading to the manifestation of neck pain. Moreover, it is important to recognize that neck pain can also serve as an indication of more severe underlying issues. In particular, the combination of poor posture and age-related wear and tear has been found to be associated with neck pain. **Objective:** The present study aimed to determine the prevalence of postural neck pain among undergraduate female students of BIHS Islamabad. **Material & Methods:** A descriptive cross-sectional study was conducted using demographic data, Numeric pain rating scale (NPRS), Occiput to wall distance (OWD) test and Neck disability index (NDI) to determine the prevalence of postural neck pain among undergraduate female students. The study participants were the female students of BIHS, age between 18 to 30 years. Data collection tools used were numeric pain rating scale for pain variable and Neck Disability Index for assessing the restrictions in daily activities due to neck pain. Data was analyzed through Frequency Tables in SPSS version 21. **Results:** The present study showed the prevalence of postural Neck pain among undergraduate students of BIHS Islamabad based on analysis. This study included 115 participants within an age range of 15 to 30 years. 65 (56.52%) out of 115 participants suffered postural neck pain. The maximum of the participants was from the age group of 18 to 20 years and the most adopted posture from the participants for study purpose was sitting that was 104 (90.4%) following the lying posture 11 (9.6%). Numeric pain rating scale revealed that maximum of the participants 50 (43.5%) had moderate amount of pain following the mild pain that was 49 (42.6%). The responses from the neck disability index questionnaire showed that 73 (63.5%) participants had mild neck disability following moderate disability that was 33 (28.7). **Conclusion:** This study serves as a significant contribution to the existing body of knowledge, elucidating the distressing prevalence of postural neck pain and its detrimental effects on the functional capacities and overall quality of life of female undergraduate students.

Keywords: Postural neck pain, Numeric pain rating scale, Neck disability Index, Functional disability.

INTRODUCTION

Postural neck pain is a prevalent musculoskeletal disorder that ranks as the second most common cause of disability, surpassed only by low back pain [1]. The incidence of neck pain within a one-year period is considerable, affecting approximately 86% of the general population [2]. Notably, research consistently demonstrates a higher prevalence of neck pain among females [3]. Postural neck pain is influenced by various factors, including poor posture, anxiety, depression, neck strain, and participation in

sports or occupational activities [4]. This multifaceted condition presents as a persistent musculoskeletal syndrome characterized by episodic occurrences and variable recovery times [5]. Its impact extends beyond physical discomfort, often resulting in reduced work hours, decreased participation in recreational activities, and disrupted sleep patterns [6]. Individuals afflicted with postural neck pain commonly experience restricted neck mobility due to factors such as muscular spasm and tightness, which can further manifest as headaches. Notably, prolonged periods of holding the neck in a forward posture have been associated with the development of neck pain [7].

With the advancement of the technology, the use of cell phones and computers has increased, and it has led to an increase in the duration spent in wrong posture. These wrong postural neck positions have a long-term impact on the neck pain [8]. Improper body posture, such as the forward head posture and prolonged sitting in a detrimental position, can lead to the development of neck pain. This occurs due to the excessive strain exerted on the muscles and ligaments that support the neck, resulting in gradual injury over time. The forward head posture specifically contributes to an increased curvature of the upper back (known as thoracic kyphosis), rounded shoulders, and protracted scapulae. This posture is characterized by increased flexion in the lower cervical segment and increased extension in the upper cervical segment [8-11].

Manifestations of faulty posture include fatigue in the muscles responsible for retracting the scapulae, nerve impingement in the cervical region, and tension in the trapezius muscle, which often leads to headaches. Moreover, maintaining a faulty, flexed position of the neck increases the likelihood of disc lesions. Additionally, as individuals age, degenerative changes in the cervical region can occur, resulting in a reduced space in the intervertebral foramina and the compression of nerve roots. Furthermore, extreme stiffness and stress can be experienced in the ligamentum flavum of the lower cervical region and in the anterior longitudinal ligament of the upper cervical region [10, 12]. Several individual risk factors contribute to the development of neck pain. These factors include gender, age, lifestyle choices, and low physical fitness levels. Additionally, high academic demands, poor ergonomics, abnormal muscle strength and endurance, smoking, and a sedentary lifestyle can also be significant contributors to the development of neck pain [11, 13, 14]. Therefore, paying attention to posture becomes crucial in preventing and managing neck pain. Even individuals who are in overall good health can experience neck pain if they consistently maintain a flexed neck position for more than 15 minutes [15]. Physiotherapy plays a significant role in the management of neck pain by employing a variety of techniques such as manual therapy, therapeutic exercises, modalities, massage, and functional training [16, 17]. The COVID-19 pandemic has led to a shift in educational methods, with online learning becoming the norm. This transition has had an impact on students, who have been extensively using cell phones and laptops for extended periods. Prolonged usage of these devices may have adverse effects on their posture, resulting in postural neck pain. Therefore, this study aims to investigate the prevalence of postural neck pain associated with poor posture specifically among undergraduate students enrolled at Bashir Institute of Health Sciences in Islamabad.

METHODOLOGY

A cross sectional survey was conducted at Bashir institute of health sciences (BIHS), Bhirakahu, Islamabad from June 2021 to October 2021. After the approval from the Institutional Review Board and Ethical Committee (IRB & EC), the study was completed in a duration of 5 months. The study included only the female participants within the age range of 18 to 25 years from different departments of the BIHS. The participants were included if they had the consecutive sitting duration of at least 3 hours/day and if their OWD test has a value greater than 2 cm. Female students with the history of recent neck surgery, discogenic pain and recent trauma were not included in the study. Moreover, the students having upper cross syndrome, Thoracic outlet syndrome, ankylosing spondylitis and whiplash injury were also excluded from the study. A total of 115 participants were selected through non probability convenient sampling technique and the sample size was calculated using Slovin's formula $n=N/(1+N_e/2)$ with confidence interval =95%, Margin of error=0.05. Data was collected directly from the participants after getting an informed consent. A semi-structured questionnaire carrying different neck related questions and Numeric pain rating scale were used to collect the data from the participants. Data was analyzed using SPSS version 25. Frequencies and descriptives were noted.

RESULTS

The current study included 115 participants within an age range of 18 to 30 years. The maximum of the participants was from the age group of 18 to 20 years. The distribution of the participants regarding their age categories is shown in table 1. The BMI of the participants was also determined and it was noted that maximum of the students 54 (47%) out of 115 were underweight and only 3 (2.6%) out of 115 were in the obese class. Fig 1 describes the BMI categories distribution among the participants.

The study revealed that the participants adopt different postures during study and it was observed that 104 (90.4%) participants have sitting posture during study and 11 (9.6%) adopt lying posture. Maximum of the participants were from the academic year 2021 that were 67 (58.3%) and 48 (41.7%) were from the academic year 2020.

In the current study, pain was measured through Numeric pain rating scale and the responses from the participants showed that maximum of the participants 50 (43.5%) had moderate amount of pain following the mild pain that was 49 (42.6%). Table 2 summarized the posture during study, academic year and the neck pain categories.

The neck disability index was also measured by using neck disability questionnaire. The responses showed that 73 (63.5%) participants had mild neck disability following moderate disability that was 33 (28.7). The categories of the neck disability on the basis of neck disability index outcome measure are described in Fig 2.

Table 1. Total age distribution of study participants

Age Categories	n (%)	Mean \pm SD
18-20	99 (86.1)	18.0 \pm 2.0
21-25	15 (13)	
26-30	1 (.9)	

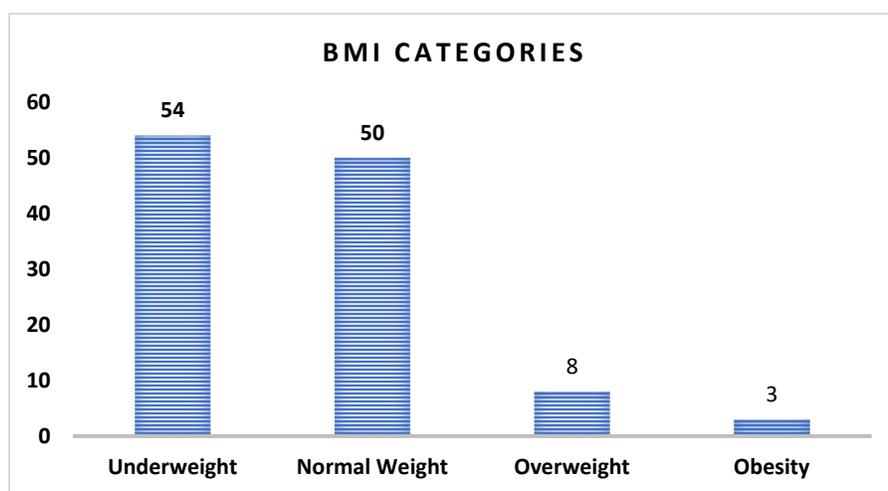


Figure 1. BMI of the students

Table 2. Summary of Variables

Posture During Study	n (%)
Sitting	104 (90.4)
Lying	11 (9.6)
Academic year of students	n (%)
2020	48 (41.7)
2021	67 (58.3)
Duration of Study of Participants	n (%)
1-5 hours	93 (80.9)
6-10 hours	19 (16.5)
11-15 hours	3 (2.6)
NPRS Categories	n (%)
No pain	9 (7.8)
Mild Pain	49 (42.6)
Moderate Pain	50 (43.5)
Severe Pain	7 (6.1)

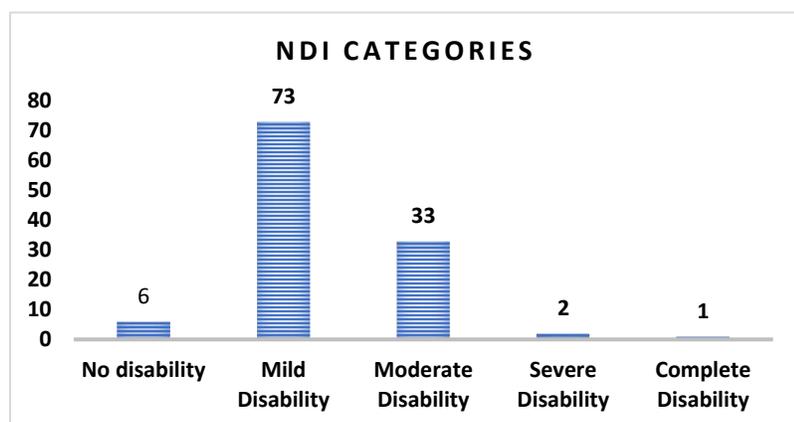


Figure 2. Total NDI categories

DISCUSSION

The results of the current study obtained through NPRS and NDI scales depicted that Postural neck pain is common in students of BIHS. Postural neck pain is common among undergraduate students. There is evidence regarding postural neck pain due to bad posture especially, but no such study has been conducted in Islamabad, Pakistan. Fahad Tanveer et al. assessed the prevalence of postural neck pain in Doctor of Physical Therapy (DPT) students of University of Lahore due to bad posture. A sample size of 143 was collected using a convenient sampling technique. A total of 51.8% had postural neck pain with mild to severe intensity [18]. Our study also showed that mild pain and discomfort in the neck and mild to moderate functional disability associated with poor posture throughout the day and during study hours.

Fadi Al-Hadidi, Islam Bsisu did a study based on a self-administered online questionnaire, 500 questionnaires between February 15th, 2017 and March 18th, 2017 were filled. The study sample included healthy students from health care faculties regardless of their age, gender, or handedness This study demonstrates a significant positive correlation between the duration of mobile phone use and the duration and severity of neck pain. Furthermore, the increased severity of postural neck pain places a huge burden on the healthcare system. This study results showed that postural neck pain is prevailing with the use of mobile phone [19]. Our study results are similar to this study as postural neck pain is prevailing among students due to bad posture and long duration of study.

Prateek Behera (2020) did a cross sectional study on 423 undergraduate medical students to measure the prevalence of postural neck pain and linked factors including appliance use and found that neck pain is common among undergraduate students. Aggravating factors in those who already have postural neck pain are academic stress, smartphone and laptop use [20]. Our study results also showed that postural neck pain is common because of the wrong neck position for prolong period of time among students. Students also suffered with pain and mild disability of neck region. Our study is similar to this past study in a way that they also had similar aggravating factors.

Sachdev S, Talreja S, Ansari IUI, et al. carried out observational study among the 158 participants from department of Physical Therapy, University of Baluchistan, Quetta and they assessed prevalence of postural neck pain among the undergraduate physical therapy students of university of Baluchistan, Quetta, Pakistan. 69% of the students showed neck pain in Baluchistan [21]. This study has a significant importance regarding positive postural neck pain in neck muscles among students and the validity and reliability of VAS scale for the assessment of pain. All the findings of this study strongly support the hypothesis that neck pain is common in undergraduate medical students and showed association with posture of study, academic year, continuous study hours, mode of study.

Some of the limitations of the current study were small sample size that may be linked to an increased risk of statistical type-II error. Psychosocial measures were not incorporated in this study design. The result and conclusion of the report study were only applicable for the population of students of BIHS, this report study was done within a very short time due to pandemic situation. It is clear by evaluating these studies that postural neck pain is very serious problem among students as well as among other populations. Important steps should be taken for realization of bad postural effects on population. The study can be done in more precise manner by increasing sample size, targeted area and the time duration.

CONCLUSION

This study concludes that undergraduate female students have postural neck pain that may lead to neck disability and thus causing a decline in quality of life.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTION

AJ contributed to the formulation of concepts and design of the study, statistical analysis, writing and revising of manuscript. HK contributed to writing and revising of manuscript. JA contributed to the design of the study, writing of manuscript. RR contributed to the concepts and design of the study. MA, HK, IUB contributed to providing advice on data collection and revising of manuscript.

FUNDING SOURCE

The present study did not receive any funding from local or international organization.

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