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Original Research Article

Relationship Between Smartphone Usage and Neck Pain in Young Adults: A Cross-Sectional Study

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Abstract

Background: Smartphone usage has increased dramatically among young adults. Prolonged use of smartphones, especially in poor postural positions, may contribute to neck pain and musculoskeletal disorders.

Objective: To evaluate the relationship between smartphone usage duration and neck pain among young adults.

Materials and Methods: A cross-sectional study was conducted among 200 young adults aged 18–30 years. Participants completed a structured questionnaire including demographic characteristics, average daily smartphone usage, and neck pain assessment using the Visual Analogue Scale (VAS). Smartphone usage was categorized into <3 hours/day, 3–5 hours/day, 5–7 hours/day, and >7 hours/day. Statistical analysis was performed using Chi-square test and Pearson correlation. A p-value <0.05 was considered statistically significant.

Results: Among 200 participants, 118 (59%) reported neck pain. Neck pain prevalence increased significantly with increasing smartphone usage duration ($p<0.001$). A positive correlation was observed between smartphone usage hours and VAS pain score ($r=0.48$).

Conclusion: Excessive smartphone use was significantly associated with increased prevalence and severity of neck pain among young adults. Awareness regarding proper ergonomics and reduction of prolonged smartphone use may help prevent neck-related musculoskeletal disorders.

Keywords: Smartphone, Neck Pain, Young Adults, Text Neck Syndrome, Musculoskeletal Disorders, Orthopedics.

Introduction

Smartphones have become an integral part of daily life among young adults. The widespread use of mobile devices for communication, education, entertainment, and social networking has led to increased screen time. Prolonged neck flexion while using smartphones may increase mechanical stress on cervical structures and contribute to neck pain, commonly referred to as "text neck syndrome." Several studies have reported a significant association between smartphone addiction, prolonged usage duration, and musculoskeletal pain, particularly in the neck region. The increasing prevalence of neck pain among young adults has become an important public health concern due to its impact on quality of life and productivity. [1,2] Therefore, the present study was undertaken to evaluate the relationship between smartphone usage and neck pain among young adults.

Materials and Methods

This cross-sectional observational study was conducted in the Department of Orthopedics among 200 young adults aged 18–30 years after obtaining institutional ethical approval. Participants were recruited from undergraduate and postgraduate students through convenient sampling. Individuals with a history of cervical spine trauma, congenital cervical abnormalities, inflammatory arthritis, neurological disorders, or previous cervical spine surgery were excluded.

Data were collected using a pretested questionnaire containing demographic information, duration of smartphone use, posture during smartphone use, and presence of neck pain. Average daily smartphone usage was categorized into four groups: less than 3 hours, 3–5 hours, 5–7 hours, and more than 7 hours per day. Neck pain severity was assessed using the Visual Analogue Scale (VAS) ranging from 0 to 10.

Statistical analysis was performed using SPSS version 25. Continuous variables were expressed as mean ± standard deviation and categorical variables as frequencies and percentages. Chi-square test was used to assess associations between categorical variables. Pearson correlation coefficient was calculated between smartphone usage duration and neck pain severity. A p-value less than 0.05 was considered statistically significant.

Results

The study included 200 participants with a nearly equal gender distribution. The mean age was 22.8 years, indicating a predominantly young adult population.

Table 1. Demographic Characteristics of Participants

Variable	Frequency (n=200)	Percentage (%)
Male	96	48.0
Female	104	52.0
Mean Age (years)	22.8 ± 3.1	-

Table 2. Smartphone Usage Duration

Usage Duration	Number	Percentage (%)
<3 hours/day	34	17.0
3–5 hours/day	56	28.0
5–7 hours/day	62	31.0
>7 hours/day	48	24.0

Table no 2 shows that More than half of the participants (55%) reported smartphone usage exceeding 5 hours daily, reflecting extensive dependence on smartphones among young adults.

Table 3. Prevalence of Neck Pain According to Smartphone Usage

Smartphone Use	Neck Pain Present	Neck Pain Absent
<3 hours/day	10	24
3–5 hours/day	26	30
5–7 hours/day	42	20
>7 hours/day	40	8

Table no 3 shows that Neck pain prevalence increased progressively with increasing smartphone use. Among participants using smartphones for more than 7 hours daily, 83.3% reported neck pain compared to only 29.4% among those using smartphones for less than 3 hours daily. This association was statistically significant (Chi-square = 32.84, $p<0.001$).

Table 4. Mean VAS Score According to Smartphone Usage

Usage Duration	Mean VAS Score
<3 hours/day	1.9 ± 1.2
3–5 hours/day	3.1 ± 1.5
5–7 hours/day	4.8 ± 1.8
>7 hours/day	6.2 ± 2.0

Table no 4 shows that Neck pain severity increased with increasing duration of smartphone usage. Participants using smartphones for more than 7 hours daily reported the highest mean VAS scores, indicating more severe pain.

Correlation Analysis

A moderate positive correlation was observed between daily smartphone usage duration and neck pain severity. Pearson correlation coefficient (r) = 0.48, $p < 0.001$. The positive correlation suggests that increasing smartphone usage is associated with increasing neck pain severity. The relationship was statistically significant.

Discussion

The present study demonstrated a significant relationship between smartphone usage duration and neck pain among young adults. Neck pain prevalence increased from 29.4% among participants using smartphones for less than 3 hours daily to 83.3% among those using smartphones for more than 7 hours daily. These findings are consistent with previous studies reporting increased cervical discomfort among heavy smartphone users. Continuous neck flexion while viewing smartphone screens increases mechanical loading on cervical muscles, ligaments, and intervertebral discs. Prolonged maintenance of this posture can lead to muscle fatigue, pain, and postural abnormalities. [7,8,9]. The observed positive correlation (r=0.48)

indicates that greater smartphone exposure contributes to increased pain severity. Similar observations have been reported in studies investigating text neck syndrome and smartphone addiction.

Conclusion

The study demonstrated a statistically significant association between smartphone usage and neck pain among young adults. Both the prevalence and severity of neck pain increased with increasing duration of smartphone use. Educational interventions promoting ergonomic smartphone use, posture correction, and periodic breaks may help reduce the burden of neck pain in this population.

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