

# Musculoskeletal Disorders and Association with Social Media Use Among University Students at the Quarantine Time Of COVID-19 Outbreak

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## Abstract

**Introduction:** COVID-19 period was characterized by lockdown and quarantine, the aim of this cross-sectional analytical study is to investigate the effect of COVID-19 quarantine on social media use, and its association with musculoskeletal disorders (MSD) among university students.

**Methods:** A cross sectional study was conducted among Al-Quds University students. 317 students (average age of 20.34 years) participated in this study. A self-designed questionnaire was used to collect data which was sent to students on social media using a simple random method in almost all academic year phases.

**Results:** There was a statically significant increase in the following variables during quarantine compared to before ( $P < 0.05$ ), like hours of using computers or laptop per day (1.93 to 5.37 hours) and in time using Social Media, (2.59 hours to 3.15), the same in the time spent using Smartphones from (3.76 to 7.36 hours). In terms of gender, there was no difference between male and female in time spent on social media for Leisure, Communication, and education ( $P > 0.05$ ). There was no statistically significant difference in time spent on exercise before and during quarantine with average time before the quarantine of 0.80 hours to 0.7 hours during the quarantine ( $P > 0.05$ ). There was a statistically significant increase of severity of Musculoskeletal disorders (MSD) as measured by a scale of 0-10 during the quarantine ( $P < 0.05$ ) in terms of severity of headache (2 to 2, 78), neck pain (2.06 to 2.80), and back pain (2.17 to 3). This increase in the three dominant MSD was positively correlated with the hours of use of laptops, computers, and mobile phones, for communication and education ( $P < 0.05$ ). Statistically significant negative correlation was found in between night sleeping hours and severity of MSD reported by students ( $P < 0.05$ ). Age was correlated with less use of social media for leisure and with more exercise ( $P < 0.05$ ).

**Conclusion:** Quarantine increased the time of use of social media, and in turn increases the prevalence and severity of MSD among university students.

**Keywords:** Musculoskeletal Problems; Social Media; Computer; Laptop; Mobile Phone; Coronavirus (COVID-19); Quarantine; University Students

## Introduction

On January 30<sup>th</sup>, 2020 Coronavirus (COVID-19) was announced as a global pandemic by the World Health Organization (WHO) (Chen *et al*, 2020) [1]. Coronavirus has imposed quarantine on over 3 billion people around the world, as a major strategy to decrease the incidence of Coronavirus infection among the majority of countries. This quarantine is associated with changes on the daily activity routine among all sectors of population in general, where less physical activity has become a habit, and more use of social media for different purposes has exceeded all previous limits, since the majority of people are under home quarantine and out of work, or working from home, for those whom their professions allowed that, the same with students, mainly university students who continued their education remotely online.

Over the last years, there was almost a 25% increase of the number of people suffering from musculoskeletal disorders (MSD) around the world (Borhany, 2019) [2]. MSD could be defined as “conditions comprise more than 150 diagnoses that affect the locomotor system; that is, muscles, bones, joints and associated tissues such as tendons and ligaments, as listed in the International Classification of Diseases” (WHO, 2019) [3]. Musculoskeletal conditions are usually characterized by pain, mobility restrictions, lack of skills and decreased functional ability. It also reduces people’s ability to work and cooperate in social roles [3].

Most people with MSD suffer back, neck, and shoulder pain (Obembe *et al*. 2013) [4]. In addition, musculoskeletal pain is a certain health issue which is not limited to adults only but also in the young people [4].

Social media is an “internet-based technology that facilitates the sharing of ideas, thoughts, and information through the building of virtual networks and communities, it gives users quick electronic communication of content, which includes personal information, documents, videos, and photos” (Dollarhide, 2019) [5]. According to Global Web Index (Worldwide), there are more than 3.5 billion social media users around the world. In the last 10 years, social media applications and their usage have been increasing quickly among students, and the effect on student’s academic performance varies (Alahmar, 2016) [6] (Kulidtod, Pasagui, 2017) [7]. In addition, it’s found that males are more addicted to social media usage than females (Lokithasan *et al.* 2019) [8]. Nowadays, social media has become increasingly associated with daily living (Scott *et al.*, 2017) [9]. Since social media represents a source of information, leisure time, and communication method, people are expected to have more time spent on social media. The extent of increase of social media use in quarantine time has not been studied before and there is a lack of information about impact of this increase on musculoskeletal problems among the population.

This research is aiming to investigate the extent of increase in the use of social media and its association with spectrum of musculoskeletal complications prevalence, among population of students at Al-Quds University in Palestine, as on top of what other people are doing on social media, they are also doing their online education during this quarantine time.

## Methodology

### Sampling and Population

317 students were selected using a convenient sampling method for this study as it was the easiest and fastest in terms of application, since we had very limited time. Inclusion criteria included university students, males and females, aging between (18-25) years old, and using social media. Students who were not registered at this semester, or not affiliated to Al-Quds university, or not using laptop, computer or mobile were excluded from this study.

### Design

A cross sectional descriptive analytical study was adopted, as it was the best design to answer the research questions within a short period of time. And at the same time, it represents the best design to answer the questions within the era of the quarantine of COVID-19.

### Assessment and Tools

Data collection sheet was developed by the researchers to investigate the research questions and it included 28 questions, which contained personal variables, the general demographics including age, gender, the faculty, and the academic year, and it also contained the duration of social media use including leisure, learning, and communication, duration of electronic devices use including laptop, computer, and mobile phone, duration of sleeping at day and night, , and time spent in exercise before and after quarantine. In addition, students were asked to rate their pain on a scale from 0 to 10, where zero represents “no pain at all” and 10 represents “the worst pain they have ever experienced”, whether it was headache, neck, or back pain. Finally, they were asked to rate themselves in terms of proper posture while using social media.

The data collection took 3 days between April 10th, and April 13th, 2020, during which 317 questionnaires were filled using Google forms as a web-based questionnaire. Questionnaires advertised using different social media tools.

### Ethical Approval

An informed consent was obtained in the first page of the study’s questionnaire, and it was written in Arabic, which is the official language in Palestine, it explained the aims of the study. Privacy was guaranteed. Participants were able to withdraw from the questionnaire at any point. No names were obtained through the questionnaire, and all collected data were used for scientific and research purposes.

## Results

Of the three hundred and seventeen participants, 259 (81.7%) were females, and 58 (18.3%) were males, and the mean age was 20.34 years (SD=2.54). The majority of participants were from the Faculty of Health Professions 90 (28.4%), and 89(28.1%) were in their first year, 67(21.1 %) in second year, 69(21.8%) in third year, and 92(29.0%) in fourth year or more (Table 1).

	Frequency	Percentage %
<b>Gender</b>		
Male	58	18.3
Female	259	81.7
<b>Faculty</b>		
Health Professions	90	28.4
Others	64	20.2

	Frequency	Percentage %
Arts	49	15.5
Engineering	24	7.6
Medicine	19	6.0
Dentistry	17	5.4
Science and Technology	15	4.7
Law	13	4.1
Pharmacy	12	3.8
Public Health	5	1.6
Academic Year		
First year	89	28.1
Second year	67	21.1
Third year	69	21.8
Fourth or more	92	29.0

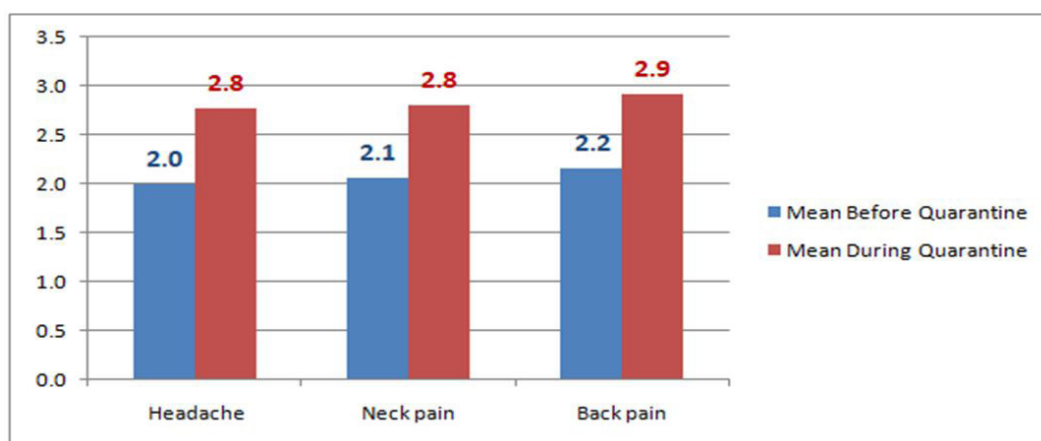
**Table 1:** General Demographic of participants (N=317)

As shown in Table 2, there was a statistically significant difference in mean time using social media for leisure, education, and communication per day before and during the Quarantine ( $p \leq 0.05$ ), a statistically significant difference in mean time using computer, laptop or mobile phone per day before and during the quarantine ( $p \leq 0.05$ ). And there was also no significant difference in average time spent in exercise per day before and during the quarantine ( $p > 0.05$ ) (Table 2).

	Mean Before Quarantine	Mean During Quarantine	Mean Difference	Std. Deviation Before Quarantine	Std. Deviation During Quarantine	P-Value
Social media use per day for leisure	4.3312	7.8076	3.48	2.82911	5.18507	.000
Social media use per day for education	1.9825	6.0003	4.02	2.53459	3.88552	.000
Social media use per day for communication	2.7870	4.2497	1.46	3.25891	4.57042	.000
Computer or laptop use per day	1.9314	5.4183	3.49	2.66689	4.31399	.000
Mobile phone use per day	5.5907	9.3019	3.71	4.16335	5.21880	.000
Sleeping hours at night	7.2104	6.7079	-0.50	1.51003	3.06907	.006
Sleeping hours at day	1.0185	2.2717	1.25	2.13734	2.82680	.000
Time spent in exercise per day	.8011	.6987	-0.10	1.39322	1.24385	.230

**Table 2:** Results of Paired sample T Test for social media and electronic devices use in before and during quarantine

Regarding the prevalence of musculoskeletal disorders (MSD), there was a statistically significant difference of prevalence and complaints of musculoskeletal disorders between before and during quarantine, as measured by Wilcoxon test ( $p \leq 0.05$ ) (Figure 1).



**Figure 1:** Musculoskeletal Disorders Before and During Quarantine

In terms of gender differences, Figure 2 shows that there was no significant difference between males and females, in terms of use of social media for Leisure, Communication, and education as measured by Independent Sample T Test. (Figure 2)

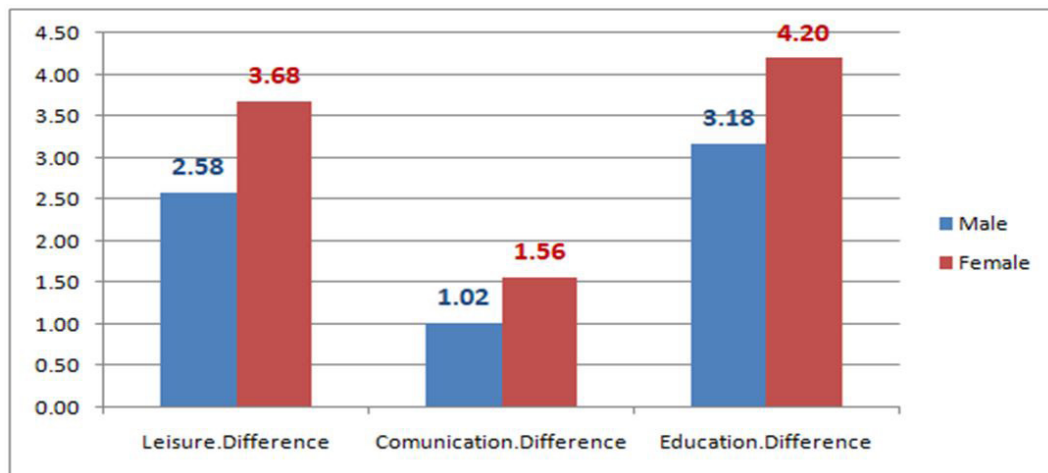


Figure 2: Social media use for Leisure, Communication, and Education

Correlation results as shown in Table 3, shows that there was a statistically significant correlation in between severity of MSD pain and times of use of social media for communication, and education. Negative correlation was found between sleeping hours at the day and the sleeping hours at night ( $r = 0.407, P = 0.000$ ).

	Age	During Quarantine, Headache	During Quarantine, Neck pain	During Quarantine, Back pain
Age	1.000	-0.081	-0.091	-0.077
		0.151	0.105	0.170
During Quarantine, Social media use per day for leisure	-0.090	0.110	0.079	0.065
	0.110	0.051	0.159	0.248
During Quarantine, Social media use per day for education	-.125*	.268**	.297**	.161**
	0.027	0.000	0.000	0.004
During Quarantine, Social media use per day for communication	-0.054	.160**	.210**	.164**
	0.340	0.004	0.000	0.004
During Quarantine, Computer or laptop use per day	-0.040	.263**	.284**	.195**
	0.476	0.000	0.000	0.001
During Quarantine, Mobile phone use per day	-.147**	.162**	.139*	.145**
	0.009	0.004	0.014	0.010
During Quarantine, Sleeping hours at night	0.021	-.174**	-.137*	-.135*
	0.716	0.002	0.015	0.016
During Quarantine, Sleeping hours at day	0.079	.154**	0.095	0.108
	0.162	0.006	0.093	0.055
During Quarantine, Time spent in exercise per day	.116*	-0.094	-0.105	-.162**
	0.040	0.096	0.062	0.004

Table 3: Correlation between Age, social media use, electronic devices use, sleeping hours, and time spent in exercise and severity of MSD during quarantine

In terms of taking care for a proper posture, it seems that the vast majority is not considering preventive measures in posture when using smart phones nor computers for social media in communication, education or leisure, as only 12.9% of smart phone users and 15.7% of computer users consider proper posture recommendations while using social media. This consideration was negatively associated with the severity of MSD (Table 4) while using social media in both laptops and smart phones.

	Headache	Neck pain	Back pain
Proper posture while using Computer or Laptop	-.117*	-.168**	-.261**
	.038	.003	.000
Proper posture while using Mobile phone	-.067	-.143*	-.163**
	.233	.011	.004

\*\* . Correlation is significant at the 0.01 level (2-tailed)

\* . Correlation is significant at the 0.05 level (2-tailed)

**Table 4:** Correlation between severity of MSD and extent of care for postural standards while using social media in quarantine

## Discussion

There was a statistically significant increase during quarantine compared to before in using computers, laptops per day (1.93 to 5.37 hours) and in time using Social Media, (2.59 hours to 3.15), the same in the time spent using smart phones from (3.76 to 7.36 hours). This result was expected as first of all the university went into online education during the quarantine, so there was more connection for the students with the smart phones, and computers (both desktops and laptops). On the other hand with the huge amount of knowledge and update about the COVID-19 on social media, it replaced the need for following up of news on other communication tools like TV, as it covers life podcast, and a variety of formal statements and personal experiences, which made people get more addicted to the use of social media, in a time that everyone is feeding his stress through the continuous follow up of the updates of this pandemic that changed the lives of people everywhere in the globe . This confirms the results found by (Cellini *et al.* 2020) [10] in Italy, which investigated that during lock down people increased the time of using social media.

In terms of gender, there was no difference in between male and female in terms of time spent on social media for leisure, communication, and education ( $P > 0.05$ ). As we think that both males and females are equally affected by the consequences of the pandemic, which makes them in need for continuous update and also for the use of social media for communication and education, and this also fits with (Jackson *et al.*, 2001) [11] study which indicated that both males and females use social media equally often.

There was no statistically significant difference in time spent on exercise before and during quarantine with average time before the quarantine of 0.80 hours to 0.7 hours during the quarantine ( $P > 0.05$ ). This could be justified by the fact that sport is a habit and an attitude, that people complains about lack of time for justifying the fact that they do not perform exercise, this result confirms the statements that suggests that exercise is life style rather than luxury of time.

There was a statistically significant increase of severity of Musculoskeletal disorders (MSD) as measured by a scale of 0-10 after the quarantine ( $P < 0.05$ ) in terms of severity of headache, neck, and back pain. As we think that the excessive time of use of social media is leading to more hours stress on posture, specially that we notice that the vast majority did not care of considering postural recommendations while using social media, which was apparent by the statistically significant correlation between the extent of this consideration and the severity of the MSD, those results support the finding of (Rimba *et al.* 2019) [12] that improper work posture is related to MSD. At the same time this severity was also affected in a statically positive correlation with the length of use of social media, as in terms of epidemiology, this means the extent of exposure that will lead for further severity of complains, this finding was previously supported by (Woo, 2016) [13].

Statistically significant negative correlation was found in between night sleeping hours and severity of MSD reported by students, as in literature night sleeping had been recommended by (Topping, 2019) [14] as it has relation with stress (Almojali *et al.* 2017) [15] that itself may affect MSD (Tantawy, 2017) [16].

## Limitations

One of the main limitations of this study that it was conducted in certain period of time “COVID 19 Quarantine” the study would have been more informative if it was performed again after the quarantine where a comparison could have been very valuable.

## Conclusion

Quarantine increased the time of use of social media, which in turn increased the prevalence and severity of MSD among university students. Further research is recommended in the field of proper measures to prevent MSD complications and a consequence of long use of social media, both age and gender had no effect on the association between use of social media and the severity of MSD.

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