

Social media use and anxiety levels among school adolescents: a cross-sectional study in Kathmandu, Nepal

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ABSTRACT

Introduction Excessive social media (SM) usage is the foremost factor contributing to anxiety. While these platforms facilitate connection and entertainment, their overuse can negatively impact adolescents' mental well-being. The study aimed to evaluate both SM usage and levels of anxiety while assessing potential associations between the two.

Methods A cross-sectional descriptive study was conducted among 401 school-age adolescents (14–17 years) in grades 9 and 10 through self-administered questionnaires. Kruskal-Wallis test was used as a non-parametric test to compare the groups, and ordinal logistic regression was used to model the relationship between ordinal dependent and independent variables.

Results The study reported high SM usage (43.6% spent 4–8 hours daily). Females and grade 9 students were more prone to severe anxiety (45.2% and 34.3%, respectively). Despite privacy concerns (93.3%), 37.9% shared their accounts. Severe anxiety was prevalent (35.4%), with males exhibiting less odds of severe anxiety compared with females (OR=0.37, p value <0.001) and higher usage frequency and duration associated with increased anxiety (p<0.001 in the Kruskal-Wallis test). Those dependent on SM had 1.15 times higher odds of severe anxiety, while those not taking breaks showed lesser anxiety (OR=0.89, $\beta=-0.10$).

Conclusions Involvement of adolescents in SM is associated with their anxiety levels, with factors like gender, usage patterns, and behaviours on these platforms playing important roles. This emphasises the need to understand how SM affects mental well-being and highlights the impact of their usage behaviours and concerns about privacy.

INTRODUCTION

Social media (SM) platforms are designed for sharing information, learning and encouraging value creation and collaboration among users as they overcome geographical barriers.¹ As per Global Stat Counter (2020), the number of SM users worldwide is Facebook: 76.86%; Pinterest: 4.58%; Twitter: 7.73%; YouTube: 6.83%; Instagram: 3.15%; and others: 0.85%.² SM usage is more widespread among younger individuals compared

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ Social media connects people worldwide, especially younger users, but excessive use can lead to dependence and less face-to-face communication, with studies revealing a connection between adolescents using social media excessively and experiencing symptoms of anxiety.

WHAT THIS STUDY ADDS

⇒ The research explores adolescents' social media usage and their anxiety levels and delves into elements such as gender, screen time, patterns and behaviour that correspond to their levels of anxiety.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ Significance in creating policies aimed at encouraging more responsible digital habits for adolescents, underscoring the necessity of addressing anxiety in contexts beyond education, and promoting additional research.

with older generations, with the age group of 16–24 years being particularly active.³ A substantial portion of global internet adolescents below 18 in the Organization for Economic Cooperation and Development countries, on average, spend 29 hours per week on the internet, emphasising the need for a nuanced understanding of the implications and challenges.⁴

Problematic usage of mobile phones is a complex issue, with being heavily dependent on SM being a major problem.⁵ Parents voiced concerns about their children forming a strong attachment to the Internet and developing a reliance on it for entertainment with a perceived negative impact on their child's social skills, highlighting that the use of SM might detract from these skills.⁶

SM benefits youth by creating a sense of community among those with shared interests, allowing access to essential information, and facilitating online friendships and social connections.⁷ However, evidence has



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surfaced, indicating concerns regarding the possible detrimental effects of SM on children and adolescents.⁸ In addition, a US study has indicated an association between elevated levels of depression, anxiety, and various mental health concerns with the excessive use of SM, particularly among adolescents and young adults.⁹

The global prevalence of anxiety disorders is evident, with approximately 4.05% of the world's population, equivalent to 301 million individuals, suffering from anxiety disorders, whose figure has surged by over 55% between 1990 and 2019, with ongoing rises in prevalence, incidence and disability-adjusted life year (DALY) rates.¹⁰ The Global Burden of Disease 2013 data indicate that anxiety and depression are among the top 10 causes of years of healthy life lost due to disability in South Asia, which includes Nepal as well.¹¹

People with anxiety disorders experience excessive fear, worry, or avoidance of perceived threats in their surroundings (like social settings or unfamiliar places) or within themselves (such as unusual bodily sensations).¹² Anxiety is a significant issue among adolescents, with approximately 6.5% of teenagers globally experiencing this condition.¹³ There are various factors contributing to anxiety in adolescents, with the most prominent being the use of media and technology.¹⁴

There is a connection between increased symptoms of anxiety and certain negative factors, such as frequent social comparisons, problematic behaviours and negative interpersonal interactions associated with SM use.¹⁵ Furthermore, the Royal Society of Public Health's research suggests that young individuals who spend more than 2 hours daily on platforms are more likely to report poor mental health, including psychological distress in the form of anxiety symptoms.¹⁶ Most parents of teenagers' express concern, ranging from somewhat to extremely worried, about the possibility of their child developing anxiety or depression issues due to SM use (53%).¹⁷ The growing reliance on technology in Nepal, especially among youth, is accompanied by increased access to digital platforms, yet there is a notable absence of measures to address digital exploitation.¹⁸

It's unfortunate that mental health remains significantly overlooked in Nepal, with an estimated 30% of the population suffering from psychiatric issues.¹⁹ Furthermore, research conducted in Nepal revealed a prevalence of 46.5% for anxiety among secondary school adolescents.²⁰ Given the lack of prior research in Nepal, it was important to understand students' mental health related to excessive SM use. Therefore, this study aimed to evaluate both the usage pattern of SM and levels of anxiety while also assessing potential comparisons and relationships between the two.

METHODS

A quantitative research approach was used in this study, with a cross-sectional descriptive study design. The data collection was conducted at a specific point in time

among adolescents (14–17 years) from grades 9 and 10 in selected schools located within Kathmandu, Nepal from March to April 2021. This age group was selected for the research due to the focus on children under 18, aligning with the educational structure in Nepal. Students in grades 9 and 10 fell within the selected age range. Opting for this age group was strategic as it represented the prime adolescent phase, corresponding to the mid-secondary level, and was a convenient age bracket for gaining valuable insights.

The sample size was derived by using the formula: $n = z^2 pq / d^2$ (where n =required sample size, $z=1.96$, considering 95% CI, $p=0.465$,²¹ $q=0.535$, d =margin of error, that is, $5\%=0.05$, non-response rate=5%). To ensure a representative sample, a multistage sampling technique was adopted. Five schools were chosen from the list provided by the Department of Education of Kathmandu Metropolitan City. Using the Probability Proportional to Size (PPS) method, 401 students were chosen from each school's sampling frame. Subsequently, students were randomly selected from each class based on attendance records.

Data collection tools and technique

In this study, a pretested self-administered questionnaire (online supplemental file 1) was used, which consisted of three sections: sociodemographics, information regarding SM usage and anxiety symptoms using the Beck Anxiety Inventory (BAI) scale. This particular scale comprised 21 items, which was a validated and reliable tool in the context of Nepal. The scoring of the BAI scale categorised anxiety levels as 'Minimal' (0–7), 'Mild' (8–15), 'Moderate' (16–25) and 'Severe' (26–63).²²

Permission was sought from the study author via email correspondence. To ensure the reliability of the questionnaire, a pretest was conducted among 10% of participants with similar characteristics as the study population but from a different location. The Nepali version of the BAI scale, which was also validated in Nepal, was used to ensure participants' full understanding of the questions.²³ The study excluded students who did not meet the age criteria, which was below 14 and above 17 years of age. All individuals involved in the research were internet users, while those who did not use the internet were excluded from the study. This exclusion was necessary to ensure that the study's findings accurately represented the experiences and behaviours of internet users, which was the focus of the research. Necessary modifications were made based on the feedback from the pretest, aiming to ensure the questionnaire's appropriateness and effectiveness for the current study.

Data analysis

The study's data were entered into the SPSS IBM Statistic V.29.0 software right after data collection to ensure data accuracy and consistency. Descriptive summary statistics like frequency and percentage were calculated for categorical data. In order to measure the relationship between

the variables, ordinal logistic regression was done. The CI of 95% was used, where a p value ≤ 0.05 was considered statistically significant. Likewise, to determine whether there were significant differences among independent variables, given that the dependent variable was ordinal, the Kruskal-Wallis test was performed. In addition, this quantitative study has been reported in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines (online supplemental file 2).

RESULTS

Sociodemographic profiles

Among the 401 school adolescents (table 1), 58.1% were male and 41.9% were female. The participants' ages ranged from 14 to 17 years old, with an average age of 15.23. In terms of grade, 51.6% were in grade 9 and 48.4% were in grade 10. Family structures varied, with 74.6% from nuclear families, 20.2% from joint families and 5.2% from extended families. Most participants were Hindu (90.8%), primarily from Brahmin and Chettri ethnic groups. Education levels were higher in fathers (59.9%) than mothers (40.4%).

SM sites and its purpose

The majority of the adolescents (online supplemental file 3), around 90.3%, used YouTube as their preferred SM platform. Following this were Facebook and Instagram (74.8% and 64.8%, respectively). In contrast, the less popular were Pinterest at 25.7%, Twitter at 17.0% and TikTok at 14.2%. A significant majority (91.3%) used SM for entertainment purposes, followed by 84.0% keeping in touch with family and friends, 64.3% checking news and information, and 32.9% expressing thoughts.

Frequency and duration of SM usage

Table 1 depicts that 48.6% of the participants used SM between four and seven times a day, while 26.4% were even more frequent users, using it over seven times a day. Shifting the focus to the duration of usage, it was concluded that a majority of 43.6% spent 4–8 hours per day, while 32.9% of them allocated 1–4 hours daily, and only a minor proportion, 15%, limited their usage to less than 1 hour per day.

Information regarding SM usage

The insights gathered from the data (table 1) shed light on various aspects of SM usage. About 54.1% of participants initiated their SM engagement between the ages of 11 and 13, with 38.4% starting even earlier, before the age of 10. Furthermore, a significant majority, around 85.3%, demonstrated consistent use of SM, while a contrasting 14.7% did not engage with it regularly. The findings also revealed that an overwhelming 71.6% of them felt reliant on SM and were unable to abstain for a single day, whereas 28.4% were capable of doing so.

The data indicated that 65.8% of them felt anxious as a result of using SM, while the remaining 34.2% did

Table 1 Study variables of the population

Study variables of the population		
Variables	Frequency	Percentage
Age		
14–15	258	64.3
16–17	143	35.7
Mean age=15.23		
Gender		
Male	233	58.1
Female	168	41.9
Grade		
Grade 9	207	51.6
Grade 10	194	48.4
Frequency of SM use		
Less than 4 times/day	100	25.0
4–7 times/day	195	48.6
More than 7 times/day	106	26.4
Duration of SM Use		
Less than 1 hour/day	60	15.0
1–4 hours/day	132	32.9
4–8 hours/day	175	43.6
More than 8 hours/day	34	8.5
First started using SM		
≤ 10 years	154	38.4
11–13 years	217	54.1
14–17 years	30	7.5
SM use on regular basis		
Yes	342	85.3
No	59	14.7
Spend a day without using SM		
Yes	114	28.4
No	287	71.6
Felt anxious due to SM use		
Yes	264	65.8
No	137	34.2
Concern about SM privacy		
Yes	374	93.3
No	27	6.7
Shared private SM account with others		
Yes	152	37.9
No	249	62.1
Felt anxious due to sharing SM accounts		
Yes	106	69.7
No	46	30.3
Took breaks from SM		
Yes	291	72.6
No	110	27.4

Continued

Table 1 Continued

Study variables of the population		
Variables	Frequency	Percentage
Anxiety levels of participants		
Minimal level	63	15.7
Mild level	109	27.2
Moderate level	87	21.7
Severe level	142	35.4
SM, social media.		

not express experiencing such emotions. Significant concerns regarding privacy were evident, with 93.3% expressing apprehension about their personal information. Despite these concerns, 37.9% of them chose to share their private SM accounts, while 62.1% decided to keep such information private. Among the subset of participants who shared their accounts, 69.7% experienced anxiety due to this sharing, whereas 30.3% did not encounter similar emotional responses. Lastly, 72.6% of them resorted to taking breaks from their SM accounts due to feelings of anxiety, while 27.4% did not find it necessary to do so.

Participants' anxiety levels

The analysis of participants' anxiety levels (table 1) showed that a significant majority (35.4%) experienced severe anxiety. This was followed by 27.2% exhibiting mild anxiety and 21.7% displaying moderate anxiety. In contrast, the smallest proportion, constituting 15.7%, fell within the minimal anxiety level category. Overall, the prevalence of severe anxiety is approximately 2.25 times higher than that of minimal anxiety.

Summary of the general symptoms of anxiety

The descriptive summary of the general symptoms on the BAI scale is illustrated (table 2). Among 401 participants, 35.7% expressed being severely bothered due to the fear of the worst happening, followed by feeling nervous (20.2%). The majority of participants were moderately bothered due to feeling scared (29.9%) and experiencing numbness or tingling (28.4%). On the other hand, the participants were not at all bothered by feelings of faintness or light-headedness (79.8%), followed by a sensation of choking (72.8%) and difficulty in breathing (63.6%).

Association between independent and dependent variables

Kruskal-Wallis test (table 3) indicated that there were significant differences between all categories of each variable except for the age and grade of the participants

Table 2 General symptoms of anxiety using BAI scale

Anxiety symptoms	Not at all bothered	Slightly bothered	Moderately bothered	Severely bothered
Numbness or tingling	134 (33.4%)	133 (33.2%)	114 (28.4%)	20 (5%)
Feeling hot	120 (29.9%)	126 (31.4%)	111 (27.7%)	44 (11%)
Wobbliness in legs	213 (53.1%)	84 (20.9%)	76 (19%)	29 (7%)
Unable to relax	126 (31.4%)	109 (27.2%)	108 (26.9%)	58 (14.5%)
Fear of worst happening	64 (16.0%)	86 (21.4%)	108 (26.9%)	143 (35.7%)
Dizzy or lightheaded	194 (48.4%)	100 (24.9%)	88 (21.9%)	19 (4.7%)
Heart pounding/racing	150 (37.4%)	114 (28.4%)	87 (21.7%)	50 (12.5%)
Unsteady	183 (45.6%)	105 (26.2%)	76 (19%)	37 (9.2%)
Terrified or afraid	113 (28.2%)	119 (29.7%)	110 (27.4%)	59 (14.7%)
Nervous	105 (26.2%)	113 (28.2%)	102 (25.4%)	81 (20.2%)
Feeling of choking	292 (72.8%)	58 (14.5%)	33 (8.2%)	18 (4.5%)
Hands trembling	235 (58.6%)	84 (20.9%)	51 (12.7%)	31 (7.7%)
Shaky/unsteady	247 (61.6%)	77 (19.2%)	56 (14%)	21 (5.2%)
Fear of losing control	237 (59.1%)	76 (19%)	57 (14.2%)	31 (7.7%)
Difficulty in breathing	255 (63.6%)	74 (18.5%)	54 (13.5%)	18 (4.5%)
Fear of dying	144 (35.9%)	102 (25.4%)	86 (21.4%)	69 (17.2%)
Scared	89 (22.2%)	124 (30.9%)	120 (29.9%)	68 (17%)
Indigestion	222 (55.4%)	97 (24.2%)	67 (16.7%)	15 (3.7%)
Faint/lightheaded	320 (79.8%)	46 (11.5%)	24 (6%)	11 (2.7%)
Face flushed	251 (62.6%)	80 (20%)	48 (12%)	22 (5.5%)
Hot/cold sweats	148 (36.9%)	114 (28.4%)	86 (21.4%)	53 (13.2%)
BAI, Beck Anxiety Inventory.				

Table 3 Association between independent and dependent variables

Variable	Level of anxiety				Kruskal-Wallis test P value	Ordinal logistic regression		
	Minimal	Mild	Moderate	Severe		Parameter estimate (β)	OR	Significance
Gender								
Male	48 (20.6%)	70 (30%)	49 (21%)	66 (28.3%)	<0.001*	-0.97	0.37	<0.001
Female	15 (8.95%)	39 (23.2%)	38 (22.6%)	76 (45.2%)		0 ^a	-	-
Age								
14–15	41 (15.7%)	71 (27.6%)	58 (22.6%)	88 (34.2%)	0.809	0.11	1.11	0.666
16–17	23 (16.1%)	38 (26.6%)	29 (20.3%)	53 (37.1%)		0 ^a	-	-
Grade								
Grade 9	27 (13.0%)	58 (28.0%)	51 (24.6%)	71 (34.3%)	0.601	0.17	1.19	0.483
Grade 10	36 (18.6%)	51 (26.3%)	36 (18.6%)	71 (36.6%)		0 ^a	-	-
Started using SM								
≤10 years	10 (6.5%)	41 (26.6%)	39 (25.3%)	64 (41.6%)	0.002	-0.02	0.97	0.962
11–13 years	42 (19.4%)	64 (29.5%)	43 (19.8%)	68 (31.3%)		-0.02	0.97	0.954
≥14 years	11 (36.7%)	4 (13.3%)	5 (16.7%)	10 (33.3%)		0 ^a	-	-
Frequency of SM use								
Less than 4 times/day	40 (40.0%)	44 (44.0%)	12 (12.0%)	4 (4.0%)	<0.001*	-1.10	0.33	0.008
4–7 times/day	22 (11.3%)	57 (29.2%)	50 (25.6%)	66 (33.8%)		-0.57	0.56	0.055
More than 7 times/day	1 (0.9%)	8 (7.51%)	25 (23.6%)	72 (67.9%)		0 ^a	-	-
Duration of SM use								
Less than 1 hour/day	32 (53.3%)	23 (38.3%)	3 (5.0%)	2 (3.3%)	<0.001*	-4.17	0.01	<0.001
1–4 hours/day	28 (21.2%)	68 (51.5%)	33 (25.0%)	3 (2.3%)		-3.40	0.03	<0.001
4–8 hours/day	3 (1.7%)	16 (9.1%)	46 (26.3%)	110 (62.9%)		-0.70	0.49	0.151
More than 8 hours/day	0 (0.0%)	2 (5.9%)	5 (14.7%)	27 (79.4%)		0 ^a	-	-
Day without SM use								
No	24 (8.4%)	59 (20.6%)	74 (25.8%)	130 (45.3%)	<0.001*	0.14	1.15	0.585
Yes	39 (34.2%)	50 (43.9%)	13 (11.4%)	12 (10.5%)		0 ^a	-	-
Anxious due to SM								
No	48 (35.0%)	54 (39.4%)	23 (16.8%)	12 (8.8%)	<0.001*	-1.05	0.34	<0.001
Yes	15 (5.7%)	55 (20.8%)	64 (24.2%)	130 (49.2%)		0 ^a	-	-
Shared SM accounts								
No	51 (20.5%)	79 (31.7%)	51 (20.5%)	68 (27.3%)	<0.001*	-0.09	0.90	0.669
Yes	12 (7.9%)	30 (19.7%)	36 (23.7%)	74 (48.7%)		0 ^a	-	-
Took breaks from SM								
No	35 (31.8%)	43 (39.1%)	14 (12.7%)	18 (16.4%)	<0.001*	-0.10	0.89	0.667
Yes	28 (9.6%)	66 (22.7%)	73 (25.1%)	124 (42.6%)		0 ^a	-	-

 0^a: reference.

*P value <0.001=highly significant.

SM, social media.

since the p value was greater than 0.05 in both. Males were associated with less odds of experiencing severe anxiety compared with females (OR=0.37, $p<0.001$). Likewise, participants of grade 9 exhibited higher odds of experiencing anxiety (OR=1.19, $\beta=0.17$) in comparison to those in grade 10. Shifting the focus to individuals who began using SM at age 10 or younger, they reported the highest proportion of severe anxiety (41.6%), followed by those

who started between ages 11 and 13 (31.3%). However, the ordinal logistic regression did not find significant differences in anxiety levels between age groups ($p>0.05$), suggesting that age at SM initiation alone may not be a strong predictor of anxiety levels.

Moreover, participants who used SM seven times or more per day and those who spent more than 8 hours daily were more likely to have greater levels of anxiety

compared with the other mentioned groups. Those who had their dependency on SM were more inclined to have greater levels of anxiety compared with those who could refrain from it (OR=1.15, β =0.14). Additionally, feeling anxious due to using SM was strongly associated with higher odds of severe anxiety, highlighting the potential emotional impact of SM usage on individuals' mental well-being.

Furthermore, while the Kruskal-Wallis test indicated significant variations in anxiety levels based on sharing SM accounts, the ordinal logistic regression did not provide evidence of a direct relationship between sharing accounts and anxiety levels. Additionally, participants who did not take a break from SM were less likely to fall under severe anxiety level compared with those who did (OR=0.89, β =-0.10).

DISCUSSION

The study involved 401 school adolescents, with 58.1% being male and 41.9% female; the average age was 15.23. Almost half of them used SM between four and seven times daily, with over a quarter using it more than seven times. Regarding duration, most (43.6%) spent 4–8 hours daily, while around one-third (32.9%) used it for 1–4 hours. Most participants were in grade 9 (51.6%) and expressed significant concerns about privacy, with 93.3% concerned about their personal information. Despite this, 37.9% chose to share their private SM accounts. A majority (54.1%) initiated their SM engagement between ages 11 and 13, and 71.6% felt reliant on SM, unable to abstain for a day. The participants reported various anxiety symptoms, with 35.4% experiencing severe anxiety. Significant differences were found across variables except for age and grade. Males had lower odds of severe anxiety (OR=0.37, p <0.001), but the age at which they started using SM alone did not predict anxiety levels. Dependency on SM was associated with higher anxiety levels, and feeling anxious due to SM usage was strongly linked to severe anxiety. However, sharing SM accounts was not directly associated with anxiety levels, according to ordinal regression. Additionally, participants who did not take breaks from SM showed less anxiety compared with those who did.

In this study, 85.3% used SM regularly, which closely mirrored the findings from 2014 to 2015, where about 91% of teens reported daily internet usage. This breakdown included 48% of girls and 43% of boys.²⁴ Moreover, over 40% of individuals were involved with SM platforms by the age of 10, and this percentage almost doubled by the time they reached 14 years old.²⁵ Similar to these findings, 38.4% of adolescents began using SM before the age of 10. Additionally, a study in the UK stated that 73% of 10–12-year-olds had registered on a SM platform, disregarding age restrictions.²⁶

In this study, the majority of participants used SM for entertainment (91.3%) and to stay in touch with friends and family (84.0%). In contrast, an Indian study found

that 37.5% used SM for chatting, 35% for browsing and 27.5% for news and other purposes.²¹ Another study found that SM use was primarily for entertainment (82.2%), academics (75.6%) and movies (56.7%).²⁷ The vast majority (93.3%) in this study were concerned about their privacy on SM. Surprisingly, despite these concerns, a significant number (37.9%) shared their private accounts. This paralleled findings from a study in Nepal, where 61.1% acknowledged privacy concerns on SM, yet intriguingly, a minority (3.6%) disregarded the importance of privacy on such platforms.²⁸

Shifting the focus towards anxiety, this study found that 35.4% of adolescents had severe anxiety. A study from Bangladesh also identified a significant link between social networking site usage and mental health issues.²⁹ A US study showed that higher daily SM use was significantly associated with increased symptoms of dispositional anxiety (β =0.74, 95% CI=0.59 to 0.90, p <0.001).³⁰ This finding aligned with previous research, as evidenced by the highly significant p value <0.001 obtained using the Kruskal-Wallis test.

In a Canadian study, 48% of adolescents spent 3 hours or more daily in SM, and 43.7% experienced moderate to severe psychological distress, with a higher occurrence noted among females (54%) compared with males (31%).³¹ On average, female participants exhibited high levels of anxiety compared with their male counterparts, which was exactly similar to this study's findings.³² Moreover, in the Bangladesh study, the participants who used the internet for 2–4 hours daily were 0.75 times less likely to experience anxiety compared with those who spent more than 4 hours online (OR=0.75 95% CI=0.451 to 1.265, p =0.287).³³

This study presented higher rates of severe anxiety level in females (45.2%), with the association between gender and anxiety levels being evident (p <0.001). In contrast, a study in Dang, Nepal, also emphasised the significant association between gender and anxiety levels, where males had 1.520 times more anxiety than females.²⁰ In this study, 71.6% could not go a day without SM and were more inclined to have greater levels of anxiety, similar to a study in India, where 70% of students faced the same challenge.²¹ The prevalence of mental health issues among adolescents was worrisome, with 32% of individuals aged 12–17 indicating symptoms of anxiety.³⁴

Limitations of this study

The study's limitation lies in its focus on schools exclusively within Kathmandu and using a multistage sampling method, potentially overlooking the varied SM habits of adolescents in other regions of Nepal. Moreover, restricting the sample to students in grades 9 and 10 aged 14–17 may not fully represent the diverse SM usage behaviours across various age groups and educational backgrounds among adolescents.

Additionally, the reliance on self-administered questionnaires for data collection may introduce response bias, as participants may provide socially desirable answers

or misinterpret questionnaire items, impacting the accuracy of the data collected. One limitation of the study's methodology is the potential for sampling bias despite the use of the PPS method. The exclusion criteria, which required participants to be internet users, may introduce selection bias, as individuals who do not use the internet may have different SM usage patterns or anxiety levels compared with internet users. This could limit the generalisability of the study's findings to the broader adolescent population.

Clinical implications

This study highlights the importance of raising awareness among healthcare professionals, parents, and educators about the negative consequences of excessive SM use among adolescents. Early interventions are crucial for preventing severe mental health issues, involving promoting educational programmes, privacy awareness, screen time management, mental health support, and responsible digital policies. This approach may empower adolescents to enhance skills to navigate SM safely, manage anxiety effectively, and cultivate healthier digital habits and emotional well-being. Furthermore, a key recommendation for clinicians to incorporate SM habit assessment into routine check-ups for adolescents, and collaborative efforts with schools are essential for implementing preventive measures and support systems.

The study underscores the need for further research on the factors influencing anxiety levels associated with SM, particularly in diverse contexts and demographics, and urges the importance of investigating the mechanisms through which SM factors may amplify adolescents' anxiety levels.

CONCLUSIONS

Despite acknowledging privacy concerns, a significant portion of participants opted to share private SM accounts, revealing early SM initiation, high dependency and various anxiety symptoms, including a prevalence of severe anxiety levels (35.4%). Significant variations were observed across different variables, especially with males exhibiting lower odds of severe anxiety than females. Moreover, the study outlined a relationship between dependency on SM and increased levels of anxiety. Those who did not take breaks from SM were less likely to have severe anxiety compared with those who did. These findings highlight the significant connection between SM usage and anxiety, with factors like gender, usage patterns and behaviours on these platforms playing important roles and emphasises the importance of promoting resilience among adolescents, managing screen time effectively and educating about responsible SM usage to address potential negative impacts on mental well-being.

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Contributors NA is the corresponding author who contributed to preparing the proposal, developing the methodology, conducting a literature review, analysing the data and writing the initial draft of the study. NA and AR collaborated on data collection, drafting the manuscript and reviewing the final version. All authors have read and approved the final manuscript. NA is the guarantor. We used AI tool to check grammatical errors in order to enhance the quality of our study.

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Patient consent for publication Not applicable.

Ethics approval This study was approved by Institutional Review Committee (IRC), Nobel college, Reference Number BPH525/2021. Permission was obtained from school principals, and informed consent was received from participants' parents. Participants were given an explanation prior to their involvement, and assent was taken afterwards.

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Data availability statement Data are available upon reasonable request. All data relevant to the study are included in the article or uploaded as supplementary information. The dataset used and/or analysed in this study are available from the corresponding author upon reasonable request.

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