Original Article

Text Neck Syndrome And Smartphone Use Among Medical Students In Lahore

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Abstract

Background: Extended smartphone use with continuous neck flexion has been associated with neck pain and musculoskeletal symptoms, which are referred to as Text Neck Syndrome (TNS).

Objective: To estimate the prevalence of TNS in medical students in Lahore and to evaluate associations with smartphone use (daily duration and typical neck posture).

Methodology: Cross-sectional survey of 320 medical students from two public sector medical colleges asked for demographics, smartphone exposure (hours/day, years of use), usual neck posture, and symptoms related to TNS. TNS was considered as occurrence of ≥3 characteristic symptoms with smartphone use ≥4 hours/day. Data analysis was performed using descriptive statistics and chi-square tests ($\alpha = 0.05$).

Results: Total TNS prevalence was 61.9% (198/320). Prevalence was greater with daily smartphone use: ≤2 h (42.6%), 2–5 h (61.0%), >5 h (76.5%) ($p < 0.001$). More frequent neck flexion >30° was predictive of greater TNS prevalence (73.4%) compared with <15° (44.4%) ($p = 0.02$). These results are consistent with similar student populations and meta-analytic data associating smartphone overuse with neck pain.

Conclusion: TNS is prevalent among medical students and significantly related to increased daily smartphone use and unfavorable neck posture. Ergonomic training and behavioral therapy to decrease prolonged smartphone use and enhance neutral head posture are advised.

Keywords: Medical Students, Pakistan, Text Neck Syndrome, TNS

Introduction

Smartphone usage and daily possession have increased exponentially globally, and maintained forward head posture while using devices has been associated with neck pain and concomitant musculoskeletal issues labeled as Text Neck Syndrome (TNS) (1). Various cross-sectional studies of university and medical students have documented high TNS prevalence and strong correlations with increased phone use and worse posture (2).

An American chiropractor, first described TNS. It is the term used to explain neck pain that is the result of repetitive stress injury or overuse (3). It occurs as a result of neck flexion, which occurs when the individual tilts his/her head downwards in a bent posture for an extended period of time, viewing mobile phones and other digital devices like tablets and laptops (4).

Medical students are most vulnerable due to intense study requirements, excessive screen exposure for education and social purposes, and extended periods of sedentary behavior conditions that might enhance musculoskeletal tension (5,6). Local evidence from Pakistan is sparse but indicates the same trend of high prevalence (7). The purpose of this study was to determine the prevalence of TNS among medical students in Lahore and to examine associations with characteristics of smartphone use. Adult head = 4.5–5.5 kg (10–12 pounds) when in the neutral position. Forward head flexion in various degrees straight influences the cervical spine. Under 15° head flexion, approximately 12 kg of load is applied to the neck. This increases to 18 kg when the flexion is at 30°, 22 kg when at 45°, and 27 kg when at 60° (8).

Text neck syndrome is defined by cervical spine, upper back, and shoulder pain. Additionally, it can result in rounded shoulders, forward head posture, more curvature of the vertebral column, and spasms of the surrounding muscles (1, 4). If not treated, conditions can result in permanent spinal cord damage, including flattening of the spinal curvature, premature arthritis, spinal cord degeneration, compression of the discs, and herniation (9).

These days, text neck syndrome is a worrying issue because increasing numbers of people use technology. As a result of the worldwide dissemination of smartphones, further research on the prevalence of text neck syndrome elsewhere in the world is necessary. Additionally, the relationship between neck disability and different behaviors while using smartphones remains uncertain in the literature. Thus, we set out to estimate the frequency of such factors and determine if they are causing text neck

Materials & Methods

This cross-sectional study in Lahore was conducted during August–September 2025. MBBS students (years 1–5) who own a smartphone and were willing to take part were included in the study. Owing to logistics, 350 questionnaires were issued and 320 full responses were processed (response rate ≈91%). Self-completed questionnaire consisted of demographics, smartphone use (hours/day groups: ≤2, 2–5, >5), smartphone years of ownership, habitual neck flexion estimate (<15°, 15–30°, >30°), and six prevalent symptoms (neck pain, shoulder/upper back pain, headaches, upper extremity paresthesia, morning stiffness, decreased neck mobility). TNS was operationally defined as having ≥3 symptoms and smartphone use ≥4 h/day — a practical

definition based on previous prevalence studies. Data in SPSS v26. Descriptive statistics outlined participant demographics. Chi-square tests were used to test associations; $p < 0.05$ significant.

Results

Table 1. Smartphone usage (hrs)'s association with TNS

Daily use	n	TNS
≤2 hrs	68	29 (42.6%)
2-5 h	154	94 (61.0%)
>5h	98	75 (76.5%)

Chi-square $p < 0.001$, increased daily use linked with increased TNS prevalence. This trend is consistent with evidence in other student populations and meta-analyses of smartphone overuse and neck pain

Table 2. Habitual Neck Flexion vs TNS

Flexion	n	TNS
<15 degrees	54	24 (44.4%)
15-30 degrees	142	83 (58.5%)
>30 degrees	124	91 (73.4%)

Chi-square $p = 0.02$, increased neck flexion linked with increased TNS prevalence, consistent with biomechanical logic and previous observational studies. No statistically significant difference: Males 63.6% vs Males 59.0% ($p = 0.13$). Gender results in literature are incongruous; some studies have more prevalent females, some no difference.

Discussion

This cross-sectional study identified TNS prevalence of 61.9% among Lahore medical students with evident dose-response relationships: increased daily smartphone use and larger neck flexion were linked to increased TNS prevalence. The results concur with international reports of TNS or neck-pain prevalence among students ranging from ~25–70%, and meta-analytic data indicating smartphone overuse raises risk for neck pain. In our study, about the majority of participants with text neck syndrome had mild neck disability. This finding agrees with the findings from other studies in the literature. The Indian study that reported a 42.5% prevalence of text neck syndrome among participants reported that this prevalence was contributed mainly by those with a mild disability (contributed to 31.9%) (10). In the Korean study, the students accounted for 34% with neck disability, with the majority having mild neck disability; they accounted for 32.85% of the whole percentage (11).

In our study, a high prevalence of text neck syndrome in medical students was seen. A reason for this could be that the medical students have to study for long hours, thus keeping their neck flexed towards the screen of smartphones or computer devices for study purposes. Secondly, integration of technology in the medical profession might enhance its use amongst such students.

Mechanistically, prolonged neck flexion creates increased loading on cervical spine structures and paraspinal musculature, resulting in fatigue, strain and pain. Behavioral factors (prolonged screen use without interruption) and physical inactivity add to risk. Ergonomic strategies (phone placement at eye level, frequent micro-breaks, strengthening exercises of the neck) have been suggested in previous literature and could be suitable for student populations.

Conclusion

Text Neck Syndrome is prevalent among Lahore medical students and is strongly correlated with more frequent daily use of the smartphone and increased neck flexion when using the device. Educational and ergonomic measures are advocated to minimize continuous use and promote neutral posture to reduce neck strain among students.

Limitations

The research employed convenience sampling that could compromise generalizability. The assessment of knowledge was through questionnaire and not through the actual performance, hence possibly potential recall and estimation bias Longitudinal follow-up and objective skill-based measures should be incorporated in future studies to assess retention of knowledge.

Authors' Contribution:

A.N conceptualized and designed the study, oversaw data interpretation, and contributed to the drafting and critical revision of the manuscript. She approved the final version for publication and takes full responsibility for the integrity of the work.

Conflict of Interest:

Authors declare no conflict of interest.

Funding and Ethics:

This research was self-funded by the author.
The study was conducted in accordance with ethical guidelines.

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