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Prevalence Of Smartphone Pinky Syndrome In A Population Of Smartphone Addicted Collegiate Individuals

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ABSTRACT

Background: Smartphone Pinky Syndrome is a condition that occurs due to prolonged smartphone use. It leads to noticeable changes or discomfort in the Pinky finger. The primary cause of Smartphone Pinky Syndrome is the repetitive strain placed on the Pinky finger when it is used to support the weight of the smartphone during prolonged use. The prevalence has been estimated 81.7% of university students has smartphone addiction.

Aim: The aim of this study is to determine the prevalence of smartphone Pinky syndrome in a population of smartphone addicted collegiate individuals.

Methodology: This was a cross-sectional study. The sample consisted of 100 college going individuals including both male and female, with a mean age of above 22±4.5 years, participated in the study. Then 100 collegiate students were interviewed with Smartphone Addiction Scale- Short Version (SAS- SV) them they were asked to perform Elbow Flexion test to see whether they have smartphone Pinky syndrome.

Result: The result shows that 52% agreed that smartphone use caused them to miss planned work. 43% felt pain in their wrists or neck due to smartphone use. 40% reported that they would struggle without a smartphone. Prevalence has been estimated 59.9% participants had smartphone pinky syndrome in a population of smartphone addicted collegiate individuals

Conclusion: The conclusion was Smartphone Pinky syndrome is more commonly seen in collegiate individuals. 59.9% individuals are at higher risk.

Keywords: *Smartphone Pinky Syndrome, Smartphone Addiction Scale, Elbow flexion test, collegiate students.*

1. INTRODUCTION

The widespread use of smartphones in daily life has raised worries about the ergonomic effects on hand health[1]. Due to repetitive muscular strain, repetitive motions, and bad posture, there is a serious biomechanical risk, especially for the neck, wrists, and thumbs. Smartphone Pinky Syndrome is a musculoskeletal disorder that is caused by prolonged and inappropriate smartphone use. It is characterized by pain, muscle weakness, numbness and deformity in the pinky finger of a specific smartphone. It is caused by the habit of using the pinky finger to support the device's base, which puts the body under unnecessary stress and may lead to musculoskeletal problems[2].

Smartphones may therefore negatively impact hand function and pinch strength. In addition, a lot of smartphone users complain of discomfort in their fingers or wrists. This discomfort could be due to Extensor and bending joints of muscles linked to particular kinds of pinky injuries, as well as inflammation of the tendon sheath in the finger's phalanx and extensor pollicis brevis, abductor pollicis longus, have been found to sustain pinky injuries[3].

In a study published in 2024, Demirkran et al. examined the radiological and morphological alterations in the fifth finger associated with smartphone use. Researchers discovered that people who used their smartphones for more than four hours a day had the fifth finger deformed[4]. According to a recent study conducted in India students who used smartphones for prolonged periods of time were more likely to fall behind or drop out of school. In 46.9% of cases neck pain was reported and thumb pain in 29.2%. About a third of participants in the study participated in the study and 66.4% took part in the survey. Another study identified as smartphone addicts and 19.1% tested positive for the Finkelstein test[5]. In another study 69.9% of participants aged between 18 and 44 reported using their smartphones almost exclusively. Throughout the day continuously throughout the day with only one break of two hours. This phenomenon is referred to as non-chemical phenomena in the physiology or technical addiction[6].

The clinical diagnosis of smartphone pinky syndrome has historically been based on a patient's symptoms. The Smartphone Addiction Scale- Short Version (SAS-SV) is a widely used tool to assess smartphone addiction[7]. The Elbow Flexion test is a clinical test used to assess smartphone pinky syndrome, which is caused by ulnar nerve compression[8]. The prevalence of smartphone pinky syndrome in a population of smartphone addicted collegiate individuals is unknown. Therefore, the primary purpose of our study was to identify the prevalence of smartphone pinky syndrome in a population of smartphone addicted collegiate individuals using Smartphone Addiction Scale- Short Version (SAS-SV) and Elbow Flexion test.

2. METHODOLOGY

This study was a cross-sectional study. Study sessions were held in colleges all over in Tamil Nadu and Puducherry, where the subjects were assessed, data were collected. All participants were selected by convenient sampling method. The inclusion criteria for this study were the smartphone addicted collegiate student who has smartphone Pinky syndrome. A total of 100 collegiate students were included in this study. The exclusion criteria were students who had recent injury, fracture, surgery or any trauma to the upper limb, no smartphone addiction and if they were under the age of 17.

PROCEDURE:

We met collegiate students and explained the procedure of this study. After receiving the consent form and demographic details from 100 participants, they were requested to fill the Smartphone Addiction Scale- Short Version (SAS-SV) in 30 minutes. After confirming smartphone addiction, 100 participants were asked to perform Elbow Flexion Test.

SMARTPHONE ADDICTION SCALE- SHORT VERSION (SAS-SV):

Smartphone Addiction Scale- Short Version (SAS-SV) is a tool designed to assess the extent to which an individual is addicted to their smartphone. It usually consists of 10 items, which are designed to assess various aspects of smartphone addiction. These include Frequency of Use, Anxiety and Withdrawal, Tolerance, Impact on Daily Life, and Compulsive Use. Each item on the SAS-SV is typically rated on a 6-point Likert scale such as 1 = Strongly Disagree, 2 = Disagree, 3 = Somewhat Disagree, 4 = Somewhat Agree, 5 = Agree and 6 = Strongly Agree.

The total score is the sum of responses to all 10 items. A score of 22 or below indicates no addiction and a score of 34 or above indicates a potential addiction.

ELBOW FLEXION TEST:

The Elbow Flexion Test is a neurological dysfunction test used to determine the dysfunction ulnar nerve course.

Technique:

Step 1. Patient position in standing or sitting.

Step 2. Ask the patient to actively fully elbow flexion with wrist extension and shoulder girdle in slight abduction and depression.

Step 3. Hold this position for up to 3 to 5 minutes.

Step 4. A positive sign indicates feeling numbness or tingling in the distribution of the ulnar nerve root.

3. DATA ANALYSIS

Software called SPSS Version 18 was used to conduct statistical analysis. In order to determine how the observed and expected data differed, the variables were examined using the Chi-Square tests analysis method. According to earlier research, duration of use and weight of the device are the risk factor for smartphone pinky syndrome. The Pearson Chi-Square test was used to compute correlation coefficients for relationships between parameters and statistical significance. A statistically significant result was defined as having a p-value of less than 0.005.

RESULT

This cross-sectional study was performed on 100 participants in which 61 participants are female and 39 participants are male. Regarding age distribution, participants aged 17-19 years constituted 40% (40 individuals), while those aged 20-22

years constituted 42% (42 individuals) and 23-25 years constituted 18% (18 individuals) (Table:1). Among the participants,77% of participants (77 people) show signs of smartphone addiction (scores > 30) and 23% of participants (23 people) show no addiction (scores ≤ 30). 50% participants reported using their smartphones longer than intended (Table:2). 52% agreed that smartphone use caused them to miss planned work. 43% felt pain in their wrists or neck due to smartphone use. 40% reported that they would struggle without a smartphone. Prevalence has been estimated 59.9% participants had smartphone pinky syndrome in a population of smartphone addicted collegiate individuals (Graph:1).

TABLE:1 DISTRIBUTION OF AGE OF THE PARTICIPANTS

AGE	FREQUENCY	PERCENTAGE
17-19 YEARS	40	40%
20-22 YEARS	42	42%
23-25 YEARS	18	18%

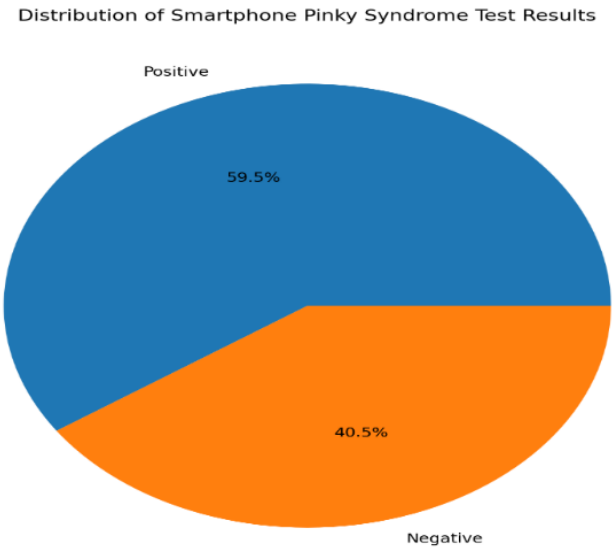
Table 1 presents the age distribution of the participants in the study. The majority of participants (42%) belong to the 20-22 years age group, making it the most represented category. This is followed by the 17-19 years age group, which constitutes 40% of the total participants. The 23-25 years age group has the least representation, comprising 18% of the participants. These findings indicate that the sample primarily consists of younger individuals, with the highest proportion falling within the 20-22 years range**.**

TABLE:2 DISTRIBUTION OF SMARTPHONE ADDICTION USING SMARTPHONE ADDICTION SCALE-SHORT VERSION (SAS-SV)

SMARTPHONE ADDICTION SCALE-SHORT VERSION SCORE	INTERPRETATION	PERCENTAGE
LESSER THAN 30	NO SMARTPHONE ADDICTION	23%
GREATER THAN 30	SMARTPHONE ADDICTION	77%

Table 2 illustrates the distribution of smartphone addiction among participants based on the Smartphone Addiction Scale-Short Version (SAS-SV). The results indicate that the majority of participants (77%) scored greater than 30, suggesting they exhibit signs of smartphone addiction. In contrast, 23% of participants scored less than 30, indicating they do not have smartphone addiction. These findings highlight a significant prevalence of smartphone addiction within the study population.

GRAPH:1 DISTRIBUTION OF SMARTPHONE PINKY SYNDROME TEST RESULTS



GRAPH 1: shows that 59.5% of individuals have smartphone pinky syndrome

4. DISCUSSION

Finding out the prevalence of smartphone pinky syndrome in a population of smartphone addicted collegiate individuals was the aim of this study. Total sample size was 100, which was the estimated number. Cross-sectional survey was the study methodology. collegiate individuals provided their information. Smartphone pinky syndrome prevalence among smartphone addicted collegiate individuals is determined using the Smartphone Addiction Scale- Short Version (SAS-SV) and Elbow Flexion test. To complete the test, participants were asked. Smartphone Addiction Scale- Short Version (SAS-SV) and Elbow flexion test is a valid tool to find the smartphone pinky syndrome. In total, there were 100 participants in this study, of whom 59.5% had smartphone pinky syndrome.

Saud N. Al Danyowi., et al. (2024) had done a study based on the level of awareness regarding smartphone pinky and its associated risk factors among the population of the Eastern Provinces. The sample size was 500, and data was collected using a semi-structured questionnaire. They found that the majority of participants, 74.4% had not heard about smartphone pinky[9]. A.K.M Rezwan., et al. (2023) had done a study based on smartphone addiction among university students. The sample size was 295, and data was collected using the smartphone addiction scale (SPAS). They found that 81.7% were addicted to smartphones among university students[10]. Baifeng Chen., et al. (2017) had done a study based on Gender differences in factors associated with smartphone addiction: a cross-sectional study among medical college students. The sample size was 1556, and data was collected using the Smartphone Addiction Scale short version (SAS-SV) to assess smartphone addiction among the students. They found that 29.8% had smartphone addiction among medical college students[11].

Grant et al. (2019) found that problematic smartphone use correlates with mental health issues such as anxiety and depression, as well as impulsivity and poor academic performance (Grant et al., 2019). This suggests a bidirectional relationship where smartphone addiction exacerbates mental health issues, further entrenching users in the cycle of addiction[12]. Mitigating smartphone pinky syndrome postulates a combination of ergonomic interventions and behavioral adjustments. In ergonomic practices, manipulation of phone stands or holders to reduce hand strain and Switching to bimanual smartphone utilization also allows smartphones to distribute the load more evenly across a wider area. Incorporate regular breaks during smartphone use. Performing hand stretches and strengthening exercises targets the intrinsic and extrinsic muscles of the hand (Seo et al., 2020)[13]. And promote manufacturers to design lighter, ergonomically friendly devices and reduce their output multiplication. Development of accessories such as ergonomic grips or phone rings to reduce pressure on the pinky finger.

5. CONCLUSION

In order to acquire clinical data quickly and accurately without observer bias, we conclude that clinical scoring systems are necessary. After then, such data can be statistically analyzed Smartphone Pinky Syndrome underscores the unintended consequences of technological advancement on human health. As smartphones become integral to modern life, balancing convenience with ergonomic awareness is critical to mitigating their adverse effects. Public health initiatives promoting proper smartphone use, combined with further research, can pave the way for evidence-based strategies to address Smartphone pinky syndrome effectively.59.5% participants had smartphone pinky syndrome in a population of smartphone addicted collegiate individuals.

6. AUTHORS CONTRIBUTIONS

Elackkiya Balamurugan designed the study, data collected analysis the collected data and interpreted. **K. Senthil** drafted the article, critical revision of the article and final approval of the version to be published.

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CONFLICTS OF INTEREST:

The author state no conflicts of interest.

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