Effects of social networking services on academic performance and self-esteem: A cross-sectional study among medical students

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ABSTRACT

Background: Social networking services (SNS) are a subcategory of social media that provide a useful tool for an individual's practical life and social relations. Since the impact of SNS on students' lives is a relatively neglected topic, we aimed to investigate the effect of social media on academic performance and self-esteem. **Methods:** A cross-sectional study was conducted with 373 medical students distributed across different academic years. Data was collected and analyzed using measures of central tendency to describe numerical variables, while frequencies and percentages were used for categorical variables. Pearson's chisquared test, Pearson's correlation coefficient, independent sample t-test, and the one-way analysis of variance (ANOVA) were used to identify relationships between the variables. All P values < 0.05 were considered significant using a 95% confidence interval and a 5% margin of error. **Results:** The majority of our sample believed that SNSs were useful, and 37.5% believed that social media positively affected their academic performance. However, no significant relationship was found between the time spent on social media and the students' grade point average (GPA). Conversely, there was a significant relationship between students' perceived addiction to social media and their self-worth, along with a positive correlation between GPA and self-esteem. **Conclusion:** Almost half of our participants agreed that social media is a helpful method for finding useful information. Nevertheless, excessive usage has been found to have a harmful effect on the students' health and self-esteem.

Keywords: Academic years, grade-point average, medical students, self-esteem, social media, social networking service

Introduction

Social media is defined as any electronic-based communication tool (such as websites or applications for social networking) through which users can create online communities to share information, ideas, and connect with people.[1] A principal subcategory of social media is social networking services (SNS), which can be defined as any web-based platform that enables users to create and maintain social relations (e.g., Twitter, Facebook, etc.).[2]

As of 2020, the current number of internet users worldwide is approximated to be over 4.1 billion, representing 60% of the global population. Social media is a critical part of why the vast majority uses the internet.[3] Local statistics in Saudi Arabia have recorded that almost 58% of all citizens use the internet.[4]

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Through rapid advances in technology and the transition to a more fast-paced lifestyle in recent years, people have turned to social media as a quicker and easier way to keep in touch with their acquaintances and relatives without the complexity of meetings and scheduled gatherings. Furthermore, university students use the internet and social media to conveniently access information, obtain an e-learning degree, and facilitate classroom communication.[5–7]

Previous studies on this subject have suggested that the excessive use of social media may have a destructive impact on the user's personal and professional life.[8–13] One undesirable effect is that it can easily lead users to be addicted to it.[6,14–16] A 2015 study found a significant relationship between social media addiction and decreasing levels of self-esteem.[17] However, it is yet to be known whether social media usage positively or negatively influences academic performance or the student's subjective evaluation of their self-worth. We cannot deny that this has a crucial impact on the current generation's academic future. Although our communities might assume social media to have a negative influence on many academic aspects, there is no concrete evidence to support this assumption. Primary care providers and family physicians should not neglect the effects of social media on adolescents who are pursuing higher education as the results show a clear correlation between social media and its effects on the academic achievements of students and their self-esteem. We aim to shed light on the influence of social media on students' academic performance and its relation to self-esteem among medical students in Jeddah, Saudi Arabia, which can assist primary care physicians and family physicians in properly counseling college students and adolescents in general about the benefits and harms of social media, with a focus on the effects of social media on mental health and self-esteem.

Material and Methods

Ethical consideration

Ethical approval for this study was granted by the Institutional Review Board (IRB) of King Abdulaziz University Hospital (KAUH) (Ref: 299-20). All respondents were informed of the study objectives and confidentiality. The procedures followed were in accordance with the ethical standards of the responsible committee based on the Good Clinical Practice (GCP) guidelines.

Study design and setting

This was an online, cross-sectional study conducted in August 2020 in Jeddah. The participants were medical students enrolled in different academic years. The study excluded students from other universities, incomplete results, and duplicated responses.

Sample size and sampling procedure

The sample size for this study was calculated using the Raosoft Sample Size Calculator.[18] The required sample from a population of 2059 medical students in the faculty was found to be 324 to achieve a 95% confidence interval (CI) with a 5% margin of error, and they were selected using a non-probability sampling technique.

Data collection instrument

Data was collected using an electronic questionnaire via Google Forms. The first four sections of the survey were previously validated in a study by Lahiry *et al.*;[14] it was found to have a Cronbach's α of 0.857, representing a high reliability coefficient. Informed consent was obtained at the beginning of the survey, and participants were then asked to answer several questions that were further divided into five sections. Section 1 identified the socio-demographic information. Section 2 assessed social media usage, including the gadgets used and time spent throughout the week and the most frequently used social media outlets. Section 3 was concerned with the self-perceived impact on academic performance, including the participants' grade point average (GPA) and how they perceived the impact of social media on their academic studies. Section 4 studied the impact of social media on the participants' physical, social, and mental well-being. Section 5 consisted of the Rosenberg Self-Esteem Scale (RSES).[19]

Analysis

Data was entered into Microsoft Excel version 20. A descriptive statistical analysis was conducted using the Statistical Package for the Social Sciences (SPSS) version 21 (IBM Corp., Armonk, NY, USA). Measures of central tendency were calculated to describe quantitative variables, while frequencies and percentages were used for categorical variables. Pearson's Chi-squared test, Pearson's correlation coefficient, independent sample *t*-test and the one-way analysis of variance (ANOVA) were used to analyze statistical differences between variables. All *P* values <0.05 with 95% CIs were considered to be statistically significant.

Results

Socio-demographic details

We received a total of 525 responses. After excluding incomplete, missing, and duplicated data, only 373 were eligible for inclusion, accounting for 71% of all responses in the survey. All participants confirmed that they used social media. Most of them consisted of females (*n* = 200; 53.6%), with ages varying from 18 to 27 years old.

Academic details

Medical students in this study were divided into pre-clinical years and clinical years; furthermore, the mean GPA (out of 5) of the students was 4.51 ± 0.416. It is worth noting that 238 students maintained a GPA above 4.5 at the time of answering the survey (63.8%) [Table 1].

Social media usage

The most preferred method of communication among the participants was meeting in person (*n* = 175; 46.9%), followed

by the use of SNSs (*n* = 146; 39.1%). But even so, 94.4% of students believed that SNSs are useful (*n* = 352) [Figure 1].

Although most participants used multiple social media outlets, the most frequently used applications were WhatsApp (*n* = 364; 97.6%), Twitter (*n* = 293; 78.6%), and Telegram (*n* = 275; 73.7%) [Figure 2]. Daily usage was the most frequent pattern (*n* = 342; 91.7%) and for three to six hours per day (*n* = 162; 43.4%) [Table 2 and Figure 3]. There was a significant variation in the daily usage of social media between genders: females reported spending more hours on social media per day (*P* = 0.042).

Moreover, participants answered that they used social media for a multitude of reasons. The frequent answers were entertainment (*n* = 317; 85%), education (*n* = 278; 74%), and communication (*n* = 245; 65.7%). However, most agreed that they used social media for academic purposes (*n* = 337; 90.3%).

Impact of social media on academic performance

Most students in this study believed that social media had a positive effect on their academic performance (*n* = 140; 37.5%) [Table 1].

Table 1: Sociodemographic details and academic performance of participants

Characteristics	Frequency	Percentage
Gender		
Male	173	46.4%
Female	200	53.6%
Medical year		
Pre-clinical years	147	39.4%
Second year	71	19%
Third year	76	20.4%
Clinical Years	226	60.6%
Fourth year	73	19.6%
Fifth year	82	22%
Sixth year	71	19%
Cumulative general point average (GPA)*		
4.5<	238	63.8%
3.75-4.49	117	31.4%
<3.74	18	4.8%
How do you prefer connecting people?		
In person	175	46.9%
Social networking service (SNS)	146	39.1%
Phone call	13	3.5%
Text	35	9.4%
Other	4	1.1%
Do you use social media for academic purposes?		
Yes	337	90.3%
No	15	4%
Not Sure	21	5.6%
What was the nature of the impact of social media on academic performance?		
Not sure	98	26.3%
Improved	140	37.5%
Worsened	82	22%
No effect	53	14.2%

*GPA out of 5

Meanwhile, no significant relationship was found between the time spent on social media and the students' GPA (Fisher's exact test significance = 0.414), nor a significant relationship between GPA and usage of social media for academic purposes (Fisher's exact test significance = 0.646).

Furthermore, our analysis revealed a significant relationship between the temporary abstinence from social media and GPA score (Fisher's exact test significance = 0.016).
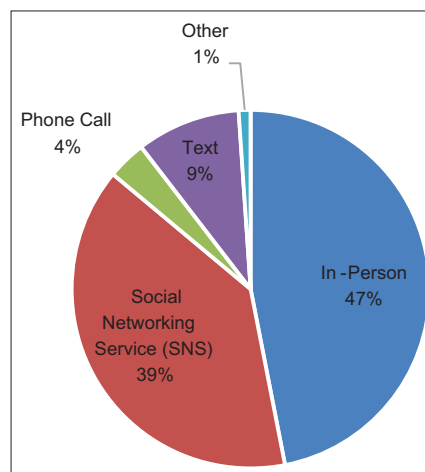

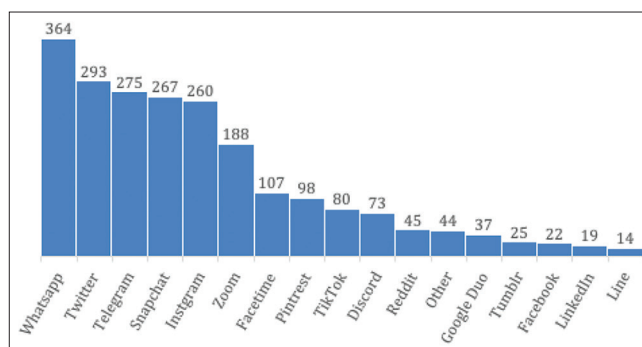**Figure 1:** How do you prefer connecting with people?

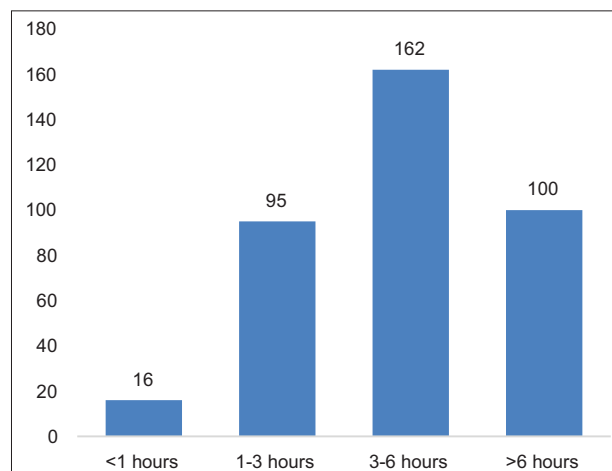**Figure 2:** Application(s) most frequently used by you?

Figure 3: Time spent on social media daily

Table 2: Pattern of SNS usage		
Questions	**Frequency**	**Percentage**
Do you think SNSs are useful?		
Yes	352	94.4%
No	4	1.1%
Not Sure	17	4.6%
How often do you use such services?		
Daily	342	91.7%
Weekends	1	0.3%
Variables	29	7.8%
None	1	0.3%
Does your online activity increase during holidays?		
Yes	308	82.6%
No	65	17.4%
Preferred place for online activity?		
Workplace	8	2.1%
Home	224	60.1%
Commute	10	2.7%
Variable	131	35.1%
Have you ever temporarily abstained from social networking?		
Yes	233	62.5%
No	105	28.2%
Not Sure	35	9.4%

Abbreviation: SNS, Social networking service

Table 3: Perceived impact on physical, social, and mental well-being		
Variables	**Frequency**	**Percent**
Physical well-being		
Yes	202	54.2%
No	108	29%
Not sure	63	16.9%
Social well-being		
Yes	185	49.6%
No	117	31.4%
Not sure	71	19%
Addicted to social media		
Yes	184	49.3%
No	119	31.9%
Not sure	70	18.8%

Effect of social media on other aspects

A total of 202 participants believed that social media negatively affected their health (54.2%) [Table 3], and about half of our respondents answered that they felt addicted to social media (n = 184; 49.3%); however, no significant variation was found between perceived addiction of social media among students of different academic years (P = 0.957), nor between students of either gender (P = 0.09).

Our results showed a significant correlation between perceived social media addiction and reporting adverse effects on health as a result of social media use (P = 0.007), as well as reporting affected interpersonal relations (P < 0.001).

Impact on self-esteem

The analysis revealed a significant relationship between students' perceived addiction to social media and their evaluation of self-worth (P <.001). Students with low RSES scores reported impact on health (P < 0.001) and interpersonal relations (P < 0.001). Regarding academic performance, our study provides evidence for a weak positive correlation between GPA and self-esteem (P = 0.013, r = 0.1). There was a statistically significant difference between the means of self-esteem of students in different academic years (P = 0.025).

Discussion

This cross-sectional study provides an account of the patterns of SNSs used by medical students, as well as the resulting influence on their scholastic performance and self-esteem. The study highlights the widespread use of social media among our students and their reasonable knowledge of its benefits and drawbacks, including the valuable resources for information and communication it can provide.

Students extensively use multiple social media sites, especially Twitter and Telegram. This is probably due to Twitter's design, making it a good media outlet for students to engage in between classes or breaks. It also allows for a community discussion with a broad user base, confirming the primary role of Twitter as a microblogging platform.[20]

Meanwhile, several Saudi Arabian universities use Telegram as the official texting application for students, which can explain its high use in Jeddah compared to other places, such as India, where WhatsApp and Facebook were reported as the most used social media sites.[14] The popularity of Telegram can be attributed to the introduction of easily accessible "channels" in the application. These are platforms that provide one-way communication between the author(s) and their audience. The implementation of Telegram channels in academics proves to be beneficial because of their informative and learning-oriented nature.[21] As such, they may enhance classroom communication between university students by enabling official broadcasting of announcements and specific learning materials, which explains the popularity of Telegram in Saudi Arabia, especially for educational purposes.

Participants believe that social media positively influences their academic performance. This result matches another study conducted in India.[14] We believe that such results could be explained by students searching for topics related to their studies and sharing what they found useful among them. These results, however, conflict with the results obtained from Kogi State University students who said that social media negatively affects their academic performance as they spend more time on it instead of studying and preparing for exams.[22] The amount of time spent on social media had no significant relationship with the students' GPAs. A study demonstrated that the time

spent on social media does not affect academic performance.[14] In contrast, a previous study reported that students who spent more time on social media had a higher GPA than those who spent less time. This outcome could be the result of good time management.[23]

54.2% of the students believe that social media has harmful effects on their health. This number is comparable to 42.45% reported by Lahiry *et al.*,[14] and this can be explained by the association of increased smartphone involvement with elevated levels of depression and stress, as reported in a 2014 study.[24] Further evidence for these harmful effects can be found in the research by Wolniczak I *et al.* who claimed that cell phone overuse had significant effects on the general health and quality of sleep.[25]

The results of the present study show a disturbingly high rate of perceived social media addiction among students (49.3%). A study conducted in China revealed that 34.3% of the college students in their sample qualified as SNS addicts. The authors hypothesized that psychological factors, including loneliness, can play a central role in internet addiction.[26]

In this study, variables that are thought to affect self-worth include academic performance and social media usage. The statistics in our study revealed a significant relationship between social media addiction and low self-esteem. This is similar to the results of a study conducted on undergraduates in the United States, which highlighted the adverse effect of the chronic use of Facebook on individuals' self-esteem because users repeatedly compared themselves to others.[27]

Students with low RSES scores also reported that their health and social relationships were negatively affected by social media. A study showed that when the self-esteem level decreased, students displayed symptoms of depression, manifesting as feelings of inadequacy toward themselves and their surroundings. Consequently, they tend to go into isolation, avoid taking risks, and feel secluded.[28–30] Additionally, the significant relationship between low self-esteem scores and affected interpersonal relationships can be explained by the fact that subjects with low self-esteem are used to escaping from their real lives by using social media anonymously any way they want.[28] In contrast, findings in different studies indicate that the relationship between people's interpersonal relations and their self-esteem level varies throughout all stages of development in life.[31]

Meanwhile, the weak positive correlation between GPA and self-esteem can be explained by the fact that people who have high self-esteem levels are satisfied and can put more effort into studying. This matches the results of a 2015 study that sheds light on the strong positive correlation between academic performance and self-esteem.[4]

The primary care providers and family physicians are capable of positively influencing students' habits by counselling them and assisting people to overcome obstacles and addressing the barriers of performance, self-efficacy, and self-esteem. This emphasizes the importance of their influence as healthy behavior role models, by practicing what may be an effective and efficient strategy for increasing self-esteem and academic achievements.

Limitation

This study's cross-sectional design has multiple limitations, as we cannot identify the direction of the relationships we obtained. Another drawback is the dependence on the self-filled survey, which is susceptible to recall and social desirability bias. Other issues include duplicated data and incorrect responses. Furthermore, the sample used may have been subject to selection bias, and therefore may poorly represent the entire population who may have a considerable variation in GPA and social media use.

Conclusion

The increased use of social media allows it to play a vital role in students' lives. But despite its many potential benefits, its improper use can have unfavorable effects on its users. Other articles confirmed our suspicions about the effect of social media on medical students and its harmful effects on health and self-esteem. We urge health officials and academic administrators to promote awareness on the ill effects of social media. This can be done, for example, by starting an awareness campaign on the damage of excess usage of social media. We recommend exploring all other factors that affect academic performance and self-esteem. Researchers should consider making hard-copy questionnaires or phone calls, which can reduce the chance of duplicated and missing data.

The key take-home message

The expanding influence of social media on our lives is undeniable.

Increasing our understanding can help us understand how we can be careful of the negative impact of social media.

Improved self-esteem is linked to higher academic achievement in medical students' GPA, while low self-esteem is linked to increasing social media use.

Ethics approval and consent

Permission to conduct the study was granted by the Biomedical Ethics Research Committee of King Abdulaziz University Hospital. Informed consent was obtained from all subjects.

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Conflicts of interest

There are no conflicts of interest.

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