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Exploring Iranian Medical Students' Views on the Pros and Cons of Social Networking: A Cross-Sectional Study

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ABSTRACT

Background: Social media plays an increasingly influential role in personal, academic, and professional experiences of medical students. This study explored Iranian students' perspectives on the benefits and drawbacks of social media and analyzed how these perceptions differed across demographic and educational characteristics.

Methods: A cross-sectional survey was carried out among medical students at Shiraz University of Medical Sciences (SUMS), Iran, from October 2024 to February 2025. A proportional stratified random sampling method was applied across ten faculties, followed by simple random sampling within each faculty. Out of 362 distributed questionnaires, 312 were fully completed and returned. The study utilized a researcher-developed 10-item questionnaire rated on a 5-point Likert scale, with a midpoint value of three representing agreement. Content validity was confirmed by Content Validity Index (CVI) ranging from 0.90 to 1.00, with an acceptable level of reliability (Cronbach's α=0.745). Statistical analysis was performed in SPSS 24 using independent samples t-tests and Analysis of Variance (ANOVA).

Results: Among respondents, 65.7% were female and 74.7% were undergraduates. The most frequently reported positive aspects were increased political awareness (2.95±1.50) and opportunities to connect with specialists and professional needs (3.05±1.35). Negative aspects most often reported were disrupted sleep patterns (3.20±1.20) and academic delays (3.10±1.12). Single students consistently gave higher ratings across all questionnaire items, with significant differences observed in perceptions related to ethical issues in cyberspace (P=0.001), political awareness (P=0.011), awareness of new technologies (P=0.016), and professional networking (P=0.039). Comparing educational levels, the undergraduates, showed higher mean scores than postgraduate students, with significant differences for ethical issues (P=0.005), political awareness (P=0.009), technology awareness (P=0.002), and networking opportunities (P=0.002).

Conclusion: Social media is a double-edged tool for medical students, supporting professional growth while also causing disruptions. Medical schools can maximize its benefits by promoting digital professionalism, responsible use, and strategies to prevent academic and health drawbacks.

Keywords: Social Media, Students, Medical, Cross-Sectional Studies, Demographic Variables, Social Networking

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Introduction

In today's technological age, effective communication is crucial for all professionals in the medical field, as it boosts satisfaction and fosters knowledge sharing. Social networking is a major component of this process, with social media emerging as a powerful resource (1). Social media refers to electronic platforms designed to build online communities, enabling users to exchange information, opinions, messages, and various types of content. By 2020, approximately 3.06 billion people were active on at least one social media platform (2). Over the years, researchers have thoroughly investigated the advantages of social media in secondary and higher education, demonstrating notable benefits across multiple disciplines (3). Moreover, social media serves multiple purposes, such as enhancing communication, discussing relevant topics, connecting individuals with shared interests, and allowing users to freely express their feelings and viewpoints (4). Popular platforms like WhatsApp, WeChat, Facebook, Instagram, Pinterest, LinkedIn, SnapChat, Twitter, Telegram, Baidu, Google+, SlideShare, WeiBo, and Tumblr are now widely utilized in various sectors, including education (2). The case for incorporating social media into educational settings is underpinned by several theoretical perspectives. These include the formation of swift, easily accessible communities of practice (5) grounded in constructivist theories, which can emerge during classroom activities (6), conferences (7), or informal discussions (8). Additionally, connectivism—a relatively recent educational theory that parallels constructivism—has evolved in response to technology-driven learning environments (9). Most medical students currently have active social media accounts, into powerful means of engaging almost all students through tools already integrated into their daily lives. For educators, the debate is no longer about whether social media has a place in education or if students are using these platforms for learning. The focus should now shift to determining the most effective ways to leverage social media and evaluating whether these platforms can help achieve targeted educational outcomes.

Social media has emerged as one of the most prevalent tools with considerable potential for delivering medical education and adapting to rapidly evolving environments. Its greatest strength lies in its global accessibility, enabling medical students to connect and exchange a variety of educational resources. Engaging in interactive discussions deepens understanding of the complexities inherent in medicine and serves as an effective means for Continuing Medical Education (CME). Furthermore, receiving feedback and support from peers and mentors not only enriches the learning experience but also fosters a sense of community. This supportive environment motivates students to share their experiences, find inspiration, and celebrate their successes, thereby strengthening their collective identity (1, 10).

Iran represents approximately two percent of global Internet users, with an Internet penetration rate of around 53 percent, equating to over 40 million users. Iranians spend a considerable amount of time daily online, ranking first in the Middle East for the number of Internet users (11, 12). A significant proportion of social network users are students and faculty members; for instance, over 75% of students actively use Facebook (13). Recently, Iranian students have increasingly engaged with online social networks, although the specific reasons and patterns of their usage remain unclear (14). Today, platforms such as Telegram, WhatsApp, Line, and Viber serve as important educational environments (15).

Virtual education has also gained prominence in health sciences; for instance, a 1997 survey of 353 American nursing schools reported a fivefold increase in Internet-based courses over the preceding five years (16). Similarly, virtual education in Iranian medical universities has expanded rapidly, providing a foundation for both students and faculty to utilize these networks (14). According to a survey, students perceive virtual social networks as presenting both opportunities

and challenges, influencing how effectively they can leverage benefits while minimizing associated risks (17).

A prior study reported that a considerable number of medical students spend more than 10 hours per week on social media, with pre-internship students showing the highest levels of use, followed by first-year and clerkship students (18). These platforms serve as tools for both personal and professional networking, allowing medical students to engage in active communication and instant information sharing that support their educational growth (19–21).

Survey results indicate that 80% of students obtain academic materials through Facebook, and more than two-thirds acknowledge its educational value. In particular, 67.9% reported that social media improved their learning activities, while 65.2% supported its use for educational purposes. However, 64.1% also admitted that it can be distracting and time-consuming (18, 22). At Ubon Ratchathani University in Thailand, research revealed that 32.6% of medical students were addicted to social media, with 23.9% experiencing depression and 45.4% reporting anxiety—suggesting a strong association between social media addiction and mental health concerns (23). Facebook users reported negative symptoms such as eye strain (21%), sleep disturbances (19%), and headaches (16%). Moreover, 67.5% acknowledged that Facebook adversely affected their academic performance, prompting 71.4% to reduce their usage in order to allocate more time for studying (22).

Therefore, social networking sites can produce both beneficial and harmful outcomes. Positive interactions, social support, and strong social connections on these platforms are associated with lower levels of depression and anxiety, whereas negative interactions and social comparison tend to exacerbate these problems (24). Research examining the relationship between social media use and academic outcomes has yielded mixed inconsistent results. For instance, Kubey and colleagues found a link between social media dependence and academic outcomes (25), whereas George and Delacega highlighted that social media can enhance academic opportunities (26). Similarly, Oye and colleagues noted that students view social networks as useful educational tools (27). In contrast, other studies have reported detrimental associations (28-30).

Given the widespread use of social media among medical students and its considerable influence on their educational experiences, it is crucial to gain a comprehensive understanding of their views regarding both the advantages and drawbacks of these platforms. Although social networks offer significant opportunities for learning, communication, and a sense of community, they also introduce various challenges.

In Iran, most previous research has primarily focused on general patterns of social media use (31, 32) without exploring how demographic and educational factors such as marital status or level of training influence students' perceptions. Similarly, most international research has examined either the benefits or the drawbacks of social media in isolation (33-35), rather than considering both aspects simultaneously within one population. Accordingly, the present study stands out by exploring both the perceived positive and negative impacts of social media among medical students at Shiraz University of Medical Sciences and analyzing how these perceptions vary across demographic and educational backgrounds. Through this approach, the study aims to provide insights and strategies that can enhance the educational value of social networks while reducing their potential adverse effects in medical education settings.

Methods

Study Design and Setting

This cross-sectional study was carried out among medical students across ten faculties at Shiraz University of Medical Sciences (SUMS), Iran, who were enrolled in 2024. The study aimed to capture students' perspectives on the benefits and drawbacks of social media within a defined timeframe.

Participants and Sampling

The study included all students enrolled at SUMS in 2024, approximately 8,000 students, who participated in the study upon giving informed consent. Participants who failed to complete the demographic section or left more than 20% of the questionnaire unanswered were excluded. The sample size was determined using Cochran's formula (36), resulting in an estimated requirement of about 362 students for a population of 8,000. A proportional stratified sampling approach was used based on the student population of each university faculty. Within each faculty, participants were chosen through simple random sampling using a lottery-based system derived from the faculty's list of students email addresses, which were obtained from the educational deputy of each faculty. The electronic questionnaire was then distributed via email to the selected students.

$$n = \frac{\frac{Z^2 pq}{d^2}}{1 + \frac{1}{N}(\frac{Z^2 pq}{d^2} - 1)}$$

Tools/Instruments

The research instrument was a researcher-made questionnaire consisting of 10 items, with six items measuring positive aspects and 4 items measuring negative aspects. The questions were rated on a 5-point Likert scale (Strongly Agree=5, Agree=4, Somewhat Agree=3, Disagree=2, Strongly Disagree=1). The first section of the questionnaire included demographic questions such as age, gender, marital status, work experience, and educational level, among others. At the beginning of the questionnaire, participants were informed about the study's objectives and provided informed consent before responding. A score of "3" was set as the cutoff point; responses higher than "3" indicated positive endorsement of the item, while responses below "3" reflected disagreement. To develop the questionnaire, a focus group discussion was conducted involving seven medical students from diverse disciplines (including medicine, pharmacy, dentistry, nursing, public health, biochemistry, laboratory sciences, health technology, health management, and physiotherapy) along with three faculty members specializing in medical education, e-learning, and educational technology. The question posed was: "In your opinion, what positive or negative effects can students' presence on social networks have?" In total, 12 items were extracted.

Although some previous studies have used existing tools to examine social media use, those instruments were either developed in different cultural and educational contexts or focused mainly on addiction and general usage patterns rather than a balanced view of both positive and negative aspects. Furthermore, to the best of our knowledge, no validated Persian instrument was available to specifically address the experiences of Iranian medical students across various disciplines. Therefore, developing a researcher-made tool allowed us to tailor the items to the local context and educational setting.

Validity and reliability - To assess face validity, the preliminary 12-item questionnaire was reviewed by five students from the fields of medicine, nursing and public health, medical education, and physiology. Based on their feedback, two items were found to be redundant and were removed, while one item was simplified to improve clarity and structure.

For content validity, the 10-item version of the questionnaire was sent to 5 experts: one specialist in educational technology, two PhD holders in medical education, one expert in higher education management, and one in e-learning. Content validity was assessed using the Content Validity Index (CVI), with values for all items ranging between 0.90 and 1.00. The overall CVI was calculated as 0.985.

Construct validity was evaluated using Exploratory Factor Analysis (EFA). Based on the EFA results, the 10 items were categorized into two factors (positive and negative aspects). Sampling adequacy was confirmed with a Kaiser-Meyer-Olkin (KMO) value of 0.772, and Bartlett's Test of Sphericity was significant ($P<0.001$).

After collecting data from 312 participants

who completed the 10-item questionnaire, the overall reliability was measured by Cronbach's alpha coefficient, which was 0.745. The reliability for the subscales was 0.642 for the negative aspect factor (6 items) and 0.875 for the positive aspect factor (4 items).

Data Collection

Data were collected from October 2024 to February 2025 at SUMS. The data collection was conducted via an electronic questionnaire sent through email links to students. Student emails were obtained with permission from the university's educational deputy and were randomly selected for questionnaire distribution.

Data Analysis

EFA was used to examine the underlying structure of the questionnaire. Cronbach's alpha was applied to assess the reliability and internal consistency of the items. For hypothesis testing and group comparisons, one-sample t-tests, independent t-tests, and Analysis of Variance (ANOVA) were used. Prior to conducting the independent samples t-tests and ANOVA, the distribution of the data was evaluated using the Kolmogorov–Smirnov test, which confirmed normality. All statistical analyses were performed using SPSS version 24.

Ethics – Students received a detailed explanation of the study's purpose and voluntarily gave written informed consent to participate. Anonymity was ensured to protect participant confidentiality. The research adhered to the ethical guidelines set by the Research Vice-Chancellor of SUMS and was officially approved by the SUMS Ethics Committee in Biomedical Research.

Results

Demographic Characteristics

Out of 362 distributed questionnaires, 312

Table 1: Demographic information of the participants

Feature	Frequency	Percentage
Gender		
• Male	107	34.3
• Female	205	65.7
Age		
• 19 to 25 years	184	59.0
• 26 years and older	128	41.0
Field of Study		
• Clinical (Medicine and Dentistry)	89	28.5
• Basic Medical Sciences	131	42.0
• Paramedical	78	25.0
• Non-medical	14	4.5
Educational Level		
• Bachelor's	125	40.1
• Professional Doctorate	108	34.6
• Postgraduate (MSc and Ph.D.)	79	25.3
Marital Status		
• Single	264	84.6
• Married	48	15.4
Employment Status		
• Student (Unemployed)	191	61.2
• Government Organizational Job	43	13.8
• Private Organizational Job	42	13.5
• Freelance Job	36	11.5

*Basic Medical Sciences: Physiology, Anatomy, Biochemistry, Genetics, Immunology, Pharmacology, etc.; Paramedical: Nursing, Nutrition, Health, Rehabilitation, Occupational Therapy, Anesthesia, Operating Room, etc.; Non-medical: Management, Information Technology, Medical Education, Language, Computer Science, etc.

were fully completed and returned (response rate=86%). More than 65% of the students were female, and 74.7% of them were in the undergraduate group (professional doctorate and bachelor's degrees), while 25.3% were postgraduate students. The detailed demographic profile of the study participants is summarized in Table 1.

Main Findings

A. Positive and Negative Aspects

For the first research question, students rated their agreement with each item. The distribution of responses, including frequencies and percentages, is presented in Figure 1 and Appendix 1.

As the results indicate, among the positive factors, the highest agreement was related to statements of "increased political awareness" and "familiarity with specialists and professional needs." However, regarding the negative aspects, students pointed to "disruption in sleep patterns" and "falling behind on homework and academic schedules" (Figure 1).

B. Impact of Contextual Variables

The second research question addressed whether students' opinions about the positive and negative aspects of social networks are influenced by contextual variables. To answer this question, the effects of gender, age, educational level, marital status, and employment status were examined.

Gender: To examine students' opinions by gender, an independent samples t-test was used. No significant difference was observed between the opinions of female and male students in any of the items (P>0.05) (Appendix 1).

Age: Based on demographic findings, students were divided into two age groups: 19 to 25 years and 26 years and older. To examine students' opinions by age group, an independent samples t-test was used. No significant differences were observed between the age groups in any of the items (P>0.05) (Appendix 2).

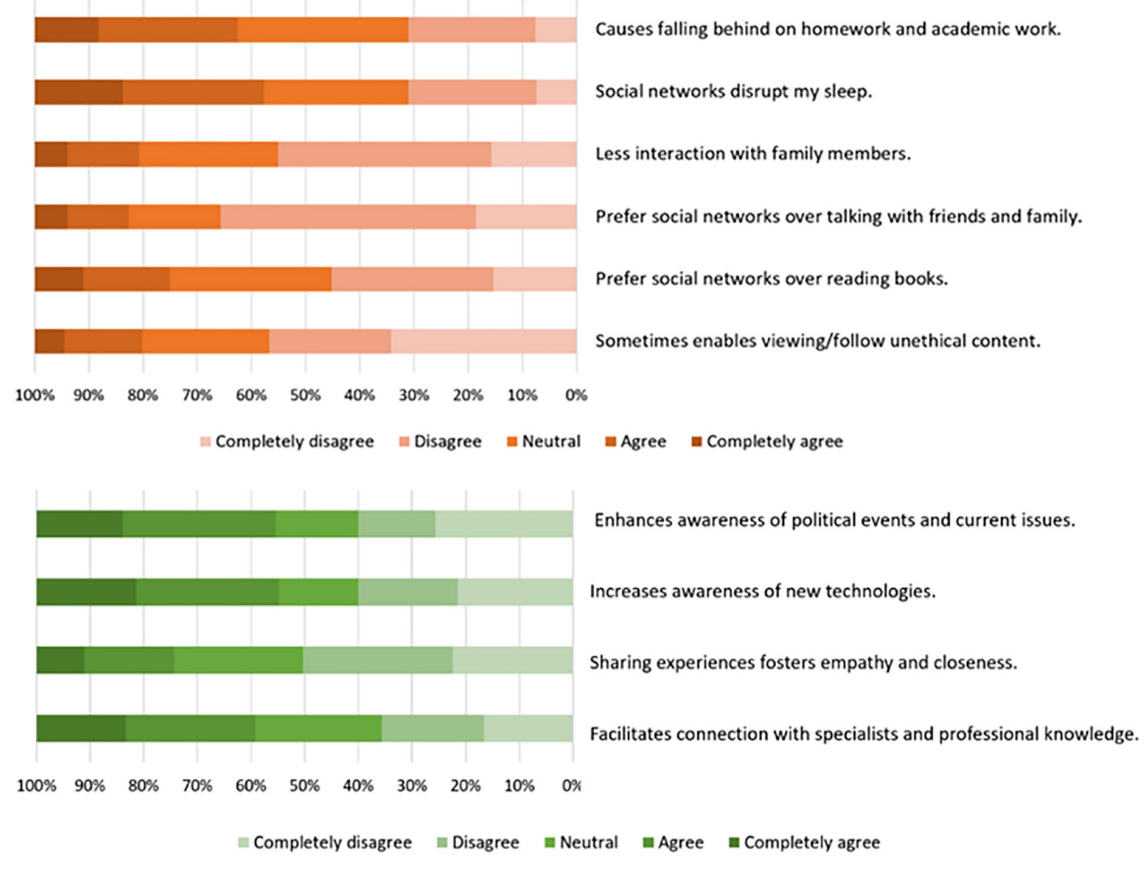


Figure 1: Students' opinions on the positive and negative aspects of social network participation

Table 2: Students' opinions on the positive and negative aspects of social networks by marital status

Components	Marital status	Mean	SD	t	P-value
Negative aspects					
Negative impact on completing academic tasks	Single	3.14	1.095	1.127	0.261
	Married	2.94	1.278		
Disruption of my sleep schedule	Single	3.23	1.172	1.150	0.251
	Married	3.02	1.263		
Decrease in conversation and interactions with family members	Single	2.55	1.081	0.165	0.869
	Married	2.52	1.167		
Preference for interactions on social networks instead of talking with family and friends	Single	2.37	1.112	0.891	0.374
	Married	2.52	1.010		
Preference for being present on social media instead of studying and reading books	Single	2.71	1.157	0.774	0.440
	Married	2.85	1.238		
Providing the opportunity to face, search, or follow unethical content	Single	2.44	1.247	3.412	0.001
	Married	1.79	1.031		
Positive aspects					
Increased awareness of political events and current issues	Single	3.04	1.430	2.571	0.011
	Married	2.46	1.473		
Increased awareness of new technologies and new approaches	Single	3.11	1.429	2.432	0.016
	Married	2.56	1.398		
Increased empathy with people by sharing experiences and observing their lives	Single	2.64	1.258	0.840	0.402
	Married	2.48	1.203		
Facilitation of acquaintance with specialists, current knowledge, and professional needs	Single	3.12	1.304	2.073	0.039
	Married	2.69	1.417		

SD: Standard Deviation Single (N=264) Married (N=48)

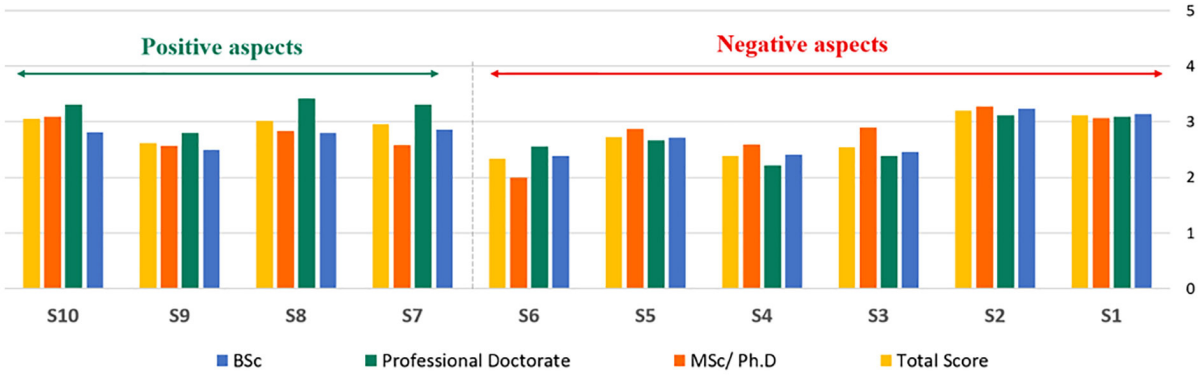
Marital Status: To examine students' opinions by marital status, an independent samples t-test was used. According to Table 2, in all cases, the mean opinions of single students were higher than those of married students. Significant differences were found in the items of "ethical issues in cyberspace" (negative aspects) (P=0.001), "increased awareness of political events" (P=0.011), "increased awareness of new technologies" (P=0.016), and "facilitation in getting acquainted with specialists and up-to-date knowledge" (P=0.039) (positive aspects). This could be because single students generally have more free time than married students, allowing them greater participation in social networks (Table 2).

Educational Level: To examine students' opinions by educational level, ANOVA was used. As illustrated in Figure 2 and Appendix 3, significant differences were observed in several items (S3, S6, S7, S8, and S10), indicating that students' views on the positive and negative aspects of social networks varied depending on their level of education.

Significant differences were found in the items of "ethical issues in cyberspace" (P=0.005) (negative aspects), "increased awareness of political events" (P=0.009), "increased awareness of new technologies" (P=0.002), and "facilitation in getting acquainted with specialists and up-to-date knowledge" (P=0.002) (positive aspects) (Figure 2; Appendix 3).

Discussion

The present study aimed to investigate the perspectives of medical sciences students regarding the positive and negative aspects of social networks and their relationship with contextual variables. The results indicated that among the positive aspects, students most strongly agreed with "increased political awareness" and "familiarity with professionals and professional needs." Conversely, the most highlighted negative aspects were "disruption of sleep patterns" and "falling behind on academic assignments and schedules". While these results partially align with previous national and international



S1. Negative impact on completing academic tasks.
S2. Disruption of my sleep schedule.
S3. Decrease in conversation and interactions with family members.
S4. Preference for interactions on social networks instead of talking with family and friends.
S5. Preference for being present on social media instead of studying and reading books.
S6. Providing the opportunity to face, search, or follow unethical content.
S7. Increased awareness of political events and current issues.
S8. Increased awareness of new technologies and new approaches.
S9. Increased empathy with people by sharing experiences and observing their lives.
S10. Facilitation of acquaintance with specialists, current knowledge, and professional needs.

Figure 2: Students' opinions on the positive and negative aspects of social networks by educational level

research, the present research contributes new insights by highlighting the influence of contextual factors, such as marital status and educational level, on students' attitudes.

One notable finding of this study is that the students highlighted the role of social networks in promoting political awareness. This is particularly significant given the importance of active participation in social and political issues—especially for medical students, who will play a pivotal role in the future health of society. Numerous studies have corroborated this finding. For instance, Buzzetto-Hollywood and colleagues (2021) demonstrated that social networks provide an appropriate platform for increasing political knowledge and civic engagement among youth (37). Loader and colleagues (2019) reported that virtual space usage can strengthen individuals' political participation (38). Halpern and colleagues (2017), examining Facebook and Twitter, confirmed their impact on political engagement (39). Similarly, Bae and colleagues (2013) examined how political discussions shift from offline to online settings and discovered that individuals with a strong interest in politics are more inclined to continue these conversations through online platforms (40).

As participatory platforms, social networks enable user-generated content creation and sharing within virtual communities. Using social networks as a news source allows users to interact with news in various ways, including consumption, discovery, sharing, or reposting. Since individuals on online social networks express political opinions and share political information, this fosters a spirit of cooperation and leads to greater political participation.

The novelty of our study is that it highlights medical students, a group not always considered politically active, as perceiving social media as a vehicle for civic engagement. For medical education, this finding suggests that social media could be harnessed to cultivate awareness of health policy, advocacy, and professional responsibility.

The second positive aspect highlighted by students is the role of social networks in establishing connections with professionals and understanding professional needs. Supporting this finding, Guckian and

colleagues (2021) examined the role of social media in undergraduate medical education and found that students felt social media flattened hierarchies and improved communication with mentors (41). Mengov and colleagues (2022) demonstrated that social network use can aid the development of students' communication skills by facilitating interaction with professionals, peers, and faculty (42). This finding aligns with other studies indicating that students engage with social networks to build connections, seek mentorship, and access learning opportunities (43, 44). It is essential for educators to prepare students for their professional lives, which is a core mission of medical education (45). The Liaison Committee on Medical Education (LCME) in the United States emphasizes foundational professional attributes such as empathy and integrity, which should be nurtured throughout medical school (46). Our results extend these studies by showing that Iranian medical students themselves perceive networking as one of the strongest positive functions of social media. In practice, this indicates that faculty can deliberately use social media channels for mentoring and career guidance, rather than leaving students to navigate professional networking informally.

Alongside positive aspects, medical sciences students in this study also pointed to significant negative aspects, including "disruption of sleep patterns" and "falling behind on academic assignments and schedules." These findings align with previous research indicating that improper and excessive use of social networks can negatively impact students' mental health and academic performance (47, 48). Pirdehghan (2021) found that extensive use of smart devices and social networks is significantly associated with poor sleep quality, reduced sleep duration, and psychological disorders such as depression (49).

Previous research has indicated that using social networks close to bedtime is linked to longer time taken to fall asleep (sleep onset latency) (50-52), and that engaging with them during nighttime, specifically within 30 minutes before sleep, is associated with increased sleep disturbances (53). Disruption of sleep patterns is a common consequence of excessive social network use, due to exposure to blue light from screens and mental activity late at night, which reduces both sleep quality and quantity (54). Insufficient and poor-quality sleep, in turn, can impair concentration, memory, and learning ability. What our study adds is the linkage between sleep disturbance and academic delays, which students themselves identified as interconnected consequences. This suggests that educational institutions should not only warn about the academic risks of social media but also integrate sleep hygiene and healthy technology-use education into student support programs.

The findings of this study also indicated that improper use of social networks can lead to academic setbacks. Previous research has shown that spending too much time on social networking platforms can limit the time available for studying and completing assignments, which in turn negatively impacts academic performance (55, 56). This aligns with Junco (2012), who reported a negative relationship between overall GPA and the amount of time spent on Facebook (57). One of the most important factors contributing to the negative impact of social network use on students' academic performance is the reduction in study time caused by these platforms. Various studies have shown that most students consider such extracurricular activities among the main obstacles to studying, leading to academic delays and prolonged study periods (55). Moreover, it was found that students who were members of social networks often accessed them at night, which may cause daytime fatigue due to sleep disturbances, manifesting as lack of concentration during learning and decreased academic performance (58, 59). Overall, the evidence indicates that improper and excessive social network use not only diminishes study time but also, through sleep disruption and fatigue, impairs learning quality and academic performance. Our

findings reinforce this evidence but add an educational implication: interventions should move beyond warning against "excessive use" and instead provide students with concrete time-management tools and digital well-being strategies tailored to the medical curriculum's high workload.

Contextual Factors

Gender: Based on the findings of the present study, no significant differences were observed between male and female students' attitudes toward the positive and negative aspects of social networks. This finding aligns with the results of Golmakani and colleagues (2018), who reported that the type of social network usage does not significantly affect students' gender-related attitudes, and specifically, no meaningful relationship was found between the type of social networks used and the dimensions of attitudes toward gender roles (60). Similarly, studies conducted by Rodríguez-de-Dios and colleagues (2021) and Gradinger and colleagues (2016) found no gender differences in the impact of social media interventions (61, 62). In contrast to these findings, Rondán-Cataluña and colleagues (2017) investigated gender roles and their influence on the behavior of Generation Y social network users (63). Their findings revealed that gender roles, beyond mere biological sex differences, shape distinct behaviors in social network usage. In other words, users with different gender roles (male, female) exhibit different behavioral patterns and levels of social participation on social networks, which affect their social satisfaction and repeated use. Such differences may be attributed to variations in sample characteristics and educational environments. Additionally, other contextual or cultural factors in the present study may have mitigated gender differences. The absence of gender differences in our sample may indicate that among Iranian medical students, heavy academic demands override gender-related variations in social media use. This suggests that educational interventions on social media literacy can be designed without the need for gender-specific tailoring.

Age: The findings indicate no significant difference in attitudes toward the positive and negative aspects of social networks between the two age groups: 19 to 25 years and 26 years and older. This suggests that age, as a demographic variable, does not significantly influence the overall attitude of students toward social network use. This result aligns with some previous studies. For instance, Grace (2022) showed that age does not directly influence users' behavioral intentions in social media environments but plays an important role in interaction with attitudes toward security and privacy (64). Hargittai (2010) found that although younger users are more skilled in using social media, older adults hold similar attitudes toward positive aspects (such as maintaining connections) and negative aspects (such as privacy concerns) of these platforms (65). However, some studies present differing results, indicating age influences attitudes and social network use. A review by Cotton and colleagues (2022) indicated that older individuals tend to hold more cautious or negative views of social networking sites, frequently emphasizing concerns about privacy, misinformation, or limited perceived benefits. In contrast, younger users generally display more mixed and diverse perspectives, recognizing both the positive social and informational opportunities and the potential drawbacks associated with social media engagement (66). Yates and colleagues (2015) investigated the effects of social class and age on digital media use patterns in the UK, revealing that both factors independently predict digital media usage, with age being a primary factor explaining overall usage and certain specific types of use (67). In the present study, which focused on a narrower and predominantly young age range, such differences were not significant. This suggests that the effect of age on online attitudes and behaviors is less pronounced among closely aged groups (such as university students) compared to wider age gaps (such as adolescents versus

older adults). Considering the existing evidence, it can be concluded that within the student age range, no significant attitudinal differences based on age are observed, and psychological, individual motivational, and cultural factors play a more prominent role in shaping attitudes. Nonetheless, on a broader scale and across wider age ranges, age can significantly affect social network users' attitudes and behaviors. The lack of an age effect in our findings underscores the relative homogeneity of medical students and indicates that interventions should focus more on psychosocial and educational variables rather than age.

Marital Status: The findings reveal that single students have higher average attitudes toward both the positive and negative aspects of social networks compared to married students. Significant differences were particularly observed in negative aspects such as "ethical issues in cyberspace," and positive aspects including "increased awareness of political events," "enhanced awareness of new technologies," and "facilitated acquaintance with professionals and up-to-date knowledge." Several studies support these results. Echine (2019) investigated the role of social networks in social and political mobilization in Morocco, particularly within the 2018 boycott campaign (68). Comparing these findings with the present study, which shows that single students hold stronger positive and negative attitudes toward social networks, reveals important insights. The higher positive attitudes of single students toward aspects such as increased political and social awareness align with Echine's findings emphasizing social networks' critical role in raising awareness and political participation. Single students, due to more free time and greater opportunities for active online presence, are more likely to use social networks for information acquisition and engagement in social and political matters (68). A qualitative study also reported that social networks like Facebook groups serve as new spaces for social interaction and even finding life partners for single young adults, increasing social interactions and positive attitudes toward these platforms among singles (69). Marital status plays an important role in shaping individuals' attitudes toward social networks. Single students, owing to more free time and greater opportunities for active online engagement, exhibit stronger positive and negative attitudes toward various aspects of social networks. These findings highlight the importance of considering contextual variables such as marital status when analyzing social network users' behaviors and attitudes and can guide the design of tailored educational and cultural programs to meet different groups' needs. Our study is one of the first in Iran to identify systematic variations based on marital status, indicating that interventions should consider lifestyle differences. For instance, time management strategies might be particularly beneficial for single students, whereas ethical education on professional boundaries could be essential for all groups alike.

Educational Level: The present study shows that undergraduate students have significantly higher average attitudes in some items—especially regarding items related to "ethical issues in cyberspace," "increased awareness of political events," "awareness of new technologies," and "facilitation of connections with professionals and current knowledge"—compared to graduate students (master's and doctoral levels). These findings suggest that undergraduates have a more active and sensitive attitude toward the positive and negative aspects of social networks. Several studies confirm this. For instance, Vošner (2016) reported that education level is among the most important factors influencing the extent and manner of social network use in this age group (70). Ahmad (2019) showed that both undergraduate and graduate students are active online and politically aware, but undergraduates demonstrate more active attitudes toward political awareness and new technologies (71). Differences in attitudes between undergraduate and graduate students may stem from multiple factors; undergraduates are typically new to

university and social networks, with greater needs for interaction, information, and awareness, which may heighten sensitivity and active attitudes toward social networks' positive and negative aspects. Conversely, graduate students, due to greater experience and expertise, may have more realistic and conservative attitudes. However, some studies suggest that educational level alone cannot fully determine attitudes, and psychological, cultural, and motivational factors must also be considered. This underscores the importance of multidimensional and comprehensive research designs to better understand social network users' attitudes.

The novelty of our findings lies in showing that even within a single institution, educational stage significantly shapes perceptions of both risks and benefits. For educators, this means that social media guidance should be tiered: undergraduates may benefit from structured digital literacy and professional identity formation workshops, while postgraduate students may require more focused discussions on ethical dilemmas and advanced professional networking.

In summary, this study is well aligned with existing international evidence but adds unique contributions by highlighting how marital status and educational stage influence social media perceptions among Iranian medical students. The practical implication is that social media training in medical education should not be uniform but instead tailored to students' life circumstances and academic stage. While the findings are most directly applicable to Iranian medical universities, the patterns observed—particularly the linkage between sleep disruption and academic delays, the strong networking potential, and the role of marital status—may also resonate in other countries with similar student demographics and social media penetration. Therefore, the study not only enriches local understanding but also contributes to the global conversation on how best to integrate social media into medical education while minimizing its risks.

Limitations and Suggestions

Despite providing valuable insights, this study has some limitations that should be considered when interpreting the results. First, data were collected based on students' self-reports, which may be subject to recall bias or social desirability bias. Additionally, the sample was limited to students from one or a few specific universities, which may limit the generalizability of findings to other universities or student groups with different characteristics. Furthermore, the cross-sectional design restricts the ability to examine causal relationships or changes in attitudes and behaviors over time.

Future research is recommended to employ longitudinal designs to monitor changes in students' attitudes and behaviors toward social networks throughout their academic tenure, allowing better analysis of causal relationships. Qualitative studies could also provide a deeper understanding of students' motivations, experiences, and challenges in social network use. It is suggested that future studies increase the geographical and cultural diversity of samples to obtain more comprehensive and generalizable results.

Conclusion

Social networks, as a pervasive and influential phenomenon, present numerous opportunities and challenges for medical sciences students. Intelligent use of these tools can enhance educational processes, strengthen professional communications, and promote social and political participation. However, improper and unmanaged use may have serious negative consequences on students' mental health and academic performance. Therefore, it is essential for educational institutions and policymakers to adopt comprehensive, evidence-based approaches to facilitate optimal and responsible social network use. Key strategies include time management training, raising awareness of psychological effects, and preparing students to utilize cyberspace constructively. Additionally, attention to individual and contextual differences among students can aid in designing more targeted and

effective programs, enabling social networks to become powerful tools in medical education and professional development.

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Authors' Contribution

FT contributed to the study design, data collection, and preparation of the initial manuscript draft. MH was involved in data analysis and interpretation and assisted in drafting the article. ZK designed the study, developed and validated the research instruments, analyzed the data and findings, and prepared the main manuscript. All authors reviewed and approved the final version of the paper.

Conflict of Interest

The authors declare that they have no competing interests. As an Editorial Board member, Zahra Karimian did not participate in any phase of this manuscript's review or decision-making process. The evaluation was carried out independently by reviewers designated by the Editorial Board, without her awareness or involvement in the assessment.

Ethical Considerations

The research adhered to the rigorous guidelines of the Research Vice-Chancellor of Shiraz University of Medical Sciences (SUMS) and was approved by the SUMS Ethics Committee in Biomedical Research (Approval code: IR.SUMS.REC.1403.306). This article is derived from a thesis project (No. 30655) approved by the Research and Technology Deputy of SUMS. Students were thoroughly briefed on the survey's objectives and voluntarily provided written informed consent. Participant privacy was ensured through anonymous data reporting.

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Availability of Data and Materials

The datasets used during the current study are available from the corresponding author upon reasonable request. Additional results and appendices are provided in the supplementary file.

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