Original Article

Impact of social media on the academic performance of undergraduate medical students

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ABSTRACT

Background: Social media has become an integral part in the life of every individual in the 21st century. Social media addiction in the younger age group is a major problem. The objective of this study was to find a correlation between academic performance and social media use.

Methods: This was a cross-sectional questionnaire-based study conducted in a medical school over a period of 3 months (Nov 2018–Jan 2019), where 400 medical undergraduates who use social media participated in the study. Data collected from the questionnaire included the academic performance in terms of university examination marks, the duration of social media use per day and the social media addiction score. Data correlation was done using the Pearson's correlation factor.

Results: 41.5% of students used social media for upto 3 h per day. Whatsapp (98.25%) and Youtube (91.75%) were the most commonly used social media applications. 73.5% used social media to read health-related news, 71.5% used it to complete assignments and more than 50% used it for seminar preparation, test preparation and research-related purposes. Academic performance of female students was better than male students. There was a significantly higher use of social media among academically low-performing medical students compared with high-performing medical students. There was a weak negative correlation between academic performance and social media usage and a strong positive correlation between social media usage and the social media addiction score.

Conclusions: Social media has a negative impact on the academic performance of 21st-century undergraduate medical students.

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Introduction

Social media is a network of websites and applications which enables individuals to converse with each other.[1] It also allows users to generate, use, exchange and discuss the content available in the worldwide web.[2]

In 2016, it was reported that there are 2.31 billion social media users reported with a global diffusion of 31%.[2] Studies have reported Facebook, Whatsapp and Twitter as the most commonly used social media among students.[1–4] Usage of social media in the age group of 18–29 years jumped from 12% in 2005 to 90% in 2015.[4] Facebook statistics reveal a login of more than half its users daily.[5] Twitter usage started with less than 5000 tweets/day in 2007 to an average of 500 million tweets/day in 2013 over just six years.[5] Alkhalaf et al[1] reported daily average use of 320 min of Whatsapp by a single individual. There are currently more than 500 million Whatsapp users worldwide and 700 million photos and 100 million videos shared and exchanged every day on this application.[6] The advent of smartphones has increased the usage of social media and the internet exponentially.[5]

Excessive usage of social media has not yet been termed a mental disorder, although the term social media addiction is in vogue.[1] Social media on a general platform has been shown to assemble information into learning and research, use reduced time to provide clear communication and produce access to required information.[1,2] It facilitates generation of ideas, resource exchange(notes and lectures), provides a clear insight of concepts and improves student engagement in classrooms.[4] It is useful in enhancing collaborations, professional development and academic research.[2,4] On the contrary, social media can also reduce cognition and enhance academic distraction which can lead to poor performance in academic engagements.[2–4] Psychological issues such as depression, anxiety, sleep disorders or exposure to health risks such as smoking and alcoholism may follow poor academic outcomes.[1,4,7]

The main aim of our study was to determine the correlation between social media usage and academic performance with a standardised questionnaire in medical undergraduates, which would give us an insight about the impact of social media on medical education and to determine the correlation between the social media addiction score and academic performance.

Materials and methods

This cross-sectional questionnaire-based study was conducted at a medical institution over a period of 3 months (November 2018 to January 2019). We invited medical students of second, third and fourth professional years to participate in the study. Four hundred students volunteered to participate in the study. The sampling technique used was purposive sampling. Medical undergraduate students who did not consent to the study or did not use social media were excluded from the study.

Ethical approval was obtained from the Institutional Ethics Committee before administration of the questionnaire. The participant information sheet was given to the students before the study, explaining the purpose of this questionnaire study and informed consent was obtained.

Questionnaire development

Two experts in the field of medical education evaluated the previous literature and selected the attributes for the study questionnaire. A logical sequence of the attributes presented in simple statements was followed to maintain the flow of the questionnaire. The questions were prepared to cover all areas related to the study objectives. An initial pilot study was conducted among 20 students across various professional years, and the elements of the questionnaire were refined after the feedback received on the initial questionnaire. The questionnaire consisted of the following categories: (A) demographic characteristics, including marks secured in the university examination (percentage) which includes the internal assessment and final assessment for the previous professional year examination; (B) various types of social media used; (C) duration of social media use; (D) purposes of social media use in medical education; and (E) the social Media addiction scale. For our study, social media included applications that could be used to converse, exchange and share information. Instant messaging and texting were also included as social media. The students answered the items of item E on a five-point Likert scale with 1 being "strongly disagree" and 5 being "strongly agree." The social media addiction scale is a validated psychometric measuring scale containing 29 items related to four domains (virtual tolerance − 5 items, virtual communication − 9 items, virtual problem − 9 items and virtual information − 6 items) (Supplementary File).[8] The questionnaire forms were distributed to the students after lecture classes and collected after completion of the same.

Statistical analysis

Statistical analysis was done using SPSS v16.0 software. Demographic characteristics were analysed using descriptive statistics. The correlation was measured between social media usage duration and the social media addiction scale score using Pearson's correlation coefficient. The correlation was also measured between academic performance and social media usage duration per day.

The chi-square test was done to compare the academic performance of male and female medical students. We have considered students scoring above 75% as high performers and below 65% as low performers.

Results

Demographics

187 (46.8%) male and 213 (53.2%) female students were a part of the study. The distribution of students of each professional year has been represented in Table 1. The mean percentage mark secured in university examinations was 69.04 ± 7.59.

Social media used

The social media used most commonly by students have been shown in Fig. 1. Whatsapp (98.25%) and Youtube (91.75%) were the most commonly used social media. The type of use in gaining academic medical knowledge and learning has been shown in Fig. 2.

Social media usage and academic performance

Duration of social media usage per day has been depicted in Fig. 3. The comparison of social media usage per day and academic performance status (high performers and low performers) has been depicted in Table 2. 61.2% low performers and 51.3% of high performers used social media more than 3 h per day. There was a significantly higher use of social media amongst low performers when compared with high performers (p = 0.02).

Gender and academic performance

Female medical students using social media demonstrated a significantly better academic performance when compared with male medical students (p < 0.001) as demonstrated in Table 3.

Social media addiction scale

The mean scores of the various domains in the social media addiction scale have been depicted in Table 4.

Statistical correlations

There was a significant correlation between the duration of social media usage and the social media addiction score. There was a weak negative correlation between the marks secured in the university examination and duration of social media usage as shown in Table 5.

Discussion

Whatsapp (98.25%) and Youtube (91.75%) were the most popular social media applications used in our study. In contrast, other studies in Europe, Asia and the United States have shown Facebook as the most followed site in college-going students.[2] The reason for this may be the varied time frame across which the studies were conducted. Social media applications are constantly evolving their range of features,
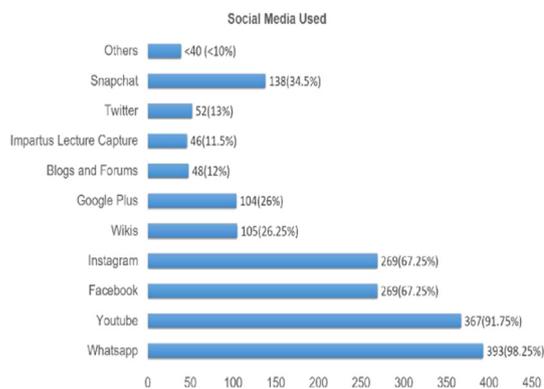

**Fig. 1 – Commonly used social media by medical students.**
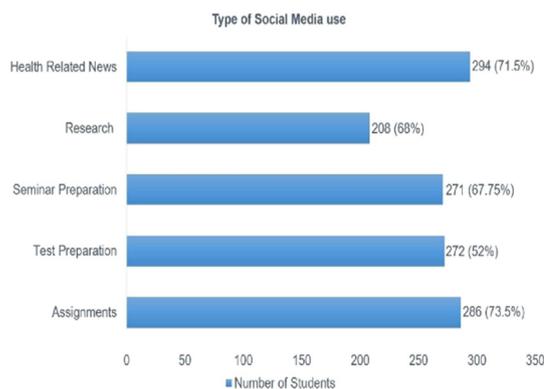
Fig. 2 – Common uses of social media in academics by medical students.

improving their user-friendliness and expanding their access to information to attract more users and gain popularity over other social media platforms.[2] Whatsapp is practically a combination of every existent social medium as it allows to communicate with each other and form peer groups, discuss and obtain feedback, and share information pertaining to medical education from any other social media platform.[9–14] Youtube provides free educational information, professional training and instructional videos, common theme vodcasts and Powerpoint presentations from top universities and organisations, which aid the medical students in enhancing their visual learning.[10,11,15–17] Facebook and LinkedIn provide opportunities for closed group teacher–student interactions,
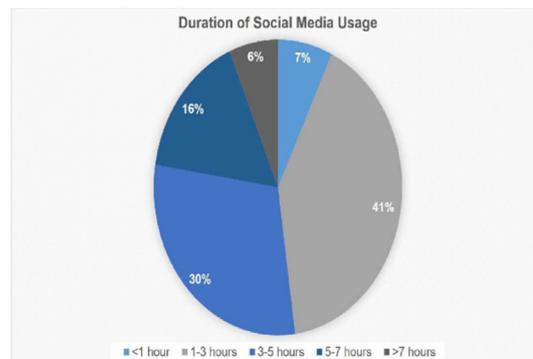
Fig. 3 – Duration of social media per day.

Table 1 – Distribution of study participants as per professional year and gender.		
Professional year	Number of students (%)	Gender
Second professional year	189 (47.2%)	Male: 99
		Female: 90
Third professional year	171 (42.8%)	Male: 73
		Female: 98
Fourth professional year	40 (10%)	Male: 15
		Female: 25

Table 2 — Comparison of social media usage to high and low performers.

Duration of social media usage	Categorisation of university examination marks (n)				p-value
	<65%	65–75%	>75%	Total	
<1 h	10	10	9	29	0.023
Percent within marks	6.9%	5.6%	11.5%	7.3%	
1–3 h	47	90	29	166	
Percent within marks	32.6%	50.6%	37.2%	41.5%	
3–5 h	46	52	23	121	
Percent within marks	31.9%	29.2%	29.5%	30.3%	
5–7 h	26	17	13	56	
Percent within marks	18.9%	9.6%	16.7%	14%	
More than 7 h	15	9	4	28	
Percent within marks	10.4%	5.1%	5.1%	7%	
Total	144 (100%)	178 (100%)	78 (100%)	400 (100%)	

n = number of students.

Table 3 — Comparison of gender with academic performance of students.

Gender	<65%	65–75%	>75%	Total	p-value
Male (n)	97	65	25	187	<0.001
Female (n)	47	113	53	213	
Total	144	178	78	400	

n = number of students.

Table 4 — Domain scores of social media addiction scale.

Social media addiction scale domains	Average domain scores
Virtual communication	23.53 ± 6.26
Virtual tolerance	14.8 ± 4.1
Virtual problem	19.18 ± 3.98
Virtual information	21.9 ± 6.7
Total score	79.42 ± 1.72

Table 5 — Pearson's correlation between social media usage with university examination marks and the social media addiction score.

Pearson's Correlation	University exam percentage marks	Social media addiction score
Social media usage per day	−0.108	0.508
p-value	0.031	<0.001

educational lectures, embedded videos and assignments with feedback being shared on a common platform.[9–13] This is based on the fact that current students prefer interactive web-based, self-directed learning compared with lectures.[15]

41.5% and 30% of our students use social media on an average of 1–3 h and 3–5 h, respectively. An average social media use of 50 min to 1.5 h daily has been noted in most previous studies.[2] A credible explanation for this could be the advancement of technology over the past decade which had led to the development of multiple user-friendly and attractive social media platforms which impart extensive information to the users.[2] Other factors that can influence

the increased time spent on social media can be explained by the gratification theory which includes needs fulfilment, relevance to user curiosity and social norms.[18] Whatsapp, Youtube, Facebook, Instagram, Snapchat, Google Plus, Wikis, Blogs and Forums, Impartus lecture capture and Twitter were the social media platforms used in completing assignments, preparing for tests and seminars, conducting research and imparting health-related news. An average of 67% of students incorporated the use of social media for their education purposes, in contrast, to the study by AlFaris et al[2] which showed 55% social media involvement in medical education.

Our study revealed a better academic performance in female medical students using social media, but there was also evidence that with increased duration of social media use per day the academic performance deteriorated. Alnjadat et al[19] reported that social media addiction is higher in the male student population because the primary aim of social media in the male student population is to find friends with similar interests which certainly affects their academic performance. The female student population in their study opined that social media addiction affected their academic performance.[19]

We used a validated social media addiction scale in our study to understand whether the duration of social media usage amounted to addiction. It is imperative from our findings that there is a weak negative impact of social media on academic performance. Contrary to the findings of our study, the literature has evidence that the relation between social media usage and academic performance is debatable. Studies showing a negative correlation between social media use and academic performance attribute it to distraction caused by multitasking, thereby adversely affecting learning.[20,21] Second, social media usage amounting to addiction increases academic procrastination and reduces sleep time and quality, thereby increasing academic stress.[22] Studies showing a positive impact of social media on academic performance attribute it to its usage as a learning tool to enhance the academic engagement between peers and educators.[23] Thereby, it impresses upon the medical educators that the social media applications have a gamut of information and processes that can be utilised to enhance learning and academic performances of medical students. Furthermore, students also need

to be sensitised on the positive and negative implications of social media early in their medical profession.

Limitations

We used a paper-based questionnaire with self-reporting of variables. This could pose a recall bias on the academic performance percentage and pattern of social media use. Secondly, gauging the in-depth duration and pattern of usage of social media application in medical education and performance was not determined which may be achieved by doing a qualitative analysis. Thirdly, psychological factors other than social media can impact a student's performance which was not assessed in our study.

Conclusion

The present study suggests a negative impact of social media usage on academic performance. Therefore, student awareness on effective use of social media in medical education and training is crucial, and it should be included and delivered proactively in the foundation course for undergraduate medical students. In addition, medical educators should incorporate social media constructively into the medical curriculum by developing learner-centric modules and effective learning strategies on a social media base to enhance student engagement in learning.

Disclosure of competing interest

The authors have none to declare.

Acknowledgements

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.mjafi.2020.10.021.

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