NECK PAIN AMONG STUDENTS AND ITS ASSOCIATION WITH SMART PHONE AND LAPTOP USAGE

Jannat Tariq, Quarat ul ail Leghari

University College of Medicine and Dentistry, The University of Lahore

ABSTRACT

Introduction: In the modern era of advancement and technology, use of smart phones and laptops is common. Literature suggests that these digital devices have many negative effects on the health of humans. One of the most common adverse effects associated with prolonged use of mobile and laptop is neck pain.

Material & Methods: A cross-sectional study was carried out at University of Lahore from July 2022 to December 2022. A total of 206 undergraduate physical therapy students having age 18 to 25 years participated in the study. For data collection, smart phone & laptop usage and neck pain questionnaire was used. For data analysis, SPSS version 20 was used.

Results: The mean age of the subjects was 21.15 ±1.89 years. The prevalence of neck pain was 82.5% (n=170). Neck pain was significantly associated (P-value< 0.05) with smart phone and laptop usage for greater than 4 hours. Surprisingly, neck pain was not associated (p valve>0.05) with different positions (standing/sitting/lying) in which students use smart phones for majority of the time, however, it had significant association (P-value< 0.05) with use of laptops in sitting position for majority of the time.

Conclusion: The prevalence of neck pain is high in students who used smart phones and laptops for long hours

Keywords: Back pain, Laptop, Neck pain, Phone, Students.

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Correspondence
Qurat ul Ain Leghari
Email address: quratulain85@outlook.com
Affiliation: University College of Medicine and Dentistry, The University of Lahore

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Introduction

In today's era of technological progress, the widespread utilization of smartphones and laptops has become commonplace (1). Initially designed to enhance human comfort, it's noteworthy that recent literature indicates numerous adverse health effects associated with these digital devices (2). Among the most prevalent concerns stemming from extended use are musculoskeletal disorders (MSDs) (3). The extended use of these digital tools exerts continuous strain on the musculoskeletal system, rendering the human body susceptible to various MSDs. Neck pain, in particular, emerges as a common issue among users, as the neck plays a crucial role in supporting the head's position (4). The typical posture adopted during laptop or mobile phone use often involves a forward-leaning head position, which places constant strain on the neck muscles, ultimately leading to chronic neck pain (5). Literature suggests that neck pain is very common in smart phones and laptop users (6).

A study conducted in Poland suggested that 55.6% people were suffering from neck pain

due to laptop usage (7). While another study reported that prevalence of back pain due to laptop usage was 56.1 % (8).

The study conducted in South Australia found that 32.50% of smartphone users experienced neck pain (9). A broader systematic review revealed that over half of smartphone users (54.8%) (10) have experienced neck pain at some point in their lives, while the prevalence among laptop users exceeds 67%. This high prevalence of neck pain among users of digital devices can be attributed to the poor posture often adopted during usage (11).

Extended periods of using smartphones and laptops place the cervical vertebrae, joints, and soft tissues in prolonged, improper positions, disrupting the normal biomechanical function of the neck and making users more susceptible to neck pain (12). Over the last twenty years, the use of digital devices like smartphones and laptops has seen a significant surge. These devices are utilized for various purposes, including academic study, professional work, and entertainment. However, the prolonged use of such devices has been linked to neck pain (13).

Despite the understanding that young students are more likely to use smartphones and laptops compared to older individuals, there has been limited research evaluating the impact of this device usage on the health of students (14,15). Thus, a cross-sectional study was undertaken to investigate the prevalence of neck pain among students and explore its correlation with smartphone and laptop usage.

Of these disorders, neck pain emerges as a prevalent issue among users, owing to the pivotal role of the neck in supporting the head (16). The conventional posture adopted during laptop or mobile phone usage often entails a forward-leaning head position, exacerbating the strain on neck muscles and contributing to the onset of chronic neck pain (17).

Materials and Methods

A cross-sectional study was conducted at University of Lahore from July to December 2022, focusing on undergraduate physical therapy students aged 18 to 25 years. Participants with a history of major trauma, surgery, or any significant medical complications were excluded from the study. The sample size was determined using the Raosoft online sample size calculator, indicating a need for 230 subjects from the total population of 550 students.

Data collection involved the administration of a questionnaire on smartphone and laptop usage habits, as well as inquiries into neck pain symptoms. Hard copies of the questionnaires were personally distributed to the students, accompanied by a detailed explanation of the study's purpose and procedures. Informed consent was obtained from each participant before data collection. Data analysis was conducted using SPSS version 20, with the Chi-square test employed to explore associations between categorical variables.

Results

A total of 230 physical therapy students participated in the study. Mean age of subjects was 21.15 ±1.89 years. Of total subjects, 128(62.1%) were females while 78(37.9%) participants were males. Of total, 82.5% (n=170) had neck pain. Neck pain had significant association (P- value< 0.05) with smart phone and laptop usage for greater than 4 hours (Table 1 and Table 2). Surprisingly, neck pain had no significant association (P-valve>0.05) with different positions in which students use smart phones for majority of the time, however, it had significant association (P-value< 0.05) with use of laptops in sitting position for majority of the time. (Table 3 and Table 4**).** Out of 170 participants who had neck pain, 110 (64.7%) were female and 60 (35.3%) were male. On visual analogue scale, 27(15.9%) participants had mild neck pain, 76(44.7%) had moderate, 61(35.9%) had severe and 6(3.5%) had very severe neck pain.

Discussion

Neck pain is increasingly prevalent, largely attributed to prolonged periods of maintaining abnormal postures (17,18). The widespread use of smartphones and laptops, fueled by technological advancements, has exacerbated

this issue, resulting in a higher incidence of neck and low back pain due to sustained poor posture (2,3). Given that students frequently rely on smartphones and laptops for academic and leisure activities, they are particularly vulnerable to developing neck pain (18).

Despite its growing prevalence, neck pain resulting from frequent laptop and smartphone use has not received sufficient attention from rehabilitation researchers. The findings of our study underscore this concern, with a striking 82% of students reporting neck pain. This observation is consistent with previous research, such as the study conducted by Obembe et al., which revealed that 69.2% of students experienced neck pain as a consequence of regular laptop usage. Remarkably, when compared to other musculoskeletal conditions, neck pain was the most common complaint among laptop users (20). Another study from California found that 67% of laptop users had neck pain, and a study from Thailand found that 32.50% of smart phone users had the same problem (9,19). The current study's stated prevalence of neck pain is significantly higher than that of earlier investigations. It might be because only physical therapy students were included in the current study. Furthermore, it is important to note that the current study was carried out in a developing nation where there is a dearth of knowledge about ergonomics, which may be the cause of the high frequency of neck pain among students.

Research indicates that extended use of laptops and smartphones is associated with an increased risk of neck pain. Twenty Because most students utilize these gadgets with their heads extended forward, posterior neck tissues are constantly strained when using these devices (23). Additionally, our research investigation verified that using a laptop or smartphone for longer than four hours is strongly linked to neck pain. In addition, there was a strong correlation between neck pain and using a laptop when seated for extended periods of time. Because sitting puts greater strain on the spine than other positions do biomechanically, laptop users who sit for extended periods of time may find themselves with neck pain (25,26). Out of 170 participants who had neck pain, 110 (64.7%) were female and 60 (35.3%) were male. On visual analogue scale, 27(15.9%) participants had mild neck pain, 76(44.7%) had moderate, 61(35.9%) had severe and 6(3.5%) had very severe neck pain.

Even though the current study carefully assessed neck pain in students and examined the relationship between neck pain and laptop and smartphone users, there are still a few noteworthy drawbacks. First off, participants in the current study could not be entirely representative of the student body because it only comprised physical therapy students. Second, the study's findings could not be applicable to a larger population because of the small sample size. Confounding variables could not be controlled, either.

Conclusion

While the present study rigorously investigated neck pain among students and its correlation with laptop and smartphone usage, several notable limitations warrant consideration. Firstly, the study's participant pool, limited exclusively to physical therapy students, may not adequately represent the broader student community. Secondly, the study's findings might lack generalizability due to the relatively small sample size, potentially limiting its applicability to a larger population. Furthermore, the inability to control for confounding variables introduces complexity into interpreting the results accurately. These constraints underscore the need for further research encompassing diverse student demographics and employing larger sample sizes to better elucidate the relationship between neck pain and digital device usage among students.

Additionally, employing robust methodologies to control for confounding variables would strengthen the validity and reliability of the study outcomes, providing more conclusive insights into the complex interplay between neck pain and digital device usage among

students.

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Table 1: Association of neck pain with smart phone usage

		Average time students use smart phone daily					P-value
		0-30mins	>30mins	>1-2hrs	>2-4hrs	>4hrs	
Neck Pain	Yes	4 (2.4%)	8 (4.7%)	27 (15.9%)	43 (25.3%)	88 (51.8%)	0.003
	No	3 (8.3%)	5 (13.9%)	12 (33.3%)	6 (16.7%)	10 (27.8%)	

Table 2: Association of neck pain with laptop usage

		Average time students use laptop daily					P-value
		0-30mins	>30mins	>1-2hrs	>2-4hrs	>4hrs	
Neck Pain	Yes	16 (9.4%)	25 (14.7%)	51(30.0%)	26 (15.3%)	52 (30.6%)	0.04
	No	2 (5.6%)	11 (30.6%)	10 (27.8%)	7 (19.4%)	6 (16.7%)	

Table 3: Association of neck pain with different positions while using smart phones

		Different positions in which students use smart phones for majority of the time			P-value
		Sitting	Standing	Lying	
Neck Pain	Yes	75 (44.4%)	6 (3.6%)	88 (52.1%)	0.207
	No	21 (58.3%)	0 (0.0%)	15 (41.7%)	

4: Association of neck pain with different positions in which students use laptops

		Different positions in which students use laptops for majority of the time			P-value
		Sitting	Standing	Lying	
Neck Pain	Yes	117 (68.8%)	4 (2.4%)	49 (28.8%)	0.019
	No	33 (91.7%)	0 (0.0%)	3 (8.3%)	