

ORIGINAL ARTICLE

Association between social media addiction and quality of life

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ABSTRACT

Background: The use of social media has become an integral part of the current adolescent's living, which raises concerns over the psychological health and quality of life (QoL). The addictive use was associated with emotional distress, poor academic achievement, and reduced physical QoL. The objective of the study was to determine the prevalence of such usage in Saudi Arabian adolescents and to investigate its relationship with the QoL.

Methods: A web-based descriptive cross-sectional study was conducted among adolescents aged 12-18 at intermediate and secondary schools in Makkah and Riyadh. Data were collected via a self-administered online questionnaire using a snowball sampling method. The survey included sociodemographic variables, pediatric QoL inventory, and Bergen Social Media Addiction Scale. Statistical analysis was performed using SPSS, including descriptive statistics, chi-square tests, *t*-tests, and Pearson correlation analysis.

Results: Of the 689 participants, 31.2% were identified as high-risk or problematic social media users. A strong negative relationship was found between social media addiction and total QoL ($r = -0.110$, $p = 0.004$), emotional ($r = -0.159$, $p < 0.001$), and school functioning domains ($r = -0.077$, $p = 0.044$). Higher addiction scores correlated with lower QoL scores and worse academic performance with higher daily social media use ($p < 0.05$).

Conclusion: Social media poses a problem for nearly a third of adolescents, linked to poorer emotional states and academic performance. These findings highlight the need for awareness campaigns and preventive measures to promote healthy digital behavior and ensure adolescents' mental and academic well-being.

Keywords: Social media, quality of life, adolescents.

Introduction

Adolescence is a sensitive period of life and is defined by WHO as a transitional phase of growth and development between childhood and adulthood, from ages 10 to 19. It is a unique stage of human development and an important time for laying the foundations of good health [1]. Social media addiction (SMA) is characterized by patterns of use involving salience, mood modification, tolerance, withdrawal, conflict, and relapse. Features that align with behavioral addiction models. Unlike simple measures of screen time, SMA reflects loss of control and functional impairment, which can negatively affect mental health and, importantly, influence quality of life (QoL). A multidimensional construct encompassing both subjective and objective aspects of individuals' lives within their cultural and socioeconomic environments [2].

Adolescents use the internet extensively for information exchange, communication, and entertainment. While previous studies have shown the potential benefits of appropriate internet use for the development of adolescents, it is important to know that excessive or uncontrolled use of the internet can lead to internet addiction (IA), including maladaptive internet use (MIU)

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Received: 09 March 2026 | **Revised (1):** 13 June 2026

Accepted: 30 June 2026



and pathological internet use (PIU) [3]. A cross-sectional survey performed in five European countries reported that approximately 17.35% of the adolescents exhibited IA, with 13.34% experiencing MIU and 4.01% having PIU [4]. The prevalence of IA in adolescents was also high in developing countries, like China [5,6]. A nationwide survey in China also identified PIU in 6.3% of children and adolescents aged 8-16 years [5,6].

Numerous studies have demonstrated the associations between IA and a variety of behavioral, developmental, and health problems in adolescents [7-13]. For example, IA has been found to be associated with health risk behaviors, such as poor eating habits, sleep problems, early initiation of drinking, smoking, and substance misuse [7-9]. Psychiatric health impairment is another significant concern, as IA raises the risk of schizophrenia, depression, and anxiety [10]. Furthermore, there is evidence suggesting that IA has a damaging impact on physical health, with excessive internet use leading to health problems, such as back pain, obesity, and deep vein thrombosis [13].

In addition to the mentioned studies, previous research has also demonstrated a connection between IA and impaired health-related quality of life (HRQOL) [14,15], a comprehensive concept that could reflect an individual's perception of their physical, psychological, and social well-being [16]. For instance, a cross-sectional study conducted in Spain has shown that adolescents with IA had significantly lower scores in all HRQOL dimensions measured by Kidscreen-27 [14]. IA has also been linked to poor HRQOL, according to another cross-sectional study that involved 2,829 Chinese adolescents [15].

Despite this wide array of studies, fewer studies or literature reviews can be found for the association between SMA and QoL, HRQOL, life satisfaction, or well-being in adolescents in Saudi Arabia. This study aims to assess the association between SMA and QoL among adolescents in Saudi Arabia. In particular, it will determine whether higher levels of SMA are linked to lower overall QoL, with a sub-analysis exploring the specific domains most affected, such as physical, psychological, social, and academic well-being. The research will also describe the patterns and predictors of social media use and addiction in this population, providing evidence to inform future interventions targeting youth mental health and digital behaviors in Saudi Arabia.

Methodology

Study design and setting

This was a web-based descriptive cross-sectional research study that aimed to determine the relationship between SMA and HRQOL in adolescents.

Sampling technique

The snowball sampling method was employed to select the participants, according to which the eligible adolescents were invited to complete and distribute the survey link among their peers. The self-administered online questionnaire was used to collect the data, which

were distributed by means of the most popular social media, such as WhatsApp, Twitter/X, Instagram, and Snapchat.

Data collection tools

The survey scale included two validated standardized measures that are validated: the Pediatric Quality of Life Inventory (PedsQL™) to measure the HRQOL and Bergen Social Media Addiction Scale (BSMAS) to measure the degree of addiction to social media.

Study population

The study sample comprised school-going children (adolescents) between the ages of 12 and 18 years in Makkah and Riyadh, Saudi Arabia. The selection criteria included that the respondents had to be within the age bracket, they had to be in the recognized schools in the two cities, they needed to read and comprehend Arabic, and they had to consent to participate. Male and female students were involved. Young people who were not within the stipulated age, could not understand Arabic, refused to participate, and those who provided responses to the main study instruments incomprehensively were excluded. Participants gave their consent, and parental consent was obtained where necessary before participation.

Data collection procedure

The data were collected using an online Google Form that was sent electronically in the Arabic language. The questionnaire contained the sections on sociodemographic factors, the PedsQL™ to evaluate the HRQOL, and the BSMAS to assess the SMA. Data collectors helped in spreading the survey link to social media applications. The responses obtained were subsequently translated into English to analyze and report them statistically. In order to guarantee confidentiality, a number and pseudonym-based coding system was used, and only the research team was allowed to access the dataset. No personal data were noted.

Sample size calculation

The sample was estimated to compare the poor QoL proportion between the adolescents who were addicted to social media and those who were not. It was calculated with OpenEpi (version 3.01; Dean AG, Sullivan KM, Soe MM.) to test two proportions, two-sided, and a significance level of 0.05 and a statistical power of 80%. According to the data published previously, it was assumed that 40% of adolescents with SMA would report having poor QoL as compared to 25% in non-addicted adolescents. The required minimum sample was estimated to be 146 participants per group (292 total). When the possibility of a 10% rate of incomplete or invalid response was considered, the lower limit of the recruitment target was 326 participants. Since the snowball sampling was used, and there was no certainty about the prevalence of SMA among the recruited sample, the target sample size was increased to about 400-500 adolescents to guarantee that both comparison groups were adequately represented.

Statistical analysis

The analysis of the data was conducted with SPSS Statistics (version 26; IBM Corp., Armonk, NY). Descriptive and inferential statistical analyses were done. Means and standard deviations were used to summarize quantitative variables, whereas frequencies and percentages were used to summarize categorical variables. To evaluate the relationship between the QoL and SMA, comparative analyses were done with the help of appropriate statistical tests, such as chi-square tests with categorical variables and independent *t*-tests with continuous variables. The level of confidence used was 95%, and statistical significance was set at a *p*-value of less than 0.05.

Ethical approval

The study was conducted with the prior consent of the Institutional Review Board of Umm Al-Qura University (HAPO-02-K-012-2025-11-2992; dated 27/10/2025). Participation was at will, and all the data were anonymously collected. Before admission, parental consent and teenage consent were obtained. All the responses were treated strictly as confidential and utilized solely in the research.

Results

This study consisted of 689 adolescents. Over 50% of the respondents were between 17 and 18 years (55.3%), 14-16 years (31.2%), with younger adolescents between 12 and 13 years (13.5%) making up the sample. A larger percentage of females (59.1) was represented. On the educational level, the majority of the participants were in intermediate school (65.5%), (29.8%) in high school, and a minor percentage (4.8%) in college level. Most of them lived in urban areas (85.3%), the majority lived in Makkah (84.0%), and (16.0%) were based in Riyadh. The sample consisted of governmental schools (92.5%) and those in the private schools (7.5%). Regarding parental education, (39.5%) of mothers and (42.5%) of fathers were of college education, and (12.6%) of mothers and (8.3%) of fathers were illiterate (Table 1).

Most participants (93.9%) indicated having a smartphone, and over half of the teenagers (55.7%) indicated having their first smartphone prior to the age of 12 years. (32.4%) spent 1-2 hours (31.1%), spent 3-4 hours (27.6%), spent over 4 hours on social media on school days, and only (9.0%) spent less than 1 hour. The academic performance was high, with (56.5%) reporting excellent academic performance and (32.8%) very good academic performance. Regarding the duration of sleep, (37.7%) of the respondents took 8-9 hours of sleep per night, and 15.1% slept less than 6 hours (Table 2).

About the choice of the platform, YouTube (83.6%) and TikTok (83.5%) were the most common platforms, with Snapchat (81.8%) and WhatsApp (74.3%) trailing closely behind. The least used platforms were Instagram (67.2%), followed by X (28.2%), Facebook (26.4%), and Telegram (4.1%) (Figure 1).

The average of the BSMAS was 17.23 with a standard deviation of 5.18. The total mean PedsQL total score

Table 1. Demographic factors of the participants.

		Count	Column N %
Age	12-13	93	13.5%
	14-16	215	31.2%
	17-18	381	55.3%
Gender	Male	282	40.9%
	Female	407	59.1%
Educational level	Intermediate	451	65.5%
	High	205	29.8%
	College	33	4.8%
Residency	Rural	101	14.7%
	Urban	588	85.3%
Location	Riyadh	110	16.0%
	Macca	579	84.0%
School	Governmental	637	92.5%
	Private	52	7.5%
Mother's education level	Illiterate	87	12.6%
	High school	224	32.5%
	College	272	39.5%
	Higher level	106	15.4%
Father's education level	Illiterate	57	8.3%
	High school	165	23.9%
	College	293	42.5%
	Higher level	174	25.3%

Table 2. Usage of social media.

		Count	Column N %
Having smart phone	No	42	6.1%
	Yes	647	93.9%
The age at which you got your first smartphone	Not having a smartphone	42	6.1%
	< 12 years	384	55.7%
	12-14	175	25.4%
	15-18	88	12.8%
Average social media usage during school days	< 1 hour	62	9.0%
	1-2 hours	223	32.4%
	3-4 hours	214	31.1%
	> 4 hours	190	27.6%
Academic performance	Weak	14	2.0%
	Good	60	8.7%
	Very good	226	32.8%
	Excellent	389	56.5%
Sleeping hours	< 6 hours	104	15.1%
	6-7 hours	215	31.2%
	8-9 hours	260	37.7%
	> 9 hours	110	16.0%

was (70.82 ± 23.43). The highest mean score was recorded in the physical health summary (76.68 ± 25.55) and the social functioning scale (74.34 ± 28.15) and school functioning scale (69.86 ± 28.22), with the lowest mean score of the emotional scale (63.85 ± 29.69) (Table 3).

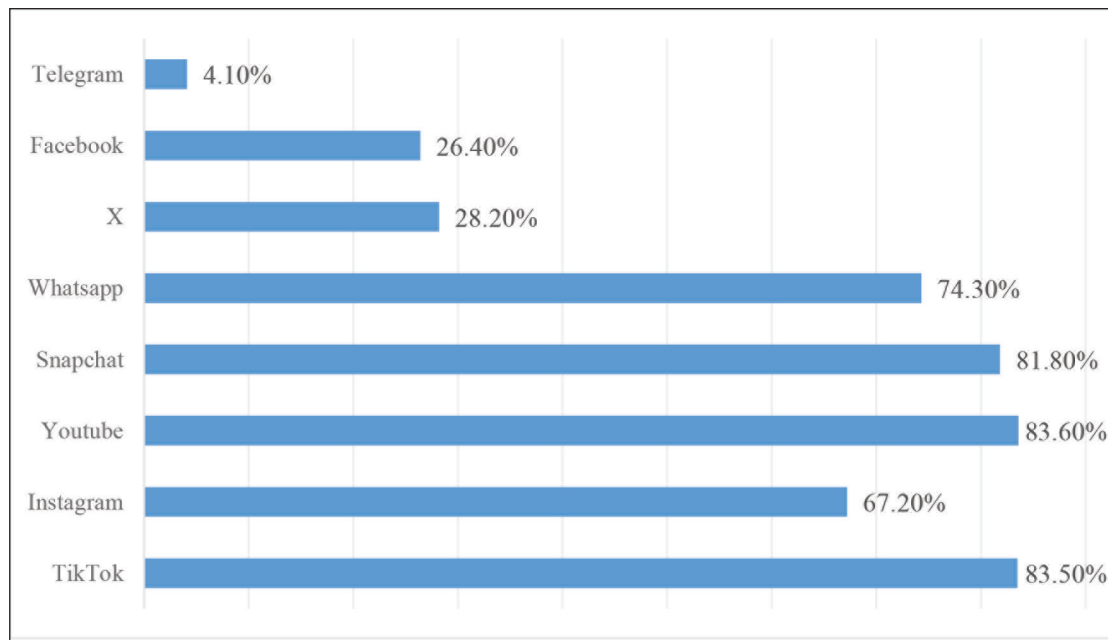


Figure 1. The type of social media most commonly used.

Table 3. Mean scores of BSMAS and PedsQL scales.

	Mean	Standard deviation
BSMAS	17.23	5.18
PedsQL Total score	70.82	23.43
Physical Health Summary Score	76.68	25.55
Emotional scale score	63.85	29.69
Social scale score	74.34	28.15
School Functioning Scales scores	69.86	28.22

PedsQL: pediatric quality of life inventory.

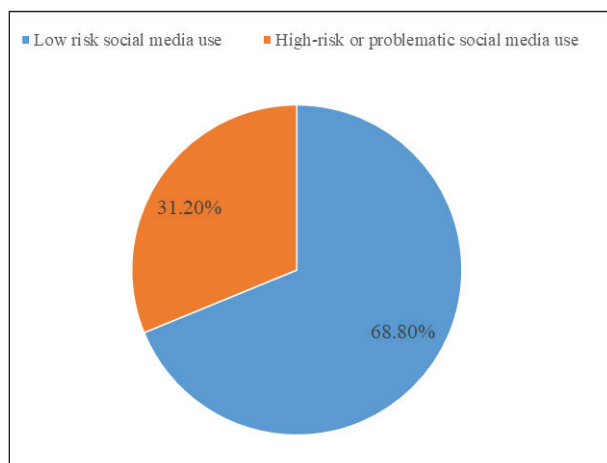


Figure 2. The incidence of SMA.

According to the predetermined classification, (31.2%) of the respondents were considered to have high-risk or problematic social media use, and (68.8%) were low-risk users (Figure 2).

There were no statistically significant age differences in BSMAS scores or total PedsQL scores. However,

emotional functioning differed significantly by age ($p = 0.005$), with older adolescents (17-18 years) scoring higher than younger groups. No significant relationships were found between gender and SMA or QoL domains. Educational level did not have a significant correlation with emotional functioning ($p = 0.049$), although college students registered higher emotional scores.

Location showed important relationships with total PedsQL score and all subscales, with adolescents at Makkah reporting significantly higher total, physical, emotional, social, and school functioning scores than those at Riyadh ($p < 0.05$ for all). Mother's education was significantly related to total PedsQL score ($p = 0.015$), emotional functioning ($p < 0.001$), social functioning ($p = 0.009$), and school functioning ($p < 0.001$), unlike father's education.

The adolescents who have a smartphone scored considerably higher in addiction scores than those who did not ($p = 0.012$), though no differences were found in PedsQL scores. Physical health ($p = 0.011$) and social functioning ($p = 0.007$) had a significant relationship with the age at which the first smartphone was obtained. Mean social media use on school days was significantly correlated with addiction scores ($p < 0.001$) and emotional functioning ($p = 0.003$), and participants who used social media more than 4 hours per day scored highest on addiction scores and lowest on emotional functioning. Academic performance was closely linked to addiction scores and PedsQL domains ($p < 0.05$ across all of them), with the adolescents with low academic performance indicating higher scores on addiction and significantly lower scores on QoL. Only emotional functioning had a significant relationship with sleep duration ($p = 0.015$) (Supplementary Table 4). Pearson correlation analysis indicated a weak negative correlation between BSMAS scores and total PedsQL score ($r = -0.110$, $p = 0.004$), indicating that higher

Table 4. The correlations between SMA and PedsQL scores.

		BSMAS	PedsQL total score	Physical health summary score	Emotional scale score	Social scale score	School functioning scales scores
BSMAS	Pearson correlation	1	-0.110**	-0.060	-0.159**	-0.041	-0.077*
	Sig. (2-tailed)		0.004	0.115	0.000	0.281	0.044
	N	689	689	689	689	689	689
PedsQL total score	Pearson correlation	-0.110**	1	0.806**	0.874**	0.827**	0.867**
	Sig. (2-tailed)	0.004		0.000	0.000	0.000	0.000
	N	689	689	689	689	689	689
Physical health summary score	Pearson correlation	-0.060	0.806**	1	0.547**	0.514**	0.556**
	Sig. (2-tailed)	0.115	0.000		0.000	0.000	0.000
	N	689	689	689	689	689	689
Emotional scale score	Pearson correlation	-0.159**	0.874**	0.547**	1	0.699**	0.699**
	Sig. (2-tailed)	0.000	0.000	0.000		0.000	0.000
	N	689	689	689	689	689	689
Social scale score	Pearson correlation	-0.041	0.827**	0.514**	0.699**	1	0.778**
	Sig. (2-tailed)	0.281	0.000	0.000	0.000		0.000
	N	689	689	689	689	689	689
School functioning scales scores	Pearson correlation	-0.077*	0.867**	0.556**	0.699**	0.778**	1
	Sig. (2-tailed)	0.044	0.000	0.000	0.000	0.000	
	N	689	689	689	689	689	689

*Correlation is significant at the 0.05 level (2-tailed).

**Correlation is significant at the 0.01 level (2-tailed).

PedsQL: pediatric quality of life inventory.

SMA was associated with lower overall QoL. Significant negative correlations were also found between addiction scores and emotional functioning ($r = -0.159, p = 0.001$) and school functioning ($r = -0.077, p = 0.044$), while no significant correlations were observed with physical or social functioning domains. The total PedsQL score and subscales were significantly correlated, with the strongest correlations between total PedsQL score and emotional functioning ($r = 0.874, p < 0.001$), school functioning ($r = 0.867, p < 0.001$), and social functioning ($r = 0.827, p < 0.001$), indicating the internal consistency and interrelationship of QoL domains (Table 4).

Discussion

This study investigated SMA and HRQOL among adolescents in Makkah and Riyadh. Using the BSMAS, we discovered that 31.2% of participants exhibited high-risk or problematic social media use. Other adolescent populations in other cultures indicate problematic use ranging from 20% to 35%, depending on cutoff ages and assessment approaches [17-19]. Similar rates in Middle Eastern and European contexts show that problematic use is a global, developing teen behavioral health problem [20,21]. Results: The mean overall score on the PedsQL was modest for the sample, with the lowest scores in the emotional functioning domain. This tendency aligns with previous findings that adolescent emotional well-being is highly sensitive, especially under heavy use of digital devices [22,23]. There is some evidence from cross-sectional studies that high levels of social media use are more strongly related to emotional symptoms such as anxiety, mood disorders, and low self-esteem than to physical health [17,24].

The results of the study revealed a high negative association between the scores of SMA and the QoL, especially the emotional and school functioning. However, the connection is consistent with the literature [25,26], although the correlation is low. Systematic reviews have reported minor to moderate detrimental effects on problematic social media use, psychological well-being, and academic achievement [17]. Poor quality of emotional life may be due to emotional dysregulation, social comparison, cyberbullying, and sleep difficulties [17]. High-risk users generally have difficulties with concentration, procrastination, and reordering of academic activities [17].

SMA was not significantly associated with physical health. This aligns with data indicating problematic social media use in teenagers has more rapid and severe impacts on psychological and behavioral health relative to physical health [27]. Some research links screen time with sedentary behavior and somatic complaints, but the mental health findings are more consistent [27].

The study indicated that teens who spent more than 4 hours a day on social media scored higher for addiction. This is consistent with previous results showing that internet time is a significant predictor of problematic use and addiction is a behavioral habit [28].

Addiction and QoL had a significant effect on academic progress. Adolescents with poor academic performance had greater scores on addiction and considerably lower scores on PedsQL in all domains. This is consistent with previous research indicating a negative association between problematic social media use and academic performance, explained by reduced study time, worse

focus, and sleep disturbances [28,29]. High academic achievers exhibited higher QoL scores, in line with the bidirectional association between well-being and academic achievement reported in the literature [29].

Emotional functioning was strongly correlated with sleep length but not addiction scores. This largely confirms earlier studies linking problematic social media use with poor sleep duration and quality [29]. Some studies suggest sleep disturbances modulate the relationship between technology abuse and mental anguish rather than predicting the severity of addiction.

Total QoL and several subcategories were related to the mother's education, whereas paternal education was not. This is consistent with the PedsQL, where maternal education is often a predictor of teenage well-being, likely through caregiving, health literacy, and parental monitoring strategies that influence digital habits.

Finally, many children under 12 owned smartphones. The age at which a first smartphone was used was not related to the addiction ratings but was related to the physical and social functioning. The link between early exposure to personal digital devices and long-term usage patterns is there, although the amount and type of this link differ.

There are several limits to be mentioned. The cross-sectional design does not allow to establish causation between SMA and QoL. Snowball sampling online restricted generalizability to social media users with internet access, which could have led to selection bias. Self-reported screen time and grades may also be prone to recall and social desirability biases. The reactions were subjective, not clinical, despite the use of proven technology. Finally, uncontrolled confounding factors such as mental health, family dynamics, and socioeconomic position may have influenced the observed relationships.

Conclusion

The results of the given research are aligned with the body of literature that suggests problematic social media use is adversely correlated with overall QoL; however, the correlation with physical health is less strong. Even though the cross-sectional design does not allow making causal inferences, the observed correlations can be used to support the theoretical models according to which compulsive digital use can disrupt emotional regulation and everyday functioning. Longitudinal research is required to understand the direction of such relationships and to find out whether a decrease in problematic social media use can result in any objective improvement in the QoL of adolescents.

List of Abbreviations

BSMAS Bergen social media addiction scale
PEDQL Pediatric quality of life inventory

Conflict of interest

The authors declare that there is no conflict of interest regarding the publication of this article.

Funding

None.

Consent to participate

Electronic informed consent was obtained from all the participants.

Ethical approval

Example for original articles: Ethical approval was granted by the Institutional Review Board of Umm Al-Qura University (HAPO-02-K-012-2025-11-2992; dated 27/10/2025).

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Supplementary content (If any) is available online.

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