International Journal of Advanced Research and Development
ISSN: 2455-4030; Impact Factor: RJIF 5.24
Received: 17-01-2019; Accepted: 21-02-2019
www.advancedjournal.com
Volume 4; Issue 2; March 2019; Page No. 96-98

Prevalence of text claw in smartphone users in young adults

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Abstract
Background: Smartphone is a mobile phone that performs many of the function of a computer typically having a touch screen interface, internet access and then operating systems capable of running downloaded applications. The number of current smartphone users is 2.53 billion, with growth expected to 2.87 billion by 2020. TEXT CLAW" is defined as the pain and feeling of soreness and cramping in fingers, wrist and forearm after constant use of smartphones. Sometimes this can lead to tendonitis, which causes wrist pain, aching, numbness and loss of strength. This study aims to find the prevalence of text claw in smartphone users among young adults.
Method: An observational study using a face validated questionnaire was conducted among 100 young college going students. A face validated questionnaire was distributed among 100 subjects to find the prevalence of text claw in smartphone users in young adults. Findings from the data collected were analysed and results were obtained.
Results: among the young adult population people using their phone for >1 hour were more prone to get text claw. There were 65 number of users who used their smartphone for >1 hour among which 33 users (50.7%) experienced pain,13users(20%) experienced cramps,15 (23.0%) experienced weakness, and 28 users(43.0%) experienced numbness which showed 40 users (61.5%) users who experienced symptoms of text claw and 25(38.4%) users experienced no symptom of text claw.
Conclusion: This study shows that text claw is prevalent among users who use their phone for >1 hour due to predominant usage of hand /wrist or forearm for smartphone activities.

Keywords: smartphone, text claw, pain, weakness, numbness, cramps, ADL'S, work efficiency

1. Introduction
Smartphone is a mobile phone that performs many of the function of a computer typically having a touch screen interface, internet access and then operating systems capable of running downloaded applications. The smartphones, being a very new invention of humanity, became an inherent part of human's life [1]. It has become a necessity for people specially young adults as it provides internet communication, information retrieval, texting, games, music, social networking sites. The number of current smartphone users is 2.53 billion, with growth expected to 2.87 billion by 2020 [2]. The growing number of smartphones and smartphone owners raises a concern about phones effect on human health [3]. Literature reports an adverse impact on the physical and psychological health of the users of Hand Held Device. The incidence of musculoskeletal disorders of hand, wrist, forearm, arm, and neck has been increasing all over the world due to prolonged forceful, low amplitude, repetitive use of hand held devices [4].
"Text Claw" is defined as the pain and feeling of soreness and cramping in fingers, wrist and forearm after constant use of smartphones. Text claw might not be an official medical diagnosis, but many techsavvy individuals have definitely felt the pangs of texting, typing or web browsing [7] Sometimes this can lead to tendonitis, which causes wrist pain, aching, numbness and loss of strength. However, this should not be confused with carpal tunnel syndrome, although swelling from tendonitis can actually cause carpal tunnel.
'Prevalence' is the proportion of a population who have a specific characteristic in a given time period.

2. Material and Method
This observational study aimed to find a prevalence of text claw in smartphone users in young adults. A face validated questionnaire was formed and validated from 10 physiotherapists. Among young adults 100 subjects which were taken college going students. The questionnaire was then given to participants Data from participating college students were collected through a face validated questionnaire.
The data included mobile game players aged 17- 25 years of age. Study outcomes included a face validated questionnaire. The data was analysed and results were obtained.

3. Results
On the basis of data collected through questionnaire results were obtained by descriptive statistical analysis of those data which shows prevalence of text claw in smartphone users. There were 100% of smartphone users out of which 65% of users used their phone for more than 1 hour,30% of users used for 30-60 mins, and 5% of users used for <30 mins.

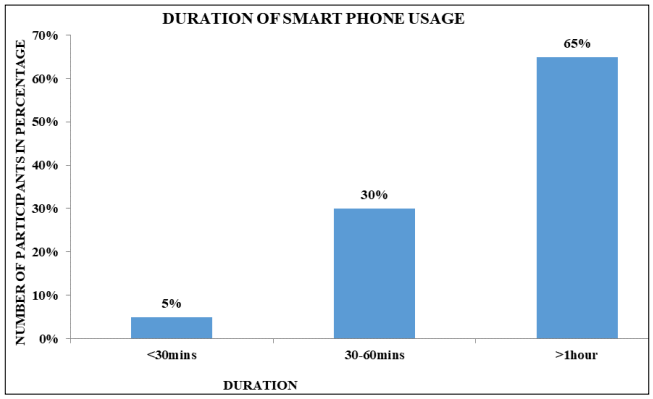

Fig 1

There were 100% of smartphone users out of which 65% of users used their phone for more than 1 hour,30% of users used for 30-60 mins, and 5% of users used for <30 mins.
93% of users used smartphone for activities like gaming or browsing, and 7% used only for texting and calling.77% of users used both of their hands during their usage and 23% used their single hand.
There were 50% of people who uses smartphone with their upper extremity supported and 50% of users who do not take support while their smartphone usage.
The pain felt by continuous users were about 47% and most of them i.e. 53% of users do not experience pain after continuous usage of their smartphone.

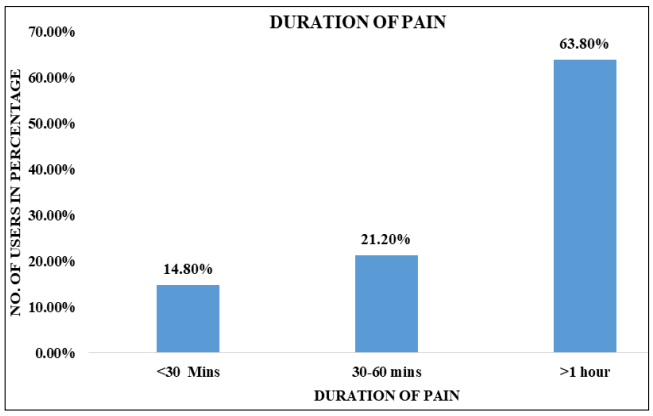

Fig 2

The pain lasted in 14.8% of users who use their smartphone for <30 mins, 21.2% of users who use their smartphone for 30-60 mins, 63.8% of users who use their smartphone for <1 hour.
The type of pain was continuous in 26% of users, periodical in 21% of users and 53% of users experience no pain.
The rating of the pain which was taken according to the Wong Bakers Face Pain Rating Scale which showed the results in people having 0% with worst hurt grade (10), 2% with hurts whole lot grade(8),4% with hurts even more grade(6),15% with hurts little more grade (4), 33% with hurts little bit grade(2), and 46% with no hurt grade (0).
There were 95% of users in which their pain or discomfort did not interfere with their ADL'S and 5% of users which showed that their pain interfered with their ADL'S.
There were 4% of users in which their work efficiency was affected due to pain and 96% of users in which their work efficiency was not affected.

The result of weakness in hand/wrist/forearm which showed 25% who showed a positive result with their weakness in hands/forearm/wrist and 75% of users did not experience any sign of weakness in their hand/wrist/forearm.
There were 30% of users who experienced numbness in their hand/wrist/forearm and 70% of users who experienced no numbness in their hand/wrist/forearm.
There were 21% of users who experienced cramps in their hand/wrist/forearm, and 79% of users who did not experienced cramps.

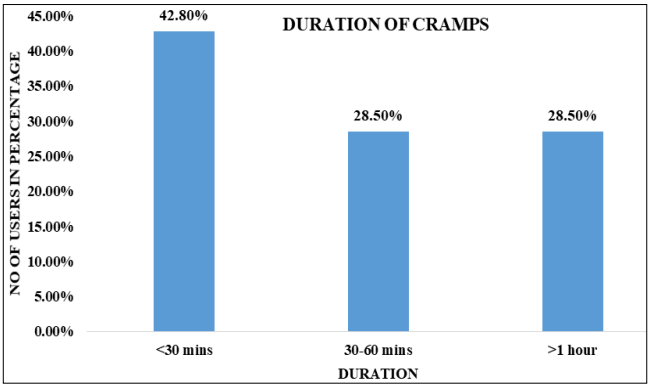

Fig 3

There were 9(42.8%) number of users experiencing cramps with using their phone for <30 mins, 6(28.5) number of users experiencing cramps with using their phone for 30-60 mins, 6(28.5%) number of users experiencing cramps for >1 hour.

4. Discussion

The aim of this non parametric study was to find the prevalence of text claw in smartphone users in young adults. Although the study by Deepak Sharan *et al.* have documented musculoskeletal disorders of upper extremities due to extensive usage of hand held devices that is smartphone in which the smartphone users had a predominant usage of thumb or only one finger while texting or gaming which were associated with a higher prevalence of Musculoskeletal disorders and hence the users are advised to select devices that are designed to permit typing or usage with all fingers [4].
Berolo noted that the mobile hand held devices users complains of the discomfort at least one area of upper extremities, back or neck. Long-term usage of the devices lead to tension on tendons, muscles, and parametric tissue, which could result in visual display terminal syndrome [1].
Among male the most significant signs and symptoms related to mobile phone use are pain in thumb (19%) and thumb weakness (9%) [3].
Another study included the age group of 17-25 years in their study and they sampled 100 subjects [6].
The purpose of my study was to find the prevalence of text claw through a questionnaire where we found people using their phone for many hours leading to more pain, weakness, numbness and cramps in their hand/wrist or forearm.
There were 6 users who experienced some or the other symptoms who used their phone for <30 mins among which 1(25%) number of user experienced pain,2(50%) number of users experienced cramps, 1(25%) number of user experienced numbness, which showed 4(66.6%) users who

experienced symptom of text claw.

Table 1

Duration	Symptoms	No. of users
<30 MINS	Pain	1
	Cramps	2
	Numbness	1
	Weakness	0

There were 29 number of users who used their smartphone for 30-60 mins among which 12 users(41.3%) experienced pain, 10 users(34.4%) experienced cramps, 8 users (27.5%) experienced weakness and 8 users(27.5%) experienced numbness which showed 18(62%) number of users experienced symptom of text claw and 11(37.9%) users did not experience any symptom of text claw.

Table 2

Duration	Symptoms	No. of users
30-60 mins	Pain	12
	Cramps	10
	Weakness	8
	Numbness	8

There were 65 number of users who used their smartphone for >1 hour among which 33 users (50.7%) experienced pain,13users(20%) experienced cramps,15 (23.0%) experienced weakness, and 28 users(43.0%) experienced numbness which showed 40 users (61.5%) users who experienced symptoms of text claw and 25(38.4%) users experienced no symptom of text claw.

Table 3

Duration	Symptoms	No. of users
>1 hour	Pain	33
	Cramps	13
	Weakness	15
	Numbness	28

5. Conclusion

This study shows that text claw is prevalent among users who use their phone for >1 hour due to predominant usage of hand /wrist or forearm for smartphone activities.

6. Acknowledgement

The satisfaction that accompanies the successful completion of any task would be incomplete without mentioning of people whose ceaseless co-operation, guidance and encouragement crown all the efforts with success.

I would like to thank God, my parents and my guardians for their undying support and for being the guiding stars in my life. I also wish to express my feelings of gratitude, respect and affection to all my esteemed professors for helping me in this venture.

I am deeply indebted to Dr. Pooja Sharma Professor of Neuro physiotherapy Rehabilitation and Project Guide, Late Shri Fakhirbhai Pansare Education Foundation's College of Physiotherapy, Pune for this invaluable guidance and support, who has contributed her expertise in bringing out the best of me in this piece of project work.

I am extremely thankful to Dr. Swati Bhise, Principal, Late Shri Fakirbhai Pansare Education Foundation's College of Physiotherapy. I am also thankful to my colleagues who helped me tremendously during the collection of data.

I offer my regard to all those who supported me in any respect during the completion of the study. Last, but not the least, I express my sincere thanks to all the subjects who participate and gave their full co-operation for the study.

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