

Role of Texting on Mobile Phones for Musculoskeletal Disorders in the Neck and Upper Extremities among Saudi Population

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ABSTRACT

Introduction: All over the world, people today use texting apps like WhatsApp, Telegram. from the time they get up until the time they go to sleep According to a survey conducted by the General Authority of Statistics of Saudi Arabia in 2018, 73.28% of the total Saudi population use mobiles or smart phone, whereas 91% of Saudis whose ages range between (12 and 65 years) use it. In the USA, a study on university students found that text messaging emerged as the most frequently used means of communication. This paper investigates whether texting on mobile phones is responsible for musculoskeletal disorders in the neck and upper extremities among Saudi Arabian population. The results show mostly short-term effects, and to a lesser extent, long-term effects of texting on musculoskeletal disorders in neck and upper extremities.

Methods: In this cross - sectional study data was collected by the purposely constructed questionnaire. Questionnaire composed of the demographic items and items related to the usage of mobile and pain Questionnaire was constructed after the series of discussions between the panel of experts this panel composed of from subject specialist, researcher, language expert. Cronbach alpha of the questionnaire was calculated.

Results: The mean (SD) of age was 35.8 (12.5) , 25.5% were health workers while 74.5% non-health professionals 69.2% have college level education, 20.7% have high school level, 6.3, 2.7 and 1.1% have post graduate, intermediate and primary level respectively. 83.1% were living in city while 16.9% were living in village. 55.8% were married while 40.0 were single, 68.2% were females while rest were males. 43.8% having monthly income less than 3000 SAR, Gender produces significant impact on pain.

Conclusion: Excess usage of mobile and texting creates the pain, so health professionals should guide the public regarding this issue, while institutes also organised workshops and awareness activities to reduce this problem.

Keywords: Mobile, Text, Pain, Neck , Shoulder.

INTRODUCTION

All over the world, people today use texting apps like WhatsApp, Telegram, etc. from the moment they wake up till they sleep. According to a survey conducted by the General Authority of Statistics of Saudi Arabia in 2018, 73.28% of the total Saudi population use mobiles or smart phone, whereas 91% of Saudis whose ages range between (12 and 65 years) use it. In the USA, a study on university students found that text messaging emerged as the most frequently used means of communication¹. The physical exposure when text messaging on a smart phone consists of low physical load, repetitive thumb movements and neck flexion (Gustafsson et al 2010, 2011). Multiple case studies have found out a correlation between musculoskeletal disorders (MSDs) in the forearm and thumb, like tendonitis, tenosynovitis, and first carpometacarpal (CMC) arthritis and excessive texting^{2,3}.

A more recent study has indicated that smart phone users have a higher prevalence of musculoskeletal pain in their upper back, neck, and wrists/hands. This is more prevalent among those who are addicted to smart phone; it is measured by duration of smart phone use on a normal day, duration of owning smart phone , and musculoskeletal pain prevalence in the neck, wrists or hands, shoulders, and upper back⁴.

Moreover, experimental and observational studies have reiterated how texting poses potential physical risks. In an experimental study among young adults, differences are found in posture, typing style, and muscle activity while texting on the phone between those with and without musculoskeletal symptoms in neck and upper extremities⁵. Among those who had symptoms, almost everyone had the neck flexed forward and did not support their arms. Static muscle load is created in the neck and shoulders as a result of this.

Another study observing posture and using style of phones by college students found that almost all subjects had a flexed neck and a non-neutral typing-side wrist; almost half of them typed with both thumbs, and one third typed with one thumb (Gold et al 2012). It is already known that neck flexion and highly repetitive movements are potential risk factors for musculoskeletal disorders^{6,7}.

In Saudi Arabian context, one study found that university students here are at risk of addiction to smart phone which causes negative effects on their mental and physical health as well as on their academic performance⁸.

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Overall, the findings suggest that texting may be linked to musculoskeletal diseases of the neck and upper extremity. Because of the rising multi-functionality of smart phone, the amount of time spent messaging on a mobile phone with its small keypad is anticipated to increase. Young adults are an important population to examine since they are a group that uses mobile phones heavily in general, and texting in particular. Because stress and lifestyle factors like physical exercise can cause or contribute to MSDs, they must be taken into account. The goal of this study is to find out how common smart phone addiction is among adult Saudis and how it relates to musculoskeletal diseases of the neck and upper extremities.

METHODS

The data for this cross-sectional study was acquired using a specially designed questionnaire. Questionnaire with demographic questions as well as questions about mobile phone use and discomfort. The questionnaire was created following a series of conversations between a panel of experts made up of professionals from various fields. Specialist, researcher, language expert. Cronbach alpha of the questionnaire was calculated. The study was conducted in the Aseer region of Saudi Arabia.

Data was collected, coded, and input into the SPSS ver.20 program for descriptive statistics analysis (mean standard deviation, frequencies, and percentages were obtained), and to determine the significance of differences. t test and chi-square test was used at 5% level of significance. Data was collected from general public after their written consent through electronic version of the questionnaire. Ethical approval was obtained from King Khalid University, Saudi Arabia. The study duration was from January-2021 to April-2021.

RESULTS

Cronbach alpha of the questionnaire was 0.78. The mean (SD) of age was 35.8(12.5), 25.5% were health workers while 74.5% non-health professionals. 69.2% have college level education, 20.7% have high school level, 6.3, 2.7 and 1.1% have post graduate, intermediate and primary level respectively. 83.1% were living in city while 16.9% were living in village. 55.8% were married while 40.0 were single, 68.2% were females while rest were males. 43.8% having monthly income less than 3000 SAR. (Table 1), Table 2 depicted that, 44.3% changed their frequent position of using mobile after pain, 26.3% decreases the use of mobile after pain, 70.5% experienced neck and shoulder pains before. 68% believed that this pain is due to the usage of mobile. 33.3% used analgesia to reduce pain, As per Table 3, 66.9% used mobile while they were sitting, 28.2% using mobile in supine position. As per Table 4, 33.8% have pain in the night, 14.2% have pain in the morning. As per Table 5, 19.9% have severity score between 1-2 , 20.5 % have 2-3, Table 6 20.8 have 3-4, 9%, 4-5, 6-7, 2.5%, 7-8, 1.4%, 8-925.8%. As per Figure 1 rest is the most common analgesic agent.

Table 1: Demographics

Age:	Frequency	Percent
>20 (1)	1329	19.0
21-30	3083	44.1
31-40	1136	16.3
Above 40	1438	20.6
Total	6986	100.0
Career:	Frequency	Percent

Healthcare worker	1781	25.5
Non Healthcare worker	5205	74.5
Total	6986	100.0
Educational level:	Frequency	Percent
Primary school	79	1.1
Intermediate school	192	2.7
High school	1443	20.7
College	4835	69.2
Post graduate	437	6.3
Total	6986	100.0
Living in:	Frequency	Percent
City	5803	83.1
Village	1183	16.9
Total	6986	100.0
Living in Which Region:	Frequency	Percent
Central	1125	16.1
Eastern	1422	20.4
Western	1841	26.4
Southern	1396	20.0
Northern	1202	17.2
Total	6986	100.0
Marital status:	Frequency	Percent
Single	3895	55.8
Married	2796	40.0
Divorced	206	2.9
Widow	89	1.3
Total	6986	100.0
Monthly income:	Frequency	Percent
in SAR		
Less than 3000	3061	43.8
3000-5000	739	10.6
5000-10000	1145	16.4
10000-15000	1000	14.3
above 15000	1041	14.9
Total	6986	100.0
Sex:	Frequency	Percent
Male	2224	31.8
Female	4762	68.2
Total	6986	100.0

Table 2: Items related to mobile and driving

Did You Change your most frequent position while using your mobile Device after experiencing this pain		
	Frequency	Percent
Yes	3098	44.3
No	1997	28.6
I do not have pain	1891	27.1
Total	6986	100.0
Did You Decrease the use of your mobile Device after experiencing this pain		
Yes	1839	26.3

No	3179	45.5
I do not have pain	1968	28.2
Total	6986	100.0
Did you experience neck or shoulder pain before?		
Yes	4927	70.5
No	2059	29.5
Total	6986	100.0
Do you think that this pain was related to the use of your mobile device?		
Yes	4758	68.0
No	2228	32.0
Total	6986	100.0
Have you ever seek medical care due to this pain?		
Yes, I've visited the Clinic	1059	15.2
Yes, I've visited the Emergency Department	221	3.2
No	5706	81.7
Total	6986	100.0
Have you ever used analgesia to decrease this pain?		
	Frequency	Percent
Yes	2325	33.3
No	4661	66.7
Total	6986	100.0

Table 3: Frequent position when you use your mobile device

What is your most frequent position when you use your mobile device	Frequency	Percent
Sitting position	4676	66.9
Standing position	173	2.5
Walking position	165	2.4
Supine position	1972	28.2
Total	6986	100.0

Table 4: Timing of Pain

What is the most common timing of the pain	Frequency	Percent
In the morning	993	14.2
At night	2325	33.3
In the Afternoon	440	6.3
Throughout the day	1191	17.0
I Do not have pain	2037	29.2
Total	6986	100.0

Table 5: Pain's Severity on Scale

What is the pain's severity on scale of 10? Knowing that 10 means the strongest pain you have ever experienced	Frequency	Percent
1-2	1392	19.9
2-3	1433	20.5
3-4	1453	20.8
4-5	632	9.0
6-7	175	2.5
7-8	98	1.4
8-9	1803	25.8
Total	6986	100.0

Table 6: Medical Care Due To This Pain

Gender	Have you ever seek medical care due to this pain?			Total	
	Yes	No	No pain		
sex:	Male	407	88	1729	2224
	Female	652	133	3977	4762
Total	1059	221	5706	6986	

P=0.0001

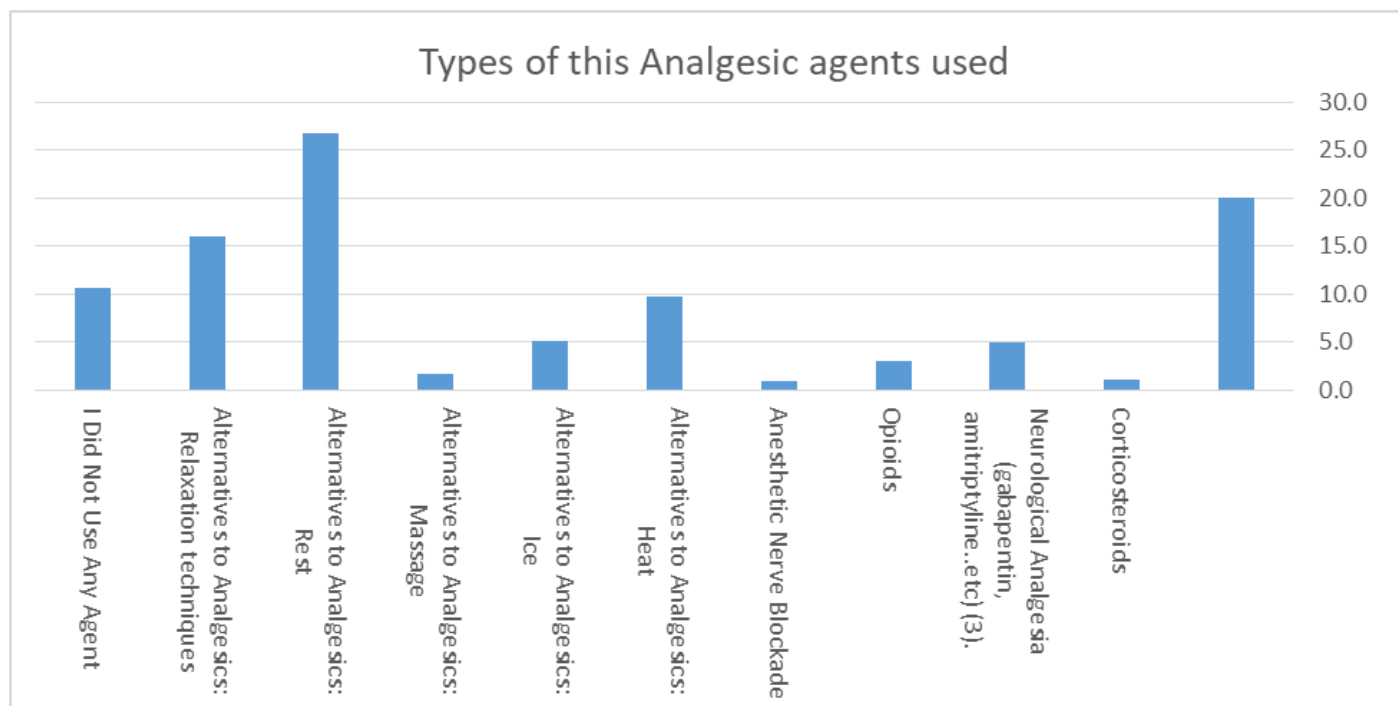


Figure 1: Types of this Analgesic agents used

DISCUSSION

The present study demonstrates the correlation between text messaging on smart phone and reporting pain in musculoskeletal disorders in the neck and upper extremities among Saudi population. Prospective associations were found in the one-year analyses, with new cases of reported numbness/tingling in the hand/fingers, and with maintained pain in the neck/upper back. The study's findings imply that text messaging is largely linked to short-term effects, and to a lesser extent, long-term effects. Text messaging has been linked to pain in the neck, upper back, shoulder, and upper extremities in both men and women. It is quite common to sit with a flexed neck while texting and an experimental study established that the head flexion angle was larger when text messaging on smart phones compared with web browsing and video watching 10 Continuous neck flexion may be a risk factor for developing pain in the neck, shoulder, and upper extremities. It has already been discovered that texting while sitting with the head inclined forward is more common among people with musculoskeletal complaints¹¹.

What makes the present study strong are that it is population-based, involves a comparatively large study group, and has a longitudinal design. Its limitations include the use of self-reported data for both smart phone use and its results, which may imply response-style biases. Moreover, recall difficulties may lead to misclassifications. Another limitation is that the study does not have statistics on how they use their mobile phones for other activities, e.g. gaming or watching videos. It is reasonable, however, to assume that excessive gaming on the phone would have the same negative effects as texting¹².

In our study we have observed significant gender differences regarding which are match able with Xiaofei et al stated that males have more neck and shoulder pains as compare to females¹³⁻¹⁵.

The study's limitation is that we only have data on leisure-time physical activity, rather of all possible physical activity, such as working in a physically demanding job. And, while we've corrected for occupation, i.e., whether the person worked or studied, we have no idea what kind of labor they did.

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Competing Interest: None.

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