

# Cervicogenic Headache and the Neck Ability to Perform Activities of Daily Livings Associated to Mobile Phone Usage

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## ABSTRACT

**Background:** Cervicogenic headache is a secondary headache, which means that it is caused by another illness or physical issue. In case of cervicogenic headache, the cause is a disorder of cervical spine and its soft tissue elements disc.

**Aim:** To determine the cervicogenic headache and the neck ability to perform activities of daily livings associated to mobile phone usage.

**Methodology:** This descriptive study was done among 355 participants from different institutes i.e. colleges and universities. This study was executed to find the cervicogenic headache and its impact on neck ability in ADLs. All ethical issues were computed and an informed consent was taken from the administration of concerned institutes and from individuals who were willing to participate.

**Results:** Among 355 participants who feel neck pain were 266(74.93%) and participants do not feel neck pain were 89(25.07%). 87(24.51%) spend 1-2 hour, 87(24.51%) spend 2-3 hour time daily on mobile phone, 91(25.63%) spend 3-4 hour time daily on mobile phone, 88(24.79%) spend more than 5 hour time daily on mobile phone. Pain Intensity according to Visual Analogue Scale was mild among 51(14.37%), Moderate among 265(74.65%) and Severe among 39(10.99%).

**Conclusion:** Frequency of cervicogenic headache was high due to mobile phone use in young adults. Cervicogenic headache is associated with poor neck posture, poor neck alignment, limited range of motion of cervical spine. There was significant association between time spend daily on mobile phone and cervicogenic headache.

**Keywords:** Cervicogenic Headache, Mobile, Headache,

## INTRODUCTION

In today's creating world appropriateness of electronic media such as mobile phone have gotten to be exceptionally common all youthful grown-ups. Use of mobile phone has a negative impact on our well being as well as cervical spine driving to cervical headache<sup>1</sup>. Mobile phone compulsion has been characterized as the abuse of mobile to degree that it disrupt the clients everyday living activities. Expending mobile phone utilize can cause different musculoskeletal issues and causes postural alter in cervical vertebrae in expansion to proprioceptive shortfall in cervical vertebrae<sup>2</sup>.

In cervical headache, as the vagus nerve is hypothesized to pull pricking pathway in brain. Non invasive vagus nerve incitement conventionally imply to incitement of cervical branch of vagus nerve which is made up of vagus nerve strands, driving to cervical headache<sup>3</sup>. Cervical spine may be the potential zone of significance due to its nearness to head, control of upper spinal line rope and vertebral courses that contribute to back circulation of the brain. Seven cervical vertebrae, combine with cartilage; tendon and muscles make a advanced and adaptable structure that permits a assortment of cervical pain and neck movement<sup>4</sup>. Cervical spine too has the interceding intervertebral disc for shock retaining and adaptability. Furthermore, it contains a much extensive spinal canal to oblige the spinal rope, blood vessels, meanings and nerve root<sup>5</sup>. Compression of extra cranial space may result in unremitting, restoratively alluded headache. Anatomical connection between extra cranial space and intra cranial trigeminal pathway may give a conduit by which the extra cranial pathology of scalp, facial and neck leading to headache which is often accompanied by cervical headache. Cervical muscle destruction has been identified as possible donate factor for development of cervicogenic headache. cervicogenic headache is caused by debilitation of upper cervical spine<sup>6</sup>.

Cervical headache due to mobile phone are the most acceptable musculoskeletal objection in general population. The predominant acceptable location of cervicogenic headache was frontal lobe 81% and occipital 78%. Neck discomfort accompanied cervicogenic headache in young adults due to mobile phone use 90% and 41% of subjects<sup>7</sup>. The incidence of cervicogenic

headache in young adults due to mobile use is computed to be 4 and critical issue on patient with cervical radiculopathy because it is more prominent than 85 of patient. Through upper cervical spine pathology was conventionally thought to be related with cervical headache. Spondylotic changes in lower cervical spine have been appeared to be related with cervical headache<sup>8</sup>. Person with cervicogenic headache are regularly treated cervical control and mobilization. Spinal mobilization consist of moderate rhythmical swaying method though control comprise of tall speed, low amplitude, high velocity thrust technique. The extent of head and neck indication of head and neck in alliance with mobile phone use lead to cervicogenic headache<sup>9</sup>. The lengthened use of mobile phone might lead to defective posture such as forward head posture as weight of head increases to the degree of neck flexion increases, sequentially and with 60 degree of head flexion increases the weight of head extend around 28kg. Neck joints are becoming more under stress due to encourage bend over mobile phone use<sup>10</sup>.

Neck pain due to cervicogenic headache enlarge as age increases, yet now a day's young adults happening cervicogenic headache due to prolonged mobile phone utilization. Lengthened mobile phone utilization may conduct to serious destruction such as cervical spine degeneration, disc alignment, spinal compression and disc herniation.

The purpose of this is to determine the role of mobile phone utilization in cervicogenic headache and to determine frequency of cervicogenic headache in young adults due to mobile phone use<sup>11</sup>.

## METHODOLOGY

A Cross Sectional Study was done. Data was gathered from Superior University Lahore. After the approval of Ethical Review Board, the study was finalized within 06 months. Sample size was calculated by sample size determination in health studies version 2.0.21 WHO and number of students registered in this research N=350 keeping the margin of error is equal to 15% and the level of significance is equal to 5%, Z 1- $\alpha$ /2 is the anticipated level of significance = 95%, P<sub>0</sub> is the expected proportion of Subjects = 60%<sup>1</sup>, d<sup>2</sup> is the expected margin of error = 15%. Non probability Consecutive sampling technique has been done to collect the sample for this study. Both male and female participants were included With Unilateral or side dominant headache, Neck pain, Neck stiffness, University and college students and teachers who strongly mobile phone users and were excluded with Congenital

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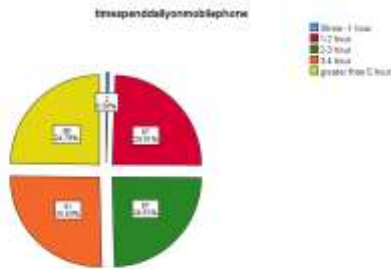
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conditions of cervical spine, Impairment of visual system, Impairment of hearing system, Neck trauma and Cervical arthritis. Data collected by using a questionnaire of neck disability strength and pain intensity was measured by visual analogue scale. An informed written consent was obtained from all the participants. Data was entered into SPSS and analyzed in the form of descriptive statistics including frequency tables and bar charts. Patient data was kept confidential throughout the study.

**RESULTS**

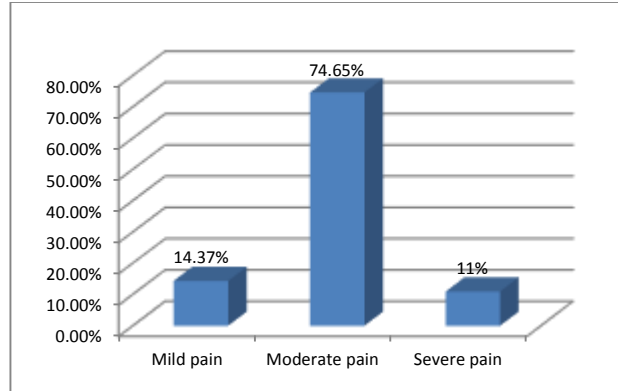
355 participants, 190(53.52%) were in age category 19-24 years, 107(30.14%) were in age category 25-30 and 58(16.34%) were in age category 30-35. 154(43.38%) were male and 201(56.62%) were female participants. 251(70.71%) participants use mobile phone continuously and 104(29.30%) participants use mobile phone intermittent. participants who feel neck pain/neck stiffness were 266(74.93%) and participants do not feel neck pain and neck stiffness were 89(25.07%).

Figure 1: Amount of time daily spent while using mobile phone



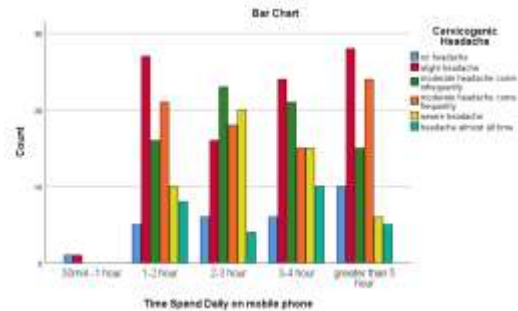
This figure shows time spend daily on mobile phone use in which 87(24.51%) spend 1-2 hour, 87(24.51%) spend 2-3 hour time daily on mobile phone, 91(25.63%) spend 3-4 hour time daily on mobile phone, 88(24.79%) spend greater than 5 hour time daily on mobile phone.

Figure 1: Pain Intensity by Visual Analogue Scale VAS.cat



Pain Intensity according to Visual Analogue Scale was mild among 51(14.37%), Moderate among 265(74.65%) and Severe among 39(10.99%).

Figure 2: Cross tabulation between time spend daily on mobile phone and cervicogenic headache



There was significant association between time spend daily on mobile phone and cervicogenic headache as P Value was 0.004 which was <0.05 which means that there was significant association between time spend daily on mobile phone and cervicogenic headache.

Table 1: Cross tabulation between time spend daily on mobile phone and cervicogenic headache

Time Spend Daily on mobile phone	Cervicogenic Headache					
	no headache	slight headache	moderate headache come infrequently	moderate headache come frequently	severe headache	headache almost all time
30min -1 hour	1(50.0%)	1(50.0%)	0(0.0%)	0()	0(0.0%)	0(0.0%)
1-2 hour	5(5.7%)	27(31.0%)	16(18.4%)	21(24.1%)	10(11.5%)	8(9.2%)
2-3 hour	6(6.9%)	16(18.4%)	23(26.4%)	18(20.7%)	20(23.0%)	4(4.6%)
3-4 hour	6(6.6%)	24(26.4%)	21(23.1%)	15(16.5%)	15(16.5%)	10(11.0%)
greater than 5 hour	10(11.4%)	28(31.8%)	15(17.0%)	24(27.3%)	6(6.8%)	5(5.7%)
Total	28(7.9%)	96(27.0%)	75(21.1%)	78(22.0%)	51(14.4%)	27(7.6%)

P value: 0.004

**DISCUSSION**

This study conducted to determine frequency of cervicogenic headache in young adults age (19-35) due to mobile phone use. Objective of this study was to determine the association of cervicogenic headache with mobile phone use in young adults. In this study 355 participants are included to determine the frequency of cervicogenic headache in young adults due to mobile phone use. Both male and female participants are included in my study. The result of my study shows significant association of cervicogenic headache due to mobile phone use in young adults. 165 patients with cervical pain and headache, age of patient was between 19 and 50 years, with posture alteration of cervical spine, but without significant cervical pathology. All patients use mobile phone in their daily activities minimum 2 hours daily. Therapeutic exercise program include exercises for peravertebral

muscles and soft tissue technique, traction, mobilization, manipulation are given to these patients. These patients shows markedly drop of intensity of cervical spine and cervicogenic headache ( estimated by visual analogue scale of pain)<sup>12,13</sup>.

A total of 40 subjects were chosen, with 20 healthy people and 20 people suffering from cervicogenic headache. The tone, rigidity, and elasticity of the sub occipital muscles and upper trapezium of participants were measured using a Myoton PRO device. The tone and stiffness of the sub occipital muscles and upper trapezium in patients with cervicogenic headache were shown to be higher than in healthy people in this investigation<sup>14</sup>.

Patients with cervicogenic headache were randomized to receive cervical and thoracic manipulation and mobilization (n=58) as well as exercise (n=52). The primary effect was headache intensity, which was assessed using the Numeric Pain Rating Scale. Headache frequency and duration were measured using the

Neck Disability Index as a secondary impact. Individuals with cervicogenic headache who received both cervical and thoracic manipulation experienced much less headache severity and impairment than those who received simply mobilization and exercises, according to the findings of the study<sup>15</sup>.

In any case, thirty participants (8 men, 22 women) with a clinical diagnosis of cervicogenic headache were divided into two groups: superficial and deep. The functional rating index, headache index, trigger point, soreness, cervical range of motion, and headache index were all measured. Dry needling into trigger points of the sub occipital and upper trapezium muscles improves the headache index, trigger point discomfort, and range of motion in cervicogenic headache patients<sup>16</sup>.

## CONCLUSION

Frequency of cervicogenic headache was high due to mobile phone use in young adults. Cervicogenic headache is associated with poor neck posture, poor neck alignment, limited range of motion of cervical spine. There was significant association between time spend daily on mobile phone and cervicogenic headache.

**Recommendations:** I would like to recommend the sample size to be larger than mine in that particular topic in order to gain more accurate results. Although the frequency of cervicogenic headache is high but I recommended further studies with large sample size and follow ups that covers the further risk factors and associated weakness in cervical musculature with cervicogenic headache that I cannot mentioned in my study.

## REFERENCES

- AlZarea BK, Patil SR. Mobile phone head and neck pain syndrome: proposal of a new entity. *Headache*. 2015;251:63.
- Demirci S, Demirci K, Akgonul M. Headache in smartphone users: a cross-sectional study. *J Neurol Psychol*. 2016;4(1):5.
- Henssen DJHA, Derks B, van Doorn M, Verhoogt N, Van Cappellen van Walsum A-M, Staats P, et al. Vagus nerve stimulation for primary headache disorders: An anatomical review to explain a clinical phenomenon. *Cephalalgia*. 2019;39(9):1180-94.
- Bertelsman T. Cervicogenic Headache: 3 Tips for Treatment, Assessment, & Management.
- Dewan K, Yang C, Penta M. Anterior cervical pain syndrome: risk factors, variations in hyolaryngeal anatomy, and treatments. *The Laryngoscope*. 2020;130(3):702-5.
- Deshmukh MP, Palekar TJ, Bajare U. Effect of cervical muscle strengthening and ocular muscle training among students with smartphone adversity. *Journal of Dental Research and Review*. 2020;7(5):65.
- Hanson L, Haas M, Bronfort G, Vavrek D, Schulz C, Leininger B, et al. Dose-response of spinal manipulation for cervicogenic headache: study protocol for a randomized controlled trial. *Chiropractic & Manual Therapies*. 2016;24(1):1-12.
- Zirek E, Mustafaoglu R, Yasaci Z, Griffiths MD. A systematic review of musculoskeletal complaints, symptoms, and pathologies related to mobile phone usage. *Musculoskeletal Science and Practice*. 2020;49:102196.
- Alpayci M, Ilter S. Isometric exercise for the cervical Extensors can help restore physiological lordosis and reduce neck pain: a randomized controlled trial. *American journal of physical medicine & rehabilitation*. 2017;96(9):621-6.
- Tanaka N, Atesok K, Nakanishi K, Kamei N, Nakamae T, Kotaka S, et al. Pathology and treatment of traumatic cervical spine syndrome: whiplash injury. *Advances in orthopedics*. 2018;2018.
- Ezra D, Been E, Alperovitch-Najenson D, Kalichman L. Cervical posture, pain, and pathology: developmental, evolutionary and occupational perspective. *Spinal evolution: Springer*; 2019. p. 321-39.
- Koleva IB, Yoshinov RD, Yoshinov BR. Complex Physical Prevention and Rehabilitation of Cervical Myofascial Pain and Headache, Due to Spine Malposition in Users (Abusers) of Smart Phones. *Highlights on Medicine and Medical Research Vol 12*. 2021:80-8.
- Farmer PK, Snodgrass SJ, Buxton AJ, Rivett DA. An investigation of cervical spinal posture in cervicogenic headache. *Physical therapy*. 2015;95(2):212-22.
- Park SK, Yang DJ, Kim JH, Heo JW, Uhm YH, Yoon JH. Analysis of mechanical properties of cervical muscles in patients with cervicogenic headache. *Journal of physical therapy science*. 2017;29(2):332-5.
- Dunning JR, Butts R, Mourad F, Young I, Fernandez-de-Las Peñas C, Hagins M, et al. Upper cervical and upper thoracic manipulation versus mobilization and exercise in patients with cervicogenic headache: a multi-center randomized clinical trial. *BMC musculoskeletal disorders*. 2016;17(1):1-12.
- Sedighi A, Ansari NN, Naghdi S. Comparison of acute effects of superficial and deep dry needling into trigger points of suboccipital and upper trapezius muscles in patients with cervicogenic headache. *Journal of bodywork and movement therapies*. 2017;21(4):810-4.