ORIGINAL ARTICLE

Evaluating the impact of social media on the mental health of school and university students in Saudi Arabia: a cross-sectional study via social media

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ABSTRACT

Background: Social media use is widespread among young people, and its effects on mental health are of growing concern. This study aimed to assess the perceived impact of social media use on the mental health of school and university students in Saudi Arabia, including anxiety, depression, sleep, and academic performance.

Methodology: An online cross-sectional survey was conducted among 422 school and university students using a self-administered questionnaire distributed via social media. Multivariable logistic regression was used to identify predictors of being mentally affected by social media use.

Results: Overall, 69.9% of participants used social media for 4 hours or more daily. Anxiety when not using social media was reported by 58.8% of participants and depressive symptoms associated with social media by 54.7%. Checking social media before bed was reported by 66.1%, and 47.6% reported that their academic performance was affected. Overall, 39.1% of participants were classified as mentally affected. Male gender (adjusted odds ratio [AOR] = 1.69; 95% confidence interval [CI]: 1.05-2.74) and more hours of daily use (AOR = 1.65; 95% CI: 1.30-2.11) were associated with higher odds of being mentally affected, whereas residence outside Riyadh city was associated with lower odds (AOR = 0.51; 95% CI: 0.33-0.79). Age, educational level, marital status, nationality, and age at first use were not significant predictors.

Conclusion: Prolonged social media use was associated with negative perceived mental health effects among students. Promoting healthy digital habits and accessible mental health support through collaboration among educators, parents, and policymakers is recommended.

Keywords: Social media, mental health, students, anxiety, depression, Saudi Arabia.

Introduction

The term "social media" encompasses various internet-based platforms that facilitate communication and interaction among users, both verbally and visually. Media, ranging from traditional television to modern devices such as smartphones and tablets, have a profound influence on children's lives. Although media are not the leading cause of any major health problem, they can contribute to various risks and health problems among children and adolescents, while also providing benefits such as health information and social connectedness [1]. Mental health is defined as a state of well-being in which individuals realize their own abilities, can cope with the normal stresses of life, can work productively, and are able to contribute to their community [2]. Media

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education and positive media use are recommended to maximize the benefits of media and reduce their harms, and clinicians and parents are encouraged to address children's media use [1].

On average, 8- to 10-year-olds spend nearly 8 hours daily using various forms of media, while older children and adolescents spend more than 11 hours per day [3]. Children and adolescents spend more time with media than in any other activity except sleeping [1].

Smartphone and social media use among adolescents has been linked to increases in mental distress, self-harming behaviors, and suicidality [4,5], and associations between digital media use and lower psychological well-being appear to be stronger among girls than among boys [6].

In 2023, there were approximately 29.1 million social media users in Saudi Arabia, representing 79.3% of the population [7]; in 2024, the number of social media user identities reached approximately 35.3 million [8]. A recent Saudi study found that social media had a low impact on the mental health of most participants; however, older participants (aged 16-24 years) appeared to be more affected. The authors noted that parents can reduce social media use by setting time limits, fostering communication, and promoting offline activities, and that trust and parental controls are essential for cultivating healthy digital habits. Although parents are not solely responsible, they can create technology-free areas and encourage in-person friendships to mitigate social media risks [9].

Understanding the association between social media use and the mental health of school and university students is important in the current digital era. This study aimed to assess the perceived impact of social media use on the mental health of school and university students in Saudi Arabia, including anxiety, depression, sleep, and academic performance, and to identify factors associated with being mentally affected.

Subjects and Methods

Study design and setting

This online cross-sectional study was conducted among school and university students with social media accounts in Saudi Arabia between July 2024 and February 2025.

Study population

Eligible participants were school and university students of both sexes who resided in any region of Saudi Arabia. Individuals who declined to participate were excluded.

Sampling technique and data collection

A convenience sampling strategy was used. An electronic self-administered questionnaire was distributed widely through social media platforms (Facebook, Twitter, Instagram, and WhatsApp).

Questionnaire

The questionnaire was adapted from that of Faqihi et al. [9] and developed on the basis of a review of the literature on the effects of social media on mental health. It consisted of three parts: (1) sociodemographic characteristics (age group, gender, nationality, marital status, educational level, and region of residence); (2) the social media use profile, including the most frequently used platform, age at first use, daily hours of use, awareness of privacy settings and of mental health resources available through social media, taking breaks for mental health reasons, and comfort in seeking professional help (Table 2); and (3) the perceived impact of social media on mental health and well-being, assessed with 19 items covering sleep, memory, academic performance, anxiety, fear of missing out (FOMO), exposure to upsetting content, depressive symptoms, desire for likes, pressure to portray a certain image, cyberbullying, appearance comparison, self-esteem, behavior change, bedtime and morning checking of social media, use during studies, and life satisfaction (Table 3).

Each impact item was scored dichotomously: a response indicating a negative effect ("Yes," "Always/Often," "Significant effect," "Decreased," "Low/Very low," or "Negative/Very negative," as shown in Table 3) was scored 1, and any other response was scored 0, giving a total score of 0 to 19. Higher scores indicate a greater perceived mental impact of social media. Participants were classified as "mentally affected" if their total score was 10 or higher (i.e., at least 50% of the maximum possible score); otherwise, they were classified as not affected.

Validity and reliability

Face validity was assessed by two researchers, who evaluated the readability, clarity, comprehensibility, and relevance of the items, the suitability of the response options, and the length of the questionnaire and the time required to complete it. A pilot study was then conducted with 25 participants from different regions of Saudi Arabia to assess their interest in and understanding of the questions; their responses were excluded from the final analysis. The impact items showed good internal consistency (Cronbach's $\alpha = 0.84$; equivalent to the Kuder–Richardson 20 coefficient for dichotomous items).

Sample size

The minimum sample size was calculated using the single-proportion formula for cross-sectional studies, assuming a 95% confidence level ($z = 1.96$), a 5% margin of error, and an anticipated proportion of 50% to maximize variability. This yielded a minimum of 385 participants, which was increased to 400 to account for potential non-response.

Statistical analysis

Descriptive statistics were computed using SPSS version 27 (IBM Corp., Armonk, NY, USA), and the logistic regression was performed using Python (version 3.13) with the statsmodels package (version 0.15). Categorical variables are presented as frequencies and percentages; all percentages were calculated from the

total sample (N = 422). Multivariable binary logistic regression was used to identify predictors of being mentally affected (dependent variable: mentally affected = 1, not affected = 0). The independent variables were entered simultaneously and coded as follows: gender (male *vs*. female [reference]); marital status (married *vs*. unmarried [reference]); nationality (non-Saudi *vs*. Saudi [reference]); residence (outside *vs*. inside Riyadh city [reference]); free-text marital status responses indicating that the participant was a student or not married were classified as unmarried; educational level (university *vs*. non-university [reference]); age (entered as an ordinal variable using the age groups in Table 1); and age at first use of social media and daily hours of use (both entered as ordinal variables using the categories in Table 2). Results are reported as adjusted odds ratios (AORs) with 95% confidence intervals (CIs). A p value < 0.05 was considered statistically significant.

Ethical considerations

The study was approved by the Institutional Review Board (IRB) of King Saud Medical City, Riyadh, Saudi Arabia (proposal reference no. H1RI-13-May24-02; approval date: May 24, 2024; category of approval: exempt). The IRB is registered with the King Abdulaziz City for Science and Technology (KACST; H-01-R-053) and the U.S. Department of Health and Human Services (IORG0010374). Detailed information about the study was provided to all participants and to the parents of participants younger than 18 years, before they chose whether to participate. Electronic informed consent was obtained from all participants, and parental consent was obtained electronically for participants younger than 18 years. Assent was obtained from participants younger than 18 years, in addition to the consent of their parents, before participation.

Results

Table 1 presents the sociodemographic characteristics of the 422 participants. The largest age group was 19 years or older (n = 176, 41.7%), and most participants were female (n = 285, 67.5%), secondary school students (n = 261, 61.8%), single (n = 315, 74.6%), and Saudi (n = 395, 93.6%). Overall, 223 participants (52.8%) lived inside Riyadh city and 199 (47.2%) lived outside it.

Figure 1 shows the most frequently used social media platform. TikTok was the most commonly used platform (n = 141, 33.4%), followed by Snapchat (n = 122, 28.9%), Instagram (n = 51, 12.1%), YouTube (n = 36, 8.5%), Twitter (n = 35, 8.3%), WhatsApp (n = 33, 7.8%), and other platforms (n = 4, 0.9%).

Table 2 shows the social media use profile. Most participants started using social media at 11-14 years of age (n = 147, 34.8%) or after 14 years (n = 124, 29.4%), whereas 26 (6.2%) started before 6 years. Overall, 295 participants (69.9%) used social media for 4 hours or more daily, including 151 (35.8%) who used it for more than 6 hours. Most were aware of privacy settings (n = 371, 87.9%) and of mental health resources

Table 1. *Sociodemographic characteristics of the participants (N = 422).*

Characteristic	*n*	%
Age (years)		
<15	10	2.4
15-16	80	19.0
17-18	156	37.0
≥19	176	41.7
Gender		
Male	137	32.5
Female	285	67.5
Educational level		
Intermediate school	9	2.1
Secondary school	261	61.8
University	124	29.4
Other	28	6.6
Marital status		
Single	315	74.6
Married	95	22.5
Divorced/widowed	12	2.8
Nationality		
Saudi	395	93.6
Non-Saudi	27	6.4
Residence		
Inside Riyadh city	223	52.8
Outside Riyadh city	199	47.2

Percentages are calculated from the total sample (N = 422) and may not sum to 100% because of rounding.

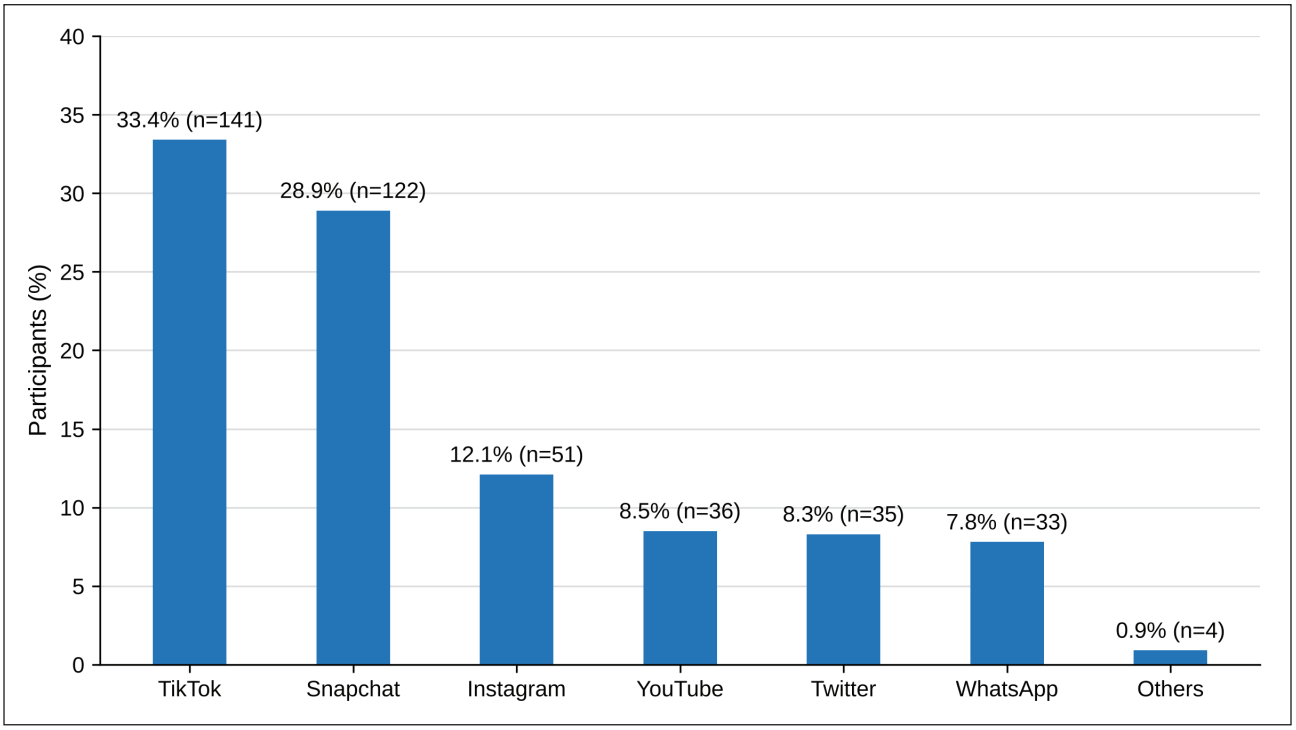


Figure 1. *Most frequently used social media platforms among the participants (N = 422).*

available through social media (n = 264, 62.6%), and 259 (61.4%) had taken breaks or tried to reduce their use for mental health reasons. Regarding seeking professional help for mental health issues related to social media use, 223 participants (52.8%) felt comfortable or very comfortable, 145 (34.4%) were neutral, and 54 (12.8%) felt uncomfortable or very uncomfortable.

Table 3 presents the perceived impact of social media on mental health and well-being. The most frequently reported behaviors were checking social media before bed (n = 279, 66.1%) and after waking up (n = 273, 64.7%). Anxiety when not using social media was reported by 248 participants (58.8%), depressive symptoms associated with social media by 231 (54.7%), and anxiety symptoms associated with social media by 196 (46.4%). A significant effect on sleep patterns was reported by 144 participants (34.1%) and an effect on academic performance by 201 (47.6%). The least frequently reported effects were low or very low self-esteem (n = 51, 12.1%) and a negative or very negative impact on life satisfaction (n = 46, 10.9%). The mean impact score was 8.2 (SD 4.5; range 0-18), and 165 participants (39.1%) were classified as mentally affected.

Table 4 shows the results of the multivariable logistic regression. Male participants had higher odds of being mentally affected than female participants (AOR = 1.69; 95% CI: 1.05-2.74; p = 0.032). Participants residing outside Riyadh city had lower odds of being mentally affected than those residing inside the city (AOR = 0.51; 95% CI: 0.33-0.79; p = 0.003). More hours of daily social media use were associated with higher odds of being mentally affected (AOR = 1.65; 95% CI: 1.30-2.11; p < 0.001). Age, educational level, marital status, nationality, and age at first use of social media were not significant predictors.

Discussion

This study examined social media use and its perceived effects on mental health among school and university students in Saudi Arabia. Social media use was extensive, and a considerable proportion of participants reported anxiety and depressive symptoms associated with social media, sleep-related behaviors such as checking social media before bed, and effects on academic performance. In the multivariable analysis, male gender, residence inside Riyadh city, and longer daily use were significantly associated with being mentally affected.

Most participants were aged 19 years or older (41.7%) or 17-18 years (37.0%), indicating that the sample consisted largely of older adolescents and young adults. Faqihi et al. [9] found that older adolescents (aged 16-24 years) were more likely to be mentally affected by social media. This age group, which is undergoing identity formation and facing academic pressures, may be especially vulnerable to curated online content and the culture of social validation on platforms such as Instagram and TikTok. O'Keeffe and Clarke-Pearson [10] noted that social media offers adolescents benefits, such as enhanced communication and social connection, but also exposes them to risks, such as cyberbullying and depression.

Females made up 67.5% of the sample. Twenge and Martin [6] reported that digital media use had a stronger negative association with girls' psychological well-being than with boys', whereas Faqihi et al. [9] found no significant difference between males and females.

Table 2. *Social media use profile of the participants (N = 422).*

Variable	*n*	%
Age at first use of social media (years)		
<6	26	6.2
6-8	46	10.9
9-10	79	18.7
11-14	147	34.8
>14	124	29.4
Daily time spent on social media		
<1 hour/rarely	23	5.5
1-3 hours	104	24.6
4-6 hours	144	34.1
>6 hours	151	35.8
Aware of privacy settings and the importance of protecting personal information		
Yes	371	87.9
No	51	12.1
Aware of mental health resources and support available through social media		
Yes	264	62.6
No	158	37.4
Ever taken breaks or tried to reduce social media use for mental health reasons		
Yes	259	61.4
No	163	38.6
Comfort in seeking professional help for mental health issues related to social media use		
Very comfortable	94	22.3
Comfortable	129	30.6
Neutral	145	34.4
Uncomfortable	38	9.0
Very uncomfortable	16	3.8

Percentages are calculated from the total sample (*N* = 422) and may not sum to 100% because of rounding.

In contrast, in the present study, male participants had higher odds of being mentally affected than female participants (AOR = 1.69); this difference warrants further investigation.

Most participants were secondary school (61.8%) or university (29.4%) students, single (74.6%), and Saudi nationals (93.6%). Slightly more than half (52.8%) lived inside Riyadh city, providing a reasonably balanced distribution between Riyadh and other areas.

TikTok (33.4%) and Snapchat (28.9%) were the most frequently used platforms. In contrast, only 2% of participants in the larger sample of Faqihi et al. [9] reported using TikTok, which may suggest an increase in TikTok's popularity among Saudi youth.

Positively, 87.9% of participants were aware of privacy settings, and 62.6% knew about mental health resources available through social media; this is encouraging, given that privacy concerns are among the recognized risks of social media use [4,10]. However, 35.8% used social media for more than 6 hours daily; in a large population-based study, adolescents with 7 or more hours of daily screen time were twice as likely as those with 1 hour to have been diagnosed with anxiety or depression [11]. Additionally, nearly half of the participants (47.2%) did not feel comfortable seeking professional help (34.4% neutral and 12.8% uncomfortable or very uncomfortable), which may reflect challenges such as stigma and limited access to mental health resources.

Disrupted sleep was commonly reported, consistent with previous studies showing that social media use before bed is associated with sleep disturbance [12]. Participants also reported anxiety and depressive symptoms associated with social media, in line with studies linking social media use to poor sleep quality, anxiety, depression, and psychological distress in adolescents [13,14]. Academic performance was affected in nearly half of the participants (47.6%), and FOMO (35.8%) and exposure to upsetting content (53.6%) were also common. FOMO has been associated with higher social media engagement and with lower general mood and life satisfaction [15]. Cyberbullying affected 28.0% of respondents; cyberbullying victimization has been associated with depression and suicidal ideation [16]. Although only 12.1% reported low self-esteem, the desire for validation (42.7%) and pressure to portray an idealized lifestyle (37.2%) are relevant, as social comparison on social media has been linked to lower self-esteem [17].

Regarding the predictors in the regression model, participants residing outside Riyadh were less likely to report negative mental health effects than those living inside the city (AOR = 0.51; $p = 0.003$), possibly because

Table 3. *Perceived impact of social media on the mental health and well-being of the participants (N = 422).*

Item	Response category counted	*n*	%
Sleep patterns	Significant effect	144	34.1
Memory	Decreased	123	29.1
Academic performance affected	Yes	201	47.6
Anxiety when not using social media	Yes	248	58.8
Fear of missing out (FOMO)	Always/often	151	35.8
Anxiety symptoms associated with social media	Yes	196	46.4
Exposure to upsetting/sad content	Always/often	226	53.6
Depressive symptoms associated with social media	Yes	231	54.7
Desire for likes, comments, and followers	Yes	180	42.7
Pressure to portray a certain image/lifestyle	Yes	157	37.2
Cyberbullying victim	Yes	118	28.0
Appearance comparison	Always/often	136	32.2
Self-esteem	Low/very low	51	12.1
Behavior change with negative implications	Yes	233	55.2
Checking social media before bed	Always/often	279	66.1
Social media keeps me from going to bed early	Always/often	217	51.4
Checking social media after waking up	Always/often	273	64.7
Desire to use social media during studies	Always/often	237	56.2
Impact on life satisfaction	Negative/very negative	46	10.9

Only the response category indicating a negative effect is shown for each item. Percentages are calculated from the total sample (*N* = 422). FOMO, fear of missing out.

Table 4. *Multivariable logistic regression analysis of predictors of being mentally affected by social media use (N = 422).*

Variable	AOR	95% CI	*p* value
Age group (ordinal)	1.35	0.95-1.92	0.097
Gender: male versus female (ref.)	1.69	1.05-2.74	0.032*
Educational level: university versus non-university (ref.)	0.99	0.57-1.74	0.983
Marital status: married versus unmarried (ref.)	0.64	0.35-1.17	0.144
Nationality: non-Saudi versus Saudi (ref.)	1.44	0.61-3.40	0.400
Residence: outside versus inside Riyadh city (ref.)	0.51	0.33-0.79	0.003*
Age at first use of social media (ordinal)	0.91	0.74-1.11	0.334
Daily hours of social media use (ordinal)	1.65	1.30-2.11	<0.001*

Dependent variable: mentally affected (impact score ≥ 10 of 19; *n* = 165) versus not affected (*n* = 257). All variables listed were entered in the same model. AOR, adjusted odds ratio; CI, confidence interval; ref., reference category. *$p < 0.05$.

of reduced exposure to urban stressors and lifestyle comparisons. Longer daily use was also a significant predictor of being mentally affected (AOR = 1.65; $p < 0.001$), consistent with Twenge et al. [18], who linked more time spent on new media screen activities, and less time spent on non-screen activities such as in-person social interaction, to more depressive symptoms among adolescents.

Age, educational level, marital status, nationality, and age at first use were not significant predictors. Faqihi et al. [9] found that older adolescents (aged 16-24 years) were more vulnerable to the mental health effects of social media, which differs from our finding regarding age. Similarly, educational level was not significant in our study; Faqihi et al. [9] suggested that the psychological influence of social media may be more pronounced among individuals with advanced education because of greater academic pressure, performance demands, and competition, although higher education was not a significant predictor in their regression analysis either.

Strengths and limitations

This study included 422 students, exceeding the calculated minimum sample size; it covered both school and university students; and it used multivariable analysis to adjust for sociodemographic factors. However, the findings are subject to several limitations. First, convenience sampling through social media probably introduced selection bias because participants were likely to be active online, which may have skewed the results toward heavier users. Consequently, the findings may not represent the broader population of Saudi students. Second, the cross-sectional design, with data collected at a single point in time, does not allow causal relationships between social media use and mental health to be established; only associations can be inferred. Third, mental health effects were self-reported and perceived

rather than clinically assessed. Finally, a non-standardized tool was used to measure mental health outcomes; although its internal consistency was good (Cronbach's $\alpha = 0.84$), it has not been validated against clinical diagnostic measures, which may affect the accuracy of the mental health scores and the overall conclusions. In addition, the cutoff used to classify participants as mentally affected was set by the researchers and has not been validated in previous studies.

Recommendations for future research

Future research should use improved sampling methods, such as probability-based or school-based sampling, to obtain more representative samples and reduce self-selection bias. Longitudinal designs are also needed: by collecting data over an extended period, researchers can track changes and better understand the temporal and potential causal relationships between digital engagement and mental well-being, allowing more robust conclusions than those drawn from cross-sectional data.

Conclusion

This study found an association between prolonged social media use and negative perceived mental health effects among school and university students in Saudi Arabia, with high levels of reported anxiety, depressive symptoms, and sleep-related behaviors, particularly among male participants and heavier users. These results support increased media literacy, timely mental health interventions, and collaborative efforts by educators, parents, and policymakers to support youth well-being in an increasingly digital world.

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List of Abbreviations

AOR	Adjusted odds ratio
CI	Confidence interval
FOMO	Fear of missing out
IORG	Institutional Review Board Organization
IRB	Institutional Review Board
KACST	King Abdulaziz City for Science and Technology
SPSS	Statistical Package for the Social Sciences

Conflict of interest

The authors declare that they have no conflict of interest.

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Consent for publication

Not applicable, as no identifiable individual data are included.

Consent to participate

Electronic informed consent was obtained from all participants, and parental consent was obtained electronically for participants younger than 18 years. Assent was obtained from participants younger than 18 years, in addition to the consent of their parents.

Ethical approval

The study was approved by the Institutional Review Board of King Saud Medical City, Riyadh, Saudi Arabia (proposal reference no. H1RI-13-May24-02; approval date: 24 May 2024; category of approval: exempt). IRB registration numbers: KACST, H-01-R-053; U.S. Department of Health and Human Services, IORG0010374.

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Supplementary content (if any) is available online.

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