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RESEARCH ARTICLE

A STUDY OF FIND OUT PREVALANCE OF DE QUERAVAIN'S DISEASE IN SMART PHONE USERS IN COLLEGE GOING STUDENTS –A CROSS- SECTION OBSERVATION STUDY

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ABSTRACT

Introduction: Smartphone is one the developing information and communication technology capable of providing information services quickly and accurate so as to make the smart phone as a necessity for all most people today. Some of the positive impact on Smartphone is for students or learners include: accelerate access to information to widely and quickly increase knowledge insight, facilitate in communicating, especially if used to create discussion forum. Extensive use of Smartphone can be associated with physical health related problems, such as pain in the wrist and neck, and it also exposes thumb for intense stresses that may lead to pain and musculoskeletal disorder s of the hand and thumb. **Aim of the study:** To find the prevalence of de quervain's tenosynovit is in Smartphone users by using finkelstein test and MRC scale. **Method:** According to the selection criteria all the subjects were selected for study. Selected subjects explain about study procedure and informed consent obtained from each participant.100 subjects taken. All the subjects had been examined for their thumb muscle strength according to MRC scale and finkelstein test. **Data analysis:** Data were analysed using Microsoft excel software. **Result:** Thumb abduction and extension MMT was normal but finkelstain test was positive 33% of prevalence of de quervain's tenosynovitis. **Outcome measure:** MRC Scale, Finkelstein test. **Conclusion:** This study concluded that in smartphone users issue for thumb pain because of long time using smartphonein 100 sample size 33% prevalence of de -quervains tenosynovitis.

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INTRODUCTION

The role of information and communication technology is very important in 21st Century, because the flow of globalization require a person to be able to get update for recent information. Increase amount of Smartphone uses as well as the way communicating is changing, bringing a joy in the use of technological tool to help and simplify human live activity (Doni, 2015). Last decade there has been rapid increase the use of mobile devices particular Smartphone, for communication, Searching a new thoughts and also there was decreasing a price so users also increases day to day (Jonsson *et al*., 2011).Smartphone is one tool or media that any owned by the students or learners and adolescent at the present movement.

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Smartphone can be useful for all the age group in learning purposes. Smartphone connected internal services will help to gather information that can sustain their knowledge (Jonsson *et al.,* 2011). The use of Smartphone has a positive and negative impact, it depends on how a person, especially students or learner's interpret. Some of the positive impact on Smartphone is for students or learners include: accelerate access to information to widely and quickly increase knowledge insight, facilities in communicating, especially if used to create discussion forum. For in addition to this negative impact, excessive is of Smartphone Call lead to disruption of health function in are body, others, cause pain in neck and head, anxiety insomnia (difficulty in sleeping), can also cause negative effect on the psychological status of person, such as depression (Park, 2015).Extensive use of Smartphone can be associated with physical health related problems, such as pain in the wrist and neck, (Kwon *et al*., 2013) and it also exposes Hands to intense stresses that may lead to pain and

musculoskeletal disorders of the hand and thumb (Jonsson*et al*., 2011).Given the mobile nature of Smartphone, users often hold the devicewith a single hand, which forces only the thumb to use the keys (Trudeau, 2012).single-hand-held Smartphone use compels individual to engage in repetitive flexion/extension of the wrist (Kwon *et al*., 2013) to date, little is known about the possible adverse effect of mobile phone over use on the hand and thumb. Case report suggest a link between high key stroke counts and hand disorders such as first carp metacarpal osteoarthritis and de quervain tenosynovitis (Ming, 2006; Kang et al., 2012).On an average, Indian consumers spend over 3 hours per day on their smartphone (Szeto, 2002; Anderson and Tichenor, 1994). De Quervain's tenosynovitis predominantly impacts the abductor pollicislongus (APL) and the extensor brevis (EPB) tendons, which pass through the first dorsal compartment of the wrist. The etiology of this disease is due to repetitive and continued strain of the APL and EPB tendons as they pass under a thickened and swollen extensor retinaculum (Ilyas, 2007; Lamphier, 1953; Wolf, 2009; Jaworski, 2012). The mechanism is due to thicking of the synovial sheath containing the extensor pollicisbrevis and abductor pollicislongus tendon which, lead to irritation of the muscle (Rettig, 2001). That cause of de-quervain'stenosynovitis in student is overuse of thumb as in: writing, short message services (SMS, typing) computer users, unnecessary grasping and pinching of object over a prolong time (Hazani, 2008; Abrisham and Shishesaz, 2011; Wright, 1912; Florence, 1992). Finklestein's test, which involves thumb MP joint flexion within a closed fist combined with active or passive wrist ulnar deviation, can result in a painful response over the styloid process of the radius.

This is due to a restricted gliding of the APL and EPB tendons in the narrowed compartment caused by a thickening of the extensor retinaculum and the APL and EPB tendons (Ilyas, 2007; Lamphier, 1953; Wolf, 2009; Daniels and Worthingham, 1992). MMT was developed by Lovett and described by Wright in 1912. For the assessment of muscle strength, quantitative methods using more qualitative methods of manual muscle testing (MMT) are available (Abrisham and Shishesaz, 2011).This technique has been revised, advanced and promoted so that it has resulted in a range of methods from which the investigator may select the most suitable one 21. The scale proposed by the Medical Research Council (MRC) uses the numeral grades 0–5(Brain, 2000). Kendall and McCreary use percentages, and Daniels and Worthingham.23 use differentiation between Normal, Good, Fair, Poor, Trace and Zero and the MRC scale neither considers the range of motion (ROM) for which a movement can be performed nor defines the strength of resistance against which a movement can be performed. These aspects are particularly relevant for grades 3 and 4. Grade 3 of the MRC scale indicates that active movement against gravity is possible; grade 4 denotes that active movement against resistance is possible. To resolve this problem, theguidelines.22 recommends the use of plus and minus subdivisions within grade 4. Grade 4 is subdivided into 3 categories: slight, moderate and strong resistance (Magee, 2008).

Aim and Objectives

To find out the prevalence of dequervain's disease in Smartphone users by using finkelstein test and MRC scale.

MATERIALS AND METHODS

After proper explanation about the purpose and procedure of the study, 100 subjects who were willing to participate in this study were requested to sign a return consent form. Basic assessment chart was filled.

Criteria of selection

Inclusion criteria

- Subjects with age of 18 to 25 years
- The person who have using smartphone for 2.5 to 3 hours a day (Szeto, 2002; Anderson and Tichenor, 1994).

Exclusion criteria

- The person who are having thumb pain any recent Fracture of limb
- Any musculoskeletal disorder of upper limb
- The person who are using Smartphone more than 3 Hours a day
- Non-Consent

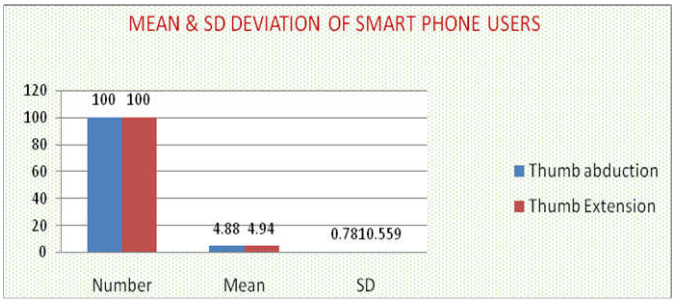
All the Subject were analyzed after inclusion and exclusion criteria. Subjects were analyzed through Finkelstein test and MRC scale for abduction and extension in thumb musculature in dominant side (Magee, 2008).

RESULTS

All the statically analysis was done by spastically package for the social science (SPSS) statically software version 20.0. for windows. Microsoft excel was used for descriptive analysis of thumb abduction manual muscle testing, thumb extension manual muscle testing and percentage of Finkelstein test, also generate graphs and tables.

Table 5.1. Discriptive analysis of Thumb Abduction, Extension and Finkelstein test

		ThumbExtension	ThumbAbduction
Number		100	100
Mean		4.94	4.88
Mode		5	5
Median		5.00	5.00
SD		.559	.781
Range	Minimum	0	0
	Maximum	5	5
SE		.062	.087
Variance		.312	.610



Graph 5.1. Mean value and Standard Deviation (SD) of smart phone users for all variable

Interpretation

The above table shows mean and SD of smart phone users for thumb abduction, extension and Finkelstein test and thumb abduction and adduction MMT is normal but according to the test 33% of chance of dequriandieasesae occur.

DISCUSSION

Our results in the present study showed that the degree of Smartphone influence was significantly correlated with musculoskeletal discomfort in the participants. Younger peer group access and exposure to different types of information and communication equipment such as computer and mobile phones has intensely increased over recent years. As the frequency of usages of mobile phone increase or abnormal usages of thumb musculatures as in writing will increase the pain and people showed positive finkelsteintest. Andnew occupational demands such as extended work at computer, an athlete especially who follow a high resistance training that includes lifting weight and using hands for support and maximal exertion. Studies have revealed that while texting in mobile phone keypad, the thumb covered motions in planes of extension, flexion, abduction, adduction and opposition. This posture of the thumb working near the extreme range of motion is perhaps the main triggering factor for the development of tendinitis of extensor policieslong us.

Due to the overuse of the thumb musculature pain arises that spread over the surface of the radial aspect of the wrist and severity decreases by ulnar deviation of hand and this study showed that de quervaintenosynovitis is due to the overuse of thumb musculature. Studies have pointed that prevalence of de quatrain's tenosynovitis remain higher in female. A variety of mobile phones were used by participants differing in size and weight that may have produced varies result. Also posture while texting was never noted. Studies have stated difference of result for those messaging while standing compared to sitting as it creates a different impact on the muscles of upper limb. with more exertion on muscles while standing during messaging. Confounders like playing games on mobiles, typing on laptops were not taken into details that may have biased the result. In the 21stcentury mobile phone has become more of necessity than a luxury. With the dawn of smart phones and advanced version expected in future it is inevitable that disease related to extensive use of cell phone will increase in numbers specifically musculoskeletal problem. The main brunt will be faced by the younger generation who are still in the phase of development and are prone to extensive use through short messaging service (SMS) messaging and gaming.

Limitation of the study

- The greater number of female student in this study so the male to female ration was not equal.
- Posture was not consider while using smart phone.
- The study was not conducted bilateral side.

Clinical implication

To prevent the various disease and advice regular inspection and exercise for carry out daily task more effectively.

Further recommedication

- The study can be carried out with male and female having equal ratio.
- Posture can be consider while texting or use of smart phone.

Conclusion

This study concluded that Smartphone users having a thumb pain because of long time exposure. In 100 sample size 33% prevalence of de - quervain disease.

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Conflict of interest: There was no personal or institutional conflict of interest for this study.

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