

# Musculoskeletal Disorders of Social Media Users among University Students in Dhaka City: A Comparison between Public and Private Universities

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## ABSTRACT

**Background:** Intensive use of social media impair musculoskeletal health of the users. A cross-sectional analytical study was conducted to identify the musculoskeletal disorders of social media users among students of both public and private universities in Dhaka city.

**Materials and methods:** A pretested, semi structured questionnaire and randomized sampling technique was used to collect the information. Study period was of three years duration from 1<sup>st</sup> January 2017 to 31<sup>st</sup> December 2019 and the number of calculated sample size was 726.

**Results:** Study revealed that mean age of the respondents of both public and private universities was 21.55±1.93 years and 21.14±1.62 years. Study revealed that 16.80%, 15.20%, 14.30%, 1.90%, 9.10%, 8.80%, 5.80%, 4.70%, 6.90%, 1.40%, 3.00%, and 2.80% of the students of public university complained musculoskeletal pain of posterior aspect of head, neck, shoulder, elbow, wrist & hand, thumb, upper back, chest, lower back, hip & thigh, knee and ankle & foot respectively, and that of the students of private university 30.30%, 27.30%, 20.40%, 3.00%, 14.60%, 18.50%, 6.60%, 8.00%, 10.20%, 2.80%, 3.90% and 5.20% complained musculoskeletal pain of posterior aspect of head, neck, shoulder, elbow, wrist & hand, thumb, upper back, chest, lower back, hip & thigh, knee and ankle & foot respectively. Over use of social media influenced significantly on musculoskeletal disorders among students of both public (Odds = 2.119) and private (Odds=1.968) universities.

**Conclusion:** Over use of social media was associated with different types of musculoskeletal disorders among the students of both public and private universities in Dhaka city.

**Key words:** Social Media; Visual Analogue Scale; Musculoskeletal disorders.

## Introduction

Social media is a part of the internet based activity that has created greater opportunity for people around the world to communicate. It has both positive and negative consequences. The positive effects of social media are making friends, reducing communication barriers creating business opportunities and getting educational materials. Negative aspects are media addiction, isolation, affecting productivity, cyber-bullying, poor concentration and health risk of both adolescents and adults. Excessive use of social media is harmful for both physical and mental health of the user, musculoskeletal disorders is one of them. The prevalence of social media addiction is high among students<sup>1</sup>. Student users suffer from different types of disorders including back pain, shoulder pain, holding urine, defecation, postponing meal, skipping meal, using social networking sites until midnight<sup>2</sup>. Students experience severe musculoskeletal problems due to excessive use of social networking sites<sup>3</sup>.

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University students are isolated from their family and society when Facebook activity is done. Excessive Facebook use had both psychological and musculoskeletal health effects of the students<sup>4</sup>. Malaysian medical students isolated from family members and community due to Facebook use<sup>5</sup>. Association between texting messages with pain of hand, fingers, neck, upper back were found<sup>6</sup>. Pain of thumb and forearm associated with burning, numbness and tingling around the thinner aspect of hand, and stiffness of wrist and hand are common complaints. Extensive texting of message were responsible for tendinosis of extensor pollicis longus and myofascial pain syndrome affecting 1<sup>st</sup> interossei, thinner and extensor group of muscles<sup>7</sup>.

The most painful body regions were shoulders, neck and back<sup>8</sup>. However, upper back, neck, trunk, leg and postural abnormality were found among the users<sup>9</sup>. Of the respondents 46% complained headache, 41.3% complained neck pain, 16% suffered wrist pain and 44.7% suffered overall musculoskeletal disorders<sup>10</sup>. 49.9% of the respondents complained upper limb musculoskeletal symptoms, particularly neck and shoulder region. Of them 61.8% of the respondents notice that their discomfort were related to electronic device<sup>11</sup>. High school female students had higher risk to develop musculoskeletal pain<sup>12</sup>. It was found that 55.19% of the digital device users suffered neck pain, 49.55% suffered lower back problem, 31.16% suffered upper back pain, 31.10% suffered shoulder and 12.53% knee pain<sup>13</sup>.

Problematic networking sites use is an emerging public health problem that severely disrupts people's lives<sup>14</sup>. The long term use of devices would be the risk factors of musculoskeletal disorders, early neck pain, neck problems and poor work habits<sup>15</sup>. The amount, features, tasks, and positions of the mobile touch screen devices are associated with musculoskeletal symptoms and musculoskeletal exposure<sup>16</sup>. Overuse of digital devices enlarge the median nerve, causes pain in the thumb and disorders of hand function<sup>17</sup>. Excessive use of networking sites in children causes musculoskeletal pain, ocular symptoms, migraine or headache and neurological symptoms<sup>18</sup>.

Muscle activity, joint movement in the neck, wrist and finger were associated with smart phone use<sup>19</sup>. The most painful body area of the users were neck and shoulder region<sup>20</sup>. Physiotherapy students using digital devices experienced neck pain (24%) upper back pain (16%) shoulder pain (16%) elbow pain (16%) wrist pain (20%) finger pain (14%) thumb (16%) and lower limbs pain (10%)<sup>21</sup>.

### Materials and methods

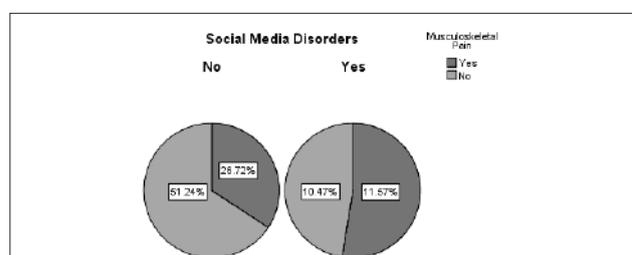
A cross-sectional analytical study was conducted to explore the musculoskeletal disorders of social media users. The study subject was students of both public and private universities in Dhaka. Sample size was 726. A pretested, semi structured questionnaire was used to collect the data on the basis of objective and variables. The study periods were three years duration from 1<sup>st</sup> January 2017 to 31<sup>st</sup> December 2019. This study sites were Dhaka University and Daffodil International University. Data were collected from Hazi Muhammad Mohsin Hall, Fazlul Huq Hall, Jagannath Hall and Ruquyyah Hall from Dhaka University. Students of Daffodil International University from different faculty including Faculty of Health Science, Faculty of Business Studies, Faculty of Social Science, Faculty of Humanities, Faculty of Engineering participated to the study. Data were collected from students of 2<sup>nd</sup> year/2<sup>nd</sup> semester and above. After collection of data, it was checked and rechecked with competently. The data were analyzed by using Statistical Packages for Social Sciences (SPSS) software, version 20. After analyzed the data set, all findings were interpreted by tables and figures. Univariate, bivariate, multivariate analysis were done and diagrams were prepared by use of SPSS and Microsoft Office Excel.

### Results

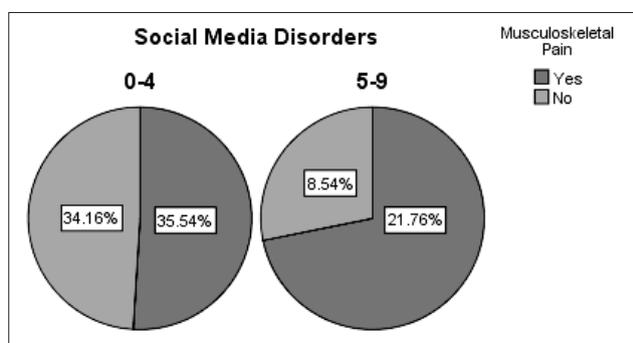
**Table I :** Distribution of respondents by socio-demographic variables (n=726)

	Group	Public University		Private University	
		Frequency	Percentage	Frequency	Percentage
Age in years	≤ 20	120	33.10	148	40.80
	21-25	232	63.90	209	57.60
	≥ 26	11	3.00	6	1.70
	Total	363	100	363	100
	Mean ±SD	21.55 ±1.93		21.14 ±1.62	
Gender	Male	243	66.90	228	62.80
	Female	120	33.10	135	37.20
	Total	363	100	363	100
Year of Education	1 <sup>st</sup> year	61	16.80	156	43.00
	2 <sup>nd</sup> Year	81	22.30	89	24.50
	3 <sup>rd</sup> Year	88	24.20	66	18.20
	4 <sup>th</sup> Year	73	20.10	44	12.10
	Post Graduate and above	60	16.50	8	2.20
	Total	363	100	363	100

Table I shows that 33.10%, 63.90% and 3.00% of the respondents belonged to their age group are ≤20 years, 21-25 years and ≥ 26 years respectively with their mean age 21.55±1.93 years of the respondents of public university. Compared to the respondents of private university, 40.80%, 57.60% and 1.70% of the respondents are belonged to their age group are ≤ 20 years, 21-25 years and ≥26 years respectively with their mean age 21.14±1.62 years. It is found that 66.90% of the respondents are male students and 33.10% of the respondents are female students of public university. 62.80% of the respondents are male students and 37.2% of the respondents are female students of private university. Study shows that 16.80%, 22.30%, 24.20%, 20.10% and 16.50% of the students are 1<sup>st</sup> year, 2<sup>nd</sup> year, 3<sup>rd</sup> year, 4<sup>th</sup> year, post graduate and above respectively of the public university, compare to private university 43.00%, 24.50%, 18.20%, 12.10% and 2.20% of the students are 1<sup>st</sup> year, 2<sup>nd</sup> year, 3<sup>rd</sup> year, 4<sup>th</sup> year, post graduate and above respectively.



**Figure 1a :** Distribution of the study subjects by social media disorders and musculoskeletal pain (Public University)



**Figure 1b:** Distribution of the study subjects by social media disorders and musculoskeletal pain (Private University)

Figure 1a shows that 11.57% of the respondents has social media disorders and they suffer musculoskeletal pain and 10.47% of the students do not suffer musculoskeletal pain. 26.72% of the students have no social media disorders but they have been suffering musculoskeletal pain and 51.24% of the student do not suffer musculoskeletal pain. Compared to private university figure 1b reveals that 21.76% of the study subjects had social media disorders, they suffer musculoskeletal pain and 8.54% of the student do not suffer musculoskeletal pain, 35.54% of the students has no social media disorders but they have been suffering musculoskeletal pain and 34.16% of the respondent do not suffer musculoskeletal pain.

**Table II :** Distribution of respondents by area of pain (n=726) (Multiple responses)

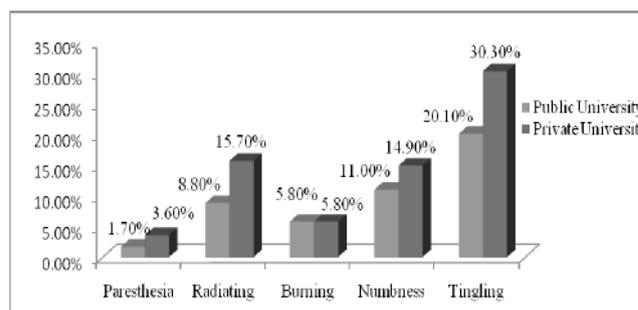
Area of pain	Public University		Private University	
	Frequency	Percentage	Frequency	Percentage
Headache (Posterior aspect of head)	61	16.80	110	30.30
Neck	55	15.20	99	27.30
Shoulder	52	14.30	74	20.40
Elbow	7	1.90	11	3.00
Wrist & hand	33	9.10	53	14.60
Thumb	32	8.80	67	18.50
Upper back	21	5.80	24	6.60
Chest	17	4.70	29	8.00
Lower back	25	6.90	37	10.20
Hip & thigh	5	1.40	10	2.80
Knee	11	3.00	14	3.90
Ankle & foot	10	2.80	19	5.20

Table II reveals that 16.80%, 15.20%, 14.30%, 1.90%, 9.10%, 8.80%, 5.80%, 4.70%, 6.90%, 1.40%, 3.00%, and 2.80% of the students of public university complain musculoskeletal pain of posterior aspect of head, neck, shoulder, elbow, wrist & hand, thumb, upper back, chest, lower back, hip & thigh, knee and ankle & foot respectively. On the other hand students of private university, table 2 shows that 30.30%, 27.30%, 20.40%, 3.00%, 14.60%, 18.50%, 6.60%, 8.00%, 10.20%, 2.80%, 3.90% and 5.20% complain musculoskeletal pain of posterior aspect of head, neck, shoulder, elbow, wrist & hand, thumb, upper back, chest, lower back, hip & thigh, knee and ankle & foot respectively.

**Table III :** Distribution of the respondents by severity of pain (n=726)

Severity of pain	Public University		Private University	
	Frequency	Percentage	Frequency	Percentage
0 (No pain)	224	61.70	156	43.00
1-3 (Mild pain)	77	21.20	100	27.50
4-6 (Moderate pain)	57	15.70	99	27.30
7-10 (Severe pain)	5	1.40	8	2.20
Total	363	100	363	100
Mean±SD	3.91±3.07		3.83±1.49	

Table III shows that 61.7%, 21.20%, 15.70% and 1.40% of the students of public university have no pain, mild pain, moderate pain and severe pain respectively with their mean pain score are 3.91±3.07. Contrast to the student of private university, Table III shows that 43.00%, 27.50%, 27.30%, and 2.20% have no pain, mild pain, moderate pain and severe pain respectively with their mean pain score are 3.83±1.49. It is measured by Visual Analogue Scale (VAS).



**Figure 2 :** Distribution of the study subjects by characteristic of musculoskeletal pain

It is found from figure 2 that 20.10%, 11.00%, 5.80%, 8.80% and 1.70% of the students of public university have complained tingling, numbness, burning, radiating and paresthesia respectively. Contrast to the respondents of private university, figure 2 shows that 30.30%, 14.90%, 5.80%, 15.70% and 3.60% complain tingling, numbness, burning, radiating, and paresthesia respectively.

**Table IV :** Distribution of the study subjects by Spearman's correlation of social media with musculoskeletal disorders

Universities	Variables	Variables	r-value	p-value
Public	Imo	Headache	0.103	0.050
	MySpace		0.117	0.026
	MySpace	Neck	0.124	0.018
	Twitter	Hip & thigh	0.173	0.001
Private	Messenger	Headache	0.123	0.019
	LinkedIn	Lower back	0.104	0.048
	Vigo		0.139	0.008
	Tango	Hip and thigh	0.134	0.010
	Vigo		0.143	0.006
	RingID		0.141	0.007

p-value obtained from Spearman's rank correlation test.

Table IV finds that there are positive correlations of Imo and MySpace with headache ( $p=0.050<0.05$ ,  $p=0.026<0.05$ ), MySpace with neck pain ( $p=0.018<0.05$ ), Twitter with hip & thigh pain ( $p=0.001<0.05$ ) of the students of public university. Contrast to the students of private university, there are positive correlation of Messenger with headache ( $p=0.019<0.05$ ), LinkedIn and Vigo with lower back pain ( $p=0.048<0.05$ ,  $p=0.008<0.05$ ), Tango, Vigo and RingID with hip & thigh pain ( $p=0.010<0.05$ ,  $p=0.006<0.05$ ,  $p=0.007<0.05$ ). These findings are statistically significant. Study revealed that Imo My Space, Twitter, Messenger, LinkedIn, Vigo, Tango, RingID positively influences the different types of musculoskeletal disorders of both public and private universities.

**Table V** : Distribution of the study subjects by binary logistic regression of musculoskeletal disorders with social media disorders and Facebook addiction

Universities	Dependent Variables	Covariates	p-value	Exp(B)/Odds
Public	Musculoskeletal disorders	Social media disorders	0.006	2.119
		Elbow		
		Social media disorders	0.007	32.742
		Facebook addiction	0.043	0.080
Private	Musculoskeletal disorders	Social media disorders	0.020	1.968
		Facebook addiction	0.004	2.114
	Headache	Facebook addiction	0.001	2.483
	Neck	Social media disorders	0.001	2.651
	Wrist and hand		0.041	2.149
	Thumb	Facebook addiction	0.023	2.091
	Upper back		0.041	2.930

Table V shows that social media disorders influence significantly on musculoskeletal disorders ( $p=0.006$  and Odds = 2.119), social media disorders and Facebook addiction influence significantly on elbow pain ( $p=0.007$  and Odds = 32.749,  $p=0.043$  and Odds =0.080) of the students of public university. On the other hand students of private university, social media disorders and Facebook addiction influenced significantly on musculoskeletal disorders ( $p=0.020$  and Odds=1.968,  $p=0.004$  and Odds=2.114) Facebook addiction significantly on headache ( $p=0.001$  and Odds =2.483). Students of private university, social media disorders influence significantly on neck, wrist and hand ( $p=0.001$  and Odds=2.651,  $p=0.041$  and Odds=2.149) Facebook addiction influence significantly on thumb and upper back ( $p=0.023$  and Odds =2.091,  $p=0.041$  and Odds=2.930).

### Discussion

Students of both public and private universities complain musculoskeletal pain of posterior aspect of head, neck, shoulder, elbow, wrist & hand, thumb, upper back, chest, lower back, hip & thigh, knee and ankle & foot. The prevalence of musculoskeletal disorders is higher in the

students of private university. Vahedi et al conducted a similar type of study in the year of 2019<sup>19,2</sup>. Another study was conducted by Woo et al and 49.9% of the respondents complained upper limb musculoskeletal symptoms particularly of neck and shoulder region<sup>11</sup>. Study found that 20.10%, 11.00%, 5.80%, 8.80% and 1.70% of the students of public university had complained tingling, numbness, burning, radiating and paresthesia respectively and private university students had 30.30%, 14.90%, 5.80%, 15.70% and 3.60% respectively. Similar types of study conducted by Sharma in the year of 2018<sup>7,22</sup>.

Social media disorders and Facebook addiction influenced significantly on musculoskeletal disorders of the students of both public and private universities. Similar type of study was conducted by Tang and Koh at Singapore in the year of 2017 and found that co-morbidity of addiction disorders of social media were psychological and musculoskeletal disorders<sup>23</sup>. Social media disorders influenced significantly on musculoskeletal disorders and Facebook addiction influenced significantly on elbow pain of the students of public university. Similar type of study was conducted by Borhany et al in the year of 2018<sup>10</sup>. It was also found that Facebook addiction influenced significantly on headache, thumb and upper back of the students of private university and social media disorders influenced significantly on neck, wrist and hand of the students of private university. Similar type of study conducted by Karkusha et al in the year of 2019 found that long-term use of smart phone would be risk factors of musculoskeletal disorders<sup>1</sup>.

### Conclusion

Study reveals that respondents of both public and private universities have been suffering musculoskeletal pain of posterior aspect of head, neck, shoulder, elbow, wrist & hand, thumb, upper back, chest, lower back, hip & thigh, knee and ankle & foot due to over use of social media. However, the prevalence of musculoskeletal disorders is higher in the students of private university than the students of public university.

### Disclosure

All the authors declared no competing interest.

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