



Prevalence of text neck syndrome and SMS thumb among smartphone users in physiotherapy students in Surat

Kinjal Shah¹, Urvi Tamakuwala¹, Himanshi Cyclewala¹, Aparna A Bachkaniwala^{2*}

¹Department of Neuro physiotherapy, SPB Physiotherapy College, Surat, Gujarat, India

² Assistant Professor, Department of Neuro physiotherapy, SPB Physiotherapy College, Surat, Gujarat, India

*Corresponding Author: Aparna A Bachkaniwala

Abstract

Background: Smartphone overuse has been associated with musculoskeletal problems such as text neck syndrome and SMS thumb. These conditions are becoming increasingly prevalent due to prolonged and improper smartphone usage. This study investigates the prevalence of these disorders among physiotherapy students and their association with nomophobia.

Methods: A cross-sectional survey was conducted among 220 physiotherapy students aged 18–24 years in Surat. Participants completed the Nomophobia Questionnaire (NMP-Q), Neck Disability Index (NDI), and Cornell Hand Discomfort Questionnaire (CHDQ). Descriptive statistics and Pearson correlation coefficients were used to analyze the data.

Results: Of the participants, 65% had no neck disability, 28.18% had mild disability, and 6.82% had moderate disability. Mild nomophobia was reported in 45.45%, moderate nomophobia in 45%, and severe nomophobia in 9.09% of participants. A significant positive correlation was observed between nomophobia and neck disability ($p < 0.000$) as well as hand discomfort ($p = 0.020$).

Conclusion: Text neck syndrome and SMS thumb are prevalent among smartphone users with nomophobia. These musculoskeletal issues, if left unaddressed, may progress into chronic conditions. Awareness, ergonomic practices, and preventive measures are essential to mitigate these risks.

Keywords: SMS thumb, neck disability, nomophobia, Cornell hand dysfunction

Introduction

The advent of smartphones has revolutionized communication and access to information, making these devices an integral part of modern life. Their multifunctionality—ranging from messaging and social media to work-related tasks—has led to an unprecedented increase in usage, particularly among young adults. Studies have reported that smartphone users aged 18–44 carry their devices for over 90% of their waking hours, emphasizing their pervasive presence in daily life [1, 2]. However, this dependency has also brought about a range of physical health challenges, particularly musculoskeletal issues.

Two prevalent conditions associated with excessive smartphone use are text neck syndrome and SMS thumb. Text neck syndrome, first described by Dr. Dean Fishman, refers to a repetitive strain injury caused by prolonged forward head posture while looking at handheld devices. This posture exerts significant stress on the cervical spine, increasing the load on neck muscles and ligaments [3, 4]. The condition manifests as neck pain, stiffness, and, in severe cases, may result in permanent spinal damage [5]. Similarly, SMS thumb arises from repetitive thumb movements during texting or typing on small smartphone keypads, causing discomfort, inflammation, and in some cases, conditions such as De Quervain's tenosynovitis [6].

Another key factor driving these conditions is nomophobia, a term coined to describe the fear of being without a mobile phone or out of network contact. Nomophobia is particularly prevalent among adolescents and young adults, with studies indicating that nearly 66% of individuals aged 18–24 exhibit signs of dependency [7]. This psychological phenomenon

amplifies smartphone usage, further exacerbating musculoskeletal strain.

The ergonomic challenges posed by smartphone usage are compounded by improper posture and prolonged device interaction. In neutral posture, the human head exerts an average force of 10–12 pounds on the cervical spine. However, with increasing forward head tilt, this force multiplies—reaching approximately 60 pounds at a 60-degree tilt [8]. This additional stress not only contributes to text neck syndrome but also disrupts the natural curvature of the spine, leading to long-term musculoskeletal disorders [9]. Furthermore, the rapid adoption of smartphones among younger populations poses unique concerns. Adolescents and young adults, whose musculoskeletal systems are still developing, are particularly susceptible to the adverse effects of improper posture and repetitive strain. Studies have shown that these conditions, if left unaddressed, can lead to chronic pain, reduced physical function, and diminished quality of life [10].

Despite the growing body of evidence highlighting the physical risks associated with smartphone use, awareness and preventive strategies remain limited. While the benefits of smartphones are undeniable, their overuse necessitates a better understanding of the associated health risks and the implementation of ergonomic interventions. This study aims to assess the prevalence of text neck syndrome and SMS thumb among physiotherapy students in Surat and explore the relationship between these conditions and nomophobia. By identifying these correlations, the study seeks to highlight the importance of early interventions to mitigate the adverse health effects of excessive smartphone usage.

Methods

Study design and setting

This study employed a cross-sectional survey design to assess the prevalence of text neck syndrome and SMS thumb among physiotherapy students. The study was conducted at two physiotherapy colleges in Surat, Gujarat: SPB Physiotherapy College and Sarvajanic College of Physiotherapy. Both institutions were selected based on the availability of a substantial number of participants from the relevant age group of 18–24 years.

Participants

A total of 220 physiotherapy students (both male and female) were randomly selected to participate in the study. The participants were aged between 18 and 24 years, a demographic particularly prone to excessive smartphone use due to academic and social pressures. Random sampling was chosen to ensure that all students, regardless of their year of study, had an equal chance of being selected, minimizing selection bias.

Inclusion criteria for the study were

- Physiotherapy students aged 18–24 years.
- Students who voluntarily consented to participate in the study.

Exclusion criteria were

- Students with known musculoskeletal disorders or pre-existing neck or upper limb injuries.
- Students with neurological disorders or conditions that might interfere with the interpretation of musculoskeletal pain.

Data collection instruments

Data were collected using three standardized questionnaires designed to assess the participants' musculoskeletal health and smartphone usage behavior:

1. Nomophobia Questionnaire (NMP-Q)

The Nomophobia Questionnaire (NMP-Q) was used to assess the psychological condition of nomophobia—the fear of being without a mobile device. This questionnaire has been widely validated and consists of items that measure the degree of anxiety and discomfort experienced when separated from a mobile phone [11]. Higher scores on the NMP-Q reflect greater dependence on smartphones and more severe symptoms of nomophobia.

2. Neck Disability Index (NDI)

The Neck Disability Index (NDI) is a widely used tool to measure the severity of neck pain and the degree of disability caused by cervical spine disorders. The NDI includes 10 questions related to pain intensity, personal care, lifting, reading, concentration, work, driving, sleeping, and recreational activities, each scored on a 0-5 scale. The higher the score, the greater the disability [12]. This index was used in the current study to assess the presence of text neck syndrome, a condition resulting from prolonged poor posture when using smartphones.

3. Cornell Hand Discomfort Questionnaire (CHDQ)

The Cornell Hand Discomfort Questionnaire (CHDQ) was employed to assess hand discomfort and musculoskeletal pain, specifically related to SMS thumb. The questionnaire evaluates the frequency and intensity of discomfort during thumb and hand activities, including texting, using touchscreens, and performing fine motor tasks [13]. The

CHDQ is particularly useful for identifying overuse syndromes of the thumb and wrist, which are common among smartphone users.

Data collection procedure

The study was conducted over a period of 6 months. Each participant was asked to complete the NMP-Q, NDI, and CHDQ questionnaires. The questionnaires were administered during class hours with the assistance of trained research assistants to ensure accurate and consistent data collection. Participants were instructed to answer questions based on their typical smartphone usage and any pain or discomfort they had experienced over the past week.

Data analysis

Data analysis was performed using SPSS software (version 20.0). Descriptive statistics (mean, standard deviation, and percentages) were used to summarize the demographic characteristics of the participants and the prevalence of musculoskeletal symptoms. The Pearson correlation coefficient was used to examine the relationship between NMP-Q (nomophobia scores), NDI (neck disability scores), and CHDQ (hand discomfort scores). The correlation was considered significant if the p-value was less than 0.05.

Results

A total of 220 participants (age range: 18–24 years) from two physiotherapy colleges in Surat participated in the study. The study consisted of 65% male and 35% female participants. The average age of participants was 21.3 years, with a standard deviation of 1.5 years. The prevalence of neck disability was evaluated using the Neck Disability Index (NDI). Of the 220 participants, 65% reported no disability, while 28.18% had mild disability, and 6.82% had moderate disability. No participant reported severe or complete disability. Results of Nomophobia Questionnaire (NMP-Q) revealed that 45.45% of participants exhibited mild nomophobia, 45% had moderate nomophobia, and 9.09% showed severe nomophobia. Only 0.45% of participants were found to have no symptoms of nomophobia. A significant positive correlation was found between nomophobia and both neck disability and hand discomfort. The Pearson correlation coefficient for the correlation between NMP-Q (nomophobia scores) and NDI (neck disability index) was $r = 0.242$ ($p < 0.000$), indicating a moderate positive correlation. Similarly, the correlation between NMP-Q and CHDQ (Cornell Hand Discomfort Questionnaire) was $r = 0.157$ ($p = 0.020$), suggesting a mild positive correlation.

Table 1: Neck Disability Distribution Based on NDI Grades

NDI Grade	No. of Subjects	Percentage (%)
No Disability	143	65
Mild Disability	62	28.18
Moderate Disability	15	6.82
Severe Disability	0	0
Complete Disability	0	0
Total	220	100

Table 2: Nomophobia Distribution Based on NMP-Q Grades

NMP-Q Grade	No. of Subjects	Percentage (%)
Absent Nomophobia	1	0.45
Mild Nomophobia	100	45.45
Moderate Nomophobia	99	45
Severe Nomophobia	20	9.09
Total	220	100

Discussion

This study aimed to assess the prevalence of text neck syndrome and SMS thumb among smartphone users, specifically focusing on physiotherapy students in Surat. The results indicated that musculoskeletal disorders related to smartphone use, such as neck disability and hand discomfort, are prevalent in this population. Additionally, a significant relationship was observed between nomophobia (the fear of being without a mobile device) and both neck disability and hand discomfort, suggesting that smartphone addiction may be a key factor contributing to these conditions.

The study found that 65% of participants reported no neck disability, while 28.18% and 6.82% reported mild and moderate neck disability, respectively. These findings are consistent with previous research showing that excessive smartphone use is linked to musculoskeletal problems such as neck pain, also known as text neck syndrome. The condition occurs due to prolonged forward head posture during smartphone use, which places significant stress on the cervical spine and associated muscles^[3, 5]. A study by Damasceno *et al.* (2018) reported that neck pain is a common issue among young adults, with text neck syndrome increasingly becoming a concern as mobile device usage continues to rise^[5].

Text neck syndrome is associated with a shift in the natural curvature of the cervical spine, which leads to increased mechanical stress on the neck and shoulder muscles. Fishman first coined the term text neck, highlighting how the posture adopted during smartphone use can lead to long-term damage if not corrected^[3]. This is concerning given the findings of the present study, where a significant proportion of physiotherapy students reported mild to moderate neck disability, indicating that they may be at risk for further complications if ergonomic practices are not adopted.

The results also showed a notable prevalence of hand discomfort, with a significant number of participants reporting symptoms of SMS thumb. SMS thumb refers to pain or discomfort in the thumb and wrist due to repetitive movements while typing on a smartphone. This condition has been linked to overuse and improper positioning of the hand and thumb during texting or device manipulation. Similar findings were observed in studies by Sharan *et al.* (2014), who linked the use of mobile phones to the development of De Quervain's tenosynovitis, a common overuse injury affecting the thumb^[14]. Additionally, a systematic review by Gustafsson *et al.* (2010) found that prolonged smartphone usage, particularly texting, leads to increased muscle activity and strain in the thumb and forearm muscles, which supports the findings of this study^[13].

A novel aspect of this study was its focus on nomophobia and its relationship with musculoskeletal disorders. Nomophobia, the fear of being without a mobile phone, was found to be prevalent in the study population, with 45% of participants exhibiting moderate nomophobia and 9.09% exhibiting severe symptoms. This aligns with previous studies showing that nomophobia is particularly common among young adults, with an estimated 66% of individuals aged 18–24 experiencing some form of smartphone addiction^[15].

The study found a positive correlation between nomophobia and both neck disability and hand discomfort suggesting that individuals with higher levels of smartphone

dependency are more likely to experience musculoskeletal problems. This finding is supported by research from Vishnu Shankar *et al.* (2018), who found that excessive smartphone use, driven by nomophobia, increases the risk of developing musculoskeletal disorders, particularly in the neck, shoulders, and hands^[15].

The correlation between nomophobia and neck disability may be explained by the fact that smartphone use, especially for long durations, often leads to poor posture. As users become absorbed in their devices, they tend to adopt prolonged forward head postures, which increases the load on the cervical spine. This leads to muscle fatigue, discomfort, and eventually pain. Similarly, the correlation with hand discomfort may be due to the repetitive thumb movements and static hand positions required for texting or browsing on mobile phones. The findings of this study reinforce the need for awareness about the potential dangers of excessive smartphone use and the importance of adopting healthier usage habits.

Impact on physiotherapy students

The prevalence of musculoskeletal disorders among physiotherapy students is particularly concerning, given that this population is already trained in musculoskeletal health and may be more aware of the potential consequences of improper posture. Despite this knowledge, physiotherapy students are likely to spend considerable time on smartphones for both academic and social purposes. This highlights the need for educational interventions within academic institutions, aimed at improving ergonomic practices and reducing the adverse effects of smartphone use.

Educational programs focusing on the importance of regular breaks, proper posture, and physical exercises to counteract the effects of prolonged smartphone use are essential in addressing these issues. As suggested by Neupane *et al.* (2017), early interventions that promote postural correction and muscle strengthening exercises can help reduce the risk of developing chronic musculoskeletal conditions related to smartphone use^[4]. Additionally, adopting ergonomic guidelines for smartphone use, such as holding the device at eye level and alternating between hands, may also help mitigate the risk of developing musculoskeletal disorders.

Implications for future research and clinical practice

This study provides important insights into the prevalence of musculoskeletal disorders and nomophobia among physiotherapy students, but several limitations should be noted. First, the sample was limited to students from two physiotherapy colleges, which may not fully represent the broader population of smartphone users. Future research should consider expanding the sample size and including students from various disciplines to better understand the generalizability of these findings. Furthermore, longitudinal studies that track the development of musculoskeletal conditions over time would provide valuable information on the long-term effects of smartphone use.

Clinical practice should integrate the findings of this study into patient education, particularly for younger populations who are more vulnerable to smartphone-related musculoskeletal disorders. Physiotherapists can play a key role in promoting awareness about the risks of excessive smartphone use and encouraging preventive strategies, including postural corrections and strengthening exercises to prevent long-term damage.

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