

ORIGINAL ARTICLE

Text neck syndrome prevalence and knowledge among the Saudi population in Jazan, Kingdom of Saudi Arabia: a cross-sectional study

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ABSTRACT

Background: Text neck syndrome, known as repetitive stress pain, is an injury that results from extreme watching or texting on handheld devices for an extended period of time. The use of mobile phones is increasing rapidly, and people spend long hours on them that also leads to other musculoskeletal problems. This study aimed to identify the prevalence and knowledge of residents toward Text neck syndrome in Jazan, Saudi Arabia.

Methods: This is a cross-sectional online survey among the Saudi population in Jazan, Kingdom of Saudi Arabia. The questionnaire contained socio-demographic information and questions to assess the awareness and prevalence of Text neck syndrome.

Results: A total of 385 Jazan residents responded to this questionnaire. Among them, 50.1% were in the age group between 21 and 30 years, 61% used smartphones for more than 5 hours per day, 90.1% were aware of the harms of using smartphones, while only 14.8% had previously heard about Text neck syndrome. Among the participants, 47.2% agreed that it was multi-factorial. Although 1.6% of the participants were diagnosed with this syndrome, 80.5% of the responders had more than one symptom using smartphones. About 93% of the responders believed that they should reduce using smartphones because of their symptoms. The average knowledge score was 6.4 ± 3.2 , out of 15 points. Factors significantly correlated to high knowledge levels included age between 31 and 40 years (p -value = 0.023), higher educational level (p -value < 0.001), living in cities (p -value = 0.043), hearing previously about Text neck syndromes (p -value = 0.002), and being diagnosed with this syndrome (p -value = 0.013).

Conclusion: Text neck syndrome is underdiagnosed in Jazan, Saudi Arabia. This can be due to the inadequate level of knowledge of the public about this syndrome.

Keywords: Text neck syndrome, smartphones, neck pain, harms.

Introduction

A smartphone is the most popular device among the general population nowadays to share information, use the internet, watch videos, use social media, gaming, and many other daily activities [1]. A study reported that 79% of the population in the age group of 18-44 years had used their cell phones excessively, except for 2 hours, which they spend on walking [2]. The term “Text neck syndrome” was first invented by Dr. Dean L. Fishman as an overuse injury. The injury may be due to the inadequate position because, during the use of mobile phones, the neck goes into forwarding flexion, and the normal curvature of the cervical spine is flattened and stretched on the neck musculature [2]. The poor posture

of the head and neck has been correlated with chronic musculoskeletal pain of the cervical spine and upper back [3,4], tightness, and spasm in the upper extremity muscles [2].

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The anatomy of the cervical spine is complex. It is composed of muscles, bones, nerves, and spinal cord. The irritation of the nerves can cause neck and shoulder pain [5]. In the 21st century, the advancement in mobile technology has brought more and more people together daily using smartphones. They spend more time using smartphones, tablets, text e-reading, and using social media, which results in flexion of the neck for a prolonged time causing Text neck syndrome [4-7]. It is an increasing health concern, and the young generation may be influenced more. It occurs due to extreme and frequent stress to the flexed neck. It is responsible for neck and shoulder pain and headache [8]. If this condition is not treated, it may result in early arthritis, permanent damage, and overuse syndrome [9-11]. Currently, little research is available on Text neck syndrome, and there is a need to evaluate this condition and its association with different factors in the young population. This study aimed to assess the frequency and prevalence of Text neck syndrome among the Saudi population in Jazan.

Subjects and Methods

It was a cross-sectional study. Online questionnaire was distributed in September 2020, among a random sample of 796,029 male and female Saudi population, within the age range of 15-60 years [12]. The sample size was calculated using www.surveysystem.com, with confidence level of 95% and confidence interval of 5. A total of 385 people participated in the survey from the Jazan region, Saudi Arabia. The questionnaire contained questions regarding socio-demographic data to assess the awareness and prevalence of Text neck syndrome [10,12,13].

Statistical Package for the Social Science program, version 22.0 (IBM Corp, Armonk, NY) was used for data analysis and to carry out all statistical calculations. Descriptive statistics were carried out. A *p*-value of 0.05 or less was considered as significant.

Results

This quantitative study included 385 responders from Jazan, Saudi Arabia. All descriptive and comparative analyses are shown below.

Among the 385 subjects, 55.1% were males, where 50.1% of the responders were in the age group between 21 and 30 years. As for marital status, 55.3% were single. Also, 73.2% had a university degree, while 53.8% lived in a city, as shown in Table 1.

Responders were asked about their frequency of using smartphones per day. Among the participants, 61% used smartphones for more than 5 hours per day, as shown in Figure 1.

Additionally, the responders were asked if they knew about the harms of using smartphones. A total of 90.1% of the participants were aware of these harms, as shown in Figure 2.

Table 1. Demographics of patients.

	Count	Percent
Gender		
Female	173	44.9
Male	212	55.1
Age category		
15-20 years old	63	16.4
21-30 years old	193	50.1
31-40 years old	83	21.6
41-60 years old	46	12
Marital status		
Single	213	55.3
Married	157	40.8
Divorced	11	2.9
Widow	4	1.0
Educational level		
Primary school	10	2.6
Intermediate school	10	2.6
Secondary school	73	19.0
University degree	282	73.2
Postgraduate degree	10	2.6
Place of residence		
Mountain	7	1.8
Village	171	44.4
City	207	53.8

Moreover, participants were asked about the symptoms that result from using smartphones in the neck, arm, shoulder, upper back, and headache. More than half of the responders either agreed or strongly agreed that using smartphones can cause neck pain or stiffness, arm pain or numbness, headache, and upper back and shoulder pain, as shown in Table 2.

Participants were asked about their symptoms that they experience with smartphones. The most prevalent symptom was headache (5.5%), followed by neck pain (5.2%), while 80.5% of the responders had more than one symptom using smartphones, as shown in Figure 3.

Participants were asked about their knowledge and their diagnosis of Text neck syndrome. It has been shown that 1.6% of participants were diagnosed with this condition, while 55.1% had neck pain related to smartphones. Additionally, 14.8% have heard before about this syndrome. About one-third of the responders (36.4%) suffered from mild pain, and 40% had mild headaches. Additionally, 93% of the responders believed that they should reduce the use of smartphones because of their symptoms, as shown in Table 4.

Additionally, responders were asked about the most common reasons for Text neck syndrome. A total of 47.2% of the responders agreed that it is multi-factorial,

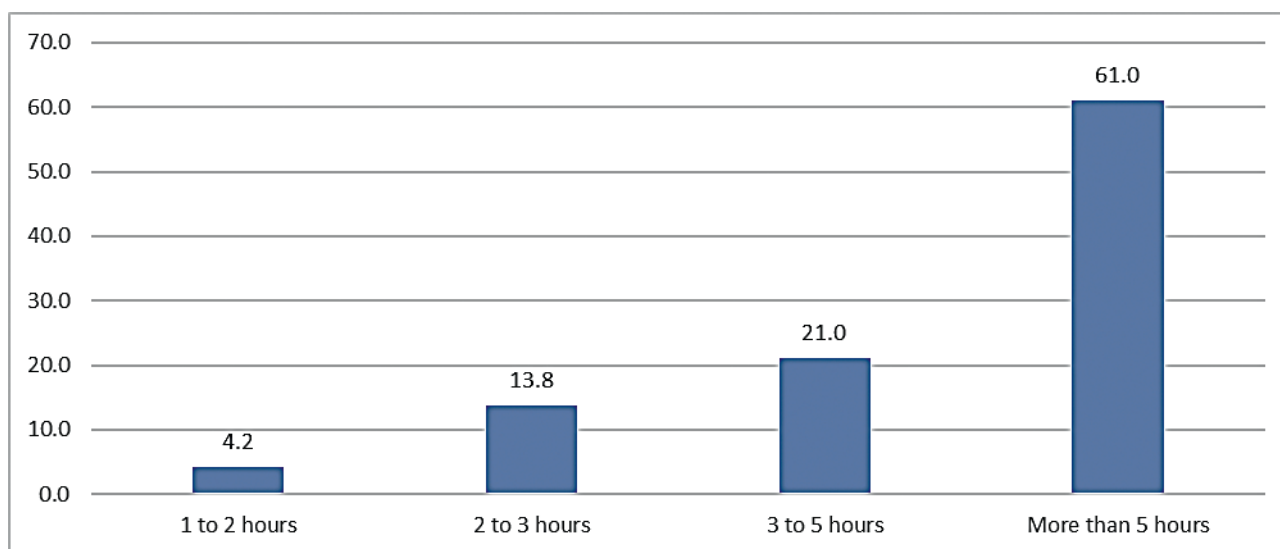


Figure 1. Frequency of using smartphones.

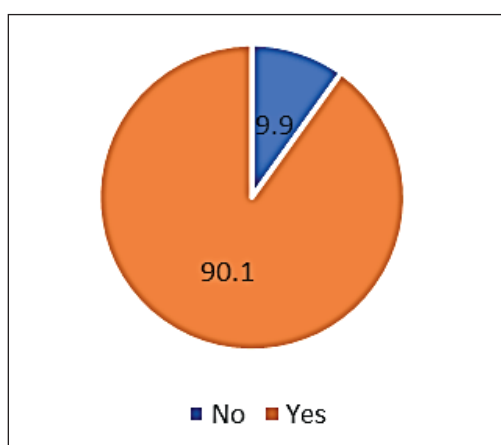


Figure 2. Awareness of the harms of smartphones.

while 30.9% attributed it to using smartphones for a long time, as shown in Figure 4.

Furthermore, responders were asked a set of questions to evaluate their knowledge about Text neck syndrome. It has been shown that 65.2% of the responders knew that Text neck syndrome is preventable, while 56.4% believed that this syndrome could be accompanied by pain in the neck, shoulders, and chronic headache. Additionally, 42.3% believed that it occurs most commonly in young adults, and 38.2% thought that this syndrome could have more than one complication, as shown in Table 5.

The responses of participants were evaluated to calculate a total score of their knowledge about Text neck syndrome. Each question, evaluating knowledge, was rated with one point for the correct answer, and the total score was calculated for each responder. The average score was 6.4 ± 3.2 , with a minimum score of zero and a maximum score of 15.

The mean score was then compared over different variables using a one-way analysis of variance, with a level of significance at $p < 0.05$, to explore the factors correlated to high levels of knowledge about Text neck syndrome.

It has been shown that the age group between 31 and 40 years (p -value = 0.023), higher educational level (p -value < 0.001), living in cities (p -value = 0.043), hearing previously about Text neck syndromes (p -value = 0.002), and being diagnosed with this syndrome (p -value = 0.013) were all factors contributing to higher levels of knowledge about Text neck syndrome, as shown in Table 6.

Discussion

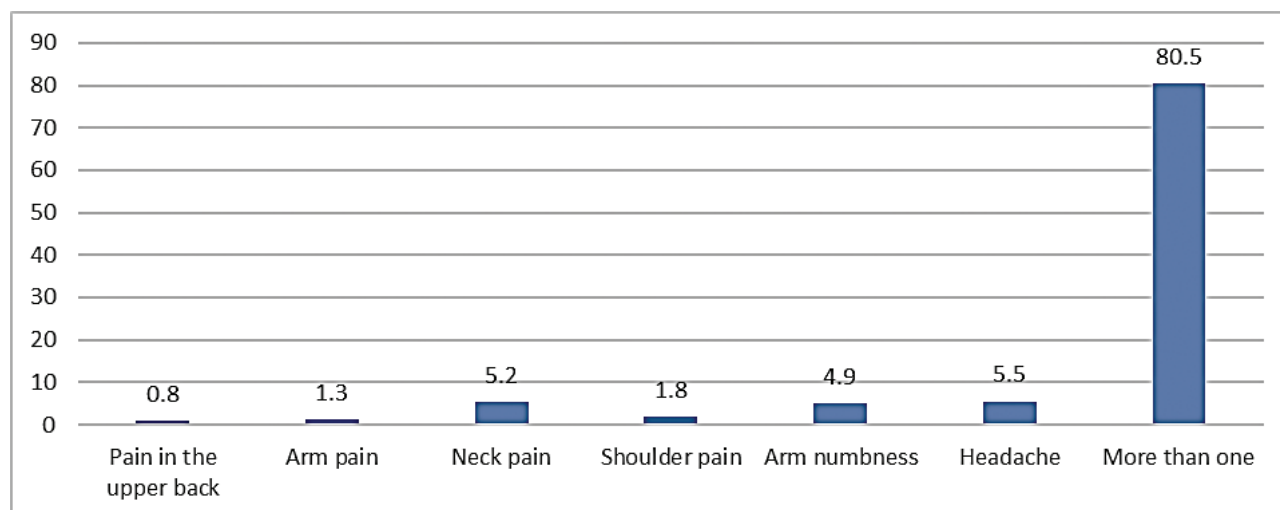
In recent decades, advances in digital technology have increased the use of smartphones for multiple reasons, including work, entertainment, and socialization [14]. However, this technology is also associated with the evolution of new medical syndromes due to the prolonged use of electronic devices [15]. One of these syndromes is Text neck syndrome. Although a significant correlation is proved between this syndrome and electronic devices, knowledge of users about this syndrome is still controversial [16].

The present study examined the prevalence and knowledge about Text neck syndrome among the public living in Jazan city, Saudi Arabia. It has been illustrated that the prevalence of Text neck syndrome in the city was only 1.6%, although 80.5% of the responders had the symptoms of the syndrome. Additionally, 93% of the responders believed that they should reduce the use of smartphones because of their symptoms.

Regarding knowledge of this syndrome, 90.1% of the participants were aware of the harms of using smartphones and 14.8% had heard about this syndrome

Table 2. Symptoms of using smartphones.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Neck pain	52.5	34	7	4.2	2.3
Arm pain	38.7	31.9	15.8	10.4	3.1
Shoulder pain	36.4	32.5	16.1	11.2	3.9
Upper back pain	36.1	32.7	17.7	9.6	3.9
Headache	53.2	27.5	11.2	6	2.1
Neck stiffness	38.7	27.5	19.5	10.9	3.4
Arm numbness	45.5	26.5	16.1	8.6	3.4

**Figure 3.** Responders' symptoms related to smartphones.

before. Moreover, the age group between 31 and 40 years (p -value = 0.023), higher educational level (p -value < 0.001), living in cities (p -value = 0.043), hearing previously about Text neck syndromes (p -value = 0.002), and being diagnosed with this syndrome (p -value = 0.013) were all factors contributing to higher levels of knowledge about Text neck syndrome. However, it should be noted that the mean score evaluating the knowledge of residents was below average level (6.4 ± 3.2 out of 15).

Knowledge about Text neck syndrome has been examined in different settings. Akshaya et al. [13] investigated the knowledge, attitude, and perception of young adults in the South Indian population toward Text neck syndrome through a cross-sectional study. Akshaya et al. [13] demonstrated that the awareness of participants toward the syndrome was inappropriate. Also, Akshaya et al. [13] recommended that this particular age group should be educated about the healthy use of smartphones.

Similarly, the present study demonstrated a below-average level of knowledge among the Saudi community in Jazan city toward Text neck syndrome, with noticeably higher knowledge among adults, higher education levels, residents living in cities, and those diagnosed with Text

neck syndrome. Additionally, 93% of the responders were willing to change their use of smartphones because of their symptoms.

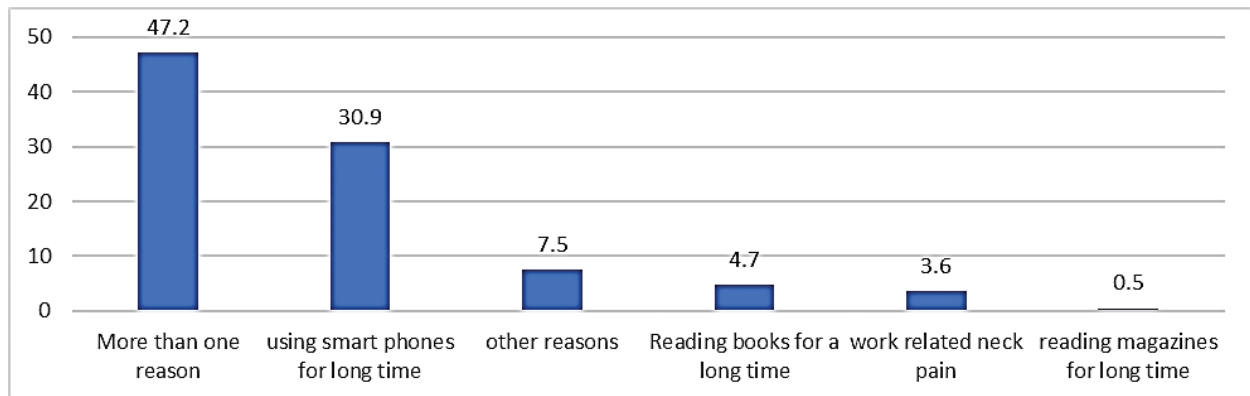
Furthermore, Ahmed et al. [17] carried out a cross-sectional study to evaluate the prevalence of Text neck syndrome and SMS thumb among university students who used smartphones. Ahmed et al. [17] demonstrated that 46.9% of the students had neck pain, and 42.5% reported having mild to severe stiffness in their neck. The present study also supported these findings, where the most prevalent age group among responders was young adults. Also, 80.5% had more than one symptom from using smartphones.

Additionally, Chaudary et al. [18] included 500 participants in a survey study to describe Text neck syndrome. The study included 58.4% females, and the mean age of the participants was 23 ± 2 years. The prevalence of Text neck syndrome was 43.6%. There was no disability in 58.4% of participants, mild disability in 30% of participants, and moderate disability in 11.6% of participants.

In contrast to Chaudary et al. [18], the present study demonstrated only a 1.6% prevalence of diagnosed Text neck syndrome, representing an underdiagnosis of the

Table 4. Prevalence and symptoms of Text neck syndrome.

		Count	Percent
Do you have neck pain when you use mobile phones?	Yes	212	55.1
	No	173	44.9
Have you heard previously about Text neck syndrome	Yes	57	14.8
	No	278	72.2
	I do not know	50	13.0
What is your source of information	Family and friends	109	28.3
	Internet	232	60.3
	Doctors	14	3.6
	Medical journals	19	4.9
	Posters in clinics and hospitals	11	2.9
Have you been diagnosed with Text neck syndrome?	Yes	6	1.6
	No	379	98.4
The severity of your symptoms	Extremely severe pain with neck movement	6	1.6
	Severe pain with neck movements	2	0.5
	Moderate pain with neck movement	25	6.5
	Mild pain with neck movements	104	27.0
	Mild pain	140	36.4
	No pain	108	28.1
Do you have a headache when you use your mobile phone for a long time?	All the time	12	3.1
	Mild	154	40.0
	Severe	15	3.9
	Moderate	77	20.0
	No headache	127	33.0
Do you think you have to reduce your use of smartphones for health reasons?	Yes	358	93.0
	No	27	7.0

**Figure 4.** Causes of Text neck syndrome.

disease. Furthermore, the present study also evaluated the knowledge of participants about the syndrome, which was not evaluated by Chaudary et al. [18].

Finally, the present study has some limitations; the study was carried out in only one city of Saudi Arabia, limiting its external validation. Additionally, the responses to

the questions of this survey depended mainly on the subjective opinions of the responders, which would affect the reliability of the outcomes. This is considered the first study in Jazan, Saudi Arabia, to evaluate the prevalence and knowledge about Text neck syndrome among people living in Jazan city, Saudi Arabia.

Table 5. Knowledge about Text neck syndrome.

		Count	Percent
Is Text neck syndrome preventable?	Yes	251	65.2
	No	7	1.8
	I do not know	127	33.0
What are the symptoms of Text neck syndrome?	Pain between shoulders	31	8.1
	Neck pain	99	25.7
	Chronic headache	12	3.1
	All of them	217	56.4
	None of them	26	6.8
Who suffers more of Text neck syndrome?	Children	82	21.3
	Young adults	163	42.3
	Adults	100	26.0
	Elderly	40	10.4
What are the complications of Text neck syndrome	Spondylitis	109	28.3
	Herniated disc (PIVD)	51	13.2
	Osteoporosis of the cervical spine	78	20.3
	More than one	147	38.2

Table 6. Factors correlated to knowledge about Text neck syndrome.

		Mean	SD	p-value
Age group	15-20 years old	6.71	3.51	0.023*
	21-30 years old	6.40	3.27	
	31-40 years old	7.87	3.48	
	41-60 years old	5.58	3.07	
Gender	Male	6.26	3.23	0.398
	Female	6.55	3.36	
Marital status	Single	6.32	3.23	0.5
	Married	6.36	3.32	
	Divorced	7.73	3.69	
	Widow	7.50	4.12	
Educational level	Primary school	5.80	2.82	<0.001*
	Intermediate school	5.40	3.47	
	Secondary school	6.67	3.46	
	University degree	7.26	3.24	
	Postgraduate degree	8.80	3.26	
Residency	Mountain	4.86	3.67	0.043*
	Village	5.10	3.17	
	city	6.69	3.35	
Do you know the harm of using a mobile phone?	Yes	6.33	3.31	0.230
	No	7.00	3.08	
Have you previously heard about Text neck syndrome?	Yes	7.87	3.56	0.002*
	No	6.47	3.22	
	I do not know	5.54	3.31	
Have you been diagnosed with Text neck syndrome	Yes	6.00	3.69	0.013*
	No	5.41	3.28	

*p-value at the level of significance < 0.05.

Conclusion

Text neck syndrome appears to be underdiagnosed in Jazan city, Saudi Arabia, with more than three-quarters of the responders having symptoms of this syndrome. This gap in prevalence could be attributed to the lack of knowledge

of public members and healthcare professionals of the symptoms and diagnosis of Text neck syndrome. Accordingly, health decision-makers in Jazan city should consider these findings and organize workshops in hospitals for physicians and general practitioners to improve their awareness about the diagnosis of the

disease. Meanwhile, awareness campaigns should be conducted in public areas, especially where young adults are present, to improve their knowledge about the harms of using smartphones for a long time, particularly Text neck syndrome. Similar studies should be carried out in other areas of Saudi Arabia to identify the prevalence of this syndrome on a national level.

Conflict of interest

The authors declare that there is no conflict of interest regarding the publication of this article.

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Consent for publication

Informed consent was obtained from all the participants.

Ethical approval

Ethical approval was obtained from the Committee for Scientific Research Ethics - Jazan University, Kingdom of Saudi Arabia, reference no. REC42/1/002, 19 August, 2020.

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