Original Article

Text Neck Syndrome among Students of a Medical and Dental College in Lahore

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ABSTRACT

Objective: To determine the frequency of text neck syndrome among medical and dental students of Sharif Medical and Dental College, Lahore.

Methodology: It was a cross-sectional survey conducted in Sharif Medical and Dental College, Lahore. The study was approved by the institutional ethical committee and informed consent was taken from all the participants. A total number of 120 MBBS and BDS students were enrolled in the study by a nonprobability consecutive sampling technique. One hundred students of MBBS, 20 from each class and 20 students of BDS, 5 from each class participated in the study. The participants were asked to complete a structured questionnaire including demographic information (name, age, gender) and duration of mobile phone use, the Nomophobia Questionnaire (NMP-Q) and the Neck Disability Index (NDI).

Results: Among the 120 participants, mild nomophobia was found in 19(16%), moderate nomophobia in 80(67%) and severe nomophobia in 21(17%) of the students. Fifty students (42%) reported neck pain during prolonged mobile phone use. The NMP-Q has a positive correlation with the NDI, having Pearson's correlation coefficient (r) of 0.41, $p < 0.001$.

Conclusion: The prolonged use of mobile phones is associated with a greater frequency of neck pain and a higher NDI score. There is a significant positive correlation between text neck syndrome and mobile phone usage. Initially, the musculoskeletal changes are short term but can cause disabilities in later life if proper care and prevention are not taken.

Keywords: *Text neck syndrome. Mobile phone. Musculoskeletal pain.*

INTRODUCTION

Text neck syndrome is a type of stress injury that occurs due to repeated frequently forward and downward flexion of the head towards a mobile phone, tablet or other devices for a prolonged duration. It is also known as an overuse syndrome that causes neck pain and soreness. This condition results in muscular fatigue. It is the most common cause of musculoskeletal neck pain in adolescent age group.[1]

The latest technology has a great impact on the lifestyle of humans.[2] Mobile phone is the most commonly used device for communication and entertainment nowadays. The newer versions of this device are used to do the necessary tasks. From retrieving an e-mail to access bank accounts, all has become possible with this handheld device. Access to the latest news and information is at the fingertips. Students have now the ease of obtaining the relevant information and social media tasking. The screen time for an average mobile user has increased significantly.[3,4] The excessive use of mobile phones has grave short and long term consequences. The short term consequences are the inability to concentrate and anxiety. The long term consequences are personality disorder, mobile phone addiction and text neck syndrome.[2] According to a recent estimate at least 77% of the global population owns a mobile phone. According to a study conducted in Jordan, mobile phone usage by the medical students is almost 5.9 hours per day.[3,4]

The cervical spine is composed of bones, joints, muscles and nerves regulated by the spinal cord and brain. The nerves of brachial plexus can be irritated by excessive neck flexion, resulting in pain of the shoulder, arm and hand. Prolong or continuous looking forward and down at cell phones can cause upper back pain and muscle spasm (Figure 1). Text neck syndrome can result in pain of neck, shoulder and back, chronic headache and increased bending of the spine.[5] If patients of text neck syndrome are left untreated, then it can trigger an inflammatory reaction of the neck musculature, ligaments and nerves.

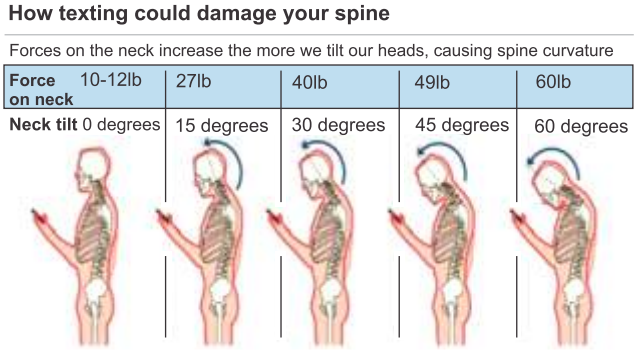

Figure 1: Text Neck Syndrome among Mobile Phone Users[1]

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It can also lead to grave complications like changes of the spinal curve, early arthritic changes, spinal malalignment, herniation of disc and compressive neuropathy.[6] Text neck syndrome has emerged as a significant health problem and has the potential to affect people of all ages globally.[5] It is essential to document the association between mobile phone use and text neck syndrome in our population. Therefore, this study was planned to determine the frequency of text neck syndrome in medical and dental college students using mobile phones for prolonged duration to establish a correlation. The aim was to increase awareness particularly among medical students regarding text neck syndrome so that they avoid unnecessary use of mobile phones and try to decrease their screen time. Individuals with text neck syndrome should be encouraged to do physiotherapy and cervical musculature strengthening exercises.

METHODOLOGY

It was a cross-sectional survey conducted in Sharif Medical and Dental College, Lahore. The study was approved by the institutional ethical committee and informed consent was taken from all the participants. A total number of 120 MBBS and BDS students were included in the study by nonprobability consecutive sampling technique. One hundred students of MBBS, 20 from each class and 20 students of BDS, 5 from each class participated in the study. Students who were willing to participate in this study and used a mobile phone for more than 2 hours per day were eligible for inclusion. Students with a history of cervical spine trauma or any neurological symptoms were excluded from the study. The participants were asked to complete a structured questionnaire including demographic information (name, gender, age) & duration of mobile phone use, the Nomophobia Questionnaire (NMP-Q) and the Neck Disability Index (NDI).

Nomophobia Questionnaire

Nomophobia stands for No Mobile Phone Phobia. It is a psychological condition in which individuals become apprehensive/ have a fear without access to their mobile phones. The NMP-Q is used to measure nomophobia.[7] It comprises 20 questions that address 4 factors of nomophobia: (a) inability to communicate (b) lack of connectedness (c) information access issues and (d) inconvenience. The score of each item ranges from 1 (strongly disagree) to 7 (strongly agree) using a 7-point Likert scale with the maximum score of 140. The interpretation of scores is as follows: score 20 indicates the absence of nomophobia, 21-59 mild nomophobia, 60-99 moderate nomophobia and 100-140 severe nomophobia. Yildirim and Correia established the validity of NMP-Q in 2015.[8]

Neck Disability Index

It is calculated by using a questionnaire with 10-items. The highest score for each item is 5, with a total score of 50. The questions are designed to assess the intensity of neck pain, associated headache and the impact of neck pain on various daily activities (personal care, work, reading, concentration, sleeping, recreation, driving and lifting weight). A high score is indicative of severe neck disability. The score of 0-4 shows no disability, 5-14 shows mild, 15-24 moderate, 25-34 severe and above 34 complete disability. It is also a validated score and was first time introduced by Vernon and Mior in 1991.[9]

STATISTICAL ANALYSIS

Statistical Package for the Social Sciences (SPSS) version 25 was used for data analysis. The qualitative variables such as gender, nomophobia grades and pain were expressed as frequencies and percentages. The quantitative variables such as age, NMP-Q and NDI were expressed as mean and standard deviation. The association between NMP-Q and NDI scores was determined by using the Pearson's correlation coefficient (r).

RESULTS

A total number of 120 participants were included in this study from Sharif Medical and Dental College, Lahore. Among the 120 participants, 54(45%) were males and 66(55%) were females. The mean age of the participants was 20.5±2.5 years. The average duration of mobile phone usage was 5 hours per day. Among the participants, mild nomophobia was found in 19(16%), moderate nomophobia in 80(67%) and severe nomophobia in 21(17%) of the students. Figure 2 shows the NMP-Q results of the students.

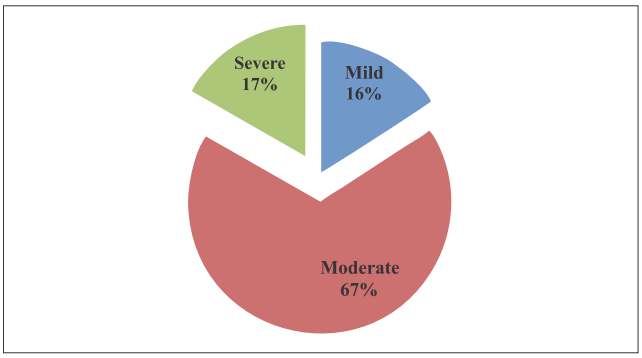

Figure 2: Showing the Results of Nomophobia Questionnaire (NMP-Q) of the Students

Fifty students (42%) reported neck pain and 42(35%) had mild neck disability index scores due to prolonged mobile phones use. Out of 50 students, 38(76%) students used mobile phone for more than 6 hours/day. Two (4%) students had mild nomophobia, 12(24%) students had moderate nomophobia and 36(72%) students had severe nomophobia. The graphical depiction of neck disability in medical & dental college students is shown in figure 3.

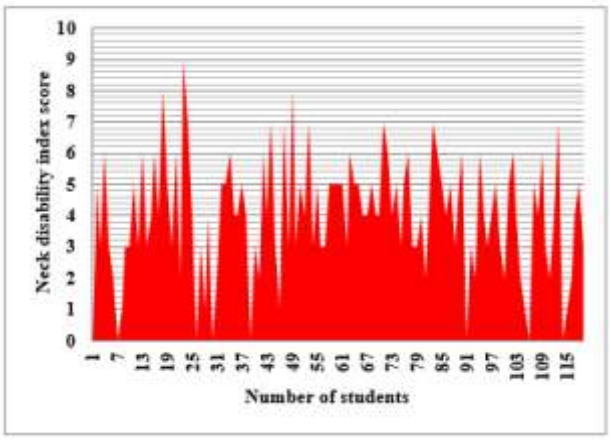

Figure 3: **Graphical Depiction of Neck Disability in Medical & Dental College Students**

The mean values of the NMP-Q and NDI scores are 81.40(75.13-87.67) and 6.2(2.5-9.8), respectively. There was a positive correlation between NMP-Q and NDI, having Pearson's correlation coefficient (r) of 0.41, $p < 0.001$ (Figure 4).

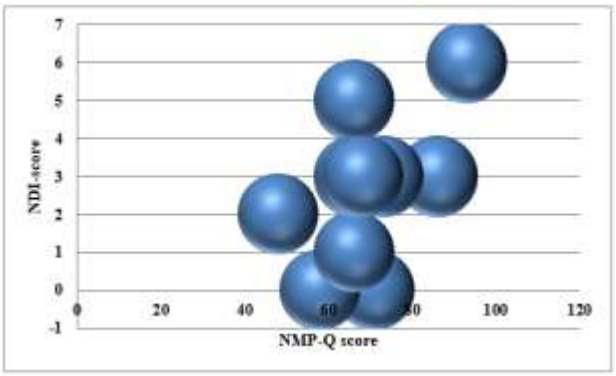

Figure 4: Correlation of Higher NMP-Q Score with NDI of the Study Participants

DISCUSSION

Cell phone is used by almost 79% population daily and its usage is increasing day by day. It results in poor slouched posture. The head is flexed forward in heavy mobile phone users and it causes loss of cervical lordotic curve. This leads to increased stress on the cervical spine and stiffness of neck and shoulder musculature. Neck pain has become a very common complaint.[6,10] It is of utmost importance to raise awareness of text neck syndrome among mobile phone users.

Our study showed that 42% of the students had neck pain and 35% had mild neck disability index scores due to prolonged mobile phone use. Comparable results were found in another study by Ahmad et al. in which 46.9% of students of physiotherapy had neck pain and 42.5% reported neck disability.[4] Even higher frequency of neck pain was observed in other studies. A study conducted in 2015 by Kim et al. among university students of Korea showed that 55.8% of students had neck pain with the constant use of mobile phones.[11] A systematic review was done to assess the frequency of musculoskeletal complaints with the use of mobile phones. The results showed that musculoskeletal complaints range from 1% to 67.8% and neck pain ranges from 17.3% to 67.8% among mobile users.[12] A study carried out in undergraduate students of Punjab University and the University of Lahore, Lahore showed that there was higher neck pain prevalence among undergraduate students. There were a total of 402 participants in this study and 228(56.7%) students had neck pain.[13]

A study conducted by AlZarea et al. found that 55% of the patients presented with neck pain and headache with the use of mobile phones.[14] The use of mobile phone results in the forward inclination of the head and neck towards the screen, which causes postural changes and can lead to long term neck pain.[1] A study conducted in Thailand showed alarming results related to text neck syndrome and termed it as an epidemic. According to the researchers, the mobile phone is the most popular device and surpasses the laptops and computers. This study also showed that approximately 62.3% of mobile phone users experienced neck pain.[15]

In our study, we observed a significant positive correlation ($p < 0.001$) between the NMP-Q and NDI. Comparable results were shown in a study by Shah et al. The study enrolled 100 physiotherapy students from Ahmadabad, India and established a significant correlation between the use of mobile phone and neck disability index.[16] Another study reported a positive correlation between NMP-Q and NDI (r 0.36, $p<0.001$).[3]

Simple lifestyle modifications like postural changes during the use of mobile phones and avoiding prolonged use can prevent neck pain. This study would be a source of awareness to help mobile phone users about the harmful effects of mobile phones. However, there are a few limitations. The sample size was not large. Moreover the study was carried out in a single

medical and dental college. Further studies with a larger sample size and a multi-centered setting can be done for more comprehensive results.

CONCLUSION

The prolonged use of mobile phones is associated with a greater frequency of neck pain and a higher NDI score. There is a significant positive correlation between text neck syndrome and mobile phone usage. Initially the musculoskeletal changes are short term but can cause disabilities in later life if proper care and prevention are not taken.

RECOMMENDATIONS

- The awareness of text neck syndrome should be raised among the students.
- They should be encouraged to decrease their screen time and take frequent small breaks after every 20 minutes during mobile phone use.
- The mobile phones should be held higher so that they align with the eyes reducing strain on neck muscles.
- Posture focused exercises should be done.

REFERENCES

1. Neupane S, Ali UTI, Mathew A. Text neck syndrome-systematic review. IJIR. 2017; 3(7):141-8.

2. Lee S, Kim M, Mendoza JS, McDonough IM. Addicted to cellphones: exploring the psychometric properties between the nomophobia questionnaire and obsessiveness in college students. Heliyon. 2018; 4(11):e00895. doi:10.1016/j. heliyon. 2018.e00895.

3. Ahmed S, Akter R, Pokhrel N, Samuel AJ. Prevalence of text neck syndrome and SMS thumb among smartphone users in college-going students: a cross-sectional survey study. J Public Health. 2019. https://doi.org/10.1007/s10389-019-01139-4.

4. Ahmed S, Pokhrel N, Roy S, Samuel AJ. Impact of nomophobia: a nondrug addiction among students of physiotherapy course using an online cross-sectional survey. Indian J Psychiatry. 2019; 61(1):77-80. doi:10.4103/ psychiatry.Indian JPsychiatry_361_18.

5. AlAbdulwahab SS, Kachanathu SJ, AlMotairi MS. Smartphone use addiction can cause neck disability. Musculoskeletal Care. 2017; 15(1):10-2. doi:10.1002/ msc. 1170.

6. Alzaid AN, Alshadoukhi OA, Alnasyan AY, AlTowairqi MY, Alotaibi TM, Aldossari FH. The prevalence of neck pain and the relationship between prolonged use of electronic devices and neck pain in: a Saudi Arabia, cross-sectional study in Saudi Arabia. Egypt J Hosp Med. 2018; 70(11):1992-9.

7. Bhattacharya S, Bashar MA, Srivastava A, Singh A. Nomophobia: no mobile phone phobia. J Family Med Prim Care. 2019; 8(4):1297-300. doi:10.4103/jfmpc.jfmpc_71_19.

8. Yildirim C, Correia AP. Exploring the dimensions of nomophobia: development and validation of a self-reported questionnaire. Comput Hum Behav. 2015; 49:130-7. doi:10.1016/j.chb.2015.02.059.

9. Vernon H, Moir S. The neck disability index: a study of reliability and validity. J Manipulative Physiol Ther. 1991; 14(7): 409-15.

10. Kumar LR, Chii KD, Way LC, Jetly Y, Rajendaran V. Awareness of mobile phone hazards among university students in a Malaysian Medical School. Health. 2011; 3(07):406-15.

11. Kim HJ, Kim JS. The relationship between smartphone use and subjective musculoskeletal symptoms and university students. J Phys Ther Sci. 2015; 27(3):575-9.

12. Xie Y, Szeto G, Dai J. Prevalence and risk factors associated with musculoskeletal complaints among users of mobile handheld devices: a systematic review. Appl Ergon. 2017; 59(Pt A):132-42.

13. Malik A, Pasha MU, Khalid S, Ahmad A, Gilani SA. Prevalence of neck pain among undergraduate students of Lahore. IJSER. 2017; 8(10):569-76.

14. AlZarea BK, Patil SR. Mobile phone head and neck pain syndrome: proposal of a new entity. OHDM. 2015; 14(5):313-7.

15. Vate-u-Lan P. Text neck epidemic: a growing problem for smartphone users in Thailand. Int J Comput Integ M.2015; 23(3):55.1-55.6.

16. Shah PP, Sheth MS. Correlation of smartphone use addiction with text neck syndrome and SMS thumb in physiotherapy students. Int J Community Med Public Health. 2018; 5(6): 2512-6.