Journal of Pioneering Medical Sciences
Received: March 30, 2026 | Accepted: June 24, 2026 | Published: August 05, 2026
Volume 15, Issue 07, Pages 128-131

DOI https://doi.org/10.47310/jpms2026150718

Smartphone Usage and Its Association with Text Neck Syndrome in University Students

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Abstract **Objectives: Background:** The penetration of smart phones has reshaped the whole communication, education and entertainment. Although smartphones are being used more among the students of universities, the occurrence of text neck is becoming more common among the younger generation. **Aim:** This study is to examine the usage and it association of Text Neck Syndrome among university students. **Methods:** A quantitative approach with a descriptive cross sectional survey study design was adopted with a purposive sampling technique of 112 university students. A semi-structured questionnaire was used to gather data. SPSS software was used for descriptive analysis using Frequency and Percentage and Association was done using one way ANOVA. **Results:** The data showed that 46.4% of people did not have any neck disability, 39.3% had a mild disability, 12.5% had a moderate disability and 1.8% had a severe disability. Similarly, 46.4% reported no neck pain, 39.3% had mild pain and 14.3% experienced moderate pain. Overall, most participants had no or mild neck disability and pain. **Conclusion:** According to the results of this study, the use of smartphones for long periods increases the occurrence of text neck syndrome in the university students more importantly for those who are studying in heavy technology area.

Key Words Smartphone Use, University Students, Text Neck Syndrome

INTRODUCTION

The surge in the use of smartphones has triggered a lot of concern on their impact to the physical well-being of people particularly among university students. One major side effect of overusing smartphones is Text Neck Syndrome (TNS) which is a musculoskeletal condition that results in neck pain from prolonged forward head posture caused by viewing a handheld screen. But, as a vital asset in academic and socialization activities, the university student is a high-risk group for this emerging health problem.

There is a large amount of evidence supporting the strong association between excessive use of the smartphone and musculoskeletal conditions, especially neck pain [1–3]. During the COVID-19 pandemic, Sirajudeen *et al.* [3] found in Saudi Arabia that 46% of the university students had neck problem related to the use of a smartphone was more frequent in the group of students who had the “text neck” posture and used the smartphone for a longer duration in the day. Studies also discovered that 68.1% of medical students in Jeddah had Text Neck Syndrome and that there was a strong link between being addicted to smartphones and having severe neck pain [4,5].

Text Neck Syndrome presents a variety of symptoms, such as cervical and shoulder discomfort, rigidity, vertigo and cephalalgia. Over time, these symptoms may hinder everyday functioning and academic achievement. Hansraj [6] established that extended head tilt forward while using a smartphone use significantly amplifies the effective weight supported by the cervical spine, resulting in excessive mechanical stress and gradual musculoskeletal strain. These biomechanical changes may lead to chronic spinal issues and diminished quality of life. Preventive strategies are both feasible and effective. Simple ergonomic and behavioral modifications-such as holding smartphones at eye level, maintaining proper head and neck alignment, preferring voice calls over prolonged texting and performing regular stretching exercises-can significantly reduce spinal stress. Namwongsa *et al.* [7] reported that students who engage in regular physical exercise experience fewer neck complaints and maintain better functional mobility than those who are inactive, emphasizing the protective role of physical activity against Text Neck Syndrome.

Despite the increasing prevalence, many students remain Unaware of the permanent health effects that are linked to poor posture and prolonged smartphone use. Tsantili *et al.* [8] highlighted that a majority of students worldwide lack awareness of the future musculoskeletal risks posed by improper device usage. Similarly, Kaur and Makker [9] reported that 37.8% of smartphone users exhibited mild neck disability, with symptom severity directly related to the duration of daily mobile phone use. These findings underscore the necessity of structured awareness programs aimed at promoting healthier digital habits.

Although existing literature consistently reports high rates of neck discomfort among smartphone users, there remains a significant gap in comprehensive research that directly examines Text Neck Syndrome in university populations, particularly in relation to specific behavioral patterns and ergonomic interventions [3,10]. As academic environments increasingly rely on digital platforms, students are exposed to prolonged screen time through smartphones and other electronic devices [11,12].

Aim

This study is to examine the usage and it association of Text Neck Syndrome in university students.

METHODS

A quantitative research approach is employed to conduct a descriptive cross-sectional survey. This study was conducted in a selected University under Tamilnadu, India. The appropriate statistical calculation was used to determine the size of the sample, which was 112 and purposive sampling method was used to select the 112 eligible students. Experts validated the data collection instrument which was a semi-structured questionnaire that was tested for reliability and administration took place from January to February, 2025.

Inclusion and Exclusion Criteria

Students aged 18 years and above from the selected university in Tamil Nadu and using smartphones on a daily basis were included. Students undergoing treatment for chronic neck conditions were excluded. Students who were unwilling to provide consent were also excluded.

Data Collection Methods

The sampling technique used in this study was purposive sampling. The data was gathered with a self-administered semi structured questionnaire using google forms. Each participant required approximately 20-30 minutes to complete the questionnaire. The total duration of data collection was eight weeks, from January 2025 to February 2025. The online mode of data collection facilitated wider participation and ensured convenience and privacy for the respondents. The data collection instrument comprised demographic variables, the Neck Disability Index and the Numeric discomfort Intensity Scale.

Ethical Considerations

The study was approved by the Institutional Ethical Committee (EC/NEW/INST/2025). Informed consent was acquired from all participants. After the goal of the study was explained, all participants gave their informed agreement.

Data Analysis

Initially, the data were coded and sorted into the MS. Excel sheet and later transferred into SPSS version 20 for statistical analysis. Descriptive statistics were conducted using a summary of descriptive data; and research findings were presented using percentages and frequencies. ANOVA was employed to investigate the association.

RESULTS

Demographic Variables

The Table 1 represents the demographic profile of the study participants, which includes age, gender, department, academic level, duration of smart phone use and hours spent on smartphone per day. The majority of the study participants were 21 years (33.9%); most of the study participants are female (78.6%); the major contribution is from the Medical Laboratory Technology department (67.9%); the highest number of participants were from the third year (46.4%) and about 37.5% are from the first year. The usage of mobile phones varies with three years duration (33.9%) and only 26.8% were four years and the majority of the study participants daily mobile phone usage is for 2 hours. (32.1%) that was followed by three hours of usage.

Neck Disability Index Questionnaire

The Neck Disability Index findings revealed that (46.4%) had no disability, while 39.3% had mild disability. A smaller proportion of students (12.5%) reported moderate disability and only 1.8% had severe disability. None of the participants fell under the category of complete disability. These results indicate that most students experienced either no or mild functional limitation related to neck problems (Table 2).

Table 1: Demographic Characteristics of the University Students (N = 112)

Variable	Category	Frequency (n)	Percentage
Age (years)	18	8	7.1
	19	34	30.4
	20	16	14.3
	21	38	33.9
	22	16	14.3
Gender	Male	24	21.4
	Female	88	78.6
Department	Medical Laboratory Technology	76	67.9
	Cardiac Technology	14	12.5
	Dialysis Technology	8	7.1
	Accident and Emergency Care Technology	14	12.5
Academic	First Year	42	37.5
	Second Year	16	14.3
	Third Year	52	46.4
	Fourth Year	2	1.8
Smartphone Usage	Less than 1 year	28	25.0
	2 years	16	14.3
	3 years	38	33.9
	More than 4 years	30	26.8
Daily Smartphone Use in hours	1	6	5.4
	2	36	32.1
	3	32	28.6
	4	12	10.7
	5	16	14.3
	above 6	10	8.9

Table 2: Frequency and Percentage of Neck Disability Index

Interpretation	Frequency	Percentage
0 to 4 = no disability	52	46.4
5 to 14 = mild	44	39.3
15 to 24 = moderate	14	12.5
25 to 34 = severe	2	1.8
Above 34 = complete	0	0

Table 3: Frequency and Percentage of Numeric Pain Intensity Scale

Numeric Pain Intensity Scale		
	Frequency	Percentage
0-none	52	46.4
1-4 mild	44	39.3
5-6 moderate	16	14.3
7-10 severe	0	0

Table 4: Association between the Demographic Variables of the Subjects with the Total Score of Neck Disability Index N = 112

Demographic variables	F-value (or Correlation)	p value	Significant (p<0.05)
Age	1.439	0.136	No
Gender	1.996	0.019	yes
Department	3.435	p<0.001	yes
Level of Academic year	1.127	0.341	No
Duration of Mobile phone use	1.092	0.374	No
Hours spent in a day	12.606	p<0.001	yes

About 46.4% of the participants reported no pain and 39.3% experienced mild pain. Moderate pain was reported by 14.3% of the students, while none reported severe pain (Table 3).

The association analysis revealed that age, level of academic year and duration of mobile phone use did not show a statistically significant relationship with the total Neck Disability Index score (p>0.05). In contrast, gender demonstrated a significant association with neck disability (F = 1.996, p = 0.019), indicating differences in neck disability levels between male and female students. Department of study also showed a highly significant association (F = 3.435, p<0.001), suggesting variation in neck disability across different academic disciplines (Table 4).

DISCUSSION

The study result showed that the significant proportion of study participants (33.9%) had been using the smartphone for three years and 32.1% were spending at least 2 hours a day on their mobile phones. As per Al-Hadidi *et al.* [13] and Kamaraj *et al.* [14] long-term usage of extended screen time with their smart phone will directly affect the musculoskeletal systems and also this will increase the strain and discomfort over the spine.

The neck disability index questionnaire exposed that more than half of the study subjects reported no pain about 8.9% of the participants had moderate pain and only 1.8% of participants exhibited severe pain in the neck. These data align with the study conducted by Chaudhary *et al.* [15], in which due to persistent forward flexion of the head due to the usage of a smartphone leads to increased spine discomfort in the future lifetime.

The effect of text neck syndrome on the activities of daily living, lifting, reading, concentration and work performance was analyzed. The majority (82.1%) stated that they were fine without any difficulty performing these activities as 3.6% of the participants reported that they needed help from others. likely 71.4% of students reported they felt pain while they lifted heavy objects and 8.9% of the study participants can only lift lightweight objects pointing up the risk of long-term musculoskeletal impacts. A study by Namwongsa *et al.* [16] also revealed that long-term improper postural alignment due to smartphone usage can result in postural imbalance and lack of physical strength and mobility.

A notable observation in this study is the effect of text neck syndrome on cognitive function. 71.4% of study subjects reported no issues regarding concentration while 5.4% a smaller percentage found it difficult to concentrate on tasks. This finding supports [17]. Chronic neck pain can affect the attention- concentration span and mental health. Similarly, 23.2% of participants reported sleep disturbance this is due to prolonged exposure to screen time which directly affects the sleep-wake cycle [18].

The statical analysis revealed a significant association between Gender (p = 0.019), Department (p = 0.000) and Hours spent on smart phones per day (p = 0.000) whereas there is no significant association with Age, Academic Level and Duration of smart Phone Use. This recommended that the duration of smart phone usage each day had a greater impact on text neck syndrome than gradual exposure over the years.

CONCLUSION

The study identified Text Neck Syndrome as an important musculoskeletal concern among university students. Although most participants reported minimal or no neck pain, a considerable proportion experienced mild to moderate symptoms. Significant associations were observed between Text Neck Syndrome and selected variables, including gender, academic department and duration of smartphone use. The results highlight the importance of promoting ergonomic practices, correct posture and responsible smartphone use through awareness and educational programs to help reduce the risk of neck-related discomfort among students.

Limitations

Several limitations are included in the study. One limitation of the study is that it is cross-sectional. Two, the results might not be applicable to other situations because they were based on a particular university's recruitment and purposive sampling. Third, there is the possibility of recall and answer bias in the data since self-reported questionnaires were used for data collection.

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