

Frequency of Posture Related Neck Pain Among Medical Students: A Descriptive Cross-Sectional Survey

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Author's Contribution

¹⁻³Conception and design, Collection and assembly of data, ²⁻⁶Analysis and interpretation of the data, ³⁻⁵Critical revision of the article for important intellectual content, Statistical expertise ¹⁻⁶Final approval and guarantor of the article.

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A B S T R A C T

Background: Poor posture and bad working environment ergonomics are the common causes of advancement in cervical pain. Acute neck pain is abrupt, intense pain and it typically subsides within days or weeks. Chronic neck pain felt most of the time and last for more than 3 months.

Objective: To determine the frequency of posture related neck pain among medical students and to explore the association between neck pain and posture adopted while using laptop and mobile phone.

Methodology: The study was carried out in medical colleges of Rawalpindi and Islamabad from March to August 2021. A total of 106 medical students were included in the study. A questionnaire was administered to obtain information about demographic characteristics, pain intensity (Numeric Pain Rating Scale NPRS) and postural adaptation (Modified student laptop use and neck pain risk questionnaire) while using laptop and mobile phone. SPSS 23 was used for data analysis.

Results: A total of 106 participants were selected in the study out of which 86(80.1%) were females and 18(18.9%) were males. The overall mean age was (21.83±1.96) years. The frequency of posture related neck pain was 51(48.1%). The most adopted posture during use of laptop and mobile phone was neck flexion and p-value was 0.00.

Conclusion: The frequency of posture related neck pain was high among medical students. The major risk factor was poor posture and prolonged use of laptop and mobile phone.

Keywords: Posture, cervical pain, Modified student laptop use and neck pain risk questionnaire), Numeric Pain Rating Scale.

Introduction

Neck pain is characterized as aching sensation and discomfort in the neck area. Pain may feel in the middle or either side of the neck or may extend to shoulders, arms and fingers. Poor posture and bad working environment ergonomics are the common causes of advancement in cervical pain. Acute neck pain is abrupt, intense pain and it typically subsides within days or weeks. Chronic neck pain felt most of the time and last for more than 3 months.¹ Neck pain is an important cause of lack of concentration in studies, student absenteeism, reduced educational attainment and loss of interest in studies due to illness. Medical students can develop neck pain due to longer

training hours, bad sleeping habits, hours of prolonged sitting and reading using laptop and mobile phone, forward head posture and use of seats without back support.² Forward head posture (FHP) causes tightening of anteriorly present cervical muscles. Forward head posture causes abnormal stress on cervical musculature. It causes severe tension on extensor muscles and connective tissues surrounding the neck.³ Studies indicated a prevalence of neck pain between 12% and 34% and most of the symptoms present among those who use portable electrical devices.⁴ Musculoskeletal pain increases especially with increased use of laptop. Prevalence of musculoskeletal

pain is common among female students (50.3%).⁵ According to previous studies there is high prevalence of neck pain among medical students. A study by Malaysian medical college reported the prevalence of 41.8%.⁶ Studies from Australia, New York, United states, Pakistan and China reported the prevalence of 52.8, 35, 65, 33.8 percent.⁷⁻¹¹ Medical students have higher risk for neck pain development due to their prolonged study hours.¹² Neck pain causes medical disability, functional impairment and decreased productivity among medical students.^{13, 14}

Methodology

The cross-sectional study was carried out in medical colleges of Rawalpindi and Islamabad from March to August 2021. The sample size was calculated using sample size calculator Raosoft.¹ The data was collected online. A questionnaire was administered to obtain information about demographic characteristics, pain intensity (NPRS) and postural adaptation (Modified student laptop use and neck pain risk questionnaire) while using laptop and mobile phone. SPSS 23 was used for data analysis. Non probability convenient sampling technique was used to select the participants. The students aged 18 to 25 were included in the study. Ethical approval for the survey was taken from the ethical research committee of Yusra Institute of Rehabilitation Sciences. (Ref no. Yirs/Rec/02/21). The questionnaire used to collect data was self-structured questionnaire, modified student laptop use and neck pain risk questionnaire. The association between neck pain and risk factors were estimated through SPSS 23 analysis procedure by considering the P-value.

Results

Of the 106 participants, 86(80.1%) were females and 18(18.9%) were males. The overall mean age was 21.8 ± 1.96 years. The age of the participants was between 18 to 25 years. The BMI of the participants was also measured. 20(20.8%) of the participants were underweight, 73(68.9%) were normal weight and 9(8.5%) were overweight. The frequency of neck pain was 51(48.1%). (Figure 1) The 10(9.4%) of participants had mild pain, 30(28.3%) of participants had moderate pain and 10 (9.4%) of participants had severe neck pain. (Table I)

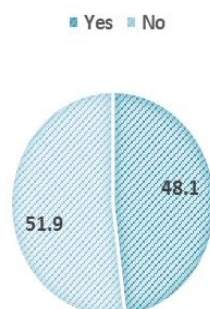


Figure 1: Neck Pain

The results showed that frequency of neck pain was due to bad posture. The most commonly adopted posture among medical students was neck flexion, slouching forward with neck flexed and slouching backward. The chi-square test was applied to check the association between neck pain and postural adaptation during laptop use and the p-value was 0.00. (Table II). Neck pain is also associated with prolonged use of laptop and the p value was 0.00.

Out of 106 participants (N=51, 48.1%) had neck pain and (N=55, 51.9%) participants had no pain at the moment when they filled the questionnaire.

Table I: Descriptive statistics of baseline characteristics of study participants and Numeric Pain Rating Scale.

Characteristics	Frequency	%
Male	18	18.9%
Female	86	80.1%
Underweight	20	20.8%
Normal	73	68.9%
Overweight	9	8.5%
Numeric pain rating		
Mild	10	9.4%
Moderate	30	28.3%

Table II: Neck position while using laptop in neck neutral, neck flexed with slouching forward, slouching backward and neck extended position.

Neck position during laptop use	Mean $\pm$ SD	P-value
Position Neck neutral	2.05 $\pm$ 1.14	0.00**
Neck flexed position	2.16 $\pm$ 1.28	0.00**
Slouching forward, neck flexed position	2.16 $\pm$ 1.38	0.00**
Slouching backward, neck flexed position	2.01 $\pm$ 1.17	0.00**
Lying on bed, neck extended position	1.06 $\pm$ 0.80	0.00**
Severe	10	9.4%

Discussion

As far as our knowledge is concerned, there is a scarcity of studies conducted to find out the frequency of posture related neck pain among medical students. Previous studies conducted among medical students of one institute, very few studies had included students from more than one medical institute. A study conducted by Fahad Tanveer et.al in 2017 to determine the prevalence of posture related neck pain. They included doctor of physical therapy students from university of Lahore in their study and the prevalence was 51.8%. The common adopted posture among students was neck flexion. The study by Fahad et.al also revealed the neck pain varies from mild to moderate and the ($P < 0.05$) which indicates the results were significant.¹ The result of our study

showed that frequency of posture related neck pain was 48.1% which were in accordance with previous study. The results showed that frequency of neck pain was due to bad posture. The most commonly adopted posture among medical students was neck flexion, slouching forward with neck slightly flexed and slouching backward. Chi-square test was applied and the p value was (0.00). It means that there is positive relation between neck posture adaptation and neck pain.

A cross-sectional study was conducted by Shivum Sachdev et.al in 2021 among undergraduate physical therapy students of university of Balochistan. The study reported that the prevalence of neck pain among female medical students was high.¹⁵ The result of current study did not find association between neck pain and gender of participant and the p- value was 0.49.

A cross-sectional study was conducted at Qassim University by AM Alsalamah et.al in 2019 among medical students. The neck pain related to smart phone addiction was (60.8%). The result showed a relationship present between use of smart phone and neck pain. The study did not find association between BMI and Neck pain.¹⁶ This study also revealed that there is relationship between neck pain and use of smart phone and P-value was 0.00. This study did not find association between neck pain and BMI and the p-value was 0.60.

The results of current study showed the prolonged use of laptop and mobile phone was associated with neck pain. To find the association between use of electronic devices and neck pain the chi-square test was used. It showed the significant results and the p-value was 0.00. These results were according to the study conducted by MM Almalkis et.al in 2016 at king Abdulaziz University.⁴

A cross-sectional study was conducted by MS Sirajudeen et.al among university students in Majmaah region, Saudi Arabia 2018. The result of the study reported that the prevalence of neck pain was high due to prolonged use of laptop.¹⁷ The result of current study also showed that there is association present between neck pain and duration of laptop use. The p value was 0.00. The limitations of the study were the possibility of response biasness, Limited resources and no physical assessment of posture as data was collected online.

Conclusion

There was a high frequency (48.1%) of neck pain among medical students. The major cause of neck pain found was prolonged use of laptop and mobile phone and bad posture. The most commonly adopted posture was neck flexion. The pain varies from mild to moderate. Thus it is recommended that

the students should place laptop on stable and supported desk or table for use. The placement of laptop screen should always be in frontline with the eyes of the user. The neck neutral position should be maintained while using laptop or cell phone.

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