

Social Media Usage and Academic Performance Among Medical Students in Medina, Saudi Arabia

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Background: Social media are websites and applications enabling users to create or share content and communicate. The widespread use of social media among university students and easy access during class and study time raises concern about its impact on academic performance. This study aims to determine the impact of social media usage, addiction, and exposure on students' academic performance.

Methods: An online cross-sectional study was conducted using convenience sampling among undergraduate medical students in Medina, KSA during the academic year 2021/2022. We used the chi-square and Fisher's exact tests to determine the impact of social media usage on academic performance.

Results: 842 medical students participated in our study. 57.1% were females, 24.8% were in the 5th academic year, and 56.5% had a Grade Point Average (GPA) in the range of 4.5 to 5. Moreover, 26.1% of the students use social networking sites for 3–4 hours, and males are more addicted to social media than females. Our results showed that students with excellent GPAs ($GPA \geq 4.5$) are less likely to be addicted to social media networks (54.8%), and they perceive that using social media is not helping to improve their grades compared to other students. Also, showed that those who are addicted to social media benefit from the use of social media to improve their grades. There is no significant difference between genders in social media usage as if it helps them improve their grades. Moreover, no difference between the academic years in addiction and usage of social media.

Conclusion: This study has revealed that students with higher levels were less addicted to social media, and those who are addicted benefit from using social media to improve their grades. We call for using social media as a supporting tool for academic performance and achievement among university students.

Keywords: social media, medical students, academic performance, gender, Saudi Arabia

Introduction

Social media is a network of websites and applications that enables people to communicate with one another. The users can create, use, exchange, and discuss the content available on the world wide web.¹ The rapid expansion of the technological revolution and the internet, particularly social media, have grown exponentially over the past few decades, and a new reality has emerged in the daily lives of society and of students in particular.² For example, the most common purpose for internet use among medical students in Pakistan was to visit social media.³ The prevalence of social media addiction was 55.2% among medical students in the Kingdom of Saudi Arabia (KSA).⁴ After the COVID-19 pandemic, the addiction to social media increased.⁵

Due to the availability of smartphones and the simplicity of accessing such websites through home computers, social networking site use is widespread among university students, and student use of social media decreases their time spent on academic tasks.⁶ Also, students often use their phones to send text messages and emails during classes. Outside the classroom, anecdotal evidence shows students' lessening ability to manage their time effectively. More and more procrastinating in getting started on assignments, resulting in requests for extensions and late submissions, and students are not reading the assigned material very regularly, according to faculty complaints.⁷

Among university students, using social media excessively is one of the risk factors for mental health disorders including stress, anxiety, and depression.⁸ Compared to the general non-student population of the same age, medical students had a higher prevalence of anxiety and depression.⁹ Among students in Kolkata, social media usage for academic reasons was high, but compared to nursing and paramedical students, medical students used social media more frequently.¹⁰ Also, the use of social media by Qassim University students in KSA is high for academic purposes, and most students are aware of both the positive and negative impact this has had on their academic performance. The positive effects include using social media for communication with their classmates and research purposes, while negative effects include changing their lifestyle and distraction from college.¹¹ Another study conducted among female students at Prince Sattam bin Abdul Aziz University in KSA found that 1% of the students used social media for academic purposes, mostly for nonacademic reasons.⁶

Several researchers have investigated the variation in social media usage among both genders. A study done among medical students showed no significant difference between female and male uses of social media among medical students, implying that gender has no bearing on social media use.¹² However, according to another research among undergraduate students at Koforidua Technical University showed female students spent more time on social media than their male colleagues.¹³

It has been demonstrated in some previous studies that social media have a negative impact on academic performance. One study discovered a negative relationship between social media usage time among students and their academic performance.⁷ However, another study found no effect of social media addiction on academic performance among nursing students.¹⁴

During the COVID-19 pandemic, there has been an increase in social media addiction and use of social media for non-academic purposes. In order to stop the spread of COVID-19, educational institutions have been forced to close, thus colleges and universities have changed how they teach. Collaborative multimedia distance learning approaches have superseded traditional teaching methods. Overusing social media due to the COVID-19 pandemic could affect students' ability to learn, and students' psychological well-being may be negatively impacted by these developments.⁶

In light of the previous results, it is clear now that social media impacts students' academic performance. Our study aims to investigate both addictive and beneficial aspects of social media usage in relation to academic performance. To achieve this, we will distribute an online questionnaire through social media to gather data from medical students at Taibah University and Alrayan College in KSA.

Materials and Methods

Study Design, Setting, and Sample Size

A cross-sectional study using an online questionnaire was conducted among the medical students at Taibah and Alrayan, Colleges of Medicine, Medina, KSA during the academic year 2021/2022, to determine the impact of social media usage on academic performance. Taibah University is a governmental university, while Alrayan College is a private college. The survey was created using an online tool, Google Forms. Data was collected from October 2021 to February 2022. A minimum sample size of 384 participants was determined for this study using an estimated prevalence of 50%, a precision level of 5%, and a confidence interval of 95%. We excluded students in the first year because it is considered a preparatory year, and 842 medical students from all five academic years participated in our research.

Study Measurements

A validated English questionnaire was used to collect the data in which permission was obtained from the corresponding author of the previous research conducted at the University of Sharjah, United Arab Emirates ([Figure S1](#)).¹⁵ Students were required to complete a 24-question survey that took about five minutes to finish it. The questionnaire contained two parts. The first part of the questionnaire contained information about participant demographics, time spent on social media, and the frequency of using special media in classes. The second part was composed of five subscales: students' addictiveness to social network and academic performance, exposure of students to social media networks and their academic performance, use of social media and students' academic performance, gender usage of social media, and age

usage of social media. The questionnaire was answered anonymously as no student name or identification number was requested while filling out the questionnaire.

Statistical Analysis

The Social Science Software Statistical Package, version 26.0 (SPSS Inc., Chicago, IL) was used for data analysis. Categorical variables were represented as frequency and percentages. We used the chi-square test, and Fisher's exact test to determine if there was a significant association between scores on social media and academic performance of the student questionnaire and the demographic variables of the sample. A p-value of less than 0.05 was considered statistically significant, and the confidence interval was 95%.

Participants were divided as addicted or non-addicted according to the score of the four statements included in the first axis of the survey, each statement has a score from 1 to 4 points, with a total of 16 points, those who got a score higher than 8 were considered in the addicted group. Participants' perception of social media exposure and its impact on their academic performance was calculated according to the score of the four statements included in the second axis of the survey, each statement has a score from 1 to 4 points, with a total of 16 points, those who got a score higher than 8 were considered to perceive the exposure to social media platforms to have a negative impact on their academic performance, and participants' perception of social media use as helpful was calculated according to the score of the four statements included in the third axis of the survey, each statement has a score from 1 to 4 points, with a total of 16 points, those who got a score higher than 8 were considered to perceive social media usage as helping them to improve their performance.

So, this study focuses on the effect of social media addiction, usage, and exposure on students' academic performance. Social media usage represents the perception of the usefulness of social media and its positive effects on academic performance. The impact of exposure to social media represents the perception of the negative influence of social media on academic performance.

Ethical Considerations

The study's objectives were explained to the participants, and the participation of students was voluntary, ethical considerations were also considered to ensure the confidentiality and privacy of the collected data. The research project was ethically approved by the Institutional Review Board, General Directorate of Health Affairs in Madinah, KSA (Reference Number: IR134-2021).

Results

Demographic Characteristic

The sample consisted of 842 participants of medical students in Medina. [Table 1](#) illustrates the sociodemographic characteristics of the sample, 42.9% were males, while 57.1% were females. It has been shown that 78% of the responders were aged between 21 to 25 years old. And 64.8% of them were studying at Taibah University. Also, 24.8% of total students were in the 5th academic year, and 56.5% had a GPA in the range of 4.5 to 5.

Usage of Social Media During Class

[Figure 1](#) shows the percentage distribution of social media usage during class, students reported they use social media during class sometimes (34.4%), followed by rarely (31.9%), never (14.5%), often (13.1%), and always (6.1%).

Time Spent on Social Media

[Figure 2](#) illustrates that 26.1% of the students use social networking sites for 3 to 4 hours, and approximately 19% of them used them for more than 6 hours, while 3.7% reported spending less than an hour on social media.

Table 1 Demographic Characteristics of Study Participants (N=842)

Variable	Frequency	Percentage %
Gender		
Male	361	42.9%
Female	481	57.1%
Age		
18–20 years	178	21.14%
21–25 years	657	78.03%
26 years and above	7	0.83%
University/college		
Taibah university	546	64.8%
Alrayan colleges	296	35.2%
Year of Study		
2nd year	177	21.0%
3rd year	163	19.4%
4th year	163	19.4%
5th year	209	24.8%
6th year	130	15.4%
GPA		
Less than 2	2	0.2%
2–2.9	19	2.3%
3–3.9	125	14.8%
4–4.4	220	26.1%
4.5–5	476	56.5%

GPA and Time Spent on Social Media

Spearman's rank correlation was computed to assess the relationship between GPA and time spent on social media, there was a negative correlation between the two variables, $r = 0.134$, $p = < 0.001$ (Figure 3).

Responses of the Medical Students to Items of Social Media and Academic Performance of Students' Questionnaire

Table 2 shows that 44.1% of respondents agree that addiction to online social networks is an issue that affects their academic life. Similarly, 56.3% of respondents agreed that online social networks distract from their studies, and 43.3% of students agreed that hours spent online can never be compared to the number of hours they spend studying. While 39.9% agreed there is no improvement in their grades since they became engaged in social networking sites.

Regarding the axis of exposure of students to social media networks and their academic performance, 45.2% of students agree they have unlimited access to social media, which has affected their academic performance negatively. In contrast, 47.7% of respondents agreed that engaging in academic discussions on social media has improved their

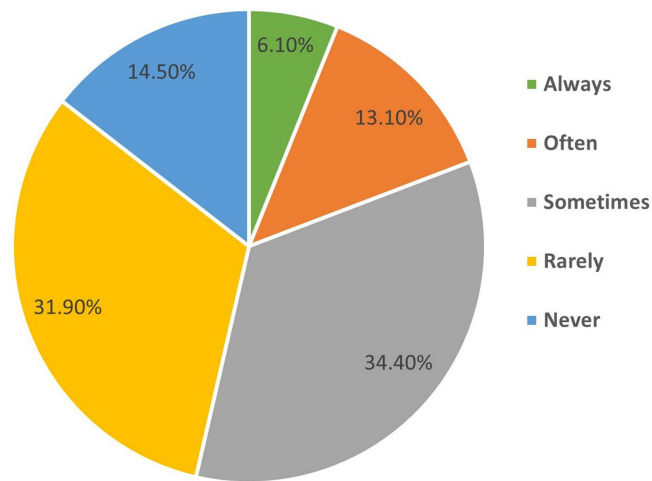


Figure 1 The percentage distribution of usage of social media during class (N=842).

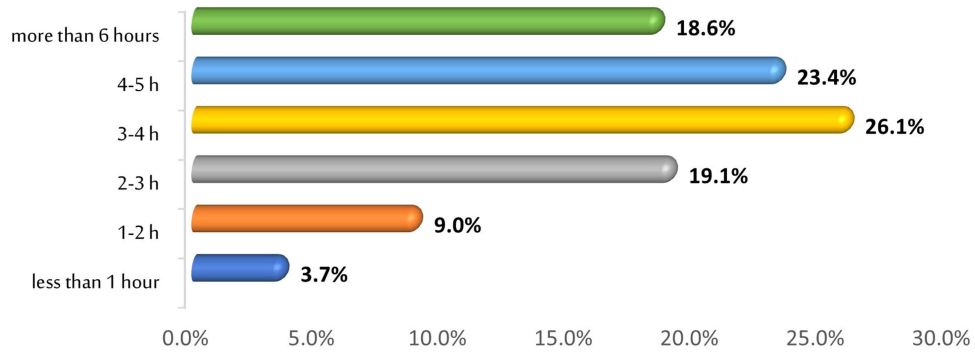


Figure 2 The percentage distribution of time spent on social media (N=842).

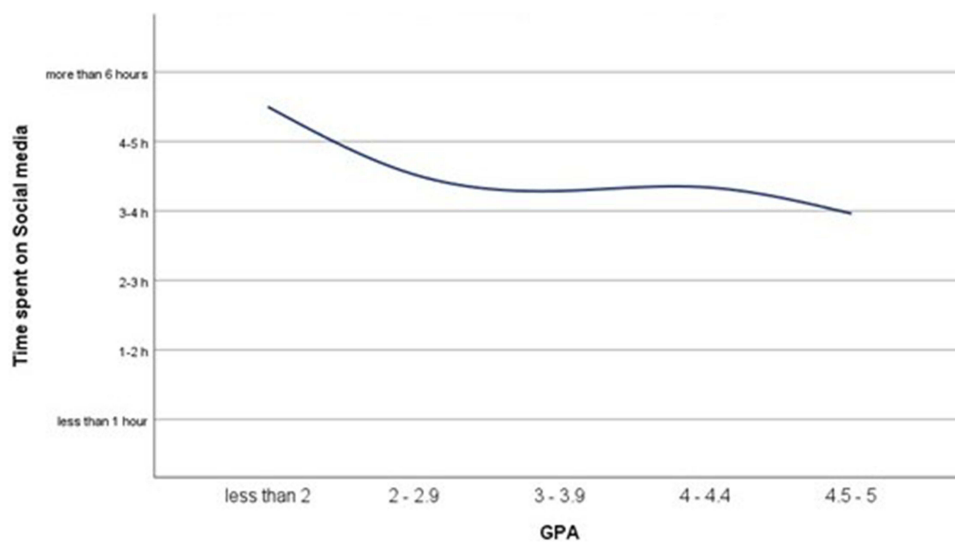


Figure 3 The GPA and time spent on social media (N=842).

Table 2 Responses of the Medical Students to Items of Social Media and Academic Performance of Students' Questionnaire (N=842)

Experience Items	Strongly Agree		Agree		Disagree		Strongly Disagree	
	N	%	N	%	N	%	N	%
Students' addictiveness to social network and academic performance								
Addiction to online social networks is a problematic issue that affects my academic life	263	31.2%	371	44.1%	182	21.6%	26	3.1%
Online social networks distract me from my studies	192	22.8%	474	56.3%	153	18.2%	23	2.7%
Hours spent online can never be compared to the number of hours I spend studying	210	24.9%	365	43.3%	213	25.3%	54	6.45%
There is no improvement in my grades since I became engaged into social networking sites	143	17.0%	336	39.9%	279	33.1%	84	10.0%
Exposure of students to social media network and their academic performance								
I usually have unlimited access to social media and this has affected my academic performance negatively	156	18.5%	381	45.2%	260	30.9%	45	5.3%
I engage in academic discussions on social media and this has improved my academic performance	137	16.3%	402	47.7%	251	29.8%	52	6.2%
I make use of social media to disseminate knowledge to my classmate	148	17.6%	447	53.1%	209	24.8%	38	4.5%
I solely rely on information obtained from social media to do my assignments without consulting other sources	120	14.3%	338	40.1%	271	32.2%	113	13.4%
Use of social media and students' academic performance								
The usage of social media has helped improve my grades	170	20.2%	407	48.3%	233	27.7%	32	3.8%
Engaging in academic forums reduces my rate of understanding	116	13.8%	338	40.1%	340	40.4%	48	5.7%
I use materials obtained from blogging sites to complement what I have been taught in class	147	17.5%	465	55.2%	196	23.3%	34	4.0%
I will not perform well in my academics even if I stop using social media	123	14.6%	337	40.0%	267	31.7%	115	13.7%
Gender usage of social media								
Male and female students use social media networks differently in different frequencies	165	19.6%	384	45.6%	241	28.6%	52	6.2%
Gender determines the level of social media network usage	106	12.6%	308	36.6%	328	39.0%	100	11.9%
Age usage of social media								
Age has impact on the use of social media	229	27.2%	495	58.8%	107	12.7%	11	1.3%
Social media become boring as I grow older	183	21.7%	410	48.7%	212	25.2%	37	4.4%
Social media is not relevant to people of older generation	141	16.7%	362	43.0%	283	33.6%	56	6.7%
The younger generation are the most active users of social media	319	37.9%	399	47.4%	102	12.1%	22	2.6%

academic performance. Likewise, 53.1% of respondents agreed they used social media to disseminate knowledge to their classmates. While 40.1% agreed they solely rely on information obtained from social media to do their assignments without reference to other sources.

Also, 48.3% of students agreed that social media has helped improve their grades. While 40.4% of respondents disagreed engaging in academic forums reduces their rate of understanding. Likewise, 55.2% of students agreed they use materials obtained from blogging sites to complement what they have been taught in class. While 40% agreed they will not perform well academically even if they stop using social media.

Further, the results showed that 65.2% of the sample believe male and female students use social media networks differently, while 50.9% of them believe gender does not determine the level of social media network usage.

Besides, 86% of medical students thought age impacted social media use, and 70.4% assumed social media would become boring with old age. While 59.7% of the sample consider social media irrelevant to people of an older generation, and 47.4% agree the younger generation is the most active social media user.

Addiction to Online Social Networks

In Table 3, the Person chi-square test shows a statistically significant association between addiction to online social networks and the gender of students. As shown males were more addicted to social media than females (61.5% vs 46.8%, $P < 0.001$), respectively. Also, there was a statistically significant association between addiction to online social networks

Table 3 Association Between Addiction to Online Social Networks and Demographic Variables (N=842)

Factors		Addiction to Online Social Network		P-value
		Not Addicted	Addicted	
Gender	Male	139 (38.5%)	222 (61.5%)	<0.001 ^a
	Female	256 (53.2%)	225 (46.8%)	
University/college	Taibah university	248 (62.8%)	298 (66.7%)	0.248
	Alrayan colleges	147 (37.2%)	149 (33.3%)	
Age	18–20 years	93 (23.5%)	85 (19%)	0.274 ^b
	21–25 years	299 (45.5%)	358 (80.1%)	
	26 years and above	3 (0.8%)	4 (0.9%)	
GPA	Less than 2	1 (50%)	1 (50%)	<0.001 ^a
	2–2.9	5 (26.3%)	14 (73.7%)	
	3–3.9	42 (33.6%)	83 (66.4%)	
	4–4.4	86 (39.1%)	134 (60.9%)	
	4.5–5	261 (54.8%)	215 (45.2%)	
Year of study	2nd year	94 (23.8%)	83 (18.6%)	0.080
	3rd year	71 (18%)	92 (20.6%)	
	4th year	80 (20.3%)	83 (53.1%)	
	5th year	84 (21.3%)	125 (28%)	
	6th year	66 (16.7%)	64 (15.4%)	

Notes: ^aP-value is statistically significant, ^bFisher's Exact Test.

and students' GPA ($P = 0.001$). Students with excellent GPAs ($GPA \geq 4.5$) are less likely to be addicted to social media networks (54.8%).

Exposure to Social Media and Academic Performance

In Table 4, Fisher's exact test shows a statistically significant association between exposure to social media and academic performance and the age of students ($P < 0.016$). Our results show that the students perceive that access to social media had a higher effect on their academic performance in the age group from 21 to 25 years (74.5%) compared to other age groups. The Person chi-square test shows a statistically significant association between exposure to social media and academic performance and year of study ($P = 0.016$). As shown, students perceive that access to social media had a negative effect on students' academic performance in the fifth year compared to the other years of study.

Use of Social Media and Students' Academic Performance

We assessed the students' perception of social media usage to help them improve their academic performance. In Table 5, Fisher's exact test shows a statistically significant association between the use of social media and students' academic performance and GPA ($P = 0.004$). Students with a $GPA \geq 4.5$ perceive that using social media is not helping improve their grades compared to other students.

Table 4 Association Between Exposure to Social Media and Academic Performance and Demographic Variables (N=842)

Factors		Exposure of Students to Social Media Network and Their Academic Performance		P-value
		Not Impact	High Impact	
Gender	Male	157 (41.9%)	204 (43.7%)	0.597
	Female	218 (58.1%)	263 (56.3%)	
University/college	Taibah university	248 (66.1%)	298 (63.8%)	0.483
	Alrayan colleges	127 (33.9%)	169 (36.2%)	
Age	18–20 years	63 (16.8%)	115 (24.6%)	0.016 ^{ab}
	21–25 years	309 (82.4%)	348 (74.5%)	
	26 years and above	3 (0.8%)	4 (0.9%)	
GPA	Less than 2	0 (0.0%)	2 (0.2%)	0.253 ^b
	2–2.9	5 (1.3%)	14 (3%)	
	3–3.9	51 (13.6%)	74 (15.8%)	
	4–4.4	98 (26.1%)	122 (26.1%)	
	4.5–5	221 (58.9%)	255 (54.6%)	
Year of study	2nd year	68 (18.1%)	109 (23.3%)	0.016 ^a
	3rd year	63 (16.8%)	100 (21.4%)	
	4th year	79 (21.1%)	84 (18%)	
	5th year	93 (24.8%)	116 (24.8%)	
	6th year	72 (19.2%)	58 (12.4%)	

Notes: ^aP-value is statistically significant, ^bFisher's Exact Test.

Table 5 Association Between the Use of Social Media and Students' Academic Performance and Demographic Variables (N=842)

Factors		Use of Social Media and Students' Academic Performance		P-value
		Not Help My Grade	Help My Grade	
Gender	Male	160 (42.2%)	201 (43.4%)	0.727
	Female	219 (57.8%)	262 (56.5%)	
University/college	Taibah university	258 (68.1%)	288 (62.2%)	0.076
	Alrayan colleges	121 (31.9%)	175 (37.8%)	
Age	18–20 years	83 (21.9%)	95 (20.5%)	0.264 ^a
	21–25 years	295 (77.8%)	362 (78.2%)	
	26 years and above	1 (0.3%)	6 (1.3%)	
GPA	Less than 2	0 (0%)	2 (0.4%)	0.004 ^{a,b}
	2–2.9	9 (2.4%)	10 (2.2%)	
	3–3.9	39 (10.3%)	86 (18.6%)	
	4–4.4	97 (25.6%)	123 (26.6%)	
	4.5–5	234 (61.7%)	242 (52.3%)	
Year of Study	2nd year	73 (19.3%)	104 (22.5%)	0.069
	3rd year	72 (19%)	91 (19.7%)	
	4th year	86 (22.7%)	77 (16.6%)	
	5th year	83 (21.9%)	126 (27.2%)	
	6th year	65 (17.2%)	65 (14%)	
Addiction to online social network	Not addicted	237 (62.5%)	158 (34.1%)	<0.001 ^b
	Addicted	142 (37.5%)	305 (65.9%)	

Notes: ^aFisher's Exact Test, ^bP-value is statistically significant.

Then, we assessed if addiction helped the students to improve their grades. The Person chi-square test shows a statistically significant association between social media addiction and social media usage to improve students' academic performance ($P = 0.001$). Show those who are addicted to social media (65.9%) benefit from the use of social media to improve their grades.

Discussion

The main purpose of this study was to examine the association between social media usage and academic performance among medical students in two colleges of medicine in Medina, KSA. We found a positive association between social media usage and students' academic performance. We recommend researchers evaluating the impact of social media in medical education look at the opportunities and challenges in integrating social media into the current framework for medical teaching.

In our study, 49.5% of medical students used social media for about 3–5 hours per day, which is considered a longer time compared to the time spent globally on social media, which is 2 hours and 27 minutes per day on average.¹⁶ Another study reported that 41.5% of medical students use social media for an average of 1–3 hours.¹ A study in Riyadh, KSA revealed that 55% of medical students used social media daily for 1–4 hours.¹² Our study was done during the COVID-19 pandemic which may explain the increase in the time spent on social media by our students. A cross-sectional study among university students in Turkey found that during COVID-19 students used social media more frequently than previously, leading to increased social media addiction.⁵ A more recent study done during the COVID-19 pandemic among university students in Indonesia found that mild depression was more likely to be experienced by students with higher social media addiction ratings.¹⁷

Medical students are at a higher risk of mental health problems, which can affect their behavior such as social media usage. They usually have the highest academic workload among university students, making them more susceptible to anxiety and depression.⁸ For example, a study done in China has shown that additional pressure, such as postgraduate examination can affect the mental health of medical students, and such mental health problems can reverse to normal after the pressure is removed.¹⁸

56.3% of our medical students agreed that online social networks distract them from their studies, and 43.3% of students agreed that hours spent online can never be compared to the number of hours they spend studying. So, social media distractions can affect the ability of the students to complete their tasks. Two main reasons for social media distraction are task-related and social distractions. Task-related distraction is when people use social media to escape from unpleasant activities or to make unfavorable activities more pleasant, while social distraction is a result of striving to connect with people and meet their expectations.¹⁹

About half of medical students agreed that engaging in academic discussions on social media has improved their academic performance, and they used social media to disseminate knowledge to their classmates. Similarly, a cross-sectional study done among medical students in KSA showed that 96% of students believed that the use of social media was beneficial. Moreover, two-thirds of students reported using social media daily for learning, and YouTube was the most common social media platform used for learning.²⁰ A systematic review of social media usage in undergraduate medical education showed that social media use can help students and teachers communicate more effectively and may improve short-term knowledge retention. However, research on the efficacy of long-term knowledge retention has been limited.²¹

Two-thirds of our sample believe that male and female students use social media networks differently. A study done in Pakistan showed differences in how each gender uses social media. Females utilize social networking sites for educational purposes, but males mostly use them for communication.²²

Our study showed that males were more addicted to social media than females. Several other researchers have investigated the variation in social media usage among both genders. Similarly, a cross-sectional study among medical students at the University of Sharjah showed that males are more addicted to social media than females.¹⁵ A study in Ghana among Koforidua Technical University students found that female students spent more time on social media than male colleagues.¹³ Also, another study conducted among biology students at a Chinese four-year university found males used social media platforms more than females.²³ Moreover, a study among university students in KSA showed that females spend more time on social media than males.²⁴ In contrast to another study at King Saud University in KSA, the authors reported no significant difference between female and male uses of social media among medical students, implying that gender has no bearing on social media use.¹²

A study suggests that medical students' use of social media improves their academic performance.¹⁰ These results are consistent with our sample's beliefs, as 48.3% of students agreed that social media usage has helped improve their grades. Also, our study showed that students with excellent GPAs are less likely to be addicted to social media networks (54.8%), and they perceive using social media is not helping to improve their grades compared to other students. Moreover, in a cross-sectional study conducted among medical students in Jeddah, KSA, most medical students believed that social media positively impacted their academic performance. However, no significant relationship was found between the students' GPA and the time spent on social media.²⁵ A study done among medical students in Riyadh, KSA found no significant association between GPA and the frequency of daily social media use.¹² Also, a study

among second-year medical students in Iraq showed that time spent on social media does not affect their academic performance.²⁶

Our study demonstrated a positive association between social media usage and academic performance, and those addicted to social media benefit from the use of social media to improve their grades. Similarly, a study among five public universities in KSA found a positive relationship between social media usage intensity and students' academic performance.²⁴

Several studies have shown a negative correlation between social media and students' academic performance. A cross-sectional study among medical students showed a weak negative correlation between social media usage and academic performance; academically low-performing students had significantly higher social media use than high-performing students.¹ Another study disclosed that the use of social media among university students had negatively affected their academic performance.¹³

This study has limitations. For example, we used convenience sampling and the data we collect through surveys is self-reported; therefore, students can provide inaccurate information, and there may have been bias toward the more active students. Also, our target population was only medical students in Medina, KSA which may limit the generalizability of our findings. Furthermore, longitudinal studies are required to assess students' social media usage before entering medical school, while studying medicine, and after graduation to understand a better picture.

Conclusions

It has been used that social media are used commonly among university students, and with the widespread access to the internet and portable devices during class hours, it can adversely impact students' academic performance. In this cross-sectional study, 842 medical students participated in investigating the usage of social media. The results showed that males used social media more common, and students with better GPAs were less likely to be addicted to social media. On the other hand, students who are addicted to social media often can use such resources to improve their grades.

This is an encouraging finding by focusing on making social media platforms as educational tools by enhancing the use of information and communication in these platforms to improve the student's academic performance.

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Disclosure

The authors report no conflicts of interest in this work.

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