

## ORIGINAL ARTICLE

# Cervical Pain and its Intensity due to the use of Hand-Held Electronic Devices among University Students

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## ABSTRACT

**Background:** Cervical Pain is the pain in the cervical region. It is the 4<sup>th</sup> leading cause of disability and it affects the young adults due to the poor posture. It is more common in females. Today. The hand-held devices such as cellphone is a necessity for communication, academic and official activities and for leisure time. The more usage of these devices in poor posture is leading to pain which if remain untreated can be a cause of long term impairment or disability.

**Aim:** To find the cervical pain due to the use of hand-held electronic devices among university students.

**Methods:** This cross-sectional study was done on 700 university students. This sample size was calculated by variables: precision 0.05, estimated proportion 0.41 and with confidence level 0.99. A self-administered Questionnaire in English was given to the students fulfilling the eligibility criteria.

**Results:** Among 700 students, 679(97%) use smartphones while 21(0.3%) don't use smartphones. The percentage of daily usage of smartphones among students was 12.6% for 1-2 hours, 28% for 2-3 hours and 59.4% more than 3 hours daily. The neck pain was reported in 500 (71.4%) participants whereas 200 (28.6%) had no neck pain. The participants rated pain on VAS Scale as 200 (28.6%) answered no pain, 434 (62%) answered Moderate Pain and 66 (9.4%) answered Worst Pain.

**Conclusion** The results of this study concluded that there was strong association of cervical pain with daily usage of smartphone.

**Keywords:** Frequency, Neck, Pain, Hand-Held, Devices, Students, University.

## INTRODUCTION

In our society pain in neck is tremendous load.<sup>[1]</sup> Pain in Neck is repeated occurring. In whole Population. Occurrence of pain in neck among worldwide population is estimated between 10% to 15% and more commonly reported female than in male and in adults of Spain its ratio was recorded at 19.5%.<sup>2</sup>

The incidence of cervical pain in office and computer workers from present researches vary between 10.4% and 21.3% in estimated one year. Some survey researches reported cervical Pain is recovered at one year ranges in between 33% and 65%. In general overall prevalence of cervical pain in general population ranges between 0.4% and 86.8% (mean: 23.1%).women has high prevalence rate of cervical pain as higher in rural than urban Ares. Most studies reveal high incidence of pain in Neck at the age of 35 to 49 year group. After this age group the risk of pain in neck starts to decline<sup>3</sup>. With age increasing Intensity and nature of pain alter and perceive different in frequency. When we differentiate the elderly person with Young one we noticed increased pain threshold is common. The Responsiveness of pain changes with age and other changes may include reduction in nociceptor, reduce pain carrying input, wear and tear of peripheral and central nervous system Activity and Skin Changes, Psychological distress also leads to change in pain perception<sup>4</sup>. Cervical Spine contain (C1-C7) Seven vertebrae out of 33 Human Vertebral column and (C1-C7) divided into two parts, the Upper Cervical (C0-C2) and lower (C3-C7) region. Cervical Spine is more mobile part of vertebral Column and provides more stability in movement; ligaments also help provide support and stability to spinal column and help to control natural neck moment. This segment is much prone to in injury. C1 called as Atlas and C2 Called as Axis C1 is Ring shaped<sup>5</sup>. Cervical spine divided into 2 regions (Sub-Occipital, Typical). Cervical Spine has Anterior Curve. Stability to neck is provided by Bony Structures/Ligaments and Muscles.<sup>[6]</sup> Imaging technique such as X-Ray is used to Rule out the pathology which lead to neck pain. X-ray reveals the degree of instability and hypermobility of neck <sup>[5]</sup> Protocols for Neck pain therapy are Patient education is one of the important part of health care and provide ease to communicate health care worker with patient <sup>[7]</sup>, Invasive (Injection), Nerve Block, Grade 1,2 Mobilization,

Manipulation, Psychological Treatment, Acupuncture, laser therapy, traction and NSAID's<sup>1,5</sup>. In these days in our society Hand-held Devices such as mobile phone is necessary for everyone the share of mobile phone in cell market raised day by day was 13.8% in 2009 to 24.9% in 2014<sup>8,9</sup>.

In other research studies Korea has 30 million mobile phone users and 91% universities Students use in 20's<sup>10,11</sup>. About 4,585 students (1.81%) were at risk and unable to do school work properly<sup>12</sup>. Republic of Korea Reported use dramatically raised from 23 million in 2012 to 33 million in January 2013 and the age of individual varies<sup>13,14</sup>. As the use of Smartphone increases with this occurrence of diseases occur such as CTS, exophthalmia and other musculoskeletal Disorders<sup>8,15</sup>. The purpose of mobile phone usage is to Send Message, Search on Google and to play Games this can be done by again and again touching Screen, this repeated action in one posture may cause Pain in Upper region or Extremity this repeated activity may lead damage to muscles, Bones ,Blood vessel and joint and this induce neck pain<sup>8,16,17</sup>. The use of a smartphone for long duration may lead to musculoskeletal issues<sup>10</sup>. Prolong use may also lead to abnormal forward bending posture and harm to nearby structures neck flexion is greater because of small screen size one other study reported that some abnormality in cervical as well as in lumbar and proprioception deficit in neck region<sup>10</sup>.

The main aim of this study is to know the Neck pain associated with use of cell phone and to tell the complications experienced after smart phone usage for a long time.

The purpose of this study is to evaluate neck pain and numbness in arm in universities student of Lahore.

## MATERIAL AND METHODS

This was an observational cross sectional study and seven hundred participants (university students) participated in this study universities name were university of Lahore and university of central Punjab, in this study students are included who are using smartphone with age in between 15 to 28 and exclusion criteria of this study was student with any history of trauma and pathology and both male and female students were included in this study. The questions used in this study was taken from another research that were conducted among dental students<sup>13,18</sup>. For statistical analysis SPSS version 21 was used by using this I made bar chart and histogram. And the confidence level or interval was (0.99).

Received on 17-01-2022

Accepted on 25-06-2022

## RESULTS

The data collected from 700 participants. The participants mean age was 21.01 years±2.08, minimum age was 15 and maximum age was 28. Out of 700 students of two universities of Lahore males were 197(28.1%) 503(71.9%) females. 500(71.4%) answered YES, 200(28.6%) answered NO (Table 1)

Table 1: Age, Frequency of participants and Have you ever experienced pain

Age		
Mean		21.01
Std. Deviation		2.085
Minimum		15
Maximum		28
Frequency of participants		
	Frequency	Percent
Male	197	28.1
Female	503	71.9
Total	700	100.0
Have you ever experienced pain?		
**Yes	500	71.4
No	200	28.6
Total	700	100.0

The participants questioned duration of cell phone daily usage? Mean usage 2.47 hours±0.708 minimum usage hours were 1 and maximum 3. The participants questioned duration of cell phone daily usage? 88(12.6%) use for 1-2 hours, 196(28%) use for 2-3 hours and 416(59.4%) use more than 3 hours daily. The participants questioned rate pain on VAS Scale 200(28.6%) answered NO pain, 434(62%) answered Moderate Pain and 66 (9.4%) answered Worst Pain (Table 2).

Table 2: Rate Pain on VAS

	Frequency	Percent
No pain	200	28.6
Moderate pain	434	62.0
Worst Pain	66	9.4
Total	700	100.0

There is association between Neck Pain and Duration of daily smartphone usage so the p-value is significant (Table 3)

Table 3 Association Between Neck Pain and Duration of daily smartphone usage?

	Asymp. Sig. (2-sided)
Pearson Chi-Square	0.01

## DISCUSSION

With prolong (yearly, Daily) usage of smartphone may lead to musculoskeletal issues such as neck pain. The survey conducted by Kim H-J, Kim J-S in 2015 among university dental students support the result of my study. to rule out the effect of smartphone on musculoskeletal system from 1<sup>st</sup> of March to 1<sup>st</sup> of May in 2014.300 self-structured questionnaires were distributed and out of this few questionnaire data were not relevant or incorrect as a result 292 copies of self-structured questionnaire were reviewed, and question asked about duration of daily cell phone usage the result of this survey was daily average usage of smartphone is >4hrs (42.1%),(21.6%) in between 3hrs to 4hrs, inshort every day > 2hrs usage is (80%).<sup>[13, 18]</sup>and the prevalence of neck pain was (55.8%).and the aim of my survey is to rule out the association or prevalence of neck pain in smartphone on the basis of daily usage the result of this study is 88 (12.6%) use for 1-2 hours, 196 (28%) use for 2-3 hours and 416 (59.4%) use more than 3 hours daily, and the prevalence of neck pain is (59.0%). Lena Korpinen was conducted Cross-sectional study survey in which Work-age related person included in order to know the effect of smartphone/computer use on neck pain,numbness.also support the finding of my result in this survey fifteen thousand questioner

were distributed out of this only 83.9% use Smartphone and 15.1% (6121) reported neck pain as symptom<sup>19</sup>. The sample size of this research is 700 out of this 697 (97%) uses smartphone. (59%) complains neck pain and 0337 (48.1%) complain numbness in arms.This Study also support my results was conducted by Kim S-Y, Koo S-J to know the association between time duration usage of smartphone with neck, in this study there were 34 participants and these participants divided into 3 groups on the basis of duration.(category 1) contain 11 individual for 10 minutes,(category 2) contain 12 individuals for 20 minutes,(category 3) contain 11 individuals for 30 minutes. . Pain is evaluated by using visual analogue scale VAS. And this reveals that with increase in duration of smartphone usage both pain and fatigue increased.<sup>[20]</sup> in my survey he aim of this survey is to rule out the association or experience of neck pain in smartphone on the basis of daily usage in students of universities of Lahore and the result of this study is and this divided in to three categories category 1 contain 88 (12.6%) use for 1-2 hours, out of this 34 students have no pain,42 have moderate and 12 have worst pain on VAS scale. Category 2 contain 196 (28%) use smartphone for 2-3 hours out of this 88 have no pain and 87 have moderate pain and 21 have worst pain in category 3 there was 416 (59.4%) use smartphone more than 3 hours daily out of this 169 have no pain, 214 have moderate pain and 33 have worst pain. and the prevalence of over all students neck pain is

## CONCLUSION

A large number of students reported neck pain. The study concluded that there was strong association of cervical pain with daily usage of hand-held devices. The cervical pain was not found associated with gender.

**Conflict of interest:** Nothing to declare

## REFERENCES

- Gross AR, Kaplan F, Huang S, Khan M, Santaguida PL, Carlesso LC, et al. Suppl 4: Psychological Care, Patient Education, Orthotics, Ergonomics and Prevention Strategies for Neck Pain: An Systematic Overview Update as Part of the ICON Project. The open orthopaedics journal. 2013;7:530.
- Campa-Moran I, Rey-Gudin E, Fernández-Carnero J, Paris-Alemay A, Gil-Martinez A, Lerma Lara S, et al. Comparison of dry needling versus orthopedic manual therapy in patients with myofascial chronic neck pain: a single-blind, randomized pilot study. Pain research and treatment. 2015;2015.
- Hoy D, Brooks P, Blyth F, Buchbinder R. The epidemiology of low back pain. Best practice & research Clinical rheumatology. 2010;24(6):769-81.
- Uthaihpur S, Prasert R, Paungmali A, Boontha K. Altered pain sensitivity in elderly women with chronic neck pain. PloS one. 2015;10(6):e0128946.
- Steilen D, Hauser R, Woldin B, Sawyer S. Chronic neck pain: making the connection between capsular ligament laxity and cervical instability. The open orthopaedics journal. 2014;8:326.
- Kisner C, Colby LA. Therapeutic exercise: foundations and techniques: Fa Davis; 2012.
- Hoving C, Visser A, Mullen PD, van den Borne B. A history of patient education by health professionals in Europe and North America: from authority to shared decision making education. Patient education and counseling. 2010;78(3):275-81.
- Kim GY, Ahn CS, Jeon HW, Lee CR. Effects of the use of smartphones on pain and muscle fatigue in the upper extremity. Journal of Physical Therapy Science. 2012;24(12):1255-8.
- Miller G. The smartphone psychology manifesto. Perspectives on psychological science. 2012;7(3):221-37.
- Lee J, Seo K. The comparison of cervical repositioning errors according to smartphone addiction grades. Journal of physical therapy science. 2014;26(4):595-8.
- Lee S. Exploration and verification of risk factors on smartphone addiction: focused on personality and use motivations. Unpublished Master's dissertation, Graduate School, Kyeongsang National University. 2013.
- Kim H. Exercise rehabilitation for smartphone addiction. Journal of exercise rehabilitation. 2013;9(6):500.

13. Kim H-J, Kim J-S. The relationship between smartphone use and subjective musculoskeletal symptoms and university students. *Journal of physical therapy science*. 2015;27(3):575-9.
14. Intra-and inter-rater reliability of measuring passive range of shoulder motion with smartphone and goniometer in patients with stroke. *Physical Therapy Korea*. 2014;21(1):1-12.
15. Berolo S, Wells RP, Amick BC. Musculoskeletal symptoms among mobile hand-held device users and their relationship to device use: a preliminary study in a Canadian university population. *Applied Ergonomics*. 2011;42(2):371-8.
16. Gustafsson E, Johnson PW, Hagberg M. Thumb postures and physical loads during mobile phone use—A comparison of young adults with and without musculoskeletal symptoms. *Journal of Electromyography and Kinesiology*. 2010;20(1):127-35.
17. Ming Z, Pietikainen S, Hänninen O. Excessive texting in pathophysiology of first carpometacarpal joint arthritis. *Pathophysiology*. 2006;13(4):269-70.
18. Lee J-H, Park S-Y, Yoo W-G. Changes in craniocervical and trunk flexion angles and gluteal pressure during VDT work with continuous cross-legged sitting. *Journal of occupational health*. 2011;53(5):350-5.
19. Korpinen L, Pääkkönen R, Gobba F. Self-reported neck symptoms and use of personal computers, laptops and cell phones among Finns aged 18–65. *Ergonomics*. 2013;56(7):1134-46.
20. Kim S-Y, Koo S-J. Effect of duration of smartphone use on muscle fatigue and pain caused by forward head posture in adults. *Journal of physical therapy science*. 2016;28(6):1669-72.