

The Influence of Social Media Usage Intensity on Adolescent Mental Health: The Mediating Role of Cyberbullying and Peer Social Support, Jambi Luar Kota District, Muaro Jambi Regency

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ABSTRACT

The intensity of social media use may influence adolescent mental health through psychosocial mechanisms, yet integrated evidence on the simultaneous role of cyberbullying as a risk pathway and peer social support as a protective pathway remains limited, particularly in semi-urban Indonesian contexts such as Jambi Luar Kota District, Muaro Jambi Regency. Purpose: This study aimed to examine the association between social media use intensity and adolescent mental health and to test the intermediary roles of cyberbullying and peer social support. Methods: A quantitative analytic observational cross-sectional design was employed among 330 adolescents aged 13–18 years selected via proportionate stratified random sampling from junior and senior secondary schools. Structured questionnaires assessed social media use intensity, cyberbullying, peer social support, and mental health; The data were analyzed using univariate and bivariate statistics with significance set at $p < 0.05$. Results: Higher social media intensity was significantly associated with greater cyberbullying ($p < 0.001$, Cramer's $V = 0.245$), modestly higher peer support ($p = 0.045$), and poorer mental health ($p < 0.001$). Cyberbullying was linked to worse mental health ($p < 0.001$), while higher peer support was associated with better mental health ($p < 0.001$). Implications: Findings support school- and community-based programs that combine digital safety education to reduce cyberbullying with strategies to strengthen peer social support rather than solely limiting screen time. Conclusion: Social media intensity relates to adolescent mental health through dual opposing psychosocial pathways; Longitudinal research is recommended to confirm mediation and temporal order.

Keywords: *Social Media Intensity, Cyberbullying, Peer Social Support, Adolescent Mental Health, Mediation*

INTRODUCTION

Adolescence is a developmental period characterized by intense biological, psychological, emotional, and social changes. This period is known to be vulnerable to various mental health issues, such as symptoms of depression, anxiety, psychological stress, low self-esteem, social isolation, and general psychological well-being. Mental health during adolescence is important to consider because it can impact academic functioning, the quality of interpersonal relationships, health behaviors, and overall quality of life. Adolescent mental health is not solely determined by individual factors but is also shaped by interactions with the social environment and the increasingly rapid development of digital technology. Therefore, this issue needs to be understood as a complex and multifactorial public health issue.

With the advancement of digital technology, social media has become an integral part of the lives of today's youth. Digital platforms are used not only for communication and entertainment, but also for information seeking, identity formation, self-expression, and maintaining relationships with peers. The intensity of social media use can be understood through several dimensions, such as frequency and duration of use, as well as the level of emotional engagement and user behavior with the platform. Social media use is inherently two-sided: on the one hand, it can increase social connectivity, access to information, and emotional support; on the other hand, increasingly intensive use has the potential to increase exposure to digital experiences that are detrimental to mental health. Therefore, the relevant issue is not simply whether adolescents use social media, but rather how the intensity of that use relates to the social and psychological experiences adolescents encounter in the digital space.

Recent studies provide empirical evidence supporting this assumption. Ni et al. (2025), in a study of 813 social media users in China, found that the intensity of social media use was positively associated with both involvement in and exposure to cyberbullying, although the strength of this relationship was moderated by the characteristics of social ties on each platform. Similarly, Grund et al. (2025), analyzing data from the 2023 United States Youth Risk Behavior Survey of over 10,000 adolescents, found that moderate to high levels of social media use significantly increased depressive symptoms, although parental supervision was shown to mitigate these negative impacts. (Grund et al., 2025). These findings confirm that the relationship between the intensity of social media use and adolescent mental health is not a simple linear one, but rather involves specific social and contextual mechanisms that need to be examined more thoroughly.

One psychosocial mechanism widely highlighted in the literature is cyberbullying, a form of aggression or harassment carried out through digital technology and electronic communication media. The more intense adolescents' involvement in digital spaces, the greater their chances of being exposed to negative interactions, whether as victims, perpetrators, or witnesses of cyberbullying. Feng et al. (2023) showed that peer victimization is associated with problematic social



media use through the mechanism of increased psychological insecurity, and this relationship is also moderated by family support. (Feng et al., 2023). Meanwhile, Wright (2025) in a longitudinal study of elementary to high school students in the United States found that peer attachment significantly moderated the relationship between involvement in cyberbullying and depressive symptoms six months later, with the most pronounced effect in middle school-aged students. (Wright, 2025). These findings provide an empirical basis for the argument that cyberbullying is not only worthy of being positioned as a stand-alone factor, but also has the potential to be an intermediary variable explaining how the intensity of social media use is related to adolescent mental health.

On the other hand, peer social support is believed to act as a protective factor in coping with psychosocial stress in digital spaces. A systematic review by Pulgarin et al. (2022) of twenty-three international studies concluded that high perceived social support was consistently associated with a lower risk of engaging in cyberbullying, both as victims and perpetrators. Wright (2024) reinforced these findings through a cross-cultural study of adolescents in China and the United States, showing that perceived social support from parents and friends significantly attenuated the association between cyberbullying victimization and depression, physical health complaints, and self-harm behavior. Peer support can take the form of emotional support, esteem, instrumental assistance, information, and a sense of belonging, which collectively help adolescents cope with social stress in both online and offline environments. Thus, peer social support has the potential to be positioned as a protective mechanism that helps explain variations in adolescent mental health in response to the intensity of social media use and cyberbullying experiences.

Based on the above description, a conceptual framework can be constructed for the relationship between the intensity of social media use (independent variable), cyberbullying and peer social support (intermediating variables), and adolescent mental health (dependent variable). It should be emphasized that peer social support can theoretically function as either a mediator or a moderator, depending on the hypothesis and analytical model used. When positioned as a mediator, the question being tested is whether the intensity of social media use is related to changes in the level of social support, which in turn is related to mental health. When positioned as a moderator, social support is seen as a factor that weakens or strengthens the relationship between the intensity of social media use/cyberbullying and mental health, a position that is theoretically more appropriate if social support is viewed as a protective factor, as demonstrated by Feng et al.; Wright (2023; 2024). Consistent treatment of these two intermediary variables is important to ensure that the analytical model developed has a clear hypothetical basis.

This conceptual framework can be strengthened through several theoretical perspectives. The social media use and mental health perspective explains that the impact of social media on mental health is influenced by the intensity, usage patterns, and quality of interactions received by users. Stress process theory explains that negative experiences such as cyberbullying are stressors that can affect adolescents' psychological condition, while social support theory explains that social support is a psychosocial resource that helps individuals cope with stress and mitigate the negative consequences of adverse social experiences. Furthermore, the social-ecological perspective places adolescent mental health in the interaction between individual factors, peers, the social

environment, and the digital environment simultaneously. The use of these several theoretical perspectives allows this study to go beyond a simple relationship between duration of social media use and mental health, but also to explain the social mechanisms underlying this relationship.

In the Indonesian context, digital technology penetration among adolescents is growing rapidly. Based on the results of the 2025 Indonesian Internet Penetration Survey conducted by the Indonesian Internet Service Providers Association (APJII) among 8,700 respondents in 38 provinces, the national internet penetration rate reached 80.66 percent, equivalent to 229.4 million people, up from 79.50 percent in 2024, with Generation Z as the dominant age group in the user population. This increase in digital penetration is in line with the high burden of mental health problems among Indonesian adolescents. The results of the first national adolescent mental health survey in Indonesia showed that one in three adolescents aged 10–17 (34.9 percent, equivalent to 15.5 million adolescents) experienced mental health problems in the past 12 months, while one in twenty adolescents (5.5 percent, equivalent to 2.45 million adolescents) experienced at least one mental disorder (Wahdi et al., 2022). The survey also identified bullying as a major risk factor associated with adolescent mental disorders. Similarly, a baseline study conducted by UNICEF Indonesia in 2023 found that 42 percent of Indonesian children had felt uncomfortable or afraid due to online experiences, while only 37.5 percent had received education on internet safety (UNICEF 2023). These findings indicate that the increasing penetration of digital technology in Indonesia is creating changes in adolescent social interaction patterns, the psychosocial consequences of which require a deeper understanding.

Jambi Luar Kota District is a district in Muaro Jambi Regency, Jambi Province, with a youth population spread across various junior and senior high schools (BPS, 2022). As a region experiencing expanding internet access and digital device use in line with national trends, youth in this district are also potentially exposed to psychosocial risks related to the intensity of social media use. However, to date, no empirical data has been found specifically describing the relationship between the intensity of social media use, cyberbullying, peer social support, and adolescent mental health in Jambi Luar Kota District, Muaro Jambi Regency. This limited evidence base at the local level does not indicate that the issue is insignificant, but rather is one of the fundamental reasons why research in this local context is important.

Based on the literature review above, several research gaps can be identified. First, most previous studies tend to examine the direct relationship between social media use and mental health, while the social mechanisms explaining this relationship have not always been analyzed simultaneously. Second, research on social media use often treats cyberbullying as a stand-alone variable, even though evidence from Feng et al. and Wright (2023; 2025) suggests that cyberbullying may be a psychosocial pathway linking digital exposure to mental health. (Feng et al., 2023; Wright, 2025). Third, the role of peer social support as a protective factor, as demonstrated by Pulgarin et al.; Wright (2022; 2025), still needs to be tested empirically in an integrated model, especially in a different cultural and regional context than previous studies, which were mostly conducted in China, the United States, and Europe. (Pulgarin et al., 2022; Wright, 2025). Fourth, empirical evidence regarding the integrated relationship between these four variables in adolescents in the



Jambi Luar Kota District, Muaro Jambi Regency, is still very limited. Fifth, research is needed that not only examines whether the intensity of social media use is related to mental health but also examines the mechanisms through which this relationship occurs.

Based on these gaps, this study proposes an approach that integrates the intensity of social media use, cyberbullying, peer social support, and mental health into a single psychosocial model for adolescents in the Jambi Luar Kota District, Muaro Jambi Regency. Evidence regarding the simultaneous role of cyberbullying and peer social support as intermediary variables in the relationship between the intensity of social media use and adolescent mental health is still limited, especially in the context of Indonesian adolescents outside of large urban areas. The contributions of this study include examining the relationship between the intensity of social media use and adolescent mental health, identifying the role of cyberbullying as a psychosocial mechanism, examining the role of peer social support in explaining this relationship, and providing local context-based empirical evidence that can support the design of adolescent mental health interventions and cyberbullying prevention in school and community settings.

The urgency of this research is based on several considerations. The increasing intensity of social media integration in the lives of Indonesian adolescents, as indicated by APJII data (2025), goes hand in hand with the complexity of mental health risks in the digital era, as reflected in UNICEF findings (2023). Cyberbullying has emerged as a new form of social pressure that requires special attention, while peer support remains a crucial element for adolescent psychosocial development. (UNICEF, 2023). Schools and health services need an adequate empirical basis for designing adolescent mental health promotion programs, with prevention strategies that focus not only on limiting social media use but also on strengthening digital safety and peer social support.

Based on this description, the intensity of social media use needs to be understood not only as a digital behavior, but as part of a social environment that can influence adolescent mental health through various psychosocial experiences. Cyberbullying has the potential to be a risk mechanism, while peer social support can be a protective mechanism. However, evidence examining this relationship in an integrated manner among adolescents in the Jambi Luar Kota District, Muaro Jambi Regency, is still limited. Therefore, this study aimed to analyze the relationship between the intensity of social media use and adolescent mental health and examine the intermediary roles of cyberbullying and peer social support in this relationship.

METHODS

1. Study Design and Setting

This study employed a quantitative analytical observational design with a cross-sectional approach. The study was conducted in Jambi Luar Kota District, Muaro Jambi Regency, Jambi Province, from January to May 2026. The study examined the relationship between social media use intensity and adolescent mental health while considering cyberbullying and peer social support as theoretically proposed intermediary psychosocial pathways.

2. Population and Sample

The target population consisted of adolescents aged 13–18 years who were enrolled in junior and senior secondary schools in Jambi Luar Kota District and actively used social media. The study included 330 respondents. Sample size determination considered a minimum statistical power of 80% at a significance level of 5%, with approximately 10% anticipated for non-response or incomplete responses. Respondents were selected using proportionate stratified random sampling based on educational level so that the sample distribution represented the eligible adolescent population across the defined educational strata.

Participants were eligible if they were aged 13–18 years, registered as students in the study area, had actively used social media during the previous three months, were able to understand the questionnaire, and agreed to participate. For respondents younger than 18 years, participation required parental or guardian consent in addition to adolescent assent.

3. Variables and Operational Definitions

The independent variable was social media use intensity, operationalized through indicators reflecting the frequency, duration, and level of involvement in social media use. Cyberbullying was assessed as a psychosocial risk variable reflecting adolescents' experiences of bullying or harmful interpersonal interactions through digital communication platforms. Peer social support represented the availability and perceived adequacy of support received from friends, including emotional support, information, appreciation, assistance, and a sense of belonging. Adolescent mental health was assessed as the dependent variable and categorized according to the score obtained from the study instrument into good, moderate, and at-risk conditions.

Each variable was measured using a structured questionnaire. The questionnaire consisted of two components: respondent characteristics and instruments measuring the four study variables. Before implementation, adapted instruments underwent language and cultural adaptation appropriate to the adolescent population. Instrument quality was assessed through validity and reliability procedures, while internal consistency was evaluated using Cronbach's alpha. The final scores were subsequently classified into the analytical categories used in the study.

4. Data Collection

Data collection was conducted after research permission and ethical approval had been obtained. Eligible respondents were informed about the study objectives, procedures, confidentiality, voluntary participation, and their right to decline or discontinue participation. Questionnaires were completed independently by respondents under the supervision of the research team. Completed questionnaires were reviewed for completeness and response consistency before data entry and statistical analysis. Incomplete or inconsistent responses were identified during the data-cleaning process before inclusion in the final analysis.



5. Statistical Analysis

Data analysis consisted of univariate and bivariate analyses. Univariate analysis was used to describe respondent characteristics and the distribution of social media use intensity, cyberbullying, peer social support, and mental health. Categorical variables were summarized using frequencies and percentages.

Bivariate analysis was conducted to examine the relationships between social media use intensity and each psychosocial variable, as well as the relationships between cyberbullying, peer social support, social media use intensity, and adolescent mental health. The statistical test was selected according to the measurement scale and distribution of the variables. For categorical variables, the association was evaluated using the chi-square test, with Cramer's V used to describe the strength of association. Statistical significance was determined at $p < 0.05$ using a 95% confidence level.

Because the study used a cross-sectional design, the observed relationships represent associations measured at a single point in time. Therefore, the findings concerning cyberbullying and peer social support are interpreted as patterns consistent with theoretically proposed intermediary pathways and should not be interpreted as evidence of causal mediation or temporal ordering.

6. Ethical Considerations

The study followed applicable ethical principles for research involving adolescents. Ethical approval was obtained before data collection, and informed consent was obtained from parents or guardians for respondents younger than 18 years together with age-appropriate assent from the adolescents. Respondent confidentiality was maintained throughout data collection, processing, and reporting. Participation was voluntary, and respondents were informed of their right to refuse or discontinue participation without consequences.

RESULTS

1. Respondent Characteristics

The study involved 330 adolescents who met the inclusion criteria. Respondent characteristics indicated that the sample was dominated by the 15–16-year-old age group and female respondents. Most respondents were in high school (SMA/MA/SMK) and used social media extensively in their daily lives.

Table 1. Sociodemographic Characteristics of Respondents (n=330)

Characteristics	Category	n	%
Age	13–14 years	86	26.1
	15–16 years	148	44.8
	17–18 years	96	29.1
Gender	Man	143	43.3
	Woman	187	56.7
Education	Junior High School/Islamic Junior High School	137	41.5

Senior High School/Vocational High School	193	58.5
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The respondents represented adolescents across early, middle, and late adolescence, with the sample predominantly consisting of middle-adolescent students. The gender distribution showed a higher representation of female respondents than male respondents. In terms of educational level, students enrolled in senior high school or vocational high school constituted the larger proportion of the sample.

Overall, the characteristics indicate that the study population was concentrated among adolescents who were entering or experiencing middle adolescence and were predominantly enrolled in upper-secondary education. This composition is relevant to the study because adolescence is a developmental stage characterized by increasingly intensive peer interaction, identity development, and independent engagement with digital environments. The relatively large representation of upper-secondary students therefore provides an important context for interpreting patterns of social media use, cyberbullying, peer social support, and mental health in the study population.

2. Distribution of Research Variables

Table 2. Distribution of Intensity of Social Media Use, Cyberbullying, Peer Social Support, and Mental Health

Variables	Category	n	%
Intensity of social media use	Low	61	18.5
	Currently	139	42.1
	High	130	39.4
Cyberbullying	Low	173	52.4
	Currently	105	31.8
	High	52	15.8
Peer social support	Low	67	20.3
	Currently	145	43.9
	High	118	35.8
Mental health	Good	141	42.7
	Currently	112	33.9
	Risky	77	23.3

The distribution of variables indicates relatively high social media exposure, with most respondents falling into the moderate and high intensity categories. This coincided with the discovery of cyberbullying experiences among some respondents, although the majority remained in the low intensity category. In terms of social resources, most respondents received moderate to high levels of peer support. Meanwhile, nearly a quarter of respondents fell into the at-risk mental health category. These findings suggest that mental health issues are not unique to groups with high cyberbullying exposure but are a pressing issue for the adolescent population as a whole.



3. The Relationship Between Intensity of Social Media Use and Cyberbullying

Table 3. Relationship between Intensity of Social Media Use and Cyberbullying

Intensity of use	Cyberbullying low n (%)	Medium n (%)	Height n (%)	p-value	Cramer's V
Low	44 (72.1)	14 (23.0)	3 (4.9)	<0.001	0.245
Currently	81 (58.3)	43 (30.9)	15 (10.8)		
High	48 (36.9)	48 (36.9)	34 (26.2)		
Total	173 (52.4)	105 (31.8)	52 (15.8)		

There was a pattern of increasing cyberbullying experiences as the intensity of social media use increased. The high-use group exhibited a significantly greater proportion of high-level cyberbullying than the low-use group. Conversely, low-level cyberbullying was more prevalent among respondents with low social media usage intensity. This relationship was statistically significant ($p < 0.001$) with a low to moderate strength of association (Cramer's $V = 0.245$). These findings suggest that the more intense adolescents' social media engagement, the greater their likelihood of experiencing negative digital interactions.

4. The Relationship between Intensity of Social Media Use and Peer Social Support

Table 4. Relationship between Intensity of Social Media Use and Peer Social Support

Intensity of use	Low support n (%)	Medium n (%)	Height n (%)	p-value	Cramer's V
Low	18 (29.5)	25 (41.0)	18 (29.5)	0.045	0.126
Currently	27 (19.4)	64 (46.0)	48 (34.5)		
High	22 (16.9)	56 (43.1)	52 (40.0)		
Total	67 (20.3)	145 (43.9)	118 (35.8)		

Intensity of social media use also showed a significant association with peer social support ($p = 0.045$), although the strength of the association was relatively weak. Respondents with high social media use were more likely to be in the high peer support category than respondents with low use. This pattern suggests that social media use is not always associated with negative social consequences. Social media can be a space for interaction that facilitates relationship maintenance and access to peer support.

5. The Relationship Between Cyberbullying and Mental Health

Table 5. Relationship between Cyberbullying and Mental Health

Cyberbullying	Good mental health n (%)	Medium n (%)	Risk n (%)	p-value	Cramer's V
Low	96 (55.5)	52 (30.1)	25 (14.5)	<0.001	0.275
Currently	35 (33.3)	42 (40.0)	28 (26.7)		
High	10 (19.2)	18 (34.6)	24 (46.2)		
Total	141 (42.7)	112 (33.9)	77 (23.3)		

The findings show a consistent pattern between increased cyberbullying and worsening mental health. Respondents with low levels of cyberbullying were predominantly in the good

mental health category, while nearly half of respondents with high levels of cyberbullying were in the at-risk mental health category. This relationship was highly statistically significant ($p < 0.001$) with low to moderate strength of association. This pattern suggests that negative experiences in digital environments are one of the psychosocial characteristics associated with adolescent mental health.

6. The Relationship Between Peer Social Support and Mental Health

Table 6. Relationship between Peer Social Support and Mental Health

Peer support	Good mental health n (%)	Medium n (%)	Risk n (%)	p-value	Cramer's V
Low	18 (26.9)	22 (32.8)	27 (40.3)	<0.001	0.233
Currently	56 (38.6)	52 (35.9)	37 (25.5)		
High	67 (56.8)	38 (32.2)	13 (11.0)		
Total	141 (42.7)	112 (33.9)	77 (23.3)		

Peer social support showed the opposite pattern to cyberbullying. The higher the perceived support, the greater the proportion of respondents with good mental health and the lower the proportion of respondents in the at-risk category. This relationship was statistically significant ($p < 0.001$). These findings suggest that peer support is a psychosocial resource that can potentially provide protection against mental health problems in adolescents.

7. The Relationship Between Intensity of Social Media Use and Mental Health

Table 7. Relationship between Intensity of Social Media Use and Mental Health

Intensity of use	Good mental health n (%)	Medium n (%)	Risk n (%)	p-value	Cramer's V
Low	35 (57.4)	18 (29.5)	8 (13.1)	<0.001	0.209
Currently	65 (46.8)	48 (34.5)	26 (18.7)		
High	41 (31.5)	46 (35.4)	43 (33.1)		
Total	141 (42.7)	112 (33.9)	77 (23.3)		

The analysis showed a significant association between intensity of social media use and mental health ($p < 0.001$). Groups with high social media use were more likely to be in the at-risk mental health category than groups with low use. However, the magnitude of the association was in the low to moderate range, so intensity of social media use cannot be viewed as the sole determinant of mental health. These findings support the hypothesis that the relationship between social media use and mental health likely operates through specific social and psychological mechanisms.

DISCUSSION

The findings of this study demonstrate that the relationship between social media use intensity and adolescent mental health is embedded within a broader psychosocial context. Social media use intensity was significantly associated with cyberbullying ($p < 0.001$; Cramer's $V = 0.245$), peer social support ($p = 0.045$; Cramer's $V = 0.126$), and mental health ($p < 0.001$; Cramer's $V = 0.209$).



Furthermore, cyberbullying was significantly associated with mental health ($p < 0.001$; Cramer's $V = 0.275$), while peer social support showed a significant association with mental health ($p < 0.001$; Cramer's $V = 0.233$). Although the strength of these associations was generally low to moderate, the consistent direction of the findings indicates that adolescent mental health in the study population cannot be understood solely from the amount of social media use. Instead, the findings point to the importance of psychosocial experiences occurring within digital and peer environments.

1. Intensity of Social Media Use and Cyberbullying

The study found a statistically significant association between social media use intensity and cyberbullying ($p < 0.001$), with a Cramer's V of 0.245, indicating a low-to-moderate association. The distribution of responses showed a clear gradient in which adolescents with greater social media use intensity tended to report higher levels of cyberbullying, whereas lower-intensity users were more frequently represented in the low cyberbullying category. This pattern indicates that greater engagement with social media is accompanied by greater exposure to potentially harmful digital interactions.

This finding is consistent with Ni et al. (2025), who reported that social media use intensity was positively associated with involvement in and exposure to cyberbullying. From a social-ecological perspective, increased engagement with digital platforms expands the frequency and diversity of adolescents' interactions with peers, thereby increasing opportunities for both positive and negative social experiences. Similarly, stress process theory helps explain cyberbullying as a psychosocial stressor that may emerge from repeated interpersonal interactions in digital environments. Feng et al. (2023) showed that peer victimization was associated with problematic social media use through psychological insecurity, while family support could modify this relationship.

The present finding should nevertheless be interpreted cautiously because the cross-sectional design does not establish whether greater social media use precedes cyberbullying or whether adolescents who experience cyberbullying subsequently increase their social media engagement. This issue is particularly important in light of Nobakht et al. (2025), whose longitudinal analysis indicated that the association between social media use and cyberbullying victimization was largely attributable to differences between individuals, while within-person increases in social media use did not consistently precede increases in cyberbullying victimization. Therefore, the significant association observed in the present study should be understood as evidence of co-occurrence rather than causal evidence.

2. Intensity of Social Media Use and Peer Social Support

Social media use intensity was also significantly associated with peer social support ($p = 0.045$), although the magnitude of the association was weak (Cramer's $V = 0.126$). The distribution of respondents indicated that adolescents with greater social media use tended to report moderate to high levels of peer social support. This finding is important because it demonstrates that intensive social media engagement is not exclusively associated with adverse psychosocial outcomes.

The finding is consistent with the conceptualization of social media as a dual-purpose social environment. Social media can expose adolescents to harmful interactions, but it can also facilitate communication, friendship maintenance, emotional exchange, and access to peer networks. Pulgarin et al. (2022) emphasized the importance of perceived social support in reducing adolescents' vulnerability to cyberbullying, while Wright (2024) demonstrated that perceived support from friends and parents could attenuate the association between cyberbullying victimization and adverse mental health outcomes. Thus, the present association suggests that social media may simultaneously function as a context of psychosocial risk and a medium through which adolescents maintain supportive peer relationships.

However, the relatively small magnitude of the association indicates that social media use intensity alone is insufficient to explain the availability or quality of peer social support. The quality of interpersonal relationships, patterns of communication, peer norms, and adolescents' individual characteristics may be more important than the amount of time spent online. Fitria and Toga (2023) demonstrated that peer pressure and self-control are relevant to cyberbullying behavior, indicating that peer relationships can operate in different directions depending on the quality and norms of the social environment. Therefore, high social media engagement should not automatically be interpreted as evidence of either strong or weak peer support.

3. Cyberbullying and Adolescent Mental Health

Cyberbullying demonstrated the strongest association with adolescent mental health among the relationships examined in this study ($p < 0.001$; Cramer's $V = 0.275$). The distribution showed a progressive deterioration in mental health conditions as the level of cyberbullying increased. Adolescents with lower exposure to cyberbullying were more commonly classified within the good mental health category, whereas those reporting higher cyberbullying exposure were more frequently represented in the at-risk mental health category.

This finding supports the theoretical position of stress process theory, which conceptualizes adverse interpersonal experiences as psychosocial stressors capable of affecting psychological well-being. Cyberbullying may expose adolescents to repeated humiliation, rejection, threats, social exclusion, or negative evaluation in an environment where harmful interactions can potentially be persistent and widely visible. Such experiences may contribute to psychological distress, anxiety, reduced self-esteem, and impaired emotional well-being.

The finding is consistent with Peprah et al. (2024), who found that cyberbullying victimization was associated with psychosomatic complaints among adolescents, with problematic social media use functioning as an important connecting mechanism. Bursac et al. (2026) likewise demonstrated that cyberbullying victimization was associated with emotional problems among school-age adolescents and identified cyberbullying as an important pathway connecting social media use with emotional outcomes. Wright (2025) further demonstrated that peer attachment moderated the association between cyberbullying involvement and depressive symptoms, particularly among younger adolescents.



The magnitude of the association in the present study remains in the low-to-moderate range, indicating that cyberbullying is an important psychosocial correlate but should not be considered an isolated determinant of adolescent mental health. Mental health is multidimensional and can also be influenced by family relationships, academic pressure, socioeconomic circumstances, individual psychological characteristics, and broader social environments. Nevertheless, the statistically significant relationship observed in this study indicates that cyberbullying represents an important dimension that should be incorporated into adolescent mental health promotion and prevention strategies.

4. Peer Social Support and Adolescent Mental Health

In contrast to cyberbullying, peer social support was significantly associated with better adolescent mental health ($p < 0.001$; Cramer's $V = 0.233$). The pattern of findings showed that adolescents reporting higher levels of peer social support were more frequently classified as having good mental health, whereas those with lower peer support were more frequently represented in the at-risk category. The magnitude of the association was low to moderate, but the consistency of the pattern supports the relevance of peer relationships in adolescent psychological well-being.

This finding is consistent with social support theory, which conceptualizes supportive interpersonal relationships as psychosocial resources that assist individuals in coping with stress. Emotional support, appreciation, information, assistance, and a sense of belonging may help adolescents interpret and manage stressful experiences more adaptively. In the context of digital interaction, supportive peer relationships may also provide adolescents with opportunities to discuss negative online experiences, seek assistance, and reduce feelings of isolation.

Pulgarin et al. (2022) found that perceived social support was consistently associated with a lower risk of involvement in cyberbullying, while Wright (2024) reported that perceived friend and parental support could reduce the adverse mental health consequences associated with cyberbullying victimization. These findings provide a theoretical and empirical basis for understanding why stronger peer support in the present study was associated with better mental health.

Nevertheless, the protective role of peer social support should not be interpreted as universal or automatic. Martinez et al. (2024), using longitudinal data, showed that the protective effects of parental warmth and prosocial school climate were not consistently observed across all mental health outcomes. Fitria and Toga (2023) similarly demonstrated that peer relationships can become a source of pressure and contribute to cyberbullying when individual self-control is inadequate. Therefore, the quality, reciprocity, and norms of peer relationships are important considerations. The present findings support the role of peer support as a potential psychosocial resource, but they do not establish that peer support causally protects adolescents from mental health problems.

5. Intensity of Social Media Use and Adolescent Mental Health

The analysis also identified a significant association between social media use intensity and adolescent mental health ($p < 0.001$; Cramer's $V = 0.209$). Adolescents with higher social media use

intensity were more frequently represented in the at-risk mental health category, whereas adolescents with lower use intensity were more frequently classified as having good mental health. However, the low-to-moderate strength of the association indicates that social media use intensity explains only part of the variation in adolescent mental health.

This finding is consistent with Grund et al. (2025), who reported that moderate to high social media use was associated with depressive symptoms among adolescents, although parental monitoring could mitigate some of the negative effects. Ruswandi and Fitriyani (2023) similarly found a significant relationship between social media use intensity and adolescent mental health in Depok, while emphasizing that social media use operates together with other psychosocial factors. Mufidah et al. (2025) also reported that social media use intensity contributed only a relatively limited proportion to variation in mental disorder symptoms among university students.

The present finding should therefore not be interpreted as evidence that social media use itself is inherently harmful. The contemporary evidence suggests that the mental health implications of social media depend on how adolescents use digital platforms, the type and quality of interactions they experience, and the social resources available to them. The findings of this study reinforce this interpretation because social media use intensity was associated not only with cyberbullying but also with peer social support. Thus, the same digital environment may provide both psychosocial risks and psychosocial resources.

6. Integrated Interpretation: Risk and Protective Psychosocial Pathways

When the findings are interpreted together, two contrasting psychosocial patterns emerge. First, higher social media use intensity was associated with greater cyberbullying, while cyberbullying was associated with poorer mental health. The statistical pattern therefore supports a theoretically plausible risk pathway: greater engagement with digital environments is accompanied by greater exposure to negative peer interactions, which in turn is associated with poorer mental health. The associations were statistically significant at both stages, with social media use intensity associated with cyberbullying ($p < 0.001$; Cramer's $V = 0.245$) and cyberbullying associated with mental health ($p < 0.001$; Cramer's $V = 0.275$).

Second, social media use intensity was also associated with peer social support, although weakly ($p = 0.045$; Cramer's $V = 0.126$), while peer social support was significantly associated with better mental health ($p < 0.001$; Cramer's $V = 0.233$). This pattern represents a theoretically plausible protective pathway in which digital engagement can facilitate peer connection and support, and stronger peer support is associated with more favorable mental health conditions.

The integrated pattern is consistent with Bursac et al. (2026), who identified cyberbullying victimization as an important pathway linking social media use with emotional problems, and with Peprah et al. (2024), who demonstrated a relationship between cyberbullying, social media use, and adolescent health outcomes. The findings also complement Wright (2024; 2025), which emphasizes the importance of social relationships and peer attachment in modifying the psychological consequences of cyberbullying.



However, the present study does not statistically demonstrate formal mediation. The cross-sectional design and bivariate analysis do not establish temporal ordering or indirect effects. Therefore, cyberbullying and peer social support should be interpreted as psychosocial variables that are consistent with theoretically proposed risk and protective pathways rather than as formally confirmed mediators. Longitudinal studies and formal mediation or path analyses are required to determine whether the observed relationships represent indirect effects and to establish the temporal sequence between social media use, psychosocial experiences, and mental health.

7. Implications for Adolescent Mental Health

The findings have implications for adolescent mental health promotion in Jambi Luar Kota District. The results indicate that interventions focused exclusively on reducing the duration of social media use may be insufficient. Because social media intensity was associated with both cyberbullying and peer social support, intervention strategies should address the quality and safety of adolescents' digital interactions while simultaneously strengthening positive peer relationships.

Digital safety education should emphasize recognition, prevention, and reporting of cyberbullying, while school-based mental health programs can strengthen peer support through positive peer networks, supportive communication, and mechanisms for early identification of adolescents experiencing harmful online interactions. These strategies are consistent with the broader theoretical framework of the study, which views adolescent mental health as an outcome shaped by interactions between individual characteristics, peer relationships, school and community environments, and digital contexts.

Overall, the findings support the interpretation that social media represents a dual psychosocial environment for adolescents. Its intensive use is associated with greater exposure to cyberbullying, which is related to poorer mental health, but social media engagement may also facilitate peer social support, which is associated with better mental health. The relatively modest strength of the observed associations further emphasizes that social media intensity should be regarded as one component of a broader psychosocial system rather than a single determinant of adolescent mental health.

8. Research Limitations

This study has limitations that need to be considered when interpreting the above findings. First, the cross-sectional design does not allow for causal inferences or temporal ordering between variables. Therefore, the role of cyberbullying and peer social support as intermediary variables in this study is interpreted as a statistical pattern of relationships, not as evidence of a mediating mechanism formally tested through path analysis. Second, all data were collected through self-report, which is potentially influenced by recall bias and social desirability. Third, most of the comparative references in this discussion come from sociocultural contexts different from Indonesia, so generalizing these patterns of relationships to local contexts requires caution.

CONCLUSIONS

This study concludes that the intensity of social media use among adolescents in Jambi Luar Kota District, Muaro Jambi Regency, is significantly associated with mental health. However, this relationship is not independent, but rather operates in conjunction with two opposing psychosocial mechanisms: cyberbullying as a risk pathway and peer social support as a protective pathway. The higher the intensity of social media use, the greater the likelihood of adolescents experiencing cyberbullying, while high levels of cyberbullying are consistently associated with worsening mental health conditions. On the other hand, high levels of peer social support are associated with better mental health conditions, although high levels of social media use do not necessarily prevent adolescents from obtaining such support. These findings confirm that social media plays a dual role in adolescents' psychosocial lives, serving as both a potentially risky space and a place for peer support.

Based on these conclusions, efforts to promote adolescent mental health in the study area need to be directed not only at limiting the duration of social media use, but also at strengthening digital security to prevent cyberbullying and enhancing the quality of peer social support, both in school and community settings. Given the cross-sectional design of this study, further research with a longitudinal design or formal path analysis is needed to more robustly confirm the mediating role of cyberbullying and peer social support, as well as to clarify the direction of the relationships between variables within the psychosocial framework tested in this study.

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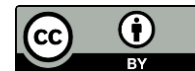
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