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Text Neck Syndrome and Associated Risk Factors: Prevalence in Medical Students

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ABSTRACT

Text neck depicts repeated stress injury and irritation of neck due to smart phone usage or other handheld devices over a sustained period. **Objective:** To evaluate the prevalence of text neck syndrome in medical students of Abbottabad. **Methods:** Descriptive cross sectional study was conducted at various government and private medical colleges of Abbottabad. A sample size of 300 students was estimated suitable for the study calculated via Epitool, a total 300 students of age group 17-30 years were asked to fill 2 well- standardized questionnaires namely Neck Disability Index (NDI) & Nomophobia Pain Questionnaire (NPO) after seeking informed consent. Convenient sampling technique was opted for data collection. The data was further analysed by using SPSS. **Results:** Among 300 subjects, 4.333% subjects showed mild nomophobia, 54% subjects reported moderate nomophobia, while 41.67% subjects had severe nomophobia. According to the Neck Disability Index (NDI), 6.333% subjects showed no disability, 41.67% subjects showed mild disability, 30% subjects showed moderate disability, 12.67% subjects showed severe disability while 0.333% subjects showed complete disability. There was significant positive correlation observed between NDI and NMP-Q with Pearson correlation coefficient value of 0.88. **Conclusions:** The study revealed a high prevalence of Text Neck Syndrome in medical students, despite of their awareness and education, primarily due to gadget addiction.

INTRODUCTION

In the 21st century, advancement in cell phone technology has brought an ever-increasing number of individuals together day by day utilizing cell phones more. They spend more time utilizing cell phones, tablets, text e-perusing, and utilizing web-based media, which brings about flexion of the neck for a delayed time causing Text neck disorder [1, 2]. If this condition is not treated, it may result in early arthritis, permanent damage, and overuse syndrome [3]. Text neck syndrome is repeated stress injury and irritation coming from excessive watching or messaging closely via

handheld devices over a sustained period [4]. Studies have demonstrated that around 87% of youngsters (14-18 years) in USA and 79% of teens (12-15 years) in UK own and use cell phones. Among grown-ups matured, 18-34 years, 92% and 95% of individual population own a cell phone respectively in USA and Australia [5]. Aside from neck pain, it can also cause shoulder pain, upper back pain, headache and increased thoracic kyphosis. It has been assessed that about 79% of the population in USA, aged between 18 to 44 years utilized their major time on mobiles phones, which



they could have spent, on walking. It may cause repetitive stress injury or overuse with neck in flexion, leading to forward head position to see the mobile or other electronic gadgets [6]. This issue is a serious problem concern with kids, since their heads are bigger as compared to their body size than grown-ups are, and in this way, they are at more risk due to the use of cell phones [7]. Flexing the head forward to use a cell phone directly affects the spine. Shifting the head forward to 15 degrees places around 27 pounds of force on neck. This increases to 40 pounds at 30 degrees, 49 pounds at 45 degrees and 60 pounds at 60 degrees [8]. This may lead to various other problems such as muscle ischaemia, pain and fatigue in head, decrease ROM of cervical spine, early disc degeneration and osteophyte formation, temporo-mandibular joint pain and inflammation, tension headache, increase in dorsal kyphosis (secondary to forward head posture), and decrease in range of motion of shoulder and arm (secondary to excessive phone usage [9, 10]. Due to the rising prevalence of media gadgets, for example, cell phones and PCs, Forward head posture (FHP) is a poor habitual neck posture. Text neck syndrome is becoming increasingly prevalent these days in almost all age groups but mostly in young population and students. With the advancement of technology, hand held devices are eventually causing a major threat to human biomechanics by creating postural misalignment[11-13].

This study is of great significance as it aims to determine the prevalence of impairments leading to text neck syndrome in students of medical colleges of Abbottabad. There is a dire need of creating awareness among people about hazards, which results from poor posture habits of routine work. Adequate measures should be incorporated to educate and treat the youth as early as possible. Therefore, this study was conducted to evaluate the prevalence of Text Neck Syndrome in medical students of Abbottabad.

METHODS

Descriptive cross sectional study was conducted after obtaining the approval from Institutional Review Board of Women Institute of Rehabilitation Sciences Abbottabad (Reference No. 1804, Date of Issuance: 5 Sep, 2022). The time duration of the research was 1 year starting from September 2022 to September 2023. The data was sought from various government and private medical colleges of Abbottabad. A sample size of 300 students was estimated suitable for the study via Epitool. The inclusion criteria were (a) students who use mobile phone for more than 2 hours per day with age group 17-30 years. Subjects were asked to fill 2 well standardized questionnaires namely Neck Disability Index (NDI) & Nomophobia Questionnaire

(NPQ) after seeking informed consent. Students with a history of cervical spine trauma and neurological symptoms were excluded from the study. (8) Convenient sampling technique was opted for data collection. The data was further analysed by using SPSS. The NMP-Q was used to measure nomophobia (No Mobile Phone Phobia; a condition where people have a fear of being detached from mobile phone connection). It comprises of 20 questions that address four 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 1-140. (1-20= No Nomophobia i.e, have no fear of losing a mobile phone and can survive without it and 100-140 =Severe Nomophobia i.e, have fear of losing a mobile phone and use it for prolong time period)[14]. The other questionnaire was Neck Disability Index(NDI) which is a standardized tool designed to access the intensity of neck pain on various daily activities (personal care, work, reading, concentration, sleeping, driving, lifting, recreation activities). It is calculated by using a questionnaire with 10-items, the highest score of each item is five with a total score of 50. The score 0-4 means no Disability 35-50 means complete Disability[15].

RESULTS

Table 1 shows that 34.33% subjects were male and 65.67% subjects were female recruited in the study from age 17-30 years.

Table 1: Gender Description

Gender	Frequency (%)
Male	103 (34.3)
Female	197 (65.6)

Approximately 24.67% subjects were between ages of 17-20 years, 61% subjects lied between ages of 21-25 years while 14.33% subjects were of ages from 26-30 (Table 2).

Table 2: Age in Years

Gender	Percentage
17-20 years	24.67%
21-25 years	61%
26-30 years	14.33%

Analysis revealed that 2% subjects used mobile phone for 2 hours, 13.67% subject used mobile phone for 3-4 hours, 29.67% subjects used mobile phone for 5-6 hours while 54.67% subjects used mobile phone for more than 6 hours per day (Table 3).

Table 3: Hours of Mobile Phone Use per Day

Hours of mobile phone use per day	Frequency (%)
2 hours	6 (2)
3-4 hours	41 (13.6)



5-6 hours	89 (29.6)
More than 6 hours	164 (54.6)

Nomophobia Questionnaire interpretation of participants recruited showed that, none reported absence of nomophobia, 4.33% reported mild nomophobia, and 54% reported moderate nomophobia while 41.6% reported severe nomophobia (Table 4).

Table 4: Nomophobia Questionnaire Total Score

NMP-Q Scoring	Percentage
Mild Nomophobia	4.3%
Moderate Nomophobia	54%
Severe Nomophobia	41.6%

Neck Disability Index interpretation in subjects recruited who used mobile phone for more than 2 hours per day revealed that 6.3% of participants had no disability in the neck, 41.6% reported mild disability, 30% reported moderate disability, and 12.6% reported severe disability while 0.3% reported complete disability of neck (Table 5).

Table 5: Neck Disability Index Total Score

NDI Scoring	Percentage
No Disability	6.3%
Mild Disability	41.6%
Moderate Disability	39%
Severe Disability	12.6%
Complete Disability	0.33%

Pearson's co-relation(r) results between Neck Disability Index (NDI) and Nomophobia Questionnaire (NPQ) total scores are shown below. The table shows p-value less than 0.05 (p-value=0.02) with Pearson correlation $r = 0.88$, which is validating significant association between the two variables with strong positive correlation respectively (Table 6). This implies that subjects with greater degree of neck pain and related disability were found to have a higher tendency of prolonged mobile phone usage; an indication factor for Text Neck Syndrome.

DISCUSSION

The rise in addiction rate and lack of awareness may be a potentially important contributor to Text Neck Syndrome. With a technological advancement, a more dependence has been observed among people on smart phone in daily routine which may, in near future, cause a number of biomechanical changes [16]. The current study was conducted to evaluate the prevalence of text neck syndrome in medical students of Abbottabad. Khan et al., conducted a study in 2020 on medical students of Sharif Medical and Dental College, Lahore. Total 120 participants were recruited and the results showed that among the

subjects, 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 and 42 (35%) had mild neck disability index score due to moderate nomophobia and 36 (72%) students had severe nomophobia. There was a positive correlation between NMP-Q and NDI, having person's correlation coefficient of 0.41 [8]. According to our study 4.33% subjects had mild nomophobia, 54% subjects had moderate nomophobia while 41.67% had severe nomophobia. According to NDI score, 6.33% had no disability, 41.67% had mild disability, 39% had moderate disability and 12.67% had severe disability while 0.333% had complete disability. The NDI and NMP-Q showed significant association with p-value 0.28 and strong positive correlation of 0.88. Ahmed et al., in 2019 conducted a study to determine neck pain and neck disability due to prolong mobile phone usage, in which 46.9% of students of physiotherapy reportedly had neck pain and 42.5% reported neck disability [17]. Comparable results were found in our study were Neck Pain was reported in 44.68% individual (19.33% had mild pain, 9.67% had moderate pain, 5% had fairly severe pain, 5.67% had very severe pain while 5% had worst imaginable pain) while 41.67% students had mild neck disability. Shah and Sheth conducted a study in 2018 on 100 physiotherapy students from Ahmedabad, India and established a significant correlation between the use of mobile phone and NDI [18]. Our study has revealed comparable results as NDI and NMP-Q had a significant correlation between the two with p-value < 0.05 i.e., 0.028. Alsiwed et al., in 2021 conducted a research to determine the prevalence of text neck syndrome and its association with smartphone use among medical students in Jeddah, Saudi Arabia. The results demonstrated that among the participants, 49.5% had mild, 16.1% had moderate, and 2.6% had severe neck disabilities due to smart phone usage with p-value < 0.001 [19]. According to our study, 41.67% had mild disability, 39% had moderate disability and 12.67% had severe disability. The results for mild disability are comparable between both the studies while the results for moderate and severe disability were reported higher in our study. Kamaraj et al., also conducted a study in 2022 on the prevalence of text neck syndrome among under-graduate students of a medical college in Puducherry and found a significant association between gender, medical academic year and duration of electronic gadget usage with significant p values 0.030, 0.001 respectively. Duration of electronic gadget usage and text neck syndrome was associated statistically with significant p value 0.038. Our study has also fetched similar results as NDI and NMP-Q had a significant correlation between the two with p-value < 0.05

i.e., 0.028 [20]. This study has its own limitations as the study was done only in medical colleges of Abbottabad with convenience sampling technique. This study was unable to show temporal cause-effect relation between the variables due to the cross sectional design of the study. In future multiple studies should be carried out in all provinces of Pakistan with a random sampling containing larger sample size. Further researches can be done to include the same number of men and women on a larger scale to obtain a more accurate result of the gender association using objective examination such as measuring Cervico-vertebral Angle (CVA) in clinical setup for proper assessment of forward head posture and text neck syndrome. This study suggests that prolong use of electronic gadgets such as mobile/smart phone may lead to evolution of a number of symptoms in the head and neck region, one of which is Text Neck Syndrome. The study revealed a high prevalence of the cluster of symptoms which, together, may lead to the development of Text Neck Syndrome. Medical students, despite of their awareness and education, are still prone to this condition as gadget addiction is a major hazard of advancement of technology. Appropriate measures should be taken to address and treat this alarming condition.

CONCLUSIONS

The study revealed a high prevalence of Text Neck Syndrome in medical students, despite of their awareness and education, primarily due to gadget addiction leading to poor posture, neck pain and disability.

Authors Contribution

Conceptualization: MB, AK

Methodology: GA, AR

Formal analysis: MWA

Writing-review and editing: AJ, GA, AR, SHA, MAA

All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest

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