Original Article

Prevalence and risk factors of text neck syndrome among medical students

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Abstract:

Background: Mobile phone and other similar gadget use are now part of our life and it has acquired as an essential position in our life. It cannot be avoided. But judicious use is possible only after the severity of the problem is understood and risk factors are identified.

Objective: To study the prevalence and risk factors of text neck syndrome among medical students of MRIMS

Methods: This was a cross sectional study carried out among 306 medical students of one medical college. Data was collected in the pre designed, pre tested, and semi-structured study questionnaire developed based on the extensive review of literature. The questionnaire was given to the medical students and they were asked to submit after half an hour. Attempt was made to ensure that all questions were answered. Chi square test and Students t test was used for statistical analysis.

Results: Almost 85% of students agreed that their virtual life orientation was affected. About 1/3rd complained of stiffness sometimes, 57% of users suffered from headaches sometimes. 1/4th suffered from numbness and weakness sometimes. The prevalence of pain in males was more i.e. 76.4% compared to 37.3% among females. The pain was significantly more in standing position (60%). The pain was found to be significantly more (68.9%) when the gadget was held at abdomen level.

Conclusion: Almost all students used some or the other gadgets. But the use was actually misuse as it has affected majority. Disorientation of virtual life, stiffness, headache, pain was very common. Pain was associated with position and level at which the gadget was held.

Key words: Text neck syndrome, prevalence, risk factors

Introduction:

Nowadays everyone is having mobile phones and majority having smart phones. They are very popular for the obvious reasons. It has been estimated that more than 77% of the global population is having the mobile phones. [1] It is not only a means of communication but also provides lot of entertainment and keeps you connected with the society at large. [2]

Apart from voice calls and video calls, short message service (SMS) is also very popular as shown in a study carried out in USA in 2012. [3] Many studies have attempted to explore the relation between mobile phone use and the presence of pain in the neck and the shoulder. [4] There is prolonged flexion of the muscles of the shoulder, neck and upper extremities while using the mobile phone. This is the reason for pain in the shoulder, neck and upper extremities. [5] The explanation for this is that there is with the prolonged flexion of the neck the static muscular load increases. There is no support to the arms. There is repeated movement of the fingers. This occurs more pronounced when the gadget is held with single hand only. [2, 5-8] The severity of the pain in the neck and shoulder has been found to be directly associated with the number of SMS sent. [9]

It has been suggested that sitting position with the arms supported is the best position for using the mobile phones with straight neck and using both the hands and both the thumbs. But it is also advised that the mobile phone even in this best position should not be used for long periods. Bad position has been found to be associated with the text neck syndrome. [5, 6, 9]

The important factors associated with text neck syndrome are more use of mobile phones, using the mobile phone when not required, position and neck flexion degree and the position of the body. [5, 6, 9]

Present study was carried out to study the prevalence and risk factors of text neck syndrome among medical students of MRIMS

METHODS:

An institution based cross-sectional study was carried out in Malla Reddy Institute of Medical Sciences under the department of Community Medicine from May 2018-July 2018.

During the study period, 306 medical students were interviewed, from 2012-2017 batches.

Based on the review of literature, a semi-structural study questionnaire was prepared. Permission from the Dean, MRIMS, was obtained to carry out the study.

This study was based on self-administered questionnaires. The whole batch of students was contacted on a particular day for data collection.

They were explained the nature of the study.

Study questionnaires were distributed to them. In between, the doubts regarding any questions were clarified. The questionnaires were taken back after a half hour. An attempt was made to see that all the questions were completely responded to.

The data was analyzed using proportions and mean values. Statistical tests like Chi-Square test, and Student's T-test was used.

$P<0.05$ is considered as statistically significant.

RESULTS:

Table 1: Position adopted and holding level while using gadgets

Variable		Number	%
Position adopted	Standing only	5	1.6
	Sitting only	160	52.3
	Lying down	122	39.9
	Mixed	19	6.2
Holding level	Eye level	37	12.1
	Abdominal level	45	14.7
	Chest level	216	70.5

More than half of the students used gadgets in the sitting only position. A lesser majority, of about 40% used it while lying down. The least proportion used it in mixed positions. The majority of students used gadgets at chest level. Mixed was of the lowest type.

Table 2: Agreed that their life is affected by gadget use

Variable		Number	%
Adaptive function is affected	Yes	204	66.6
	No	102	33.4
virtual life orientation is affected	Yes	263	85.9
	No	43	14.1
withdrawal is difficult	Yes	154	50.3
	No	152	49.7
would not be able to live without a smart phone	Yes	162	52.9
	No	144	47.1

2/3rds of students agreed that their adaptive function was affected. Almost 85% of students agree that their virtual life orientation was affected. The test subjects were almost equally split over the opinion that withdrawal is difficult. A slightly larger majority of test subjects said that they would not be able to live without a smartphone; however, it was almost equal.

Table 3: Users suffering from variety of text neck syndrome

Text neck syndrome variety		Number	%
Neck/shoulder pain	Always	12	3.9
	Sometimes	154	50.3
	Never	140	45.8
Neck stiffness	Always	4	1.3
	Sometimes	89	29.1
	Never	213	69.6
Radiating pain	Always	4	1.3
	Sometimes	52	16.9
	Never	250	81.8
Headache	Always	8	2.6
	Sometimes	175	57.1
	Never	123	40.1
Weakness & numbness	Always	4	1.3
	Sometimes	73	23.9
	Never	229	74.8

Almost half the users surveyed are suffering from shoulder or neck pain sometimes. 45% never suffered, while less than 3% suffer always. Majority of users never suffered from neck stiffness. This is almost 70%. About 1/3rd complained of stiffness sometimes. Almost 82% of users never complained of radiating pain. The smallest minority complained of radiating pain sometimes. 57% of users suffered from headaches sometimes, and the next majority, of 40% never suffered from headaches. Smallest minority suffered only about 2% of the time. About 3/4th of the users never complained from weakness or numbness. A little less than 1/4th suffered from numbness and weakness sometimes. The smallest portion of users suffered always.

Table 4: Pain as per the visual analogue scale

Pain as per the visual analogue scale	Number	%
No pain	157	51.3
Sometimes	87	18.6
Mild	32	10.4
Moderate	11	3.5
Severe	19	6.2
Total	306	100

A little more than half of the users complained of no pain. Almost 1/5th complained of pain sometimes in the VAS. Smallest minority experienced moderate pain.

Table 5: Association of various factors with pain

Factors		Pain		Chi square/t value	P value
		Yes	No		
Sex	Male	68 (76.4%)	21 (23.6%)	37.03	< 0.001
	Female	81 (37.3%)	136 (62.7%)		
Position while using the gadget	Standing	3 (60%)	2 (40%)	8.457	0.035955
	Sitting	51 (31.9%)	109 (68.1%)		
	Lying	34 (27.9%)	88 (72.1%)		
	Mixed	11 (57.9%)	8 (42.1%)		
Holding level of the gadget	Eye level	24 (64.9%)	13 (35.1%)	10.8378	0.012636
	Chest level	105 (48.6%)	111 (70.7%)		
	Abdomen level	31 (68.9%)	14 (31.1%)		
	Mixed	2 (25%)	6 (75%)		

The prevalence of pain in males was more i.e. 76.4% compared to 37.3% among females. This difference was found to be statistically significant. The pain was significantly more in standing position (60%) and mixed position (57.9%) compared to other positions. It was significantly less (27.9%) in lying down position. The pain was found to be significantly more (68.9%) when the gadget was held at abdomen level compared to other positions

Table 6: Association between time spent (hours) and pain

Variable	Pain present	Pain absent	T value	P value
Mean time spent (hours)	2.7±0.84	2.6±0.89	1.0096	0.2778

The association between mean time spent on gadget use and pain was not found to be statistically significant.

DISCUSSION:

Almost 85% of students agree that their virtual life orientation was affected. The test subjects were almost equally split over this. A slightly larger majority of test subjects said that they would not be able to live without a smartphone; however, it was almost equal. Almost half the users surveyed are suffering from shoulder or neck pain sometimes. 45% never suffered, while less than 3% suffer always.

Majority of users never suffered from neck stiffness. This is almost 70%. About 1/3rd complained of stiffness sometimes. Almost 82% of users never complained of radiating pain. The smallest minority complained of radiating pain sometimes. 57% of users suffered from headaches sometimes, and the next majority, of 40% never

suffered from headaches. Smallest minority suffered only about 2% of the time.

About 3/4th of the users never complained from weakness or numbness. A little less than 1/4th suffered from numbness and weakness sometimes. The smallest portion of users suffered always. A little more than half of the users complained of no pain. Almost 1/5th complained of pain sometimes in the VAS. Smallest minority experienced moderate pain.

The prevalence of pain in males was more i.e. 76.4% compared to 37.3% among females. This difference was found to be statistically significant. The association between mean time spent on gadget use and pain was not found to be statistically significant. The pain was significantly more in standing position (60%) and mixed position (57.9%) compared to other positions. It was significantly less (27.9%) in lying down position

The pain was found to be significantly more (68.9%) when the gadget was held at abdomen level compared to other positions. The association between mean age and pain was not found to be statistically significant.

Al-Hadidi F et al [10] found that severity of the pain in the neck is directly and significantly associated with age and duration of use of gadgets. Duration of pain was found to be associated with duration of use of gadgets. The authors divided the participants based on the pain score in two groups. 5.8% Subjects in severe pain category went for medical help in emergency department. 44.6% subjects in severe pain category used analgesics compared to only 12.1% in the other category.

Visnjic A et al [11] noted that anxiety was more in younger age group and those who were more involved in sending the SMS and those who used the internet more and more. The odds of stress were 1.28 in those who spent more time on mobile phones. The odds of high stress levels was 1.48 among those who kept mobile phone very near to their body while sleeping.

Gustafsson E et al [12] observed that muscle activity was affected by posture and type of task used in the mobile phones. More muscle activity was seen in females compared to males. They had more abduction of the thumb compared to males.

Gold JE et al [13] found that the prevalence of flexed neck was 91%. The prevalence of non neutral typing side wrist was 90.3%. Males had more prevalence of protracted shoulders compared to females.

Xie Y et al [14] carried out a systematic review on "prevalence and risk factors for musculoskeletal complaints associated with mobile handheld device use". They found that the prevalence ranged from 1-67.8%. The prevalence of the pain in the neck ranged from 17.3% to 67.8%. They also noted that musculoskeletal complaints were related with number of calls made, degree of the flexion of the neck, more use of texting and more tendency of gaming etc. but duration of use was not found to be associated with.

Ahmed S et al [15] found that the prevalence of pain in the neck was 46.9%. The prevalence of pain in the thumb was 29.2%. The authors cautioned that if the attention is not given to the acute problems, then it can lead to chronic disability.

CONCLUSION:

Almost all students used some or the other gadgets. But the use was actually misuse as it has affected majority. Disorientation of virtual life, stiffness, headache, pain was very common. Pain was associated with position and level at which the gadget was held.

There is a need to motivate and counsel the medical students for appropriate use of gadgets.

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