ASSOCIATION OF NECK PAIN WITH USE OF ANDROID PHONE AND ITS DAILY USAGE AMONG STUDENTS OF UNIVERSITIES OF LAHORE

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ABSTARACT Neck Pain is a tremendous Load on our society. Neck pain is a fourth leading seed with disability. Occurrence of Neck pain in worldwide population is estimated between 10% to 15%, and more commonly seen female than in male and in Spanish adults its ratio is recorded at 19.5%. Now a day in our community cellphone is necessary for everyone the share of cellphone in cell market raised day by day was 13.8% in 2009 to 24.9% in 2014.the main objective of this study was to evaluate the association of neck pain with use of smartphone and their usage duration among (Students) Universities of Lahore. This was a observational cross-sectional study. Questionnaire was filled among 700 university students; this sample size was estimated by using estimated proportion 0.41, precision 0.05 and with confidence level 0.99. The participants questioned about are they use smartphone? 679 (97.0%) answered yes, 21 (0.3%) answered no. participants also questioned about Duration of cell phone Daily usage? (12.6%) use for 1-2 hours, 196 (28%) use for 2-3 hours and 416 (59.4%) use more than 3 hours daily. participants questioned Have you had Neck pain? 500 (71.4%) answered YES, 200 (28.6%) answered NO.in last participants questioned to rate pain on VAS Scale 291 (41.6%) answered NO pain, 343 (49%) answered Moderate Pain and 66 (9.4%) answered Worst Pain.According to the result of this study we concluded that there is no association of neck pain with daily usage of smartphone ,the result of this study also concluded that there is no Association of neck pain with gender

Key words Neck Pain, Android Phone and Universities.

Introduction :

Neck Pain is a tremendous Load on oursociety.(1).Neck Pain is associated with Change in movement and co-ordination.Universally Neck Pain is a fourth leading seed with disability due to this reason a lot of work done on its prevention and therapy to know the exact mechanism.(2, 3)Neck pain is continual or repeated occurring.In widespread Population. Occurrence of Neck pain in worldwide population is estimated between *10% to 15%,and more commonly seen female than in male and in Spanish adults its ratio is recorded at 19.5%*(4).The occurrence of Neck pain is may be with presence or without Presence of unknown cause of Scoliosis.(5).*Neck pain is most commonly seen Problem in general adults its ratio Ranges from 30% to 50%.(6)*.The incidence of neck pain in office and computer workers from present researches ranges between 10.4% and 21.3% in estimated one year. Some surveys reported neck pain is recovered at one year ranges in between 33% and 65%.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 neck pain as higher in rural than urban Ares. Most studies reveal high incidence of neck pain at the age of 35-49 year group. After this age group the risk of neck pain starts to decline.(7)Causes of neck pain may be mechanical (Torticollis,spondylosis),infectious (Osteomyelitis, Meningitis),Traumatic (Whiplash), Referred and Non-Mechanical (RA,AKS)(8, 9)With increasing age

Intensity and nature of pain alter and perceive different in frequency.When wedifferentiate the elderly person with Young one we noticed increased threshold is common.The Responsiveness of pain changes with age changes may include reduction in nociceptor,reduce pain carrying input,damaged peripheral and central nervous system Activity and Skin Changes,Psychological distress also responsible for change in pain perception.(10, 11)In Some Studies Neck Pain may be presence of Mayofacial trigger points due to this pain move to face and cranium and these pains called as facial and cranial pain.Trigger point present in upper trapezius is most common cause of neck pain these upper fibers are more sensitive to pain.(4, 12).Prolong positioning of neck in Abnormal posture such as forward bending of neck cause Neck pain.(13).Cervical Spine contain (C1-C7) Seven vertebrae out of 33 Human Vertebralcolumn and (C1-C7) divided into two parts, the above Cervical (C0-C2) and lower (C3-C7) region. Cervical Spine is more moveable part of vertebral Column and provides more stability in movement; ligaments also help provide support and stability to spinal column and help to control normal neck moment. This segment is much prone to in injury.C1 called as Atlas and C2 Called as Axis C1 is Ring shaped.(14).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.(15)In-between two Vertebrae there is disc called intervertebral disk this has no Blood Supply this disc is made up of Fibrocartilage this has two parts outer and inner outer called as annulus fibrosis resist tension and rotational force.Inner part called nucleus pulposis maintain compression forces.The fibers arranged in cross manner. Cervical region Consist of three ligaments one is Ligamentum flavum second is anterior longitudinal ligament third name as posterior ligament. All Seven vertebras has foramen through which vertebral artery pass but there is exception with C7.Vertebral vein and Sympathetic nerves passes from C7 foramen.(14, 16-19). Imaging technique such as X-Ray is used to Rule out the pathology which lead to neck pain.X-ray show the degree of instability and hypermobilityof neck.(14, 20, 21)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 (22), Invasive (Injection),Nerve Block, Grade 1,2 Mobilization,Manipulation,Psychological Treatment, Acupuncture,laser therapy,traction and NSAID's.(1, 14, 23)Now a days in our community cellphone is necessary for everyone the share of cellphone in cell market raised day by day was 13.8% in 2009 to 24.9% in 2014.(24, 25).In other studies Korea has 30 million cellphone users and 91% universities Students use in 20's.(26, 27). About 4,585 students (1.81%) were at risk and unable to do school work properly. (28).Republic of Korea Reported use dramatically raised from 23 million in 2012 to 33 million in January 2013 and the age of individual varies.(29, 30)Cellphone addiction is not an individual concern this lead to serious abuse problems specially in students.(28).Prolong use of cell phone lead to cell phone Addiction. The benefit of Smartpho0ne with general phone is we have access of internet on smartphone(26, 31, 32) As the use of Smartphone increases with this occurrence of diseases occur such as CTS, exophthalmia and other musculoskeletal Disorders.(24, 33)The Usage of Smartphone 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.(24, 34, 35).The prolong use of a smartphone lead to musculoskeletal issues.(26).Prolong use may 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 proprioceptiondeficit in neck region.(26, 36-40)Abnormal posture for long interval while seeing at cell screen lead to musculoskeletal issues and the angle at which individual

look at screen is smaller for cell screen this lead to more bending and as a result of this more flexion there is increase stress on back neck muscles such as Trapezius this more extensor muscle activity cause damage to ligaments and impair the proprioception many previous studies focused on psychological and subjective symptoms.(41-47).When head is in lower position than vertebrae of neck is in straight position this position may lead to mayofacial pain syndrome and this syndrome cause tissue damage and more tissue tension on muscles.(48-50)In addition to all this long use cause pain in head, damage to autonomic system, visual issue and stress.(29, 36, 51)

Aims and Objectives of the study: To determine the Association of neck pain with use of Android phone usage duration among students of universities of Lahore.

1. Literature Review:

Until now many researches are conducted to know the prevalence of neck pain with use of smartphone.Hyo-Jeong Kim et al was conducted a survey in university dental students to rule out the effect of smartphone on musculoskeletal system from 1st of March to 1st of May in 2014.Three hundred 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. Thequestionnaire include information regarding age,height,weight duration of smart phone daily usage area where to be usedsuch as Home ,Universitylibrary and other places, and for which goal is used such as texting, browsing and gaming. The result of this survey reveals that 42.5% smartphone used for messaging,38.2% for browsing,12.5% for gaming and 3.05 for other purposes. Mostly students use cellphone at home (58.4%) and in sitting posture (40.0%) or lying on bed (34.9%).(29, 52)daily average usage of smartphone is >4hrs (42.1%),(21.6%) in between 3hrs to 4hrs,inshort every day > 2hrs usage is (80%).(29, 53).(42.1%) eye pain,(55.8%) neck pain,(54.8%) shoulder pain,(19.2%) arm pain,(19.2%) hand pain,(27.1%) wrist pain,(19.9)% fingers pain,(29.8%) waist pain,(9.6%) leg and feet pain. Therefore it is seen that neck and shoulder pain is most common.(29)In 2012 Lena Korpinen , Fabriziomaria Gobba&Rauno Packwomen was conducted a Cross-sectional study survey in which Work-age related person (age 18-65) included in order to know the effect of smartphone/computer use on neck pain,numbness.in this survey fifteen thousand questioner were distributed out of this only 15.1% (6121) reported neck pain as symptom, result showed 83.9% showed use of smart phone.(54)The purpose of survey conducted by Yanfei Xie, Jie Dai et all in 2015 was to know the muscle activity in young people with or without neck-shoulder pain (each group n=20) while texting on touch screen cellphone with single hand use or both hand use this texting activity is also compared with desktopsusers. Whenelectromyography test is performed on three near postural muscles and four distal hand/thumb muscles of right hand recorded. When neck-shoulder pain individual compared with non or without shoulder-neck pain shows high muscles activity in upper trapezius and cervical erector muscle while texting. Single handed texting have high muscle activity in forearm muscles than double handed texting.(55)In 2015 one more research study. When head is in flexed position for a long time while using smartphone considered as risk factor of neck pain.Forward head flexion angle, amount and range is measured in smartphone users in three tasks (texting, browsing and watching videos) while sitting and standing in lab. Participant while using smartphone ask to maintain head in flexion position (33-45~) from vertical. Study reveal that head is in more flexion position while texting and sitting as

compare to other tasks on cellphone and standing. Study result also suggest that texting application is more frequently using application and it is the major cause of neck pain.(56)

The research survey was conducted by Berolo S et all among university students in 2011 Faculty and staff (n=140).the aim of this study is to rule out the musculoskeletal symptoms (upper limb, upper back and neck) with hand-held devices and association between use and symptoms. 137 out of 140 participants (98%) declared they are using smartphone. 84% participants complain about pain in any single body region. Pain at right hand thumb base is common. Confidence interval is 95% (1.02–4.78) and right shoulder pain (2.55, 1.25–5.21), and neck pain (2.72, 1.24–5.96).(33)Kim S-Y et all was conducted a study in 2016 to know the association between time duration usage of smartphone with neck, shoulderfatigue and pain with head in flexion position.in this study there were thirty-four participants and these participants divided into three 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. Musclefatigue is recorded by electromyography for trapezius upper fiber and cervical erector spine muscle. Pain is evaluated by using visual analogue scale VAS.the result of this reveal that there is a significant difference in fatigue and pain between group 1 and group 3.this shows that with increase in duration of smartphone usage both pain and fatigue increased.(57)In another research work whose aim was to know the load and discomfort on upper extremity muscles by arranging or positioning tablet computer at different tilt angle. Thirty healthy participants participated in this research;experiment is performed at three different angles (67.5, 45 and 22.5 from horizontal point) by performing (playing game and movie watching tasks).muscle activity was recorded by electromyography.Andthe degree of comfort assessed by VAS (visual analogue) scale. The result of research reveals that when neck is in pain than increase the tablet angle to reduce stress on muscle.if there is shoulder pain than decrease the angle of computer tablet to reduce stress on shoulder area.(58)Another studywas conducted on eighteen healthy smartphone user individual(seven males and eleven females) the purpose of this study is to know the association of cervical and lumbar spine flexion angle and error of cervical spine with duration of smartphone usage. The kinematics of above and below cervical and lumbar spine flexion is measured and error in above and lower cervical spine repositioning is measured after 3 sec and 300 sec in sitting while using smartphone.in this survey paired t-test was used to know the effect of smartphone duration usage with cervical and lumbar spine kinematics and error in positioning. The repositioning error in above and below cervical and flexion angle of lower cervical and lumbar spine increased significantly after 300 sec usage of smartphone. The result of study reveal that prolong usage of cell phone cause change in proprioception of cervical spine and changes induce in cervical and lumbar posture.(59)In 2016 the survey was conducted on adults and teenagers whose using smartphone by Kee I-K, et all. the use of smartphone dramatically increases teenagers are more active in use and more addicted to smartphone this addiction may lead to physical and psychosocial symptoms.in this survey one hundred teenagers recruited and categorize in two part (normal and addiction) questionnaire based on smartphone addiction scale version. Cephalometric and cervical range of motion instrument is used to analyze craniocervical mobility and posture. These two categories (normal and addiction) not show any significant difference in craniocervical angle at resting position by Cephalometricanalysis. There is significant cervical spine in flexed position while using smartphone when measured by inclinometer and decrease range of motion in cellphone addicted adults. The survey revealed that addiction of smartphone has negative effect on craniocervical mobility and posture it also reported that teen addicted to

smartphone have occurrence of muscular problems temporomendibular disorder.(60)In 2013 the study conducted among present high school students by Zhi Shan, Guoying DengEt all in Shanghai the purpose of this study was to evaluate the association of neck-shoulder and low back pain with use of digital products and their influences on physical activity and psychological status. Survey conducted across 30 high schools in shanghai city among 3600 students. Thequestionnaire includes questions to know the prevalence of neck-shoulder pain and low back pain, physical activity as well as use of PC, computer and mobile phone. questions in the questionnaire include daily usage time, posture distance from eye to screen3016 questionnaire whose data was correct were this include(48.41%) 1,460 Male participants, (51.59%) 1,556 female participants. The students of high school students revealed neck-shoulder and low back pain at rates of 40.8% and 33.1% respectively, more girls (693 of 1,556; 44.5%) complains neck-shoulder pain as compared with boys (537 of 1,460; 36.8%) in addition more females (563 of 1,556; 36.2%) complain low back pain as compare with boys (435 of 1,460; 29.8%).(61)

2. Methodology

Research methodology is a way of solving a question, in a systemic way, belong to a particular topic.

Study type: Observational Cross sectional study conductance was done to complete this study, the study was conducted to know the association of neck pain with android phone usage.

Study setting: This study was carried out on 700 universities students of Lahore these students were recruited on the basis of our inclusion and exclusion criteria.

Statistical analysis: for coding and data analysis purpose, SPSS (Statistical package for social sciences) version 21 was used. This software is used for data entry along with to make chart and tables purpose and to test the hypothesis by evaluating p-values

3. Results:

This chapter demonstrates the outcomes that have received from 700 students from universities of Lahore.

Descriptive Statistics

Age

Mean	21.01
Std. Deviation	2.085
Minimum	15
Maximum	28

Table 1 Participants mean age was 21.01 years±2.08, minimum age was 15 and maximum age was is 2

Descriptive analysis of gender

Gender

	Frequency	Percent
Male	197	28.1
Female	503	71.9
Total	700	100.0

Table 2 Above mentioned table shows frequency distribution of age Out of 700 students of two universities of Lahore males were 197 (28.1%) 503 (71.9%) females.

Do you use smart phone?

	Frequency	Percent
YES	679	97.0
NO	21	3.0
Total	700	100.0

Table 3 Above mentioned table shows frequency distribution of Smartphone usage Out of 700 students of two universities of Lahore679 (97.0%) answered YES. 21 (0.3%) answered No

From how many years you are using smartphones?

	Frequency	Percent
2-3 Year	194	27.7
3-4 Year	250	35.7
Other	256	36.6
Total	700	100.0

Table 4 194 (27.7%) students were using smartphone from 2-3 years, 250 (3.7%) students were using smartphone from 3-4 years and 256 (36.6%) students were using smartphone more than 4 years.

Duration of cell phone Daily usage?

	Frequency	Percent
1-2 hours	88	12.6
2-3 hours	196	28.0
Others	416	59.4
Total	700	100.0

Table 588 (12.6%) use for 1-2 hours, 196 (28%) use for 2-3 hours and 416 (59.4%) use more than 3 hours daily

Have you ever had Neck pain with smartphone usage?

	Frequency	Percent
YES	500	71.4
NO	200	28.6
Total	700	100.0

Table 6 Above mentioned table show frequency distribution of neck pain with phone usage500 (71.4%) answered YES, 200 (28.6%) answered NO.

Rate pain on VAS?

	Frequency	Percent
No pain	291	41.6
Moderate pain	343	49.0
Worst Pain	66	9.4
Total	700	100.0

Table 7 Above mentioned shows frequency distribution of Pain on VAS so out of 700291 (41.6%) answered NO pain, 343 (49%) answered Moderate Pain and 66 (9.4%) answered Worst Pain.

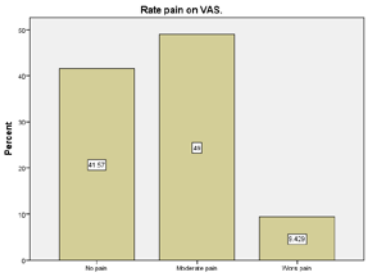

Fig 1 Above mentioned graph show percentage of pain on VAS.

	Asymp. Sig. (2-sided)
Pearson Chi-Square	.056

Table 8 There is no significant association between Neck Pain and Duration of daily smartphone usage so the p-value is in-significant (0.056)

	Asymp. Sig. (2-sided)
Pearson Chi-Square	.071

Table 9 There is no significant association between Neck pain and gender so the p-value is in-significant (0.071).

4. CONCLUSION

Among the whole population (university students) universities of Lahore reported neck pain. According to the result of this study we concluded that there is no association of neck pain with daily usage of smartphone ,the result of this study also concluded that there is no Association of neck pain with gender

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