

## Physical health effects of excessive Facebook use in a Palestinian student population<sup>†</sup>

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### ABSTRACT

Social networking is expanding in the Middle East including Palestine where alternative social opportunities and leisure time activities are limited due to cultural norms and geopolitical realities. Health consequences of excessive use are of concern. The aim of this study is to assess the unhealthy habits and physical health complaints in relation to the level of Facebook use in university students in Palestine. A cross-sectional design was used to investigate the effects of excessive Facebook use on healthy habits and negative health consequences of Palestinian university students. Nine hundred twenty-two students completed a self-administered questionnaire that assessed demographics, patterns of Facebook use, unhealthy habits and adverse physical health. Facebook use was evaluated using the Facebook Intensity Scale (FIS). Among the students, 389 (42%) reported using Facebook till midnight or later and 390 (42.4%) felt it affected their sleep patterns. 478 (51.8%) noticed that they have lower daily energy levels than before joining Facebook. Additionally, 477 (51.0%) said that they dedicated less time for physical exercise than before. Appositive relationship was found between time spent on social network sites, number of Facebook friends, and Facebook Intensity Scales scores and an increase in unhealthy habits including skipping meals ( $p = <0.001$ ), holding urination ( $p = <0.001$ ), late night and interrupted sleep ( $p = <0.001$ ). Negative health consequences related to excessive use included eye strain ( $p = <0.001$ ), reduction in frequency and duration of exercise ( $p = <0.001$ ), as well as back and wrist pain ( $p = <0.001$ ). Excessive social networking is associated with unhealthy habits and negative health effects on the student population. Public awareness and alternative opportunities for socialization and recreation are needed.

**Keywords:** Facebook Use; Health Risks; Negative Health Habits; Palestine.

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### INTRODUCTION

The number of people using the internet has surged over the past years, with average of 4.4 billion users in 2019 [1]. Using social media Web sites is among the most common activities of today's adolescents, and they are increasingly being used for health and social care purposes [2].

Palestinian social media users are on the rise at an accelerated rate. In 2017, there were 1.6 active social media users, with Facebook and WhatsApp being the most widely used social media platforms [3]. More than two third (70%) of Palestinian Facebook users are youth, and 55.4% are males. Palestine ranked as the fourth country in the Arab world in new

Facebook users, as percentage of population, in 2018[4].

The most popular motives for Facebook use are relationship maintenance, passing time, entertainment, and companionship[5]. It provides individuals with easy access to view personal information about friends, coworkers, and even complete strangers [6]. The fear that Facebook use replaces normally occurring activities both socially and physically has surfaced and appears relevant in areas like Palestine, where socialization, opportunities for physical leisure time activities, and venues for youth recreation are severely limited.

This is of increased concern as Facebook users tend to be young and in the process of building lifelong health habits. A Facebook "addiction" has been suggested by the American Psychological Association (APA) which identifies symptoms of excessive use as use in the face of negative academic, economic, and social consequences, increased use over time (tolerance) and a feeling of discomfort when unable to use (akin to withdrawal) [7].

Although speculation has been high, actual studies examining physical health consequences of extended social media use due to inactivity (back pain, fatigue, etc.), screen lighting (headaches, eye strain, etc.), and the interruption of natural body cycles (eating, sleeping, toileting, etc.) have been few [8–10]. Early research has found general positive relationships between Facebook use and physical health complaints problems, such as pain [10].

Farooqi et al, reported that Facebook users complained of headache, back pain, and eye strain after long internet sessions, and reported feeling less energetic than normal [9]. Another study identified high risk health behaviors related to long hours of use including holding urine and defecation, skipping meals, and late-night use[10]. Wolniczak et al reported that more than half of users complained of poor sleep quality that affects their ability to attend and succeed in daily tasks [11]. One study even found a relationship between excessive Facebook use and an increase in upper respiratory infections believed to be mediated by increased stress [12].

These behavioral habits are of more significance when recognizing that most Facebook users are youth or young adults in the process of establishing lifestyle patterns that will follow them into their adult lives. The lack of energy, reduced physical activity, and chronic sleep deprivation will have increased negative impact as these young people move into later adulthood possibly creating higher levels of obesity, diabetes, hypertension, and other serious health problems. The aim of this study is to assess the unhealthy habits and physical health

complaints in relation to the level of Facebook use in university students in Palestine.

## METHODS

### *Population and Sample*

A cross sectional study design was used to study Facebook use in relation to health risks. The study population included students of An-Najah National University (ANU) representing all faculties that were divided in three schools including: Faculty of Arts, Humanities, and Social Sciences, Faculty of Engineering and Information Technology, Faculty of Medicine and Health Sciences. A systematic random sampling technique was used to collect a sample of students registered in obligatory university courses. One thousand three students completed the survey and 938 valid response packages were obtained.

The study was approved by NNU Institutional Review Board (IRB) and appropriate permissions were received from the university administration. Anonymity of the participants and confidentiality of the collected data were assured.

### *Measurement Tool*

A self-administered questionnaire was used as a study instrument. It was constructed based on literature review and questions adapted from previously published related studies [9,10]. The questionnaire was pre-tested with a sample of 80 students in the initiation of the study to ensure the clarity, time, ease of administration, and reliability. Refinements were made on the basis of feedback from the pilot test.

The questionnaire was divided into four sections;

- (i) Characteristics of the participants including age, gender, faculty, year of study, having a Facebook account, year of joining, main purpose of using Facebook.
- (ii) Facebook Intensity Scale (FIS): Ascale, constructed by Ellison in 2007, used to measure Facebook usage beyond simple measures of frequency and duration, incorporating emotional connectedness to the site and its integration into individuals' daily activities. Example

questions are “Facebook is part of my everyday activity” and “I would be sorry if Facebook shut down.” Additionally, the measure included two questions on the number of Facebook friends and time spent online on a typical day[12]. The scale was translated in a backward/forward process using several bilingual experts with relevant field familiarity. The Cronbach’s alpha was calculated for the FIS used in this study and was found to be 0.78 which is considered good.

- (iii) Unhealthy habits related to Facebook use including postponing, forgetting, or skipping meals, holding urine, holding defecation, Facebook use until midnight, awakening at night to check Facebook and sleep patterns.
- (iv) Adverse physical health complaints such as back pain, shoulder/neck pain, headache, wrist pain, eye pain, eye redness, and less time dedicated for exercise.

#### Data analysis

Data entry and analysis were performed using the SPSS version 17. P-value  $\leq 0.05$  was set as a criterion of statistical significance. Frequencies and proportions were calculated for categorical variables and mean and standard deviation for continuous variables. The relationship between the study outcomes and the independent variables was assessed using the chi-squared test and *t*-test as appropriate.

## RESULTS

Among the 938 participants, 920 of them (98.3%) reported that they have accounts on Facebook. Their mean age was 19.74 ( $\pm 1.33$ ) years, and females constituted the majority of them (61.9%) (Table 1).

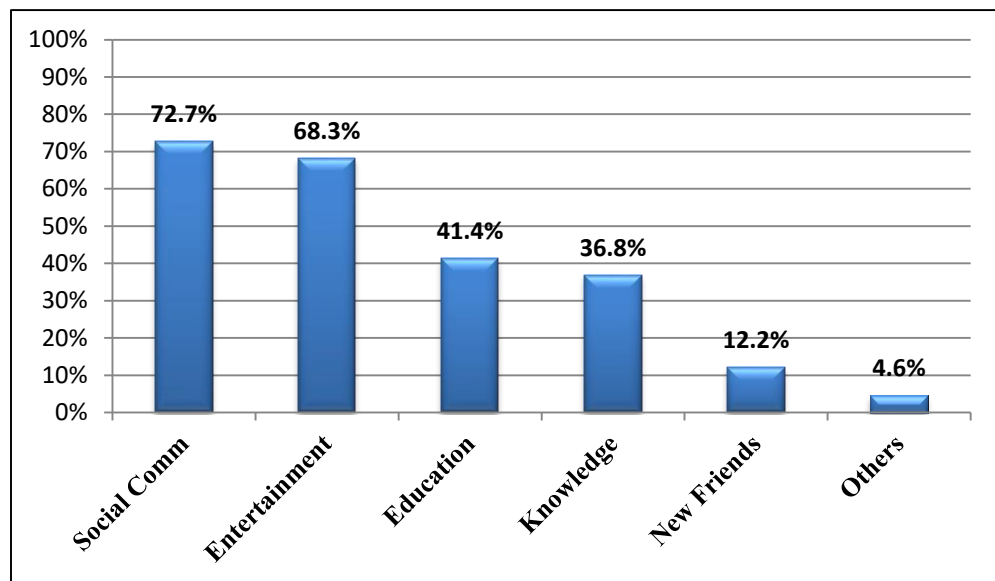
When asked about the average time per day they spent on Facebook last week, about 40% of the respondents spent on average “more than 2 hours” daily on Facebook. More than one quarter of the respondents (28.4%) reported having > 300 friends on Facebook. Table 1 shows the detailed answers on participants’ characteristics and their Facebook use.

**Table (1):** Socio-demographic and Facebook use Characteristics of respondents (n= 922).

Characteristic	Frequency (%)
<b>Gender</b>	
Males	351 (38.1)
Females	570 (61.9)
<b>Faculty</b>	
Faculty of Arts, Humanities and Social Sciences	456 (49.6)
Faculty of Engineering and Information Technology	230 (25.0)
Faculty of Medicine & Health Sciences	234 (25.4)
<b>Year of study</b>	
First year	388 (42.3)
Second year	225 (24.5)
Third year	167 (18.3)
$\geq$ Fourth year	137 (14.9)
<b>Daily Time spent on Facebook</b>	
< 1 Hours	353 (38.3)
1-2 Hours	193 (21.0)
2-3 Hours	136(14.7)
> 3 Hours	239 (26.0)
<b>Total Facebook Friends</b>	
<100	210 (22.8)
100-200	253 (27.5)
200-300	196 (21.3)
> 300	262(28.4)

#### Facebook Use

Most users reported having Facebook accounts for at least three years. The main motive for Facebook use was “Social communication with family and friends”, and the least reported reason was “Making new friends” (full data are presented in Figure 1).



**Figure (1):** Distribution of participants reasons of using Facebook (n=922).

Approximately 70% of participants agreed that Facebook is part of their daily activities, and routine and 12.1% reported that they are proud to tell others that they are on Facebook. A further 45% feel out of touch when they don't log onto Facebook for a while, and 39.9% of the respondents reported that would feel sorry if Facebook were to close. The FIS score for each participant was calculated in order to use in the association tests.

#### **Health Behaviors among Facebook users**

Table 2 presents health behaviors among Facebook users. About one tenth of respondents admitted that they frequently postpone, skip, or even forget a main meal while using Facebook. 4.5% admitted that they hold urine frequently while using Facebook and 2.7% reported holding

defecation during use. About 42% of the respondents reported using Facebook till midnight or later and 12.5% state they wake at night to check their Facebook accounts. Consequently, 42.4% felt that Facebook affected their sleep patterns while 51.8% noticed that they have lower daily energy levels than before joining Facebook.

Most of the findings mentioned above were found to be significantly associated with time spent on Facebook, total number of Facebook Friends, and Facebook Intensity as presented in table 2.

Additionally, fifty-one percent of the respondents said that they dedicated less time for physical exercise than before, this was found to be significantly associated with time spent on Facebook ( $p = <0.001$ ), Facebook Friends ( $p = 0.072$ ), and with Facebook Intensity ( $p = <0.001$ ).

**Table(2):** Unhealthy Behaviors in relation to and Time, Friends, and Facebook intensity (n=922).

Behavior	Time n (%)		Friends n (%)		Facebook Intensity Mean (SD) <sup>#</sup>
	≤ 2 hrs*	>2hrs*	≤ 300*	>300*	
<b>Postponing/skipping/forgetting main meals</b>					
Yes	25 (4.6)	73 (19.5)	61 (9.3)	37 (14.1)	21.7 (4.54)
No	521 (95.4)	302 (80.5)	598 (90.7)	225 (85.9)	18.8 (4.81)
<i>P value</i>	<b>&lt;0.001</b>		<b>0.031</b>		<b>&lt;0.001</b>

Behavior	Time n (%)		Friends n (%)		Facebook Intensity Mean (SD) <sup>#</sup>
	≤ 2 hrs*	>2hrs*	≤ 300*	>300*	
<b>Holding urine</b>					
Yes	13 (2.4)	29 (7.7)	25 (3.8)	17 (6.4)	22.1 (4.55)
No	533 (97.6)	346 (92.3)	634 (96.2)	245 (93.6)	19.0 (4.83)
<i>P value</i>	<b>&lt;0.001</b>		0.077		<b>&lt;0.001</b>
<b>Holding defecation</b>					
Yes	9 (1.7)	16 (4.2)	16 (2.4)	9 (3.4)	20.9 (5.54)
No	537 (98.4)	359 (95.8)	643 (97.6)	253 (96.6)	19.1 (4.83)
<i>P value</i>	<b>0.016</b>		0.396		0.118
<b>Surfing Facebook till midnight</b>					
Yes	152 (27.8)	237 (63.2)	241 (36.6)	148 (56.5)	21.2 (4.18)
No	394 (72.2)	138 (36.8)	418 (63.4)	114 (43.5)	17.7 (4.76)
<i>P value</i>	<b>&lt;0.001</b>		<b>&lt;0.001</b>		<b>&lt;0.001</b>
<b>Waking up at night to check your account</b>					
Yes	33 (6.0)	82 (21.9)	71 (10.8)	44 (16.8)	22.3 (4.49)
No	513 (94.0)	293 (78.1)	588 (89.2)	218 (83.2)	18.7 (4.75)
<i>P value</i>	<b>&lt;0.001</b>		<b>0.013</b>		<b>&lt;0.001</b>
<b>Facebook surfing affects usual sleeping pattern</b>					
Yes	168 (30.8)	222 (59.4)	249 (37.8)	141 (54.0)	21.0 (4.39)
No	377 (69.2)	152 (40.6)	409 (62.2)	120 (46.0)	17.8 (4.76)
<i>P value</i>	<0.001		<0.001		<0.001

\* Chi Square test. # Independent sample t-test.

### Adverse health effects among Facebook users

About one third (36.6%) of respondents reported back and neck pain after using Facebook for a long time, and this was found to be significantly related to Facebook Intensity ( $p=0.001$ ). Almost one fifth (22.3%) of them complained of wrist pain and this was

significantly associated with time spent on Facebook ( $p=0.013$ ). Furthermore, 39.4% reported eye pain, which was significantly associated with Facebook Intensity ( $p=0.024$ ). Finally, 21.5% reported having eye redness, and 33.3% complained of headache after excessive use, but neither was significantly associated with Facebook use measures. More details are shown in table 3.

**Table (3):** Association between adverse health effects and time, friends, and FIS ( $n=922$ ).

Adverse health effect	Time n (%)		Friends n (%)		FIS Mean (SD) #
	≤ 2 hrs*	>2hrs*	≤ 300*	>300*	
<b>Since joining Facebook, noticing a change in vision</b>					
Yes	216	185	227	124	20.0 (4.68)
No	(39.6)	(49.3)	(42.0)	(47.5)	18.5 (4.88)

Adverse health effect	Time n (%)		Friends n (%)		FIS Mean (SD) #
	≤ 2 hrs*	>2hrs*	≤ 300*	>300*	
	329 (60.4)	190 (50.7)	382 (58.0)	137 (52.5)	
<i>P value</i>	0.001		0.131		<0.001
<b>Since joining Facebook, decreasing time for exercise</b>					
Yes	248 (45.4)	222 (59.2)	324 (49.2)	146 (55.7)	20.1 (4.55)
No	298 (54.6)	153 (40.8)	335 (50.3)	116 (44.3)	18.2 (4.99)
<i>P value</i>	<0.001		0.072		<0.001
<b>Complaining of Back/Neck pain</b>					
Yes	193 (35.5)	143 (38.1)	250 (38.0)	86 (33.0)	19.8 (4.68)
No	351 (64.5)	232 (61.9)	408 (62.0)	175 (67.0)	18.8 (4.93)
<i>P value</i>	0.411		0.152		0.001
<b>Complaining of Headache</b>					
Yes	172 (31.5)	135 (36.0)	223 (33.8)	84 (32.1)	19.5 (4.83)
No	374 (68.5)	240 (64.0)	436 (66.2)	178 (67.9)	19.0 (4.87)
<i>P value</i>	0.155		0.606		0.108
<b>Complaining of wrist pain</b>					
Yes	106 (19.4)	99 (26.4)	145 (22.0)	60 (22.9)	20.1 (4.62)
No	439 (80.6)	276 (73.6)	513 (78.0)	202 (77.1)	18.9 (4.89)
<i>P value</i>	0.013		0.776		0.001
<b>Complaining of eye pain</b>					
Yes	215 (39.4)	147 (39.2)	261 (39.6)	101 (38.6)	19.6 (4.84)
No	330 (60.6)	228 (60.8)	397 (60.4)	161 (61.4)	18.9 (4.84)
<i>P value</i>	0.939		0.754		0.024
<b>Complaining of eye redness</b>					
Yes	117 (21.4)	81 (21.6)	148 (22.5)	50 (19.1)	19.3 (5.06)
No	428 (78.6)	294 (78.4)	510 (77.5)	212 (80.9)	19.1 (4.80)
<i>P value</i>	0.962		0.256		0.591

\*Chi Square test. # Independent sample t-test.

## DISCUSSION

Social media as a method of communication between people continues to grow around the world with more than 1 billion current users. Facebook is a clear leader in social media and continues to grow internationally among people at all social

levels. Although previous studies aimed at assessing the health impact of Facebook have been published, this is the first exploration from Arab world evaluates the health effects of social media use on university students.

The current study shows that 98.3% of the participants in Palestine have Facebook

accounts which are similar to results of a study conducted in the Philippines [13]. About 62% of those who have Facebook accounts were females. This seems to be close to the male to female ratio in the full university sample and similar to findings of other studies in Pakistan [9] and Malaysia [10].

At least 26% of the study participants reported spending three hours or more on Facebook use daily (not considering other social networking sites and internet venues). The results are similar to those found in other studies [9,10,13]. Thirty-five percent of the participants by self-identification state they are "addicted" to Facebook and "can't live without it". This suggests a pattern of excessive use in a significant proportion of the general student population.

This study found a significant association between strong bonding to Facebook (measured by surfing hours, number of Facebook friends, and FIS score) and unhealthy behaviors related to excessive use (skipping meal, holding urine, holding defecation, surfing till late night, waking up at night to check Facebook, affected sleep pattern and daily energy level). These findings are in accordance with those of Al-Dubai, et al in Malaysia (2013) which demonstrated significant association between unhealthy behaviors and Facebook use intensity [10].

Furthermore, this study found a significant association between Facebook utilization hours and adverse health effects. These include wrist pain, change in vision acuity, and less time dedicated for exercise and physical activity. Similarly, Al-Dubai et al found a significant association between hours of Facebook use and back pain, shoulder pain, neck pain, headache, and eye irritation [10]. In addition, FIS scores were found to be significantly associated with changes in vision acuity, less time dedicated for exercise, back or neck pain, wrist pain, and eye pain [10]. Some of these adverse health effects could be related to positioning during use (posturing, and seating with inadequate support) as well as using small devices (such as phones or tablets) whose print is more challenging to decipher.

Addiction is defined as a habit which is susceptible to the desire for increased use

(tolerance), feelings of discomfort when interrupted (withdrawal) and where the behavior continues in the face of negative personal consequences (economic, social, or medical) [14]. It was suggested that the physiological arousal related to social connectivity by use of social networking sites is similar to that of chemical substance and may affect the same results in addictive quality [15]. This is especially significant for youth who are sensitized to the need for forming and maintaining social relationships at this stage in their development.

Likening social network use to an addictive process helps to understand and predict the vulnerabilities of young people exposed to this powerful physiologically stimulating experience in a venue of easy accessibility, with little supervision, and having few limits of use (being available all day every day).

In an environment like Palestine where there are significant stressors on youth including occupation related violence and restrictions on travel, significant economic constraints, as well as high cultural and educational expectations for discipline and success; combined with limited opportunities for leisure time activities and unrestricted socialization for youth and young adults, the role of networking sites such as Facebook becomes increasingly attractive and potentially "addictive" with little competition for the time and attention of a youth based population.

Excessive use of any social network venue or time interacting with technology in lieu of actual human contact and physically stimulating activities may lead to the formation of unhealthy habits and resulting negative health consequences. This is especially true when the majority of users are youth or young adults in the process of forming lifelong health behaviors and lifestyles.

Some limitations should be considered in the current study. First, the cross-sectional design of this study cannot verify a causal relationship between the study variables, but rather supports the existence of a relationship between excessive Facebook use and unhealthy use behaviors and subsequent

negative health impacts. Second, the fact that the study was conducted at a single large university in North West-Bank may limit generalizing results on all university students in Palestine. Furthermore, as participants were asked to recall past unobserved behaviors some response bias may be present in the findings.

## CONCLUSIONS

The current data demonstrate that Facebook is utilized by almost all of the Palestinian university students and that some percentage is identified as high-intensity users as defined by hours of use, numbers of friends, and emotional attachment to use. The data also indicate that high Facebook utilizes exhibit unhealthy behaviors, related to use and have some subsequent adverse health effects. The study found that these effects are strongly associated with Facebook using patterns (time spent on Facebook, the number of Facebook friends, and FIS).

The building of a healthy community is essential to all societies, especially in developing nations. Monitoring, research, and education about the long term effects of excessive Facebook use is needed in environments where youth are particularly at risk for addictive behavior patterns due to stress and limited alternative occupations.

The following steps are recommended to seriously address the increasing use of social network sites in the young adult population of Palestine:

- Public awareness campaigns directed at youth, young adults and their caretakers focused on unhealthy behaviors associated with excessive social media use to create awareness of the possible adverse physical consequences and safety precautions that can mediate these risks such as taking breaks, appropriate distance from computer or cell phone, light, posturing, etc.
- An actual increase in venues where young people can socialize and engage in healthy leisure activities that will promote positive relationships, decrease stress and lead to positive health habits throughout the lifespan.

- Further research on the factors related to excessive use of Facebook and identification of personal risk factors.

As with all advances in society and progress in technology it is important to understand and manage both the benefits and risks. Young users of social networking sites who are developmentally motivated by an increased desire for socialization and living in an environment with cultural and geopolitical obstacles to this goal may be more highly vulnerable to the addictive effects of an immediate, unsupervised, and highly stimulating social venue increasing the likelihood of then adopting both immediate unhealthy habits, but also creating a more sedentary lifestyle expectation for their futures. It is the responsibility of the educators, health professionals, and policymakers to address these issues through public awareness and policy but also creating positive, venues for healthy leisure and social opportunities for the youth where positive realistic health behaviors can be encouraged.

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## COMPETING INTERESTS

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

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