

Frequency of De Quervain's Syndrome among Smartphone Users in Different Universities of Lahore, Pakistan

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Highlights:

- Frequency of De Quervain's syndrome (DQS) among the students in universities of Lahore was evaluated.
- Finkelstein test was found to be positive in 95 out of 170 respondents.

Abstract:

De Quervain's Syndrome (DQS), also known as finger thumb, player's thumb, is basically tendinitis of Extensor Pollicis Brevis and Abductor Pollicis Longus muscle.

Objective:

To find out the of De Quervain's syndrome among smartphone users in different Universities of Lahore, Pakistan

Methodology:

Cross sectional study was conducted in which sample was chosen using convenient sampling technique. Total 170 students were included in this study which had been calculated by standard "Finite Population" formula. Self-developed questionnaire for the of DQS was used for data collection. Data were collected from The University of Lahore, University of the Punjab and University of Central Punjab.

Results:

The frequency of smart phone users was found to be 55%. 31% of the affectees had mild pain, 20% had average pain and rest 4% faced severe pain.

Conclusions:

Almost half of the students used their mobile phones for texting more than 50 SMS per day. Due to the extensive use of mobile, they experienced pain and weakness over the base of the thumb/wrist which shows the DQS positive in that students and there is a positive association between the thumb pain and frequent text messaging.

Keywords:

De Quervain's syndrome, Tendinitis, Intensity of

pain, university students

Introduction:

Black-Berry may be a neologism that points to some style of Repetitive Strain Injury (RSI) attributable to the frequent use of thumbs to press buttons on a thumb, handheld personal computers (PCs), smartphone, or alternative mobile device.¹ The name comes from BlackBerry, a complete smartphone in the market 1 in 1999, DQS includes thumb and gliding joint pain and throbbing pain. In severe cases, the affected hand could quickly stop it, particularly its ability to carry objects.² Indications like pain on the radial facet of the gliding joint, spasms, tenderness, sensation of burning within the hand and swelling on the thumb facet of the gliding joint and grasping with the hand affected facet are often tough.³ A scientific review of potential risk factors mentioned within the literature failed to realize any proof of a causative relationship with activity factors.⁴ However, researchers in France found personal and work-related factors were related to Diamond State Quervain's sickness within the operating population; gliding joint bending and movements related to the twisting or driving of screws were the foremost important of the work-related factors.⁵

According to the latest Report by Pakistan Telecommunication Authority published in December 2009,⁶ a total of 106 billion text messages were sent through 5 cellular networks in Pakistan in 2009. Considering the positive relationship between the thumb pain and frequent text messaging, research on this disease is insignificant to make people aware of the over usage of cell phones and excessive messaging. Previous studies support the fact that text messaging can strongly be related to De Quervain's tenosynovitis (DQT). There are many

other factors which affect pain intensity or show the prevalence of DQS. De Quervain's disease may be a synovitis constraint of connective tissues and secretion sheaths. The abductor pollicis longus (APL) and extensor pollicis brevis (EPB) muscles had been concerned with restricted movements of the thumb. These limited movements cause pain and swelling at thumb and articulation radiocarpal pitch. However, medical specialty data concerning this disorder continues to be inadequate. One prevalence of DQD prevalence (0,7% -36%) was rumored within the study counting on the popularity used and therefore the population concerned⁶⁻⁹. The frequency of females is 0.6 per a thousand person-years and a pair of 2.8 per 1,000 person-years in females. Though not solely owing to work, however conjointly in DQD¹¹. Even though DQT is rapidly intensifying problem faced by the young adults, so far, not enough research has been done to support and aware people regarding it. Research on the association of SMS texting and DQT is scarce in this part of the world and keeping in consideration the popularity of texting among our youth it is justified that a research be conducted to find association between these two entities in young population.

Methodology:

A Cross-sectional study was conducted in The University of Lahore, University of the Punjab and University of Central Punjab, Lahore. All the data which was used in the present study were collected from primary sources by questionnaires. Convenient sampling technique was used. The frequency was 50%, and confidence interval was 95%, chance of error was 5% and population size was 170 students. Z-score was 1.96 which was calculated on Microsoft excel by formula of =NORM.S.INV (1-Chances of Error/2). Students aged between 17-35 years using smartphone were included in the study. Students who had history of wrist fracture, carp-metacarpal joint dislocation, were not included in study. Data were collected and the permission letter from the administration of

The University of Lahore. "Self-administrative questionnaire" was used for data collection. Statistical Package for Social Science (SPSS) 20.00 was used to analyze the data.

Results:

The total number of observations (N) is 170. The factors showing value 0 (if the answer is no) and 1 (if yes) and values for other questions; affecting which thumb are (0) if none, (1) if right thumb, (2) left thumb, (3) for both is showing the frequency of pain. Mean age of the students was 25.27 years (Table 1).

Factors	Minimum	Maximum	Means \pm SD
Age	17	35	25.27 \pm 1.95
Do you have Pain Right Now?	0	1	0.4 \pm 0.23
Intensity of Pain	0	10	5.41 \pm 0.91
Number of text/ days	1	4	1.94 \pm 1.03
Pain after fist thumb inside	0	3	1.7 \pm 0.70
Swelling at thumb	0	3	1.2 \pm 0.82
Pain before using Cell Phone	0	3	1.25 \pm 1.04
Stiffness of thumb	0	3	1.5 \pm 1.10
Numbness of Thumb	0	3	1.18 \pm 0.51
Inability to use Phone after Pain	0	1	36 \pm 0.29

Table 1: Factors Associated with De Quervain's syndrome

Finkelstein test was found to be positive in 95 out of 170 respondents. The other 75 out of 170 respondents were not suffering from De Quervain's disease (Table 2). 52 out of 170 students were having mild pain, this means the 31.2% respondents were described with mild pain. 35 respondents (20.1%) had average pain and rest of the 8 respondents had severe pain (Table 3).

Responses	Frequency (%)
Positive	95 (55)
Negative	75 (45)

Table 2: Finkelstein Test

Answers	Frequency (%)
No pain	75 (45)
Mild pain	52 (31)
Average pain	35 (20)
Severe pain	8 (4)
Total	170 (100)

Table 3: Intensity of Pain

Discussion:

Younger peer group access and exposure to different types of information and communication equipment such as computers and mobile phones has intensely increased over recent years^{10,11}. During the past decade in Sweden only, 15–24-year-age group have 100% access to mobile phones and 93% on average utilize it for sending text messages (SMS).¹² Use of mobile phones has increased in USA in teens for text messaging from 38% in 2008 to 54% in 2009.¹³ When considering students related to healthcare profession most common reasons related to SMS texting include academic related activities¹⁴. DQT most commonly arises due to the overuse of the thumb musculature which is characterized by pain that spread over the surface of radial aspect of the wrist and intensified by ulnar deviation of the hand. In 2010, a case report of bilateral DQT revealed that the diagnosis is linked to the patient's condition with excessive routine of the text messaging feature on a cellular telephone.¹⁵

An extensive community based study performed in the United Kingdom displayed that prevalence of DQT was 0.5% in males compared to 1.3% in females.¹⁶ Our study results were unusual in that 43% of those texting between 50–100 SMS had positive Finkelstein test and as texting increased frequency of the condition decreased. This was contrary to the results shown by Yoong who witnessed this condition in school children in Singapore who were sending more than 100 text messages per day.¹⁷ However similar observation to our research was seen in a study conducted by

Lenhart *et al.*, with 50% positive results for those texting 50 messages and 33% positive results among those going for 100 text messages per day.¹⁴ These results were significant when different hand movements were compared to results of the Finkelstein test. This was in accordance to previous literature that explicitly states repetitive pushing, prolonged and sustained gripping (example during computer use or hand tool use) and repetitive redundant movements of the thumb (e.g. typing) as potential risk factors.^{18,19}

Other studies have reported that patients complained of decrease in gripping strength, pain in wrist while using thumb and as a consequence dropping objects due to pain or stating a combination of these symptoms.²⁰ However, our strengths cannot be overlooked. Unfortunately there is no gold standard diagnostic confirmatory test for DQT. In the 21st century mobile phones have become more of a necessity than a luxury. With the dawn of smartphones and advanced versions expected in future, it is inevitable that diseases related to the extensive use of cell phones will increase in numbers specifically musculoskeletal problems.²¹ 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 SMS messaging and gaming. In order to inhibit the development of musculoskeletal disorders, a better understanding of the texting technique and connection to the muscle activity and the kinematics is needed.²² As DQT is a serious issue leading to dysfunction of the affected hand further insight would help researchers to get a background for physical guidelines for texting on mobile phones and recommend appropriate behavioral changes for averting this under recognized cause of tendinopathy.

Conclusions:

Almost half of the students use their mobile phones for texting more than 50 SMS per day as suggested by this study. It leads to De Quervain's positive syndrome in these students and there is a positive association between the thumb pain

and frequent text messaging.

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