Original Research Article.

Awareness of Text Neck Syndrome Among Clinical Years Medical Students At King Abdulaziz University, Jeddah

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ABSTRACT

Aim: This study aimed to evaluate the level of awareness regarding text neck syndrome among medical students.

Method: This was across- sectional study conducted among 417 clinical years medical students at King Abdulaziz University –Jeddah. During 2021. The data collected using a structured valid questionnaire.

Results: The results revealed that 31.9% population has heard of text neck syndrome where only 7.9% population has knowledge of this syndrome. Only18.5% have knowledge regarding the preventive measures of this syndrome.

Conclusion: The increasing number of smart devices, and their users of these devices cause an increasing in the number of patients of text neck syndrome. Two thirds of the participants didn't hear about text neck syndrome, indicating un adequate level of awareness.

Recommendation: Education messages to medical students and interns about text neck syndrome should cover the main points of knowledge gap. Further nation-wide studies on assessment of medical students' awareness regarding text neck syndrome need to be conducted in larger sample size and regions other than Jeddah, so as to identify the level and distribution of different attitude as well as the areas and topics of attitude deficits.

Keywords: Awareness, Text Neck Syndrome, Medical Students, Smart Devices.

INTRODUCTION

At these days, it is well identified that the use of digital devices in the pattern of modern life is very common and frequent among all age groups.[1-3] Almost everyone owns at least one type of mobile handheld device, due to several reasons; low cost, suitability, Multiple usability choices, attractive applications, and easy access to internet encourage users especially youths to spend a most of the time with their mobile devices.[3-5] American study (2017) reported a significant growth in the using of smartphone from 33% at 2011 to 77% at 2017.[6,7] A recent study represents that 79% of the population between the age (18-44) have their cell phones with them most of the time.[1,8]

Saudi Arabia ranked third in the world in terms of population using smartphones at 72.8%.[9] Nowadays, the electronic devices are considered a cornerstone of university students' life. Similar to Canadian studies, Studies done among university students in Saudi Arabia are representing moderate to high addiction rate of using smartphones.[9-11]

One of the studies among King Saud University students showed that 27.2% of the participants spent more than 8 hours per day using their smart phones.[12] The anatomy of the neck or cervical spine is

complex. It has coordinated network of muscles, bones and nerves, so any Irritation of the cervical spine and its pathway could promote pain and stress.[13] Previous research has established that the prevalence of musculoskeletal problems with mobile phone habit become higher from 17.3% to 67.8% for neck complaints.[3] This problem may be explained by a hypothesis, based on biomechanics that unsuitable neck posture to text and read on electronic devices could be one of the causes for the increasing prevalence of neck pain.[5,14-17]

However, for every 2.5 cm the head moves forward, it gains 0.45 kg in weight. Consequently, the muscles of the upper back and neck suffer more strain to support the position of the head. Also, forward head posture may lead to in the loss of up to 30% of vital lung capacity.[2]

Head down posture when using a smartphone has been measured in experimental studies by calculating the amount of head flexion in the sagittal plane.[18]

In Lee et al. (2015), head flexion angle of the participants was measured in tow position sitting and standing when doing texting, browsing and video watching. Median head flexion angle ranged from 33.3° to 44.8° and head flexion when doing texting was bigger than browsing or video watching with more head flexion during sitting position when compared standing.[19] Another study was conducted by Schabrun et al, head flexion angle was measured when conducting texting and reading tasks while walking on an 8.5-m walkway showed mean head flexion angle ranged from 29.2° to 31.8°, without significant difference between the two tasks.[18,20]

Text neck syndrome is combination musculoskeletal symptoms resulting from frequently using handheld devices specially smartphones for a long time with inappropriate postures. The most frequently reported symptoms were neck pain and soreness in addition to upper back pain, shoulder pain and chronic headache. Excessive utilizing of the cell phone long periods could result in prolonged forward head posture which is harmful and painful.[21-24]

The consequence of text neck syndrome if not detected early and treated will lead to a serious permanent damage such as: flattening of the spinal curve, early arthritis, muscle and nerve damage, disc compression, headache and depression.[13,25] A recent study done in 2018 demonstrated low level of awareness of text neck syndrome among young adultpopulation,35% of the population has heard of text neck syndrome and out of those only 21% know about the preventive measures.[26]

METHODOLOGY

It is a Cross Sectional Analytic Study. The study will include a sample of clinical years medical students at King Abdulaziz University –Jeddah. Clinical years medical students (4th,5th, and 6th) at King Abdulaziz University, Jeddah will include in this study. The study will be carried out using a structured valid questionnaire by published study, Section one consists of information regarding socio-demographic variables of included subjects (age, gender, marital status, academic year). Section two consists of questions to assess the knowledge regarding text neck syndrome. Section 3 regarding the preventive measures of text neck syndrome.

All collected data will be coded and entered into a personal computer. Data entry and statistical analysis will be performed by using the Statistical Program for Social Science-s (SPSS, version 22.0) and appropriate statistical tests will be applied. Descriptive statistics (i.e., frequency, percentage, mean and standard deviation) calculated. Chi-square test and independent t test will be applied for comparison. P-value of <0.05 will considered statistically significant.

Table 1: Demographic data:

Variable	N	%
Age		
18-22 year	206	49.4
23-27 year	208	49.9
28-32 year	3	.7
Gender		
Female	273	65.5
Male	144	34.5
Nationality		
Saudi	400	95.9
Non-Saudi	17	.24.1
Marital status		
Divorced	1	.2
Married	17	4.1
Single	399	95.7
Clinical year		
4th year	109	26.1
5th year	240	57.6
6th year	68	16.3
Variable	**Mean ± SD**	**Range (min-max)**
GPA	4.3± 0.5	(1-5)

Table 2: Using mobile and other devices information

Variable	N	%
Years of using mobile		
3-5 year	27	6.5
6-8 year	107	25.7
8-10 year	141	33.8
More than 10 years	142	34.1
hours spending on mobile phone		
1 hour	12	2.9
2-4 hours	103	24.7
5-6 hours	170	40.8
More than 6 hours	132	31.7
Using other electronic device		
No	17	4.1
Yes	400	95.9

Electronic device#				
Laptop	346		82.9	
Ipad	356		85.4	

Variable	Laptop		Ipad	
	N	%	N	%
The time of using electronic devices				
1 hour	160	46.2	75	21.1
2-4 hours	93	26.9	79	22.2
4-6 hours	54	15.6	105	29.5
More than 6 hours	39	11.3	97	27.2

Variable	Less than 1 hours		1-3 hours		4-6 hours		More than 6 hours	
	N	%	N	%	N	%	N	%
The reasons of mobile phone using and the time of each reason								
Calling	332	79.6	65	15.6	13	3.1	7	1.7
Texting	100	24.0	208	49.9	88	21.1	21	5.0
Reading	133	31.9	176	42.2	83	19.9	25	6.0
Watching	88	21.1	165	39.6	120	28.7	44	10.6
Video gaming	339	81.3	47	11.3	17	4.1	14	3.3

Table 3: Knowledge of text neck syndrome

Variable	N	%
Do you think you should minimize phone usage from health perspective?		
No	58	13.9
Yes	359	86.1
Do you know how to cope up with the symptoms caused by excess usage of phone? #		
Exercises	156	27.9
Rest	358	63.9
Medications	42	7.5
Others	4	0.7
Have you heard about Text Neck syndrome?		
No	284	68.1
Yes, but I don't know about it	100	24.0
Yes, I know about it	33	7.9
If yes, from which sources? #		
Friends	24	11.1
Internet	64	29.6
Medical professionals	42	19.4
Multimedia	40	18.5
Others	46	21.4
What do you think can cause text neck syndrome?		
Excess talking on phone	14	3.4
Excess texting on phone	334	80.1
Reading of textbook	69	16.5
Do you think you can prevent text neck syndrome?		
No	13	3.1
Yes, but I don't know how	327	78.4
Yes, I know how	77	18.5
Are you involved with any interventions for preventing text neck syndrome?		
No	365	87.5
Yes, daily	4	1.0
Yes, sometimes	48	11.5
Did you committed to praying?		
Always	257	61.6
Never	39	9.4
Often	35	8.4
Sometimes	26	6.2
Usually	60	14.4

Multiple response

Table 4: Text neck health hazards and complications

Variable	N	%
Thinking in the ability of the phone to cause the following health hazards		
Pain in neck		
Agree	159	38.1
Disagree	12	2.9
Slightly agree	62	14.9
Strongly agree	168	40.3
Strongly disagree	16	3.8
Pain in arm		
Agree	131	31.4
Disagree	63	15.1
Slightly agree	107	25.7
Strongly agree	97	23.3
Strongly disagree	19	4.6
Pain in shoulder		
Agree	130	31.2
Disagree	71	17.0
Slightly agree	113	27.1
Strongly agree	88	21.1
Strongly disagree	15	3.6
Pain in upper back		
Agree	153	36.7
Disagree	59	14.1
Slightly agree	87	20.9
Strongly agree	105	25.2
Strongly disagree	13	3.1
Headache		
Agree	145	34.8
Disagree	32	7.7
Slightly agree	81	19.4
Strongly agree	141	33.8
Strongly disagree	18	4.3
Change in neck posture		
Agree	151	36.2
Disagree	53	12.7
Slightly agree	52	12.5
Strongly agree	139	33.3
Strongly disagree	22	5.3
Tingling numbness in Hand		
Agree	108	25.9
Disagree	87	20.9
Slightly agree	96	23.0
Strongly agree	101	24.2
Strongly disagree	25	6.0
Awareness of long-term complications		
Prolapsed inter vertebral disc (slipped disc)		
No	255	61.2
Yes	162	38.8
Spondylosis		
No	279	66.9
Yes	138	33.1
Osteoarthritis of cervical spine (degeneration)		
No	276	66.2
Yes	141	33.8

Table 5: The relation between minimizing the use of phone and demographic data:

Variable		Do you think you should minimize phone usage from health perspective?		P value
		No	Yes	
Age	18-22 year	26	180	0.563
		44.8%	50.1%	
	23-27 year	32	176	
		55.2%	49.0%	
	28-32 year	0	3	
		0.0%	.8%	
Gender	Female	32	241	0..053
		55.2%	67.1%	
	Male	26	118	
		44.8%	32.9%	
Nationality	Saudi	57	343	0.815
		98.3%	95.5%	
	Non - Saudi	1	16	
		1.7%	4.5%	
Marital status	Divorced	0	1	0.830
		0.0%	.3%	
	Married	2	15	
		3.4%	4.2%	
	Single	56	343	
		96.6%	95.5%	
clinical years	4th year	9	100	0.115
		15.5%	27.9%	
	5th year	38	202	
		65.5%	56.3%	
	6th year	11	57	
		19.0%	15.9%	
Committed to praying	Always	41	216	0.531
		70.7%	60.2%	
	Never	4	35	
		6.9%	9.7%	
	Often	3	32	
		5.2%	8.9%	
	Sometimes	4	22	
		6.9%	6.1%	
	Usually	6	54	
		10.3%	15.0%	
Change in neck posture	Agree	26	125	0.022*
		44.8%	34.8%	
	Disagree	8	45	
		13.8%	12.5%	
	Slightly agree	11	41	
		19.0%	11.4%	
	Strongly agreed	9	130	
		15.5%	36.2%	
	Strongly disagree	4	18	
		6.9%	5.0%	
Years of using mobile phone	3-5 year	6	21	0.465
		10.3%	5.8%	
	6-8 year	12	95	
		20.7%	26.5%	
	9-10 year	22	119	
		37.9%	33.1%	
	More than 10 years	18	124	
		31.0%	34.5%	
Hours spending on mobile phone	1 hour	4	8	0.383
		6.9%	2.2%	
	2-4 hours	14	89	
		24.1%	24.8%	
	5-6 hours	22	148	
		37.9%	41.2%	
	More than 6 hours	18	114	
		31.0%	31.8%	

Table 6: The relation between knowing how to cope with text neck syndrome symptoms and demographic data:

Variable		knowing how to cope with text neck syndrome symptoms			P value
		Rest	Exercises	Medication	
Age	18-22 year	175	111	16	0.156
		49.2%	53.6%	37.2%	
	23-27 year	178	94	27	
		50.0%	45.4%	62.8%	
	28-32 year	3	2	0	
		.8%	1.0%	0.0%	
Gender	Female	234	132	30	0..328
		65.7%	63.8%	69.8%	
	Male	122	75	13	
		34.3%	36.2%	30.2%	
Nationality	Saudi	342	196	40	0.454
		96.1%	94.7%	93.0%	
	Non - Saudi	14	11	**3**	
		3.9%	5.3%	7.0%	
Marital status	Divorced	1	1	0	0.485
		.3%	.5%	0.0%	
	Married	16	8	1	
		4.5%	3.9%	2.3%	
	Single	339	198	42	
		95.2%	95.7%	97.7%	
clinical years	4th year	94	55	10	0.120
		26.4%	26.6%	23.3%	
	5th year	210	111	28	
		59.0%	53.6%	65.1%	
	6th year	52	41	5	
		14.6%	19.8%	11.6%	
Committed to praying	Always	222	131	31	0.564
		62.4%	63.3%	72.1%	
	Never	34	17	5	
		9.6%	8.2%	11.6%	
	Often	30	22	3	
		8.4%	10.6%	7.0%	
	Sometimes	19	10	1	
		5.3%	4.8%	2.3%	
	Usually	51	27	3	
		14.3%	13.0%	7.0%	
Change in neck posture	Agree	128	70	12	0.025*
		36.0%	33.8%	27.9%	
	Disagree	46	18	6	
		12.9%	8.7%	14.0%	
	Slightly agree	42	27	3	
		11.8%	13.0%	7.0%	
	Strongly agreed	123	82	20	
		34.6%	39.6%	46.5%	
	Strongly disagree	17	10	2	
		4.8%	4.8%	4.7%	
Years of using mobile phone	3-5 year	22	15	6	0.304
		6.2%	7.2%	14.0%	
	6-8 year	91	48	11	
		25.6%	23.2%	25.6%	
	9-10 year	121	80	13	
		34.0%	38.6%	30.2%	
	More than 10 years	122	64	13	
		34.3%	30.9%	30.2%	
Hours spending on mobile phone	1 hour	11	7	2	0.532
		3.1%	3.4%	4.7%	
	2-4 hours	82	61	14	
		23.0%	29.5%	32.6%	
	5-6 hours	146	80	15	
		41.0%	38.6%	34.9%	
	More than 6 hours	117	59	12	
		32.9%	28.5%	27.9%	

Table 7: The relation between hearing about text neck syndrome and demographic data:

Variable		Hearing about text neck syndrome			P value
		No	Yes, but I don't know about it	Yes, I know about it	
Age	18-22 year	145	46	15	0.816
		51.1%	46.0%	45.5%	
	23-27 year	137	53	18	
		48.2%	53.0%	54.5%	
	28-32 year	2	1	0	
		.7%	1.0%	0.0%	
Gender	Female	194	62	17	0.119
		68.3%	62.0%	51.5%	
	Male	90	38	16	
		31.7%	38.0%	48.5%	
Nationality	Saudi	272	96	32	0.544
		95.8%	96.0%	97.0%	
	Non - Saudi	12	4	1	
		4.2%	4.0%	3.0%	
Marital status	Divorced	1	0	0	0.448
		.4%	0.0%	0.0%	
	Married	13	4	0	
		4.6%	4.0%	0.0%	
	Single	270	96	33	
		95.1%	96.0%	100.0%	
clinical years	4th year	72	28	9	0.570
		25.4%	28.0%	27.3%	
	5th year	170	51	19	
		59.9%	51.0%	57.6%	
	6th year	42	21	5	
		14.8%	21.0%	15.2%	
Committed to praying	Always	177	61	19	0.873
		62.3%	61.0%	57.6%	
	Never	28	9	2	
		9.9%	9.0%	6.1%	
	Often	24	8	3	
		8.5%	8.0%	9.1%	
	Sometimes	19	4	3	
		6.7%	4.0%	9.1%	
	Usually	36	18	6	
		12.7%	18.0%	18.2%	
Change in neck posture	Agree	103	35	13	0.829
		36.3%	35.0%	39.4%	
	Disagree	41	8	4	
		14.4%	8.0%	12.1%	
	Slightly agree	35	13	4	
		12.3%	13.0%	12.1%	
	Strongly agreed	91	37	11	
		32.0%	37.0%	33.3%	
	Strongly disagree	14	7	1	
		4.9%	7.0%	3.0%	
Years of using mobile phone	3-5 year	21	5	1	0.672
		7.4%	5.0%	3.0%	
	6-8 year	69	28	10	
		24.3%	28.0%	30.3%	
	9-10 year	94	33	14	
		33.1%	33.0%	42.4%	
	More than 10 years	100	34	8	
		35.2%	34.0%	24.2%	
Hours spending on mobile phone	1 hour	10	2	0	0.072
		3.5%	2.0%	0.0%	
	2-4 hours	63	33	7	
		22.2%	33.0%	21.2%	
	5-6 hours	119	32	19	
		41.9%	32.0%	57.6%	
	More than 6 hours	92	33	7	
		32.4%	33.0%	21.2%	

RESULTS

Out of 417 clinical years medical students, 273 (65.5%) were female and 144 (35.5%) were male, 400 (95.9%) were Saudi, 399 (95.7%) were single, 240 (57.6%) were from 5th year. The mean score of GPA was 4.3± 0.5. (Table 1)

Third of the participants 141 (33.8%) used mobile for 8-10 years and the other third 142 (34.1%) used it more than 10 years, 170 (40.8%) used t for 5-6 hours and 132 (31.7%) used it more than 6 hours. The majority 400 (95.9%) used other electronic devices, where 346 (82.9%) used laptop and 356 (85.4%) used I pad. Almost the half 160 (46.3%) used laptop for 1 hour and the fourth 93 (269%) used it for 2-4 hours, while 105 (29.5%) used I pad for 5-6 house and 97 (27.2%) for more than 6 hours. Calling 332 (79.6%) and video gaming 339 (81.3%) were the reasons for using mobile for less than 1 hour and, texting 208 (49.9%) and reading 176 (42.2%) were the reasons for using mobile for1-3 hours, while watching was the reason of using mobile for 4-6 hours among 120 (28.7%) and more than 10 hours among 44 (10.6%). (Table 2)

Most of the participants reported that they should minimize phone usage from health perspective. Almost two thirds 358 (63.9%) reported rest as the way to cope up, and 156 (27.9%) reported exercises. Two thirds of the participants 284 (68.1%) didn't hear about text neck syndrome. Most of the participants 334 (80.1%) reported "Excess texting on phone" as the cause of the syndrome, 327 (78.4%) think that the syndrome can be prevented but they don't know how, 365 (87.6%) didn't involve with any interventions for preventing text neck syndrome, 257 (61.6%) were committed to praying. (Table 3)

The main health hazards reported by the participants were headache (78.6%), followed by pain in neck (78.4%), then change in neck posture (69.5%), pain in upper back (61.9%), pain in arm (54.7%), pain in shoulder (52.3%), and lastly, tingling numbness in Hand (50.1%). Third of the participants reported the following as the main long-term complications; Prolapsed inter vertebral disc (slipped disc) 162 (38.8%), Osteoarthritis of cervical spine (degeneration) 141 (33.8%), and Spondylosis 138 (33.1%). (Table 4) The result revealed a significant association between minimizing the use of phone and change in neck posture (p=0.022). On the other hand, there was no significant association between minimizing the use of phone and other demographic data (age, gender, nationality, marital status, clinical year, committed to praying, years of using mobile, and hours of using mobile). (Table 5) The result revealed a significant association between knowing how to cope with text neck syndrome symptoms and change in neck posture (p=0.025). On the other hand, there was no significant association between knowing how to cope with text neck syndrome symptoms and other demographic data (age, gender, nationality, marital status, clinical year, committed to praying, years of using mobile, and hours of using mobile). (Table 6) There was no significant association between hearing about text neck syndrome and all demographic data (age, gender, nationality, marital status, clinical year, committed to praying, change in neck posture, years of using mobile, and hours of using mobile). (Table 7)

DISCUSSION

The growing rate of smart phone addiction and lack of awareness have the major impact on developing TNS. Where, dependence on smart phones increases due to the development in technology. This mean that addiction to smart phones is likely to grow in the future and become one of the most significant addiction kinds. This can be credited to a technology attraction and eagerness to have smart phones as a sign of maintaining with the modern world.[27,28] The present study aimed to evaluate the level of awareness regarding text neck syndrome among medical students.

Results of this study showed that only 24% have heard about TNS but don't know about it whereas 7.9% have heard about TNS and know about it, and most of them 68.1% didn't hear about it. This result showed the low levels knowledge about text neck syndrome and indicate the high level of ignorance regarding this syndrome. Similar results were reported in India study, where, 27% have heard about TNS but don't know about it where as 8% have heard about TNS and know about it, and 65% haven't heard about TNS.[26] Also, in Peshawar study, 119 (39.8) Physical Therapy students were not aware of TNS, 101(33.8%) heard about it but don't know what it is and 79 (26.4%) students were aware of TNS.[27] While, in Majmaah study, 140 (61.1 %) of them had good knowledge, 77 (33.6 %) of them had moderate knowledge, while only 12 (5.2 %) of them had poor knowledge.[29] This differences in the percentage could be due to several factors such as socio-economic factors, sample size, and studies nature.

Out of 417 students, 80.1% stated that TNS is caused due to excess Texting on phone whereas 3.4% think it's because of talking on phone and 16.5% think it's because of reading of textbooks. In India study, 81% population answered that TNS is caused due to excess Texting on phone whereas 13% think it's because of talking on phone and 6% think it's because of reading of textbooks.[26] In the other India study, 85% of people said that it is caused mainly due to over usage of smartphones for a long time.[30] In the current study almost half of the participants use their mobile phone for 5-6 hours in a day (40.8%) and 31.7% use their phone for more than 6 hours in a day. In India study, most of the subjects use their mobile phone for 2-4 hours in a day (42%) and 27% use their phone for 4-6 hours in a day.[26] Also, in Majmaah study, more than third (36.7 %) were using the smart devices for 3 -6 hours per day, around one-quarter (30.1%) students were using them for more than 6 hours per day, and (30.1 %) were using them for less than 3 hours per day.[29] The relation between the time spending in the phone and TNS occur was confirmed in other study from Korea, where, a positive relationship between hours of mobile phone use and subjective musculoskeletal problems was demonstrated, the time of using smart phone was about 2 hours among (66.96 %) of the participants. when smart phones are continually used without any rest, and a poor posture is sustained over a long period of time, musculoskeletal pain can happen.[31]

Most of the participants stated that the most common health hazard were mainly headache and pain in the neck. In India study, 38.9% reported neck pain as the main health hazard of excess usage of phone.[26] In Majmaah study, the most common signs were neck pain and discomfort (49.8 %), and headache (23.1%)".[29] In Aljouf University study, 212 respondents show that the most commonly reported complaint was neck pain due to smart devices and 251 of them had a headache.[32] Also, in the study done in Lahore, on prevalence of neck pain amongst under graduate students found out that 56.7% of the participants suffered from neck pain.[33] Similar result was reported in China

(40.0%), Thailand (62.3), and Las Vegas (84.6%) studies.[34-36] All the studies confirmed the relation between using mobile and neck pain and neck problems. The difference in rates could be due to the variety of socio-economic factors and geographic areas.

In the current study, most of the participants 63.9% reported rest as a method to deal with the symptoms, 279% reported exercises, and only 7.5% reported medications. While, in Majmaah study, massage and relaxation were the most reported (38.4 %) relieving way when having pain after using the smart devices, (27.9 %) correcting the head position, (7.9 %) placing warm water and going to the hospital (n = 10; 4.4 %).[29] The findings of the current study indicate the importance of increasing the knowledge regarding text neck syndrome as it is a cumulative stress injury and can be prevented through education.

Time constraints, the researcher finished the data collection within one month only and the nature of the study.

CONCLUSION

Based on the findings of the researcher study, the following can be concluded: Technology development, the increasing number of smart devices, and the growing number of users of these devices cause an increasing in the number of patients of text neck syndrome. Most of the participants reported that they should minimize phone usage from health perspective. Two thirds of the participants didn't hear about text neck syndrome, indicating un adequate level of awareness Excess texting on phone was the main cause of text neck syndrome. Less than fifth know about the preventive measures.

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