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INFLUENCE OF EXCESSIVE USAGE OF ANDROID SMARTPHONES ON ULNAR NERVE COMPRESSION SYMPTOMS AMONG PHYSIOTHERAPY STUDENTS OF ALLIED HEALTH SCIENCES

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ABSTRACT

Objective: *To determine the influence of excessive Android Smartphone usage on Ulnar Nerve Compression Symptoms among physiotherapy students.*

Methodology: *Cross-sectional study among 125 physiotherapy students aged 20–25 years using a structured questionnaire. Data analyzed using SPSS with Chi-square tests.*

Results: *Students using Android Smartphones more than 6 hours daily showed higher prevalence of symptoms including numbness in the fourth and fifth fingers, hand weakness, and elbow discomfort ($p < 0.05$).*

Conclusion: *Excessive Android Smartphone use is associated with Ulnar Nerve Compression Symptoms. Ergonomic education and limiting screen time are recommended.*

Keywords: *Android Smartphone usage, Ulnar nerve compression, Cubital tunnel syndrome, Physiotherapy students, Android Smartphone addiction.*

INTRODUCTION

Android Smartphones have become an essential component of daily life, particularly among university students who rely on them for communication, academic activities, and entertainment. Over the past decade, the widespread availability of affordable Android phones has significantly increased their usage worldwide. Students frequently use Android phones for educational purposes such as accessing online lectures, digital textbooks, medical applications, and communication platforms. Although Android phones provide numerous benefits in terms of accessibility and convenience, excessive usage has raised concerns regarding its potential negative impact on physical health.

Recent studies have shown that prolonged Android phone usage can lead to several musculoskeletal and neurological disorders due to repetitive hand movements, prolonged elbow flexion, and sustained gripping postures. One of the nerves particularly affected by these repetitive postures is the ulnar nerve, which passes through the cubital tunnel at the elbow and provides sensory and motor innervation to the fourth and fifth fingers of the hand.

Ulnar nerve compression, commonly referred to as cubital tunnel syndrome, occurs when the nerve becomes compressed or irritated as it passes through the elbow. This condition may result in symptoms such as numbness and tingling in the ring and little fingers, weakness in hand grip, pain

around the elbow, and difficulty performing fine motor tasks. Repetitive Android phone use, especially while holding the elbow in a flexed position for extended periods, may increase the risk of developing such symptoms.

University students, particularly those studying health sciences, represent a population with high Android phone dependency. Physiotherapy students often use Android phones for academic research, accessing clinical demonstration videos, communicating with peers, and completing assignments. However, excessive use without proper ergonomic awareness may increase the risk of developing upper limb neuropathies.

Previous research has primarily focused on the relationship between Android phone usage and musculoskeletal problems such as neck pain, shoulder discomfort, and wrist strain. However, limited studies have specifically investigated the relationship between Android phone use and ulnar nerve compression symptoms, particularly among physiotherapy students.

Understanding this relationship is important because early symptoms of nerve compression, if ignored, may progress to more severe neurological impairments affecting hand function. Therefore, identifying the influence of excessive Android phone usage on ulnar nerve compression symptoms among physiotherapy students may help in developing preventive strategies such as ergonomic education, posture correction, and controlled Android phone usage.

A cross-sectional study conducted by Maayah et al (2023) investigated the association between Android phone use and neck pain among university students. The study found that prolonged Android phone usage was significantly associated with increased musculoskeletal discomfort due to sustained poor posture.

Another study by Czępińskal et al (2024) examined the prevalence of neck disability among physiotherapy students who frequently used Android phones. The results indicated that students who used Android phones for more than six hours daily experienced a higher prevalence of musculoskeletal symptoms.

A systematic review conducted by Santos et al (2025) also highlighted that excessive Android phone use is associated with multiple health problems, including musculoskeletal pain, neurological symptoms, and reduced physical activity levels.

Similarly, Candussi et al (2023), Fernandes et al (2023), Ghandi et al (2024), Khan et al (2023), Tao et al (2024), Toa et al (2024) and Ukkirapandian et al (2024) reported a high prevalence of multiple health problems, neck pain, reduced physical activities and musculoskeletal disorders among university students who used Android Smartphones for prolonged durations. Repetitive movements and sustained elbow flexion were identified as potential risk factors for nerve compression syndromes.

Despite the growing body of literature examining Android phone-related musculoskeletal disorders, relatively few studies have specifically focused on ulnar nerve compression symptoms related to Android phone use. This highlights the need for further research to investigate the potential neurological consequences of prolonged Android phone usage among university students.

METHODOLOGY

Study Design: Cross-sectional study.
Setting: Institute of Allied Health Sciences.
Duration: 6 months.
Sample Size: 125 students.
Sampling Technique: Non-probability convenience sampling.
Inclusion Criteria: Physiotherapy students aged 20–25 years using Android smartphones.
Exclusion Criteria: History of elbow fracture, neurological disorders, or previous cubital tunnel syndrome.

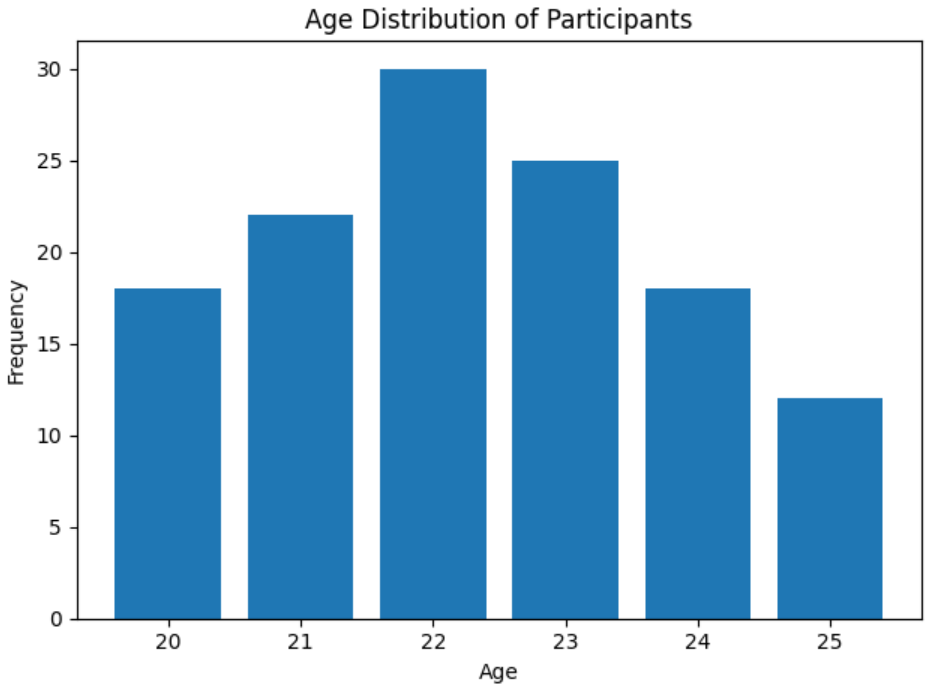
Data Collection Tools:
Questionnaire: It comprised as;
1:Demographics
2: Duration of Android 3:phone usage
4: Daily screen time
Hand posture while using phone
5: Symptoms of Ulnar Nerve Compression:
*Numbness in ring and little finger
*Tingling sensation
*Weak hand grip
*Elbow pain
*Difficulty holding objects

A cross-sectional study was conducted among physiotherapy students aged 20–25 years at the Institute of Allied Health Sciences. A sample size of 125 students was selected using non-probability convenience sampling. Data were collected using a structured self-administered questionnaire that assessed android smartphone usage duration, posture habits, and symptoms associated with ulnar nerve compression such as numbness in the ring and little finger, hand weakness, and tingling sensations. Data were analyzed using SPSS version 26. Descriptive statistics and Chi-square tests were used to determine associations between android smartphone usage and ulnar nerve compression Symptoms

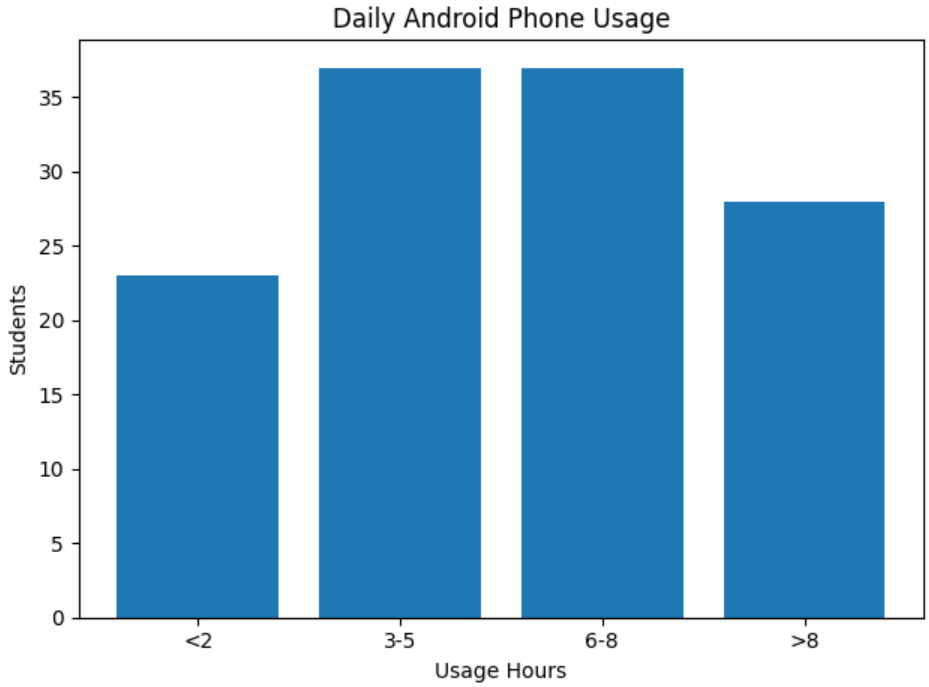
RESULTS:

The results demonstrated that students who used Android Smartphones for more than 6 hours daily had a significantly higher prevalence of Ulnar Nerve Compression Symptoms compared with those who used phones less frequently. The most common symptoms reported were numbness in the fourth and fifth fingers, hand weakness, and elbow discomfort. Statistical analysis showed a significant association between prolonged android smartphone use and ulnar nerve compression symptoms ($p<0.05$).

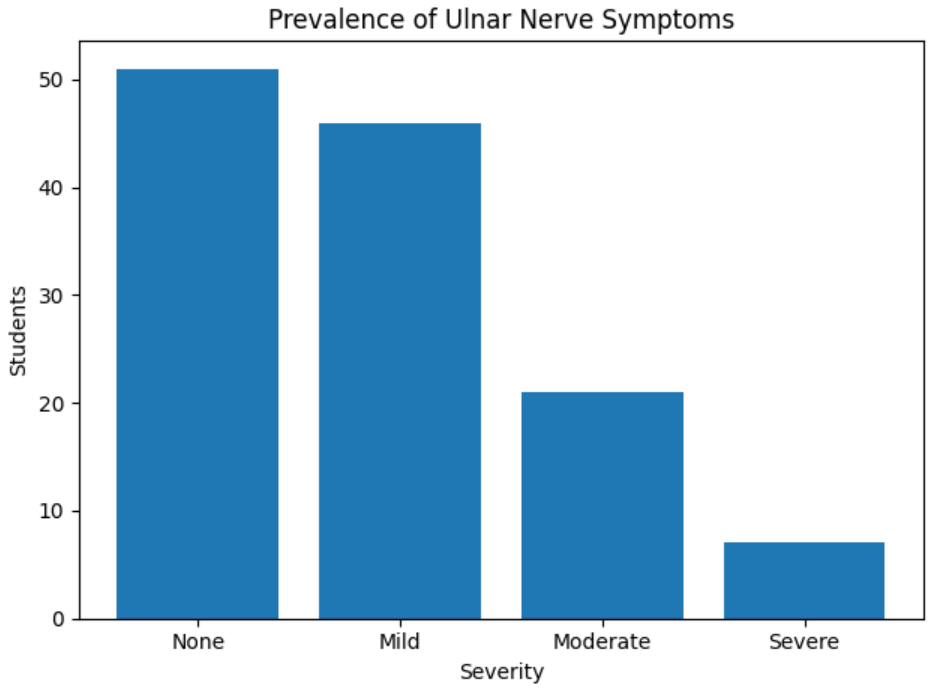
Graph 1: Age distribution



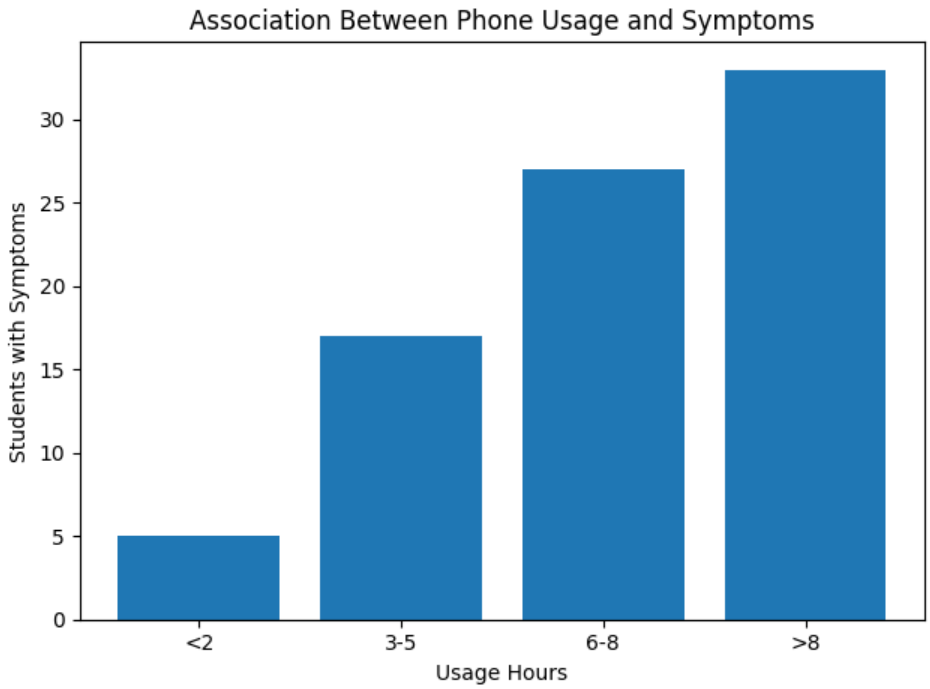
Graph 2: Daily Android Smartphone usage hours



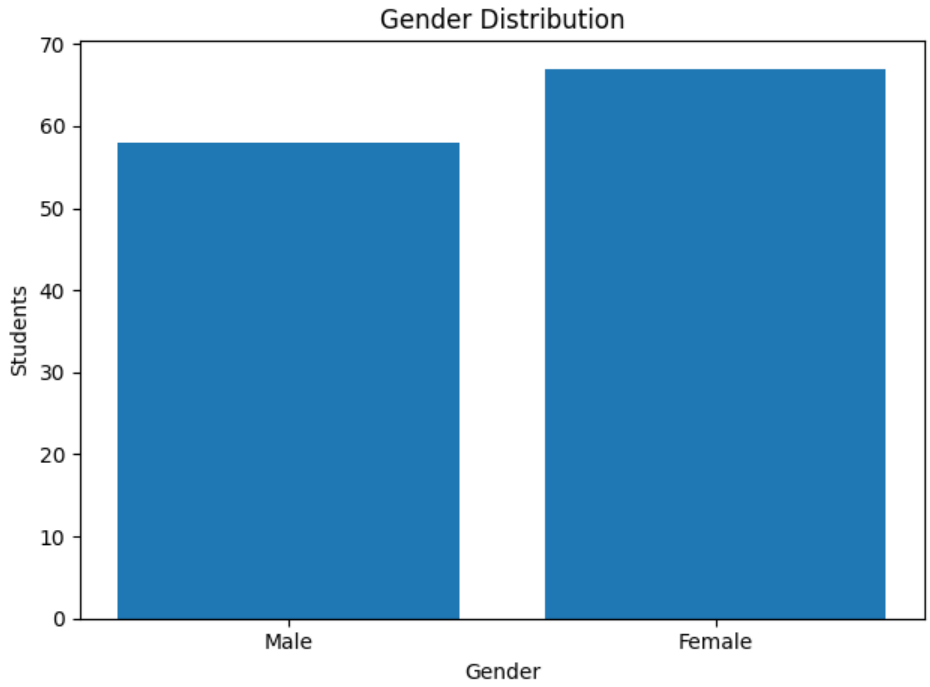
Graph 3: Prevalence of Ulnar Nerve Symptoms



Graph 4: Association between Android Smartphone usage and symptoms



Graph 5: Gender distribution



Graph 6: Types of symptoms reported

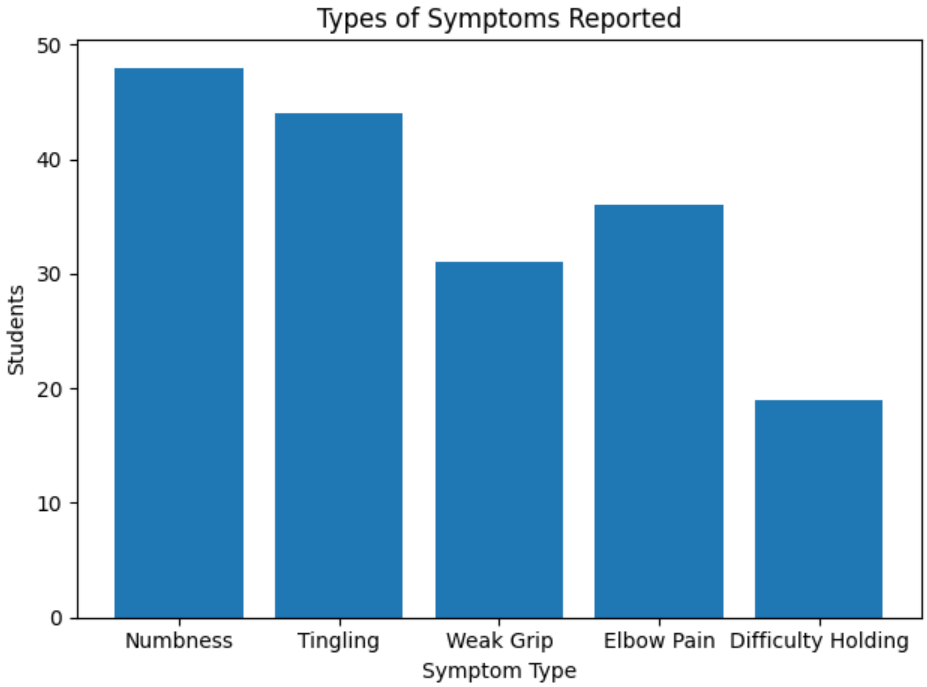


Table: Smart Phone Usage vs Symptoms

Phone Usage	No Symptoms	Mild Symptoms	Moderate	Severe
<2 hours	18	4	1	0
3–5 hours	20	12	4	1
6–8 hours	10	18	7	2
>8 hours	3	12	9	4

CONCLUSION

Excessive Android Smartphone usage is significantly associated with the development of Ulnar Nerve Compression Symptoms among physiotherapy students. Preventive strategies such as ergonomic education, posture correction, and limiting android smartphone usage duration are recommended. Hence there is dire need to control android smartphone usage among masses especially students of Allied Health Sciences so as to reduce the risk of nerve compression disorders.

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