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Analysis of the Influence of Internet Use on the Occurrence of Stress Among Female Adolescents at SHS 7 Palu

¹Riri Noviana*, ²Abd. Rahman, ³Ni Wayan Sridani, ²Rosmala Nur, ³Fauzan
¹ Student of Master of Public Health Program, Faculty of Public Health, Universitas Tadulako, Palu, Indonesia*; email: novianariri@gmail.com
² Faculty of Public Health, Universitas Tadulako, Palu, Indonesia
³ Faculty of Medicine, Universitas Tadulako, Palu, Indonesia
*Correspondence

Abstract
Introduction: *Around 68% of adolescents experience internet addiction linked to stress, anxiety, and depression. Initial observations of five students in Palu also showed that high internet use triggered symptoms such as anxiety and sleep disturbances.* ***Objective:*** *To analyze the influence of internet use on stress among female adolescents at SHS 7 Palu.* ***Methods:*** *This cross-sectional study involved all 275 female students selected through total sampling, with data analyzed using multiple linear regression.* ***Results and Discussion:*** *All variables significantly affected stress: internet use duration (t = 2.369; Sig = 0.019), social media use (t = 5.003; Sig = 0.000), cyberbullying (t = 4.060; Sig = 0.000), and online gaming (t = 4.978; Sig = 0.000).* ***Conclusion:*** *Longer internet use, higher social media activity, frequent cyberbullying, and increased online gaming all raise stress levels. Online gaming had the strongest influence, contributing 6.91% to stress.*

Introduction

The development of technology has had a significant impact on human life, particularly through the use of the internet (Chitechi & Otanga, 2020). The internet is utilized in various aspects such as education, work, health, and business (Santos et al., 2023). and has become an effective medium because it eliminates spatial and temporal boundaries (Baisyir & Prasetyo, 2023). In Indonesia, the number of internet users continues to increase, reaching 221 million in 2024 (Younes et al., 2016). In Indonesia, the number of internet users has reached 215 million and increased to 221 million in 2024 (Prasetiyo, Gustiawan, & Albani, 2024). where 60% of them use the internet for more than 6 hours per day (Harsitantia & Fahrurrajib, 2023).

Adolescence is a phase of identity exploration; therefore, high internet exposure can support self-development but also increases the risk of addiction due to immature impulse control and cognitive development (Chemnad et al., 2023;Franscelia & Lyaputera, 2023). Excessive internet use can reduce direct social interaction, increase loneliness (Chemnad et al., 2023;Isan & Nasir, 2023). and trigger sleep disturbances, body-image pressure, cyberbullying, and stress (Fitrialis et al., 2024; Ripa'i, Safri, & Dewi, 2019). In fact, 68% of adolescents have been reported to experience internet addiction, which is associated with stress, anxiety, and depression (Ismail, 2024). In fact, 68% of adolescents have been reported to experience internet addiction, which is associated with stress, anxiety, and depression (Pristiwatie & Handayani, 2021).

Stress among adolescents is a serious issue, with a national prevalence of 6% (Mentari, Liana, & Pristya, 2020) and emotional-mental disorders reaching 6% among individuals both below and above 15 years old (Harnawati, 2023). Studies show that 57.1% of high school students experience stress, particularly female adolescents (Gusti, Saputera, & Chris, 2023). Stress can lead to emotional, cognitive, and physical disturbances, and even suicidal risk (Dhanuputra, Yunus, & Puspitasari, 2022; Fidora & Yuliani, 2020; Musabiq & Karimah, 2018; Salam, 2015).

Various digital factors influence adolescent stress, including internet use duration, social media, cyberbullying, and online gaming (Fahriza & Ulfa, 2019; Ismail, 2024; Mohammadi et al., 2020; Najwa, Zidni Fauziyyah Al Ghifari, Naiima Khairiya Ismah, & Ati Kusmawati, 2025; Pristiwatie & Handayani, 2021) Social media contributes to stress through social pressure and self-comparison (Najwa et al., 2025; Khaira, 2023). The four most influential digital factors contributing to adolescent stress are internet use duration, social media use, cyberbullying, and online gaming. Excessive social media use has been proven to increase stress (Aprilia, 2023). Social media as a space for digital interaction also increases the likelihood of cyberbullying (Najwa et al. 2025). In addition, online games are connected to social media and create virtual interactions that may lead to emotional pressure (Mohammadi et al., 2020).

Long internet use duration is a known contributor to increased stress among adolescents. Excessive use can reduce rest time particularly when used late at nightleading to poor sleep quality, fatigue, and higher stress risk. Social media, while beneficial for communication and information sharing, also creates pressure to present an ideal self-image (Qadir & Ramli, 2024). Social media has communication and information access benefits but also triggers pressure to present an ideal self-image (Aydogan & Buyukyilmaz, 2017; Shakila, Putri, & Kuncoro, 2024). This social comparison process directly contributes to stress among adolescents (Rezki, Naryoso, & Pradekso, 2024).

Cyberbullying is bullying conducted through digital platforms to harm or belittle others (Marlef, Masyhuri, & Muda, 2024). Its impact on adolescent mental health is significant, including anxiety, depression, decreased self-esteem, and increased aggressive behavior (Guo, Liu, & Wang, 2021; Hinduja & Patchin, 2018). Repeated cyberbullying pressure leads to prolonged stress (Tsani, Augest, Hidayat, & Sahfrina, 2024).

Online games are internet-based multiplayer games (Rompas, Zakarias, & Kawung, 2023). Although they have benefits, excessive use can disturb emotions, isolate adolescents, and cause addiction (Akmarina, 2016; Paremeswara & Lestari, 2021; Ulfa & Risdayati, 2017).

This study focuses on adolescent girls because they are more vulnerable to stress than boys. Girls face social pressure, academic expectations, and are more sensitive to social comparison (Gusti et al., 2023; Wilujeng, Habibie, & Ventyaningsih, 2023). Females also dominate smartphone use for social media (Chen et al., 2017). making them more susceptible to self-image pressure (Najwa et al., 2025). Their stress responses are also more intense (Putra, Iman, Pane, & Pane, 2024). Based on these phenomena, this research was designed to analyze the influence of internet use duration, social media use, cyberbullying, and online gaming on the occurrence of stress among female students at SHS 7 Palu.

Method

This study employed a cross-sectional approach, in which data were collected at a single point in time to describe the relationship between internet use and stress levels among female adolescents. The research was conducted at SHS 7 Palu as the study site. The study population consisted of 275 female students, all of whom were included as respondents through the total sampling technique. This approach ensured that the sample reflected the entire population, allowing for more comprehensive analysis.

To examine the effect of each independent variable on stress, this research used multiple linear regression analysis. This method was selected to assess the contribution of each variable duration of internet use, social media use, cyberbullying, and online gaming both simultaneously and partially, to the occurrence of stress among female adolescents.

Result and Discussion
1.   Result
Univariate Analysis

Univariate analysis is used to describe and explain data related to respondents' identities and characteristics by calculating the frequency distribution of each variable (Badri et al., 2020). The variables used in this study include internet use, social media use, online gaming, and cyberbullying. The univariate analysis for each variable is presented below:

Duration of Internet Use

The duration of internet use among female adolescents at SHS 7 Palu was measured to determine the intensity of time spent accessing the internet each day. The frequency distribution of internet use duration is presented in Table 1.

Table 1
Duration of Internet Use

Duration of Internet Use	f	%
Low	126	45.8
High	149	54.2
Total	**275**	**100%**

Source: Primary Data, 2025

The findings indicate that most respondents had a high duration of internet use, totaling 149 respondents (54.2%). Meanwhile, 126 respondents (45.8%) were in the low category. These results show that internet use among female adolescents is generally quite intensive, which may influence psychological aspects, including the potential occurrence of stress.

Social Media Use

Social media use among female adolescents was analyzed to determine the level of intensity in using various platforms such as TikTok, Instagram, and YouTube. This variable was categorized into low and high levels based on the scores obtained by respondents. The distribution of social media use is shown in Table 2.

Table 2
Social Media Use

Social Media Use	f	%
Low	133	48.4
High	142	51.6
Total	**275**	**100%**

Source: Primary Data, 2025

The results show that the majority of respondents fell into the high social media use category, totaling 142 respondents (51.6%). Meanwhile, 133 respondents (48.4%) were categorized as low users. This indicates that most female adolescents are highly active social media users, which can affect social interactions, emotions, and psychological well-being.

Cyberbullying

To determine the extent to which respondents experienced exposure to cyberbullying while using the internet, a frequency distribution analysis of the cyberbullying variable was conducted. The classification is presented in Table 3.

Table 3
Distribution of Respondents Based on Cyberbullying

Cyberbullying	f	%
Low	265	96.4
High	10	3.6
Total	**275**	**100%**

Source: Primary Data, 2025

Based on Table 3, most respondents were classified as having low exposure to cyberbullying (96.4%). Only 10 respondents (3.6%) experienced high levels of cyberbullying. This indicates that incidents of cyberbullying among female adolescents at SHS 7 Palu were relatively low, although they still require attention due to their potentially significant psychological effects.

Online Gaming
The next analysis describes the distribution of respondents based on the intensity of online gaming. This variable was measured to understand the extent to which online gaming is part of internet use among female adolescents. The distribution is shown in Table 4

Table 4
Distribution of Respondents Based on Online Gaming

Online Game	f	%
Low	265	96.4
High	10	3.6
Total	**275**	**100%**

Source: Primary Data, 2025

The table shows that most respondents had a low intensity of online gaming, totaling 265 respondents (96.4%). Only 10 respondents (3.6%) were in the high category. This suggests that online gaming is not a dominant activity in internet usage among most female students in this school.

Stress Occurs
To obtain an overview of respondents' psychological conditions, particularly regarding stress levels, an analysis of stress occurrence among female adolescents at SHS 7 Palu was conducted. This distribution is important in assessing the presence of mild or moderate stress. The results are presented in Table 5.

Table 5
Distribution of Respondents Based on Stress Levels

Online Game	f	%
Low	254	92.4
High	21	7.6
Total	**275**	**100%**

Source: Primary Data, 2025

The results indicate that most respondents experienced mild stress, totaling 254 respondents (92.4%). Meanwhile, 21 respondents (7.6%) experienced moderate stress. No respondents were found to have severe stress. These findings suggest that although internet and social media use are relatively high, most female adolescents remain within the mild stress category.

Multivariate Analysis
Simultaneous Test (F-Test)
The simultaneous test or F-test is one of the steps in multiple linear regression analysis used to determine whether all independent variables in the model collectively have a significant effect on the dependent variable. In the study The Influence of Internet Use on the Occurrence of Stress Among Female Adolescents at SHS 7 Palu, the F-test was used to examine whether internet use duration, social media use, cyberbullying, and online gaming simultaneously affect stress levels.
The F-test compares the variance explained by the regression model with the unexplained variance (residual). If the calculated significance value (Sig.) is < 0.05, the regression model is considered significant as a whole, meaning all independent variables collectively influence stress levels. Conversely, if the Sig. value is > 0.05, the model is

considered not significant, indicating that the independent variables are unable to explain changes in stress levels simultaneously.

The F-test provides an overview of the overall significance of the regression model, allowing researchers to determine whether the proposed model is appropriate for explaining the relationship between internet use and stress levels among female adolescents.

Table 6

Simultaneous Test (F-Test)

	Model	Total of Squares	Mean Square	F	Nilai Sig
1	Regression	2646.963	661.741	16.804	0.000
	Residual	10632.542	39.380		
	Total	13279.505			

Source: Primary Data, 2025

Based on the results of the simultaneous test shown in Table 6, the calculated F-value is 16.804 with a significance value of 0.000. Since the significance value is < 0.05, the regression model used in this study is considered significant simultaneously. This means that the independent variables internet use duration, social media use, cyberbullying, and online gaming collectively have a significant effect on stress levels among female adolescents at SHS 7 Palu.

The Mean Square Regression value of 661.741 and Mean Square Residual value of 39.380 indicate that the variation in stress levels explained by the model is much greater than the unexplained variation. This reinforces the conclusion that the regression model has a strong ability to explain the relationship between internet use and stress occurrence.

The F-test results indicate that the regression model constructed in this study is appropriate and significant for analyzing the influence of internet use on stress experienced by female adolescents. All independent variables in the model are shown to contribute collectively to changes in stress levels.

Partial Test (t-Test)

The partial test or t-test in multiple linear regression is used to determine the individual effect of each independent variable on the dependent variable. Unlike the F-test, which evaluates combined effects, the t-test assesses the contribution of each variable while controlling for other variables in the model. In this study, the t-test was used to determine whether internet use duration, social media use, cyberbullying, and online gaming each have a significant effect on stress levels among female adolescents at SHS 7 Palu.

The interpretation of t-test results is based on the significance value (Sig.) or comparison between the calculated t-value and the t-table value. If the Sig. value is < 0.05, the independent variable significantly affects the dependent variable. Conversely, if Sig. > 0.05, the variable has no significant effect. Through this test, researchers can identify which variable has the strongest contribution to stress levels.

Table 7
Partial Test (t-Test)

Variable	B	Std. Error	t	Sig
Internet Use Duration	0.915	0.386	2.369	0.019
Social Media Use	0.176	0.035	5.003	0.000
Cyberbullying	0.157	0.039	4.060	0.000
Online Gaming	0.427	0.086	4.978	0.000

Source: Primary Data, 2025

The partial test results show that Internet Use Duration has a t-value of 2.369 with a significance value of 0.019. Since Sig. <0.05, this variable significantly affects stress levels among female adolescents. The regression coefficient B = 0.915 indicates that each one-unit increase in internet use duration raises stress levels by 0.915 points, assuming other variables remain constant. Thus, the longer adolescents use the internet, the higher the risk of stress.

The variable Social Media Use has a t-value of 5.003 with Sig. = 0.000, indicating a highly significant effect on stress. The regression coefficient B = 0.176 shows that an increase in social media activity contributes to higher stress levels, although its effect is smaller compared to internet use duration. Its high t-value also indicates that social media use is one of the strongest predictors in the model.

For Cyberbullying, the t-value is 4.060 with Sig. = 0.000, demonstrating a significant effect on stress levels. The coefficient B = 0.157 means that each unit increase in cyberbullying experience increases stress by 0.157 points, reinforcing that exposure to cyberbullying is a clear and relevant risk factor.

The Online Gaming variable shows a t-value of 4.978 with Sig. = 0.000, indicating a significant effect on stress. The coefficient B = 0.427 demonstrates that the higher the intensity of online gaming, the greater the tendency for increased stress. The size of this coefficient suggests that online gaming contributes considerably to psychological pressure among adolescents.

2. Discussion

Effect of Internet Use Duration on Stress Among Adolescent Girls

The partial test results show that Internet Use Duration significantly affects stress (t = 2.369; Sig = 0.019). This finding aligns with Lazarus & Folkman's (1984) stress and coping theory, explaining that excessive internet use may create stressors such as information overload and digital social demands that exceed coping resources. Similarly, Sweller's (1988) cognitive load theory states that prolonged exposure to online content increases cognitive burden, reducing emotional regulation and increasing mental fatigue. According to Katz (1973), media use may shift from gratification to problematic use, triggering anxiety and social pressure in girls.

These results are supported by empirical studies. Santos et al. (2023) found that increased screen time correlates with higher stress and anxiety. Ahmed et al. (2024) reported that long social media use triggers emotional exhaustion and stress. Shannon et al. (2022) and Unsar et al. (2020) similarly found positive correlations between prolonged internet use and psychological distress. Recent studies by Du et al. (2024), He et al. (2024), and Chen et al. (2024) confirm that using the internet for more than 3 hours daily significantly increases stress and reduces well-being among adolescents.

Effect of Social Media Use on Stress Among Adolescent Girls

Social Media Use shows a highly significant effect (t = 5.003; Sig = 0.000), making it the strongest predictor. This is consistent with Lazarus & Folkman (1984), who argue that social pressure from online interactions can be appraised as stressors. Festinger's (1954) social comparison theory explains that constant exposure to idealized online images leads to dissatisfaction and emotional stress, as also supported by Vannucci et al. (2017).

Prior studies reinforce these findings. Shannon et al. (2022) reported that problematic social media use increases emotional stress. Baker et al. (2023) identified FoMO in girls as a driver of continuous checking behavior that heightens stress. Rezki et al. (2024) found that high engagement on TikTok, Instagram, and YouTube increases emotional fatigue due to pressure for online appearance management. Additionally, Ahmed et al. (2024) and Du et al. (2024) reported that high social media intensity disrupts sleep and increases stress. A longitudinal study by Viner et al. (2019) confirmed that girls are particularly vulnerable to stress from social comparison and digital validation.

Effect of Cyberbullying on Stress Among Adolescent Girls

Cyberbullying significantly influences stress (t = 4.060; Sig = 0.000). Based on Lazarus & Folkman (1984), online threats such as insults, humiliation, or rumors are appraised as threats exceeding coping ability. Similarly, Tajfel & Turner (1986) stress that negative social evaluation threatens identity, making girls more emotionally vulnerable.

This is consistent with evidence from Khadka et al. (2024) who found girls experience higher stress from appearance- and reputation-related cyberattacks. Korkmaz (2025) showed that low resilience amplifies stress responses to cyberbullying. Kurnaz et al. (2025) also reported strong negative mental health impacts, emphasizing the need for digital literacy, empathy education, and psychosocial support for victims.

Effect of Online Gaming on Stress Among Adolescent Girls

Online Gaming significantly affects stress (t = 4.978; Sig = 0.000). According to Lazarus & Folkman (1984), competitive gaming pressure, social conflict, and performance demands may exceed coping resources. Katz et al. (1973) also suggest that when gaming shifts from entertainment to dependency, it becomes a psychological stressor especially when girls face in-game failure, conflict, or cyberbullying.

Empirical studies support this. Aonso-Diego et al. (2024) found that high gaming intensity correlates with increased stress and anxiety. Thakur et al. (2023) reported links between gaming and behavioral problems, friendship conflict, and low self-esteem. Satapathy et al. (2024) identified gaming disorder as a predictor of stress and reduced social functioning. Falcione et al. (2025) showed that adolescents with impulsivity or anxiety are at greater risk of gaming-related stress due to maladaptive coping.

Conclusion

The results of this study indicate that several factors significantly influence stress levels among female adolescents at SHS 7 Palu. Internet usage duration was found to have a significant effect, where longer daily use is associated with higher stress levels, suggesting that excessive internet engagement may contribute to psychological disturbances. Social media use also showed a significant impact, as increased interaction, content consumption, and engagement across platforms tend to elevate psychological

pressure and trigger stress. Furthermore, cyberbullying was identified as a significant predictor, with more frequent exposure leading to a higher likelihood of stress among adolescents. Online gaming likewise demonstrated a significant influence, where greater gaming intensity corresponded with increased stress levels. Among all variables examined, online gaming emerged as the most dominant factor, contributing an effective value of 6.91% and a relative contribution of 34.65%. This finding suggests that high-intensity gaming poses substantial psychological pressure, reduces rest time, and induces emotional tension, making it the strongest predictor of stress compared to the other variables.

The analysis shows that online gaming contributes the greatest influence on stress, with an effective contribution of 6.91% and a relative contribution of 34.65%. This means that online gaming is the most dominant factor affecting stress in female adolescents. High intensity of gaming may lead to psychological pressure, reduced rest time, and emotional tension, resulting in a greater contribution to stress compared to other variables.

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