



Impact of Social Media Use on Student Mental Health at All Saints University School of Medicine, Dominica: An Institution-Based Analytical Cross-Sectional Study.

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Received: 13-06-2026

Revised: 23-06-2026

Accepted: 28-06-2026

Published: 07-07-2026

Abstract

Background: Social media is embedded in medical student life, but excessive and poorly timed use can coincide with emotional distress, sleep disruption, and negative online experiences. **Objectives:** To assess patterns of social media use and determine their association with depressive and anxiety symptoms among students of All Saints University School of Medicine, Dominica. **Methods:** This institution-based analytical cross-sectional study was conducted from May 01, 2026 to May 31, 2026. A total of 100 eligible students were included. Data were collected using a structured questionnaire covering sociodemographic variables, social media platforms, daily duration, night-time use, sleep disturbance, fear of missing out/social comparison, and negative online interaction. Depressive symptoms were assessed using the Patient Health Questionnaire-9, and anxiety symptoms were assessed using the Generalized Anxiety Disorder-7 scale. Associations were analysed using chi-square test and multivariable logistic regression. **Results:** The mean age was 22.6 ± 3.1 years, and 55 participants were females. High social media use of at least four hours per day was reported by 51 students. Night-time use before sleep was reported by 60 students, while 51 students reported sleep disturbance related to social media use. Moderate-to-severe depressive symptoms were present in 33 students, and moderate-to-severe anxiety symptoms were present in 29 students. High social media use was independently associated with depressive symptoms and anxiety symptoms. Sleep disturbance, fear of missing out/social comparison, and cyberbullying or negative online interaction also remained significant predictors. **Conclusion:** Depressive and anxiety symptoms were common among medical students. Higher social media exposure, sleep disturbance, social comparison, and negative online experiences were significantly associated with poorer mental health indicators.

Keywords: Social media; Medical students; Depression; Anxiety; PHQ-9; GAD-7.



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INTRODUCTION

Social media has become a routine component of communication, learning, entertainment, and peer interaction among university students. Medical students use online platforms to share academic material, remain connected with peers and family, follow health information, and participate in professional networks.

These benefits are important in a diverse medical school environment, where students often live away from home and depend on digital communication for social support. At the same time, social media use is not a neutral exposure. Its psychological effect varies according to duration, timing, platform content, emotional engagement, and the quality of online interactions [1,2].

Young adulthood is a sensitive period for the onset or recognition of depression and anxiety symptoms. Medical education adds further pressures through academic workload, examinations, relocation, clinical expectations, financial concerns, and reduced leisure time.

Within this setting, prolonged screen-based social interaction can intensify sleep disruption, social comparison, and perceived academic or social inadequacy. Research shows that the relationship between social networking sites and mental health is complex, with positive and negative associations across populations [1,2]. Studies among medical students also describe high social media use, anxiety, depression, academic disturbance, and problematic digital behaviour [3].

Recent systematic reviews and meta-analyses have strengthened the evidence that problematic social media use is associated with depressive symptoms, anxiety symptoms, and psychological distress in adolescents and young adults [4-6].

The magnitude of association is generally stronger for problematic or compulsive use than for simple screen-time duration. Sleep represents another clinically relevant pathway, because late-night use, alerting content, continuous notifications, and emotional arousal can delay sleep onset and reduce sleep quality. A large systematic review with meta-analyses reported important links between social media use, mental health outcomes, and sleep in young populations [7].

Depression and anxiety in student populations are commonly assessed using brief validated instruments. The Patient Health Questionnaire-9 is widely used for grading depressive symptom severity, while the Generalized Anxiety Disorder-7 scale is used for anxiety symptom assessment [8,9].

Both instruments have been evaluated in university student settings and are suitable for large cross-sectional surveys when interpreted as screening tools rather than diagnostic substitutes [10]. Social comparison and fear of missing out are additional constructs relevant to social media exposure.

Studies among college and university students suggest that upward social comparison, cognitive overload, fear of missing out, and self-presentation behaviours contribute to maladaptive social media engagement and emotional distress [13,14].

Despite growing international evidence, institutional data from Caribbean medical school settings remain limited. Students at All Saints University School of Medicine, Dominica, represent a diverse academic population exposed to both traditional medical training stressors and continuous digital engagement.

The present study was conducted to assess patterns of social media use and the burden of depressive and anxiety symptoms among students of All Saints University School of Medicine. The objectives were to estimate the frequency of high social media use, describe platform and behavioural patterns, assess the prevalence of depressive and anxiety symptoms, and determine the association between social media-related factors and mental health outcomes.

METHODOLOGY

Study design and setting: This institution-based analytical cross-sectional study was conducted at All Saints University School of Medicine, Dominica. The cross-sectional design was selected to measure exposure and outcome variables at a single point in time and to examine associations between social media-related behaviours and mental health indicators without inferring temporality. The study was conducted among enrolled students from pre-medical, basic science, and clinical science years.

Study period: The study was carried out from May 01, 2026 to May 31, 2026. This period included participant approach, consent, questionnaire administration, response verification, data cleaning, and statistical analysis.

Study population and eligibility criteria: Students aged 18 years or above, currently enrolled at All Saints University School of Medicine, using at least one social media platform during the previous month, and willing to provide informed consent were eligible. Students who declined consent or submitted questionnaires with missing primary exposure, PHQ-9, or GAD-7 outcome items were excluded from the final analysis. A total of 100 complete responses were included.

Sample size: The sample size was calculated using the single-proportion formula $n = Z^2pq/d^2$. With 95% confidence level ($Z=1.96$), expected prevalence of 50% to obtain the maximum sample size, and 10% absolute precision, the minimum sample size was 96.04. This was rounded to 100 students, and 100 complete responses were included in the final analysis.

Data collection tool and variables: Data were collected using a structured questionnaire. The first section recorded age, sex, academic year, and residence. The second section assessed social media use, including daily duration, commonly used platforms, purpose of use, night-time use before sleep, sleep disturbance related to social media, fear of missing out/social comparison, and cyberbullying or negative online interaction. High social media use was operationally defined as use for at least four hours per day.

Outcome assessment: Depressive symptoms were assessed using the Patient Health Questionnaire-9, and anxiety symptoms were assessed using the Generalized Anxiety Disorder-7 scale. These instruments are brief self-administered screening tools used in clinical and research settings [8-10].

PHQ-9 categories were recorded as none/minimal, mild, moderate, moderately severe, and severe. GAD-7 categories were recorded as none/minimal, mild, moderate, and severe. Moderate, moderately severe, and severe PHQ-9 categories were combined as moderate-to-severe depressive symptoms. Moderate and severe GAD-7 categories were combined as moderate-to-severe anxiety symptoms.

Statistical analysis: Data were entered, checked for completeness, and analysed using descriptive and inferential statistics. Frequencies and percentages were used for categorical variables. Mean and standard deviation were used for age and daily duration of social media use.

Associations between social media-related factors and mental health outcomes were assessed using chi-square test. Variables of theoretical and statistical relevance were entered into multivariable logistic regression models. Adjusted odds ratios with 95% confidence intervals were calculated. A p-value less than 0.05 was considered statistically significant.

Ethical considerations: The study was conducted after approval from the Institutional Ethics Committee of All Saints University School of Medicine, Dominica. Written informed consent was obtained from all participants. Participation was voluntary, anonymity was maintained.

RESULTS

A total of 100 students from All Saints University School of Medicine were included in the final analysis. The mean age of the participants was 22.6 ± 3.1 years, with the largest proportion belonging to the 21–23 years age group. Females constituted 55 participants (55.0%), while males accounted for 45 participants (45.0%).

Most respondents were from the basic science years, followed by clinical science and pre-medical years. The baseline demographic profile of the study participants is shown in Table 1.

Table 1. Baseline demographic characteristics of study participants (n=100)

Variable	Frequency	Percentage
Age group		
18-20 years	26	26.0
21-23 years	43	43.0
24-26 years	21	21.0
>26 years	10	10.0
Sex		
Male	45	45.0
Female	55	55.0
Academic year		
Pre-medical	21	21.0
Basic science	49	49.0
Clinical science	30	30.0
Residence		
Hostel/campus accommodation	67	67.0
Off-campus/private accommodation	33	33.0

All participants reported using at least one social media platform during the previous month. The mean duration of social media use was 4.3 ± 2.1 hours per day. Overall, 51 students (51.0%) reported high social media use, defined as use for at least four hours per day.

WhatsApp was the most commonly used platform, followed by Instagram, YouTube, and TikTok. Entertainment, communication with friends, and academic purposes were the common reasons for use. Night-time social media use before sleep was reported by 60 students (60.0%), and 51 students (51.0%) reported sleep disturbance related to late-night use (Table 2).

Table 2. Pattern of social media use among students (n=100)

Variable	Frequency	Percentage
Daily duration of social media use		
<2 hours/day	16	16.0
2-<4 hours/day	33	33.0
4-6 hours/day	29	29.0
>6 hours/day	22	22.0
High social media use, ≥4 hours/day	51	51.0
Commonly used platforms*		
WhatsApp	90	90.0
Instagram	79	79.0
YouTube	75	75.0
TikTok	43	43.0
Facebook	29	29.0
X/Twitter	21	21.0
Purpose of use*		
Entertainment	85	85.0
Communication with friends/family	84	84.0
Academic learning	80	80.0
News and current updates	54	54.0
Professional networking	32	32.0
Night-time use before sleep	60	60.0
Sleep disturbance due to social media use	51	51.0
Fear of missing out/social comparison	47	47.0
Cyberbullying or negative online interaction	13	13.0

*Multiple responses were allowed.

Based on PHQ-9 scoring, 65 students (65.0%) had some degree of depressive symptoms. Mild depressive symptoms were observed in 32 students (32.0%), moderate symptoms in 23 students (23.0%), moderately severe symptoms in 8 students (8.0%), and severe symptoms in 2 students (2.0%). Overall, 33 students (33.0%) had moderate-to-severe depressive symptoms. According to GAD-7 scoring, 59 students (59.0%) had some level of anxiety symptoms, and 29 students (29.0%) had moderate-to-severe anxiety symptoms (Table 3).

Table 3. Distribution of depression and anxiety symptoms among students (n=100)

Mental health outcome	Frequency	Percentage
PHQ-9 depression category		
None/minimal	35	35.0
Mild	32	32.0
Moderate	23	23.0
Moderately severe	8	8.0
Severe	2	2.0
Moderate-to-severe depressive symptoms	33	33.0
GAD-7 anxiety category		
None/minimal	41	41.0
Mild	30	30.0
Moderate	20	20.0
Severe	9	9.0
Moderate-to-severe anxiety symptoms	29	29.0

High social media use was significantly associated with both depressive and anxiety symptoms. Among students using social media for at least four hours per day, 24 students (47.1%) had moderate-to-severe depressive symptoms compared with 9 students (18.4%) among those using social media for less than four hours per day. This association was statistically significant ($p=0.002$). Similarly, moderate-to-severe anxiety symptoms were observed in 20 students (39.2%) with high social media use compared with 9 students (18.4%) with lower use ($p=0.022$). Night-time use, sleep disturbance, fear of

missing out/social comparison, and cyberbullying or negative online interaction were also significantly associated with poorer mental health outcomes (Table 4).

Table 4. Association between social media-related factors and mental health outcomes

Variable	n	Moderate-to-severe depression n (%)	p-value	Moderate-to-severe anxiety n (%)	p-value
Daily social media use					
<4 hours/day	49	9 (18.4)	0.002	9 (18.4)	0.022
≥4 hours/day	51	24 (47.1)		20 (39.2)	
Night-time use before sleep					
No	40	8 (20.0)	0.024	6 (15.0)	0.012
Yes	60	25 (41.7)		23 (38.3)	
Sleep disturbance due to social media use					
No	49	8 (16.3)	0.001	7 (14.3)	0.001
Yes	51	25 (49.0)		22 (43.1)	
Fear of missing out/social comparison					
No	53	10 (18.9)	0.001	8 (15.1)	0.001
Yes	47	23 (48.9)		21 (44.7)	
Cyberbullying/negative online interaction					
No	87	25 (28.7)	0.019	22 (25.3)	0.034
Yes	13	8 (61.5)		7 (53.8)	

On multivariable logistic regression analysis, high social media use remained independently associated with moderate-to-severe depressive symptoms after adjusting for age, sex, academic year, residence, night-time use, sleep disturbance, and cyberbullying or negative online interaction. Students using social media for at least four hours per day had nearly three-fold higher odds of moderate-to-severe depressive symptoms than those using it for less than four hours per day. Sleep disturbance showed the strongest association with depressive symptoms. For anxiety, high social media use, fear of missing out/social comparison, sleep disturbance, and cyberbullying or negative online interaction remained significant independent predictors (Table 5).

Table 5. Multivariable logistic regression analysis of factors associated with moderate-to-severe depression and anxiety

Predictor variable	Adjusted OR for depression	95% CI	p-value	Adjusted OR for anxiety	95% CI	p-value
Social media use ≥4 hours/day	2.82	1.20-6.64	0.017	2.54	1.05-6.14	0.038
Night-time use before sleep	1.49	0.60-3.68	0.390	1.61	0.60-4.28	0.342
Sleep disturbance due to social media use	3.35	1.39-8.06	0.007	2.83	1.12-7.17	0.028
Fear of missing out/social comparison	2.47	1.02-5.98	0.045	3.12	1.25-7.80	0.015
Cyberbullying/negative online interaction	3.21	1.01-10.17	0.048	3.39	1.01-11.35	0.048
Female sex	1.24	0.54-2.83	0.609	1.31	0.55-3.12	0.545
Clinical science year	1.29	0.51-3.25	0.590	1.17	0.43-3.15	0.757

Overall, the findings demonstrated a high burden of depressive and anxiety symptoms among medical students. Greater duration of social media use, late-night use patterns, sleep disturbance, fear of missing out/social comparison, and negative online experiences were significantly associated with poorer mental health indicators. Because of the cross-sectional design, the observed associations should be interpreted as correlational rather than causal.

DISCUSSION

This cross-sectional study found a high burden of depressive and anxiety symptoms among students of All Saints University School of Medicine, Dominica. Moderate-to-severe depressive symptoms were present in 33.0% of participants, while moderate-to-severe anxiety symptoms were present in 29.0%. These findings indicate that emotional distress is a relevant

student health concern in this academic setting. The observed burden is consistent with the broader literature showing that university and medical student populations experience considerable mental health vulnerability due to academic pressure, relocation, competitive expectations, and transition into professional identity [3,11,12].

High social media use was reported by just over half of the participants and was significantly associated with both depression and anxiety outcomes. After adjustment for demographic and behavioural variables, use for at least four hours per day retained an independent association with moderate-to-severe depressive and anxiety symptoms. This pattern agrees with systematic reviews reporting that social networking and problematic social media use are associated with depression, anxiety, and psychological distress [1,2,4-6]. The relationship is multifactorial rather than simply dose-dependent. Time spent online can reflect academic use, social communication, entertainment, emotional coping, or compulsive checking; therefore, context is important in interpreting mental health associations.

Sleep disturbance showed the strongest adjusted association with depressive symptoms and remained significantly associated with anxiety symptoms. This finding is clinically meaningful because night-time social media use was common in the present sample. Late-night checking, notifications, emotionally stimulating content, and prolonged scrolling can disturb sleep timing and sleep continuity. A recent systematic review with meta-analyses reported associations between social media use, mental health, and sleep among young people, supporting sleep as a plausible pathway connecting digital engagement and emotional distress [7]. Screening for sleep disruption in students with heavy social media use is therefore relevant for campus health programmes.

Fear of missing out/social comparison also emerged as an independent predictor, particularly for anxiety. Social media platforms frequently expose students to idealized academic, social, and lifestyle content, which can intensify upward comparison and perceived inadequacy. Evidence among college students suggests that upward social comparison and cognitive overload mediate the relationship between mobile social media intensity and depressive mood [13]. Similarly, fear of missing out is associated with social media addiction and online self-presentation among university students [14].

These mechanisms shift attention from duration alone to emotionally charged and cognitively demanding patterns of use. Cyberbullying or negative online interaction was reported by a smaller proportion of students, but it showed significant adjusted associations with both depressive and anxiety symptoms. Negative online experiences can create persistent emotional arousal, social withdrawal, embarrassment, and perceived lack of safety in peer networks. The findings support the need for student-centred digital wellbeing education, confidential counselling, sleep hygiene interventions, and online boundary guidance. Since the study used a cross-sectional design, the direction of association cannot be determined. Students with depression or anxiety could also engage more heavily with social media as a coping strategy. Longitudinal studies are needed to clarify temporal pathways and evaluate preventive interventions.

Limitations

This study has limitations. The cross-sectional design prevents temporal interpretation between social media use and mental health outcomes. Data were self-reported, creating scope for recall and social desirability bias during questionnaire completion. The study was conducted in one medical school, limiting external validity. PHQ-9 and GAD-7 are screening tools, not structured diagnostic interviews. Platform-specific content exposure was not measured in detail.

CONCLUSION

This study identified a substantial burden of depressive and anxiety symptoms among students of All Saints University School of Medicine, Dominica. High social media use, sleep disturbance, fear of missing out/social comparison, and cyberbullying or negative online interaction were significantly associated with poorer mental health indicators. The findings support the need for institution-level digital wellbeing initiatives, student counselling access, sleep hygiene education, and awareness on safe social media practices. Screening for excessive or distress-driven social media use can be integrated into student support services. Future longitudinal research should examine temporal pathways and identify protective patterns of purposeful academic and social media use in comparable student populations.

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