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PREVALENCE OF TEXT NECK SYNDROME AMONG THE UNDERGRADUATE STUDENTS OF KHYBER PAKHTUNKHWA

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Abstract

Text neck syndrome is a type of injury that can happen when people use electronic devices excessively. If it remains untreated, it becomes worse and affects the nerves and spine. In the Pandemic of COVID-19, the use of electronic gadgets increases, especially for academics and entertainment. Excessive use with improper posture can lead to neck and shoulder pain. The goal of this study's was to figure out how many undergraduate Allied Health Sciences students have text neck syndrome using a measuring tool called the neck disability index. Also to see if there's a connection between excessive use of electronic gadgets with text neck syndrome. The validated Neck Disability Index questionnaire that students filled out to measure how neck pain affects them. We sent this questionnaire to undergraduate students through Google Forms, and the 300 filled questionnaire was collected from the respondent. The data were analyzed using SPSS version 26. There were 8 questions, each question can have a maximum score of 5, with higher scores indicating more severe disability. The total score is used to categorize neck disability into five categories: 0–4: No disability, 5–14: Mild disability, 15–24: Moderate disability, 25–34: Severe disability, >34: Complete disability. A total of 300 students from 4 universities in Khyber Pakhtunkhwa (KPK) region participated in study. Text neck syndrome was found in 69.9% of the people we studied. Average age of participants were 23 Years. Majority of the respondents were male, making up 83.7% of the participants. Our survey results indicate that a significant majority of respondents, comprising 206 (70.3%) out of 300 people, either strongly agree or agree that smartphone usage is a factor contributing to missing planned work. This suggests a clear consensus among participants regarding the impact of smartphones on productivity.

INTRODUCTION

The term Text Neck Syndrome (TNS) was introduced by Dr. Dean L. Fishman as an overuse injury caused by incorrect posture while using mobile phones. Forward bending of the neck flattens the cervical spine's normal curvature, leading to musculoskeletal discomfort such as upper back pain. In literature, TNS is also linked to nomophobia (fear of being without one's phone). (1) The cervical spine,

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or neck, functions as a coordinated system of bones, joints, nerves, and muscles under brain and spinal cord control. Irritation of these pathways may radiate pain in the shoulder, arm, and hand. TNS describes neck pain and damage from prolonged and frequent use of mobile devices while looking down. (2) This condition causes discomfort and injury to the upper back muscles due to repetitive forward neck bending, disrupting cervical spine curvature. (3) It often occurs in individuals using smartphones and tablets for extended periods in poor postures. Preventive measures include keeping devices at eye level, adjusting posture, and limiting usage time, although many users neglect these precautions. (4)

The phrase "Text Neck" was coined in 2008 by Dr. Fishman to describe misalignment of neck muscles from excessive texting. Symptoms include neck tightness and pain due to repetitive strain. (5) Prolonged smartphone use has raised concerns, as it commonly causes pain or soreness in the neck and shoulders. (6) TNS can progress to shoulder/back pain, migraines, and abnormal spinal curvatures. Average users spend 2–4 hours daily with the neck bent forward, producing 700–1,400 hours of annual stress on the cervical spine. (5) The rise of smartphones—over 1.08 billion users in 2012—has made them indispensable, yet excessive use contributes to addiction, with prevalence between 9.3% and 48%. (1,8) Smartphones have grown rapidly worldwide, from 3.6 billion users in 2016 to 6.6 billion in 2022, with usage extending to children. Surveys show device use among children aged 0–8 rose from 38% in 2011 to 72% in 2013. (6) Despite unclear links between posture and pain, management generally involves advice, physiotherapy, and exercise. A study at the University of Abomey Calavi (Benin) examined prevalence and risk factors of TNS among 1,835 students. (10) Mobile phone activities like texting, emailing, and browsing are associated with neck pain, which affects over 30% of people annually and may persist in 50% of cases. (11) Musculoskeletal disorders, especially in students, often involve poor posture, long study hours, and device use. Risk factors include ergonomics, stress, smoking, and emotional issues. (5)

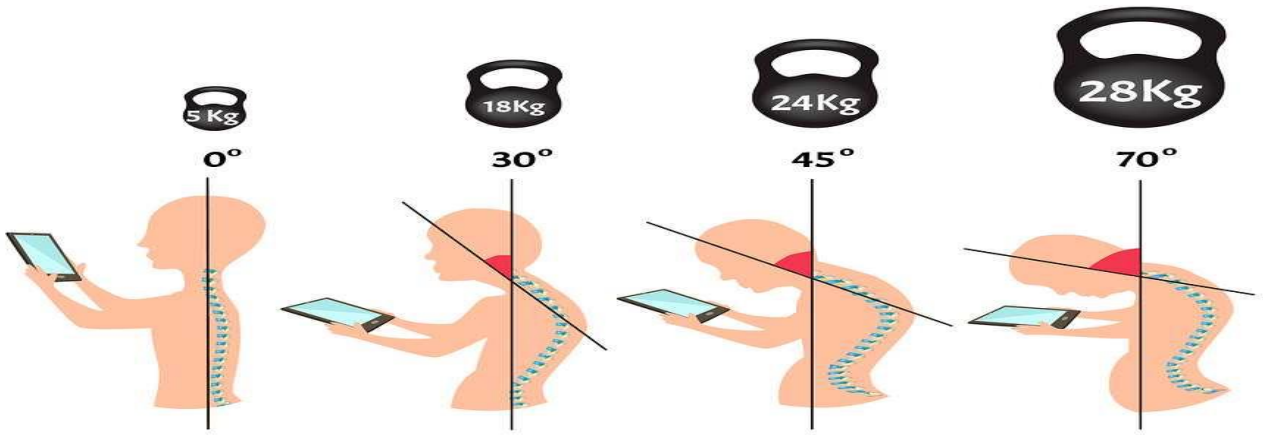

Figure 1 Shows the increased tilt significantly raises neck strain

Poor posture may cause severe outcomes, including spinal misalignment, arthritis, disc compression, and reduced lung capacity. The COVID-19 pandemic increased device uses due to online classes, promoting forward head posture and cervical strain. (12,13) Preventive strategies include holding phones

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at eye level and avoiding lap use of tablets. (4) TNS is a global issue across all age groups, linked to prolonged strain on the neck and shoulders from handheld devices. Symptoms range from headaches and shoulder pain to compromised breathing. Hakala et al. (2015) and Zhi Shan et al. observed that smartphone use strongly correlates with musculoskeletal pain, academic stress, and depression. (11) Scapular positioning plays a crucial role in cervical and shoulder movement. Pathologies in one area affect the others. This study therefore aims to evaluate the impact of TNS on scapular position in college students with high smartphone use. (5)

RESEARCH OBJECTIVES

1. To measure the prevalence of TNS among undergraduate students at KP.
2. To measure the frequency and duration of smartphone usage.

MATERIAL AND METHODS

Study Design: The research was designed with a descriptive, cross-sectional approach to assess the prevalence of TNS among undergraduate students at different Universities of KP including Gomal University Dera Ismail Khan, University of Peshawar, Khyber Medical University-IPMS, and Rehman Medical College. The study was completed in 04 months.

Sample Size: The sampling technique employed in this study is non-probability convenient sampling. The sample size for this study was determined using the formula for a proportion or prevalence study, considering a presumed prevalence of 69.9%, a 95% confidence level, and a 5% margin of error. The formula is given by, n = Z 2 P (1 - P) /E 2 where n is the sample size, Z is the statistic corresponding to level of confidence, P is expected prevalence (that can be obtained from same studies or a pilot study conducted by the researchers, and E is the margin of error. In our case, with a Z-score of 1.96 for a 95% confidence level, a prevalence estimates of 69.9%, and a 5% margin of error, the calculated sample size was 300.

Inclusion Criteria: Undergraduate students of age range 18–25 years, enrolled in four randomly selected universities in Khyber Pakhtunkhwa (KPK), Pakistan. Students who regularly use their digital devices (e.g., smartphones, tablets, laptops) for academic purposes.

Exclusion Criteria: Students enrolled in four randomly selected universities with a history of musculoskeletal disorders, those who have undergone previous neck or spinal surgery. Those students were diagnosed with any neurological conditions affecting the posture or movement.

Data Collection Procedure: This study utilized a quantitative research method. Quantitative data sources include questionnaires and content analysis. Specifically, for this research, we employed the questionnaire method to assess the awareness and knowledge of TNS among undergraduate students. It's worth noting that most previous studies on TNS have also employed a quantitative approach. Therefore, in this research, we aimed to follow a similar primary data collection technique. Given the close connection of TNS to the field of medical science, several researchers in this domain strongly support the use of quantitative process analysis.

This is a cross-sectional survey conducted at KP Universities, utilizing non-probability convenient sampling techniques with a sample size of 300 undergraduate students. The study included undergraduate students who had been using smartphones, tablets, and laptops for at least six months or more. We administered the questionnaires online via a google link. We employed a combination of open and closed-ended questions and utilized the Neck Disability Index (NDI), a 8-item questionnaire where each item is scored on a Likert scale of zero to five, resulting in a total score ranging from zero to forty.

1. **Zero**: This score typically represents no disability or no impact at all on the individual's functioning or quality of life.
2. **One**: A score of one means very mild disability with minimal impact, allowing normal daily activities.
3. **Two**: A score of two indicates mild disability with noticeable impact, but many activities remain doable independently.
4. **Three**: A score of three reflects moderate disability, with significant impact and need for help in some activities.

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5. **Four**: A score of four indicates severe disability, meaning there's a substantial impact on daily functioning, and the person often requires significant assistance or adaptations.

6. **Five**: The highest score, five, signifies extreme disability, implying that the person is unable to perform the activities in question without substantial support or adaptations. These scores help quantify the level of disability and provide valuable information for your research.

We add another question. The question is feeling pain in the upper neck and upper back while using mobile phones in which we use 5 options agree, disagree, strongly agree, strongly disagreed neutral.

Data Analysis Procedure:

The questionnaire used for data collection was specifically designed to collect information regarding age, gender, semester, experiences of pain or discomfort, and the number of hours spent using electronic devices. The Chi-Square test was employed to examine differences in age, duration of usage, pain duration, and pain severity with respect to factors like hourly time spent. Continuous measurements were presented as Mean SD (Min-Max), and categorical measurements were reported as number and percentages.

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RESULTS

3.1 Gender of the participants

Gender	Frequency	Percent
Male	253	84.3
Female	47	15.7
Total	300	100.0

Table 1 Gender

Table 3.1: A total of 300 students from 4 universities in the Khyber Pakhtunkhwa (KPK) region participated in the study. Most of the respondents were male, making up 84.3% of the participants, while 15.7% were female (Table 1)

3.2 Distribution of participants according to their current semester

	Frequency	Percent
1st	4	1.3
2nd	38	12.7
3rd	37	12.3
4rth	40	13.3
5th	126	42.0
7th	25	8.3
8th	30	10.0
Total	300	100.0

Table 2 Current semester

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Table 3.2: The research included undergraduate students from various semesters, with a significant portion being in the 4rth and 5th semesters, making up 55.3% of the total participants (Table 2)

3.3 Feeling neck pain while using a mobile phone.

	Frequency	Percent
Agree	141	47.0
Strongly agree	24	8.0
Strongly disagree	40	13.3
Disagree	38	12.7
Neutral	57	19.0
Total	300	100.0

Table 3.3: "In response to the question about experiencing neck pain while using a mobile phone, the survey revealed the following responses:47% of participants agreed that they experience neck pain, 12.7% of participants disagreed with experiencing neck pain, 19% of participants had a neutral response, 8% of participants strongly agreed with experiencing neck pain, 13.3% of participants strongly disagreed with experiencing neck pain(Table 3).

Figure 3.1 Missing planned work due to smartphone use.

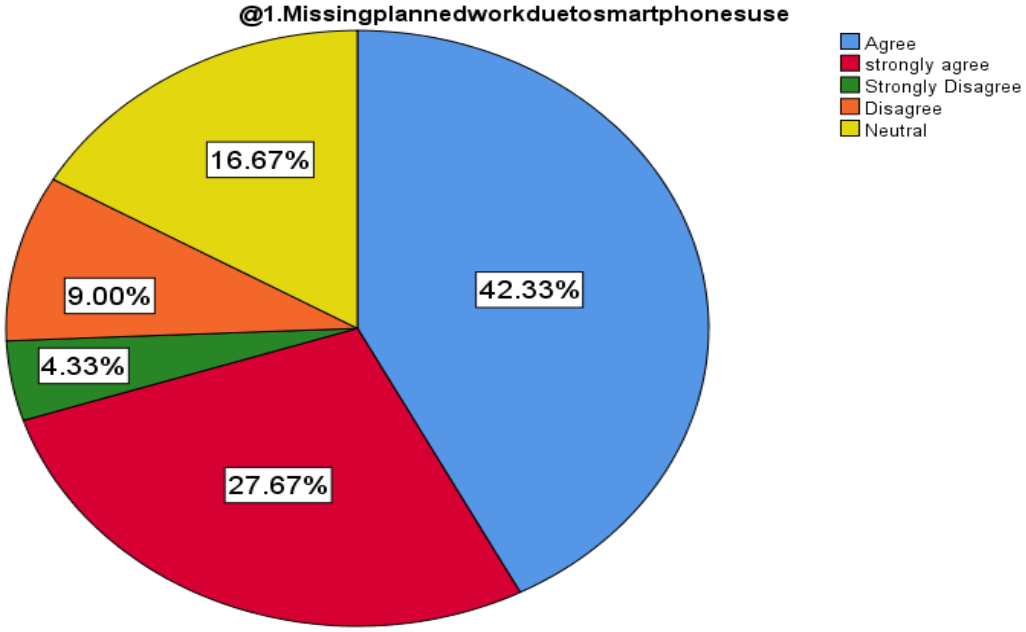

Figure 3.2: Strongly Agree: 27.67%, Agree: 42.33%, Neutral: 16.67%, Disagree: 9%, Strongly Disagree: 4.33%. These percentages illustrate the varying degrees of agreement or disagreement among the surveyed students regarding the influence of smartphone use on their planned work. This data provides valuable insights into the perception of this issue within the student population (Figure 1).

3.4 My life would be empty without my smartphone

	Frequency	Percent
Agree	95	31.7
Strongly agree	31	10.3
Strongly disagree	51	17.0
Disagree	71	23.7
Neutral	52	17.3

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Total	300	100.0

Table 3.4: The survey revealed mixed attitudes toward smartphone dependency. About 40.67% (Strongly Disagree 17.0 + Disagree 23.7) do not see smartphones as essential, while 42% (Agree 31.7 + Strongly Agree 10.3) view them as important or indispensable. Meanwhile, 17.33% remained neutral, reflecting ambivalence. Overall, the findings highlight diverse perspectives on the role of smartphones in daily life.

Figure 3.3: Using smartphones longer than I intended.

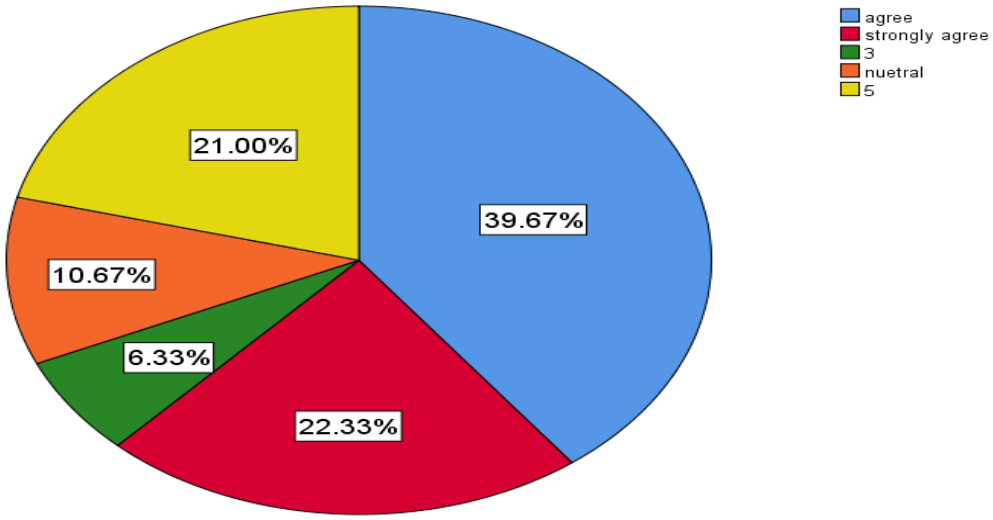

Figure 3.3: The results show that 62% of respondents (Agree 39.66 + Strongly Agree 22.33) admitted to using smartphones longer than intended, indicating prevalent overuse. Only 27.33% (Strongly Disagree 21.0 + Disagree 6.33) denied this behavior, while 10.67% remained neutral. These findings highlight a clear tendency toward excessive smartphone use, raising concerns for digital well-being.

3.5 On average how many hours per day do you spend using your mobile phones.

	Frequency	Percent
1-2 hours	40	13.3
2-4 hours	78	26.0
4-6 hours	96	32.0
more than 6 hours	68	22.7
less than 1 hour	18	6.0
Total	300	100.0

Table 3.5: The survey revealed varied daily smartphone usage among students. Only 6% used phones less than 1 hour, while 13.3% reported 1–2 hours. Moderate use (2–4 hours) was seen in 22.7% of students, whereas the largest group (32%) spent 4–6 hours daily. Notably, 26% used smartphones more than 6 hours, reflecting high dependency in a significant portion.

3.4 Feeling pain during reading.

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3.9.3 MODERATE_DISABILITY

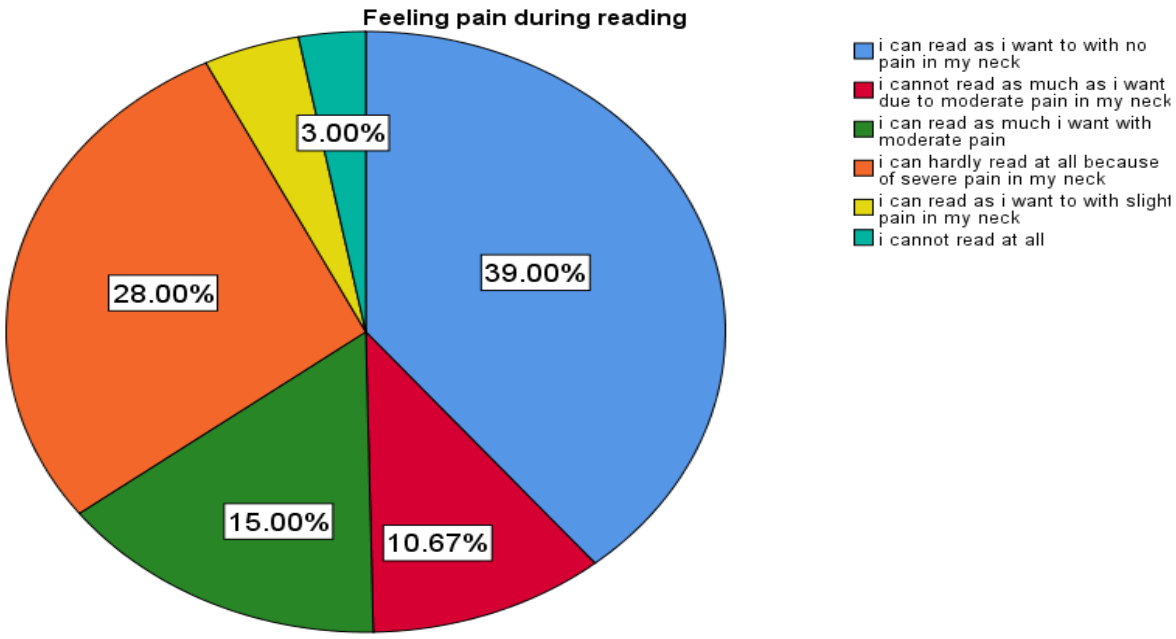

Figure 3.4: The data shows that 39% of participants can read without neck pain, while smaller groups reported slight (3%) or moderate pain (15%). Around 10.67% experience moderate pain that limits reading, and 28% suffer severe pain that greatly hinders their ability. Only 2% reported being completely unable to read due to pain, highlighting varying levels of neck discomfort affecting reading habits.

	Frequency	Percent
No	181	60.3
Yes	119	39.7
Total	300	100.0

Mild disability from 300 students was about 119(39.7%) (Table 7).

	Frequency	Percent
No	235	78.3
Yes	65	21.7
Total	300	100.0

3.9.2 MILDDISABILITY.

3.5 NO DISABILITY

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	Frequency	Percent
No	219	73.0
Yes	81	27.0
Total	300	100.0

Table 3 MODERATE_DISABILIT

Moderate disability from 300 students was about 81(27%)

3.9.4 SEVERE_DISABILITY

	Frequency	Percent
No	289	96.3
Yes	11	3.7
Total	300	100.0

Table 4 SEVERE_DISABILITY

Severe disability from 300 students was about 11(3.7%) (Table 9).

3.10 Gender and Disability Crosstabulation with P-Value Analysis:

Gender * DISABILITY Crosstabulation				
		Disability		P value
		Disability	Non disability	
Gender	Male	196 (77.5%)	57 (22.5%)	0.400
	Female	39 (83.0%)	8 (17.0%)	

Table 5 Gender and Disability Crosstabulation with P-Value Analysis

Among males, 77.5% reported disability and 22.5% did not, while among females, 83% had disability and 17% did not. The P-value of 0.400 indicates no significant association between gender and disability. Thus, disability prevalence appears similar across genders in this group.

DISCUSSION

The present study revealed a **TNS prevalence of 69.9% among undergraduate students in KPK,** assessed using the Neck Disability Index (NDI) scale. Based on the NDI, **21.9% showed no disability, 9.5% had mild disability, 26.8% moderate disability, and 3.6% severe disability**, highlighting varying levels of neck-related impairment. These results align closely with a study at **Aljouf University**, where 71.2% of students reported cervical pain, while other studies from India, Korea, and China documented lower prevalence rates ranging from 32% to 42.5%. Gender differences have also been noted across populations, with **female students more frequently affected** by musculoskeletal pain.

In the current research, among 400 smartphone users, **37.8% experienced mild disability** and **12.2% had moderate disability**, consistent with Shah & Sheth (2018), who reported 48% of physiotherapy students with mild neck disability. **Duration of smartphone use** was significantly associated with pain severity, as supported by Omar Samarah et al. (2019), who also found higher medical consultations among those with greater pain scores. Similarly, Indian and Puducherry-based studies confirmed links between **usage patterns, gender, and disability prevalence**.

Headaches emerged as another common symptom, with **63.3% of participants reporting headaches**, a rate much higher than studies in Saudi Arabia, India, and Europe (ranging from 3% to 21%). Irritability was also prevalent in **54.5% of students**,

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consistent with earlier findings. The variability in reported symptoms across global studies reflects differences in usage habits, demographics, and environmental factors.

Overall, the **most frequent symptom was cervical pain (71.2%),** underscoring the significant musculoskeletal impact of prolonged mobile phone use. The concept of **Text Neck Syndrome (TNS)** captures this phenomenon, describing pain and disability caused by repeated forward flexion of the head when looking at screens. Research indicates that bending the head forward markedly increases spinal stress and disrupts cervical curvature, leading to long-term postural problems.

In conclusion, the study highlights the widespread prevalence of TNS and related symptoms such as neck pain, headaches, and irritability among students. The findings emphasize the need for **preventive strategies, ergonomic awareness, and educational interventions** to reduce the musculoskeletal burden associated with excessive smartphone use.

Recommendations

Preventing Text Neck is crucial, as suggested by a systematic review:

Minimize smartphone use and take breaks regularly. Avoid prolonged static postures. Position devices to reduce stress on the head/neck and upper extremities. Steer clear of excessive typing or swiping. Refrain from holding heavy devices in one hand for extended periods.

For Text Neck stress injuries, effective rehabilitation spans 2-4 weeks, involving soft tissue mobilization, joint mobilization, stretches, muscle strengthening, posture retraining, and home exercises.

In acute cases, prioritize pain realief through neck movements, upper trapezius and serratus function restoration, chin tuck exercises, and ice/heat packs. In chronic cases, consider pain medication, facet joint injections, trigger point treatments, or acupuncture when necessary.

CONCLUSION

The survey found that 70.3% of participants agreed smartphones can affect productivity by causing missed work, while 54.8% reported neck pain from use. Most respondents used smartphones for 2–6 hours daily, with a large share spending 4–6 hours. These findings highlight the need for awareness, healthier usage habits, and better time management to reduce health risks and distraction.

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