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Factors related to online game addiction among adolescents

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Abstract

Background: Online game addiction among adolescents that affects academic, psychological, and social aspects. The increasing use of the internet and the intensity of gaming have caused some adolescents to experience difficulties in controlling their playing time.

Purpose: To determine the relationship between self-control, learning motivation, peer influence, and sleep quality with online game addiction among students.

Method: This research employed a quantitative approach with a cross-sectional design. The sample consisted of 288 respondents selected using purposive sampling technique. Data were collected using questionnaires and analyzed using the chi-square test.

Results: The results showed that there were significant relationships between self-control ($p=0.001$), learning motivation ($p=0.001$), and peer influence ($p=0.001$) with online game addiction. Meanwhile, sleep quality was not significantly related ($p=0.846$).

Conclusion: It can be concluded that self-control, learning motivation, and peer influence are factors related to online game addiction.

Suggestion: Promotive and preventive efforts in the school environment are needed to reduce excessive gaming behavior.

Keywords: Game Addiction; Learning Motivation; Peer Influence; Sleep Quality; Self-Control.

INTRODUCTION

The latest report from the World Health Organization (WHO) Regional Office for Europe in 2024 shows that digital media use among adolescents has experienced a worrying increase. The number of adolescents experiencing excessive social media use increased from 7% in 2018 to 11% in 2022. Furthermore, approximately 12% of adolescents are also at risk of developing gaming addiction. This finding comes from the Health Behavior in School-aged Children (HBSC) study, which involved nearly 280,000 adolescents aged 11–15 from 44 countries. The report also stated that 34% of adolescents play games daily, and 22% of them play for at least four hours a day. While the majority are considered non-problematic gamers (68%), 12% of adolescents are already showing signs of

developing problematic gaming use. This indicates that some adolescents have difficulty controlling their gaming time, experience impacts on their daily activities, and some even exhibit signs of addictive behavior. Excessive use of social media and games is also linked to sleep deprivation, declining mental health, and suboptimal academic performance (World Health Organization, 2024).

Internet development in Indonesia is also showing rapid growth. Internet penetration reached 80.66% in 2025, or approximately 229 million people connected to the internet. This expansion of access is also occurring across various regions. Survey data shows that 28.17% of respondents play online games, with games like Mobile Legends being the top choice, with the highest percentage at 48.99%. Furthermore, the

duration of game play among teenagers is also quite high, ranging from 1–3 hours per day, with some even playing for more than 4 hours. This intensity of use is inseparable from the ease of access to digital devices, with over 80% of internet users across all generations using smartphones as their primary means of connecting to the internet (Association of Indonesian Internet Service Providers, 2015).

The phenomenon of online gaming among teenagers in Bandar Lampung City shows quite high numbers and has the potential to lead to addictive behavior. Other research conducted on 177 junior high school students in Lampung showed that 70.1% of teenagers had a moderate intensity of online gaming and 17.5% were in the high category, with playing durations that could reach more than 4-6 hours per day. The study also noted that the majority of respondents were male teenagers (67.8%) and the most played game was Free Fire (61.6%), which is a type of competitive game and has the potential to increase excessive involvement in online gaming (Budiawan, Sari, & Sujiah, 2024). Furthermore, research showed that of 77 adolescents, 32.5% played online games intensively, with a playing time of 6-8 hours per day, which is considered a risk factor for online gaming addiction. This study confirms that high gaming duration and frequency contribute to the emergence of addictive behavior in adolescents, characterized by difficulty controlling gaming time and a tendency to neglect basic needs such as sleep and learning activities (Larantika & Amatiria (2025)

SMA Negeri 12 Bandar Lampung was chosen as the research location because it has a relatively large student population of 1,032. According to data from the Education Office, Bandar Lampung City has 17 public senior high schools with a total population of over 15,000 students in 2025. Of these 17 schools, SMA Negeri 12 is among the top six schools with the largest student population, ranking 6th, indicating a vibrant and diverse learning environment. The student population at SMA Negeri 12 Bandar Lampung is 1,032, comprising 350 students in grade 10, 348 students in grade 11, and 334 students in grade 12. Based on gender, grade 10 comprises 234 female students and 116 male students, grade 11 comprises 203 female students and 145 male students, and grade 12 comprises 190 female students and 144 male students.

A pre-survey conducted on October 22, 2025, at

SMA Negeri 12 Bandar Lampung revealed that more than 50%, or approximately 516 students, of the total number of students at SMA Negeri 12 Bandar Lampung play online games. This was confirmed by interviews with 10 students from grades 10, 11, and 12, indicating that gaming has become part of their daily routine. In the 10th grade (3 students), students reported that their sleep was disrupted by playing games until late at night, sometimes even finding it difficult to wake up in the morning for school. In the 11th grade (4 students), 3 students frequently stayed up late engrossed in gaming and felt tired quickly during class. Meanwhile, in the 12th grade (3 students), 2 students reported that excessive gaming made it difficult for them to focus on their studies, leading to a decline in their grades in some subjects.

Furthermore, 7 out of 10 students stated that they played not only because they wanted to, but also because their peers encouraged them to, making it difficult for them to control their playing time. The types of games students generally played varied, including Mobile Legends, Free Fire, Roblox, and others. This phenomenon was also evident during class meetings, where each grade 10, 11, and 12 sent teams to participate in online gaming competitions. This situation demonstrates that online gaming has become a lifestyle and a popular form of entertainment among teenagers at school.

Several studies have also highlighted the effects of online gaming addiction, including those by Mestiana Br. Karo et al. In their research at Deli Murni Delitua High School, the majority of students experienced severe online game addiction (74.3%) and low learning motivation (62.8%). This study indicates that high levels of online game playing can negatively impact students' learning interest and academic concentration. This reinforces the hypothesis that online game addiction not only affects social behavior but also reduces adolescents' internal drive to learn and academic achievement (Karo, Pakpahan, & Sihombing, 2023).

Similar findings were also revealed who studied students at MTS Nurul Islam in Bogor City. The results of this study indicated that adolescents with high levels of addiction not only experienced sleep disturbances, with 51 of 60 students (85%) experiencing poor sleep quality, but also showed a significant decline in learning motivation and academic achievement, with 45 of 60 students (75%)

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experiencing low learning motivation. There was a significant relationship between online game addiction and learning motivation ($p = 0.02$). Furthermore, students with addiction were 8.5 times more likely to have low learning motivation. Contributing factors include excessive time spent playing, impaired focus, and a psychological compulsion to continue playing despite awareness of the negative impacts. This research reinforces the view that online gaming addiction has multidimensional effects, encompassing physical (sleep), cognitive (motivation and focus on learning), and psychological (emotional dependence on the game) aspects (Widiarti, Istiani, & Rokhmiati, 2024). Other research showed that 134 adolescents (63.8%) experienced low levels of online gaming addiction, while 43 adolescents (20.5%) experienced moderate levels, and 33 adolescents (15.7%) experienced high levels. These findings suggest that while most adolescents can still control their gaming habits, some groups are at risk of developing more serious addiction. The study also demonstrated a significant relationship between self-control and online gaming addiction, with low self-control increasing the potential for addiction. Therefore, strengthening self-control is crucial to prevent adolescents from experiencing negative impacts on mental health and academic achievement (Fitri, Putri, & Yulanda, 2021).

In addition to impacting behavior and learning activities, online gaming addiction also causes various health problems that require attention. The WHO, in its ICD-11 update, explains that excessive gaming can cause sleep disorders such as insomnia, sleep deprivation, and daytime fatigue, which ultimately impair concentration in adolescents. Adolescents who spend too much time staring at screens also often experience physical complaints such as headaches, dry eyes, neck and back pain, and irregular eating patterns (World Health Organization, 2019).

Research findings in Indonesia further support this finding, where 85% of students addicted to gaming experience poor sleep quality, and some report low learning motivation due to fatigue and lack of focus. This situation demonstrates that gaming

addiction not only impacts behavior and performance but also directly impacts adolescents' physical and mental health, strongly arguing that this issue requires further research, particularly in the school environment.

RESEARCH METHOD

This quantitative research method focuses on testing hypotheses and making generalizations about the population through statistical analysis. This research was conducted from January 21st to 22nd, 2026, at Senior High School 12 Bandar Lampung, with a total student population of 1,032 students from grades 10, 11, and 12. From this population of 1,032 students and a 5% margin of error, a sample of 288 respondents was obtained.

The inclusion criteria for this study were active students in grades 10, 11, and 12 who had played online games in the past three months and were willing to participate by completing a consent form. Exclusion criteria were students who did not actively play online games, students who completed the questionnaire incompletely or provided invalid answers, and students experiencing certain physical or psychological health conditions that could interfere with their ability to complete the research instrument.

Self-control was categorized as low (<11 -25 total score), moderate (26-40 total score), and high (≥ 41 -55 total score). The assessment categories for motivation to learn are low: <20 -39 total score, medium: 40-59 total score, and high: ≥ 60 -80 total score. The peer assessment category is low: <16 -31 total score, medium: 32-47 total score, and high: ≥ 48 -64 total score. The assessment categories for sleep quality are good: ≤ 5 and poor: > 5 . The assessment categories for game addiction are low: <21 -41 total score, medium: 42-62 total score, and high: ≥ 63 -84 total score.

Statistical testing in this study was conducted using the chi-square test and, if the requirements were not met, the alternative, Fisher's Exact Test, was used. Hypothesis decisions were made based on the p-value, where if the p-value <0.05 then the alternative hypothesis (H_a) is declared accepted, while if the p-value >0.05 then the null hypothesis (H_0) is accepted.

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RESEARCH RESULTS

Tabel Distribution Frequency of Respondents (N=288)

Variable	Results	P-value
Self-Control (n/%)		0.001
Low	16/5.6	
Medium	202/70.0	
High	70/24.4	
Motivation to Learn (n/%)		0.001
Medium	152/47.2	
High	136/47.2	
Friends of the Same Age (n/%)		0.001
Low	26/9.0	
Medium	227/79.0	
High	35/12.0	
Sleep Quality (n/%)		0.846
Good	83/28.8	
Poor	205/71.2	
Game Addiction (n/%)		
Low	60/21.0	
Medium	142/49.0	
High	86/30.0	

Based on Table 4.1, it is known that of the teenagers, the majority of teenagers had moderate self-control, 202 teenagers (70.1%). the majority of teenagers at had moderate learning motivation, namely 152 teenagers (52.8%). the majority of teenagers were of moderate age, 227 teenagers (78.8%). the majority of adolescents had poor sleep quality, as many as 205 adolescents (71.2%). the majority of teenagers with moderate gaming addiction were 142 teenagers (49.3%), and 86 teenagers (29.9%) were highly addicted.

Based on the Chi-Square test results in Table 4.6, the p-value was 0.001 ($p < 0.05$), thus concluding that there is a significant relationship between self-control and the level of online gaming addiction among adolescents at . These results indicate that the higher a person's self-control, the lower the likelihood of experiencing online gaming addiction. Conversely, the lower the self-control, the higher the level of online gaming addiction. Thus, self-control plays a significant role in the level of online gaming addiction among the respondents in this study. the p-value was 0.001 ($p < 0.05$), thus concluding that there is a significant relationship between learning motivation and online gaming addiction among adolescents. These results indicate that higher learning motivation leads to lower levels of online gaming addiction. Conversely, adolescents with lower or moderate learning motivation tend to have higher levels of addiction. Thus, learning motivation has a significant role in influencing the level of addiction to playing online games in the respondents of this study.

The results of the analysis using the Chi-Square test showed a p-value of 0.001 ($p < 0.05$), indicating a significant relationship between peer influence and the level of online gaming addiction among adolescents. These findings indicate that the stronger the peer influence, the greater the tendency for adolescents to experience online gaming addiction. Conversely, lower peer influence tended to be associated with lower levels of addiction. Thus, peer environment factors have a significant relationship to online gaming addiction behavior among the

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respondents in this study. the p-value was 0.846 ($p > 0.05$). This indicates no significant relationship between sleep quality and online gaming addiction among adolescents.

DISCUSSION

Based on the results of the univariate analysis, it was found that of the 181 respondents, 96 (53.0%) had low self-control and 85 (47.0%) had high self-control. This data indicates that more than half of the adolescents in this study do not yet have optimal self-regulation skills in controlling their online gaming behavior. Low self-control can be reflected in difficulty resisting the urge to play, an inability to limit playing time, and a tendency to neglect academic responsibilities.

This finding aligns with other research which reported that 58.3% of respondents had low self-control and that this group was significantly more likely to experience online gaming addiction ($p < 0.05$). These results indicate that self-control is a protective factor against addictive behavior. Individuals with high self-control tend to be able to consider consequences before acting (Fitri et al., 2021).

Theoretically, the concept of self-control is explained in their self-regulation theory, which states that self-control is an individual's ability to direct behavior in accordance with long-term standards and goals (Baumeister & Vohs, 2007). In the context of gaming addiction, one indicator of addiction is the loss of control over the frequency and duration of playing (Lemmens, Valkenburg, & Peter, 2009). Furthermore, the criteria for Gaming Disorder emphasize that the inability to control gaming behavior is a key characteristic of this disorder (World Health Organization, 2019).

According to the researchers, the low proportion of self-control in this study may underlie the emergence of online gaming addiction. Adolescents, who are still in the psychosocial development stage, tend to have unstable emotional regulation, making them more easily influenced by stimuli that provide instant gratification, such as online games.

The results showed that 102 respondents (56.4%) had low learning motivation, while 79 respondents (43.6%) had high learning motivation. This indicates that most respondents lack a strong internal drive to achieve academic success. Low learning motivation can be seen in a lack of perseverance, low interest in lessons, and a tendency to procrastinate on

schoolwork. Other research found that 61.2% of students with high gaming intensity had low learning motivation, with a significant relationship ($p < 0.05$) (Karo et al., 2023). Another study also reported that 63% of respondents with gaming addiction showed a decline in learning interest and academic concentration. This finding reinforces the idea that excessive gaming can shift adolescents' learning orientation (Widiarti et al., 2024).

Theoretically, Learning motivation is explained in Self-Determination Theory, which states that intrinsic motivation arises when an individual has a need for competence, autonomy, and social connectedness. Online games often fulfill these three needs instantly through level systems, rewards, and social interactions, making them more engaging than learning processes that require long-term effort (Ryan & Deci, 2000). Furthermore, another theory explains that behavior that receives consistent positive reinforcement is more likely to be repeated (Skinner, 1953). According to the researchers, the high proportion of low learning motivation in this study indicates a possible shift in adolescents' activity priorities. Online games, which are competitive and offer instant rewards, can diminish interest in academic activities that require consistency and perseverance.

The results showed that 99 respondents (54.7%) were in the high peer influence category, while 82 respondents (45.3%) were in the low peer influence category. This data indicates that most adolescents live in social environments that strongly influence their behavior, including online gaming habits. Other research found that 67% of adolescents in active gaming groups reported playing more than 3 hours per day, with a significant relationship between peer influence and online gaming addiction ($p < 0.05$). This suggests that social interaction within a group can reinforce gaming habits (Larantika & Amatiria, 2025).

Theoretically, in his Social Learning Theory, explains that individuals learn through observation and imitation of their social environment. Adolescents tend to imitate behaviors deemed popular or accepted within their group (Bandura, 1986). Furthermore, developmental theory states that adolescents are in

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the identity versus role confusion stage, where social acceptance becomes a crucial need (Erikson's (1968).

According to the researchers, the dominant peer influence in this study indicates that online gaming addiction is influenced not only by internal factors but also by social group dynamics. Adolescents in environments with high levels of gaming tend to view such behavior as normal.

The results showed that 97 respondents (53.6%) had poor sleep quality, and 84 respondents (46.4%) had good sleep quality. This data indicates that more than half of the respondents experienced sleep disturbances, which can impact concentration and overall health.

That 85% of adolescents with gaming addiction had PSQI scores >5, indicating poor sleep quality. Furthermore, other research shows that using gadgets more than 4 hours before bedtime doubles the risk of sleep disturbances compared to using less than 2 hours (Widiarti et al., 2024)

According other research poor sleep quality is characterized by disturbed duration, long sleep latency, and impaired daytime functioning. Exposure to blue light from gadget screens can inhibit the production of melatonin, a hormone that plays a role in regulating the sleep-wake cycle (Buysse, Reynolds III, Monk, Berman, & Kupfer, 1989). The World Health Organization also states that excessive digital media use can impact sleep disturbances and mental health in adolescents (World Health Organization, 2019).

According to the researchers, the high rate of poor sleep quality in this study is likely related to the habit of playing games late at night. If this condition persists, it can reduce academic performance and psychological well-being in adolescents.

The analysis showed that 94 respondents (51.9%) were in the high category of online game addiction, and 87 respondents (48.1%) were in the low category. This indicates that more than half of the respondents had a fairly high level of addiction.

Explained that game addiction is characterized by salience, tolerance, withdrawal, conflict, and relapse (Lemmens et al., 2009). Meanwhile, the World Health Organization officially included Gaming Disorder in the ICD-11, with the main criteria being impaired control over gaming, prioritizing gaming over other activities, and continuing to play despite negative consequences (World Health Organization, 2019).

Other research also reported that 52% of respondents were in the moderate to high addiction category, with an average playing time of more than 4 hours per day. This indicates that the phenomenon of online game addiction in adolescents is a quite serious issue (Budiawan et al., 2025).

According to the researchers, the high addiction rate in this study indicates that online gaming has become a dominant activity in the lives of some adolescents. Therefore, preventative measures through education, increased self-control, and strengthened learning motivation are needed to maintain a balance between adolescent activities.

Based on the Chi-Square test results in Table 4.6, the p-value is 0.001 ($p < 0.05$), indicating a significant relationship between self-control and online gaming addiction among adolescents. Based on data distribution, respondents with low self-control were predominantly in the high addiction category (81.3%), while respondents with high self-control were more likely in the low addiction category (50.0%). This pattern suggests a strong relationship between self-regulation skills and levels of online gaming addiction.

The results of the study indicate a significant relationship between self-control and online gaming addiction. Adolescents with low self-control tend to experience higher levels of addiction compared to those with good self-control. These results also align with previous research that suggests self-control plays a crucial role in preventing addictive behavior.

Theoretically, according individuals with low self-control tend to be impulsive and prefer activities that provide quick gratification. In the context of online gaming, game designs that trigger instant reward responses can reinforce compulsive behavior in individuals with weak self-regulation. Furthermore, Baumeister explains that self-regulation plays a role in delaying gratification so that individuals can consider the long-term consequences of their behavioral choices (Burt, 2020).

According to researchers, although a general trend was found that higher self-control led to lower levels of online gaming addiction, a small proportion of respondents with high self-control were still in the highly addicted category, namely 6 people (8.6%). This condition indicates that self-control ability does not work absolutely in determining online gaming behavior. In the context of adolescents, addictive behavior is influenced not only by internal factors

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such as self-control, but also by various interacting external factors, such as the intensity of peer influence, easy internet access, lack of supervision, and the characteristics of online games that are designed with reward and competition systems that encourage repeated engagement. In addition, online games can function as a means of venting stress or boredom due to academic demands, so that even though individuals have good self-control in general, in certain situations they are still at risk of exhibiting excessive gaming patterns. Thus, this finding does not contradict the results of statistical tests that show a significant relationship, but rather confirms that online gaming addiction in adolescents is a complex phenomenon and is influenced by various interrelated factors.

Based on the Chi-Square test results in Table 4.7, the p-value is 0.001 ($p < 0.05$), indicating a significant relationship between learning motivation and online game addiction among adolescents at SMA Negeri 12 Bandar Lampung in 2026. Respondents with high learning motivation were more likely to be in the low addiction category (36.8%), while respondents with moderate learning motivation were more likely to be in the medium and high addiction categories.

Compared to the results of this study, the direction of the relationship remains consistent. However, this study did not conduct a risk analysis (OR), so the strength of the relationship cannot be measured numerically, as in the study by Widiarti et al. Nevertheless, the data distribution shows a clear pattern that high learning motivation correlates with lower levels of addiction.

According to Self-Determination Theory (SDT), individuals have three basic psychological needs: competence, autonomy, and relatedness. If unmet in an academic context, students seek alternatives outside of school, such as playing online games. Furthermore, Santrock explains that low learning motivation can result in decreased concentration, increased procrastination, lower academic achievement, and a tendency to seek activities that provide instant gratification (Ryan & Deci, 2000).

In addition to these aspects, low learning motivation also has the potential to cause impacts such as poor time management, procrastination in completing schoolwork, and long-term impairment in academic performance.

According to the researchers, the results of a pre-survey conducted through interviews with 10 students from grades 10, 11, and 12 provide an initial overview of the impact of online gaming habits on the learning process. Two grade 12 students directly revealed that excessive gaming intensity made it difficult for them to concentrate during class and resulted in lower grades in several subjects. When learning motivation is not at an optimal level, students tend to prioritize academic activities less. Time that should be spent studying is diverted to gaming, schoolwork is postponed, and attention during lessons is less than optimal. If this condition persists, it will impact academic achievement, which is reflected in student learning outcomes. Thus, the statistical relationship found in this study aligns with the reality on the ground, where low learning motivation coupled with high levels of gaming intensity contributes to declining academic performance.

However, the study results also show that not all respondents with high learning motivation fall into the low addiction category. Some adolescents with high learning motivation still fall into the high online gaming addiction category. This situation demonstrates that learning motivation and gaming behavior are not always mutually exclusive. An adolescent can maintain a strong academic drive and be able to fulfill their school responsibilities, yet at the same time use gaming as a means of entertainment, a way to relieve boredom, or a form of self-reward after completing assignments.

Furthermore, high learning motivation does not necessarily translate into optimal self-regulation skills in managing free time. If game use is intense and repeated, even though academic obligations are still met, the behavior can still be categorized as an addiction. Thus, these findings emphasize that learning motivation is one factor, but not the sole determinant, in developing online gaming addiction in adolescents.

Based on the Chi-Square test results in Table 4.8, the p-value is 0.001 ($p < 0.05$), indicating a significant relationship between peer influence and online gaming addiction. Respondents with high peer influence were predominantly in the high addiction category (80.0%). This figure indicates a significant social contribution to the development of online gaming behavior.

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Other research supports this finding by stating that an uncontrolled social environment can increase the risk of online gaming addiction. The study emphasized the existence of social pressure and competitive urges within groups, which make it difficult for adolescents to limit gaming time. Furthermore, research, published in *Consilia: Scientific Journal of Guidance and Counseling*, showed that peer conformity is positively and significantly related to online gaming addiction, with an effective contribution of 24.6%. This means that the higher the level of peer conformity, the higher the likelihood of online gaming addiction among vocational high school students in Bengkulu City (Pratiwi, Rochmania, Asmarani, & Edi, 2019).

Individuals learn through observation and imitation of their social environment. In the context of friendships, the norms and behaviors of peers who play games intensively become models that adolescents imitate to gain social acceptance. Erikson's psychosocial theory also explains that adolescents' identity struggles make them highly sensitive to peer group influence (Bandura, 1986).

According to researchers, peer influence is particularly strong in adolescence because adolescents seek acceptance within their peer group. If gaming becomes a habit within that group, individuals will tend to follow suit to avoid feeling isolated. Therefore, a positive social environment is crucial to help adolescents avoid excessive gaming behavior.

Based on the Chi-Square test results in Table 4.9, the p-value is 0.846 ($p > 0.05$), indicating that there is no statistically significant relationship between sleep quality and online gaming addiction among adolescents at SMA Negeri 12 Bandar Lampung in 2026. Respondents with good sleep quality were predominantly in the moderate addiction category (51.8%), followed by high (27.7%) and low (20.8%) categories. Meanwhile, among respondents with poor sleep quality, the largest distribution was also in the moderate addiction category (48.3%), followed by high (30.7%) and low (21.0%) categories. The percentage pattern between the two groups appears relatively similar. This indicates that, within the context of this study sample, the difference in sleep quality between addicted and non-addicted respondents is not large enough to be considered statistically significant.

However, the insignificant findings in this study do not necessarily mean that sleep quality is completely irrelevant in the context of online gaming addiction. Theoretically and empirically, numerous previous studies have shown a relationship between the intensity of online gaming and sleep disturbances. For example, a study found a significant relationship between online gaming addiction and sleep quality, with a p-value of 0.05 in elementary and middle school students. These results indicate that students with symptoms of online gaming addiction tend to experience more disturbed sleep patterns than those without addiction (Widiarti et al., 2024).

Furthermore, another study, "The Relationship Between Addiction to the Online Game Mobile Legends Bang-Bang (MLBB) and Sleep Quality in Teenagers," found that addiction levels were significantly correlated with decreased sleep quality among adolescent respondents ($p = 0.001$). These findings indicate that the higher the level of online gaming addiction, the lower the sleep quality experienced by adolescents, especially if gaming is played for a long time or close to bedtime (Fauzi & Rusli, 2024).

Furthermore, a literature review study which analyzed 16 scientific journals, showed that adolescents addicted to online gaming have poorer sleep quality. approximately 63.7% of respondents in various previous studies. These results indicate a general trend that online gaming can affect sleep duration and quality, although in some research contexts this relationship is not always statistically significant (Hastani & Budiman (2022),

This finding aligns with research in "Online Gaming Behavior and Adolescent Sleep Patterns: A Correlation Study." In that study, statistical tests showed no significant relationship between online gaming frequency and adolescent sleep patterns ($p = 0.236$), although playing duration tended to influence sleep patterns. This suggests that intensity or frequency alone does not always directly correlate with disrupted sleep patterns or quality, and other variables such as playing duration, sleep habits, and daily activities may play a moderating role (Kurniasih, 2022)

Sleep quality in adolescents can be explained by the circadian rhythm theory proposed by Alexander Borbély in his Two-Process Model of Sleep Regulation. This theory states that sleep patterns are

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regulated by two main mechanisms: the homeostatic process (the biological need for sleep that increases with the length of time awake) and the circadian process (the internal biological clock that regulates the 24-hour sleep-wake cycle). In adolescents, the circadian rhythm tends to experience a phase shift (delayed sleep phase), making them naturally more active at night and having difficulty falling asleep early. This condition can be exacerbated by exposure to blue light from gadget screens, including when playing online games, which can inhibit melatonin production and delay sleep onset. In its classification of Gaming Disorder, the World Health Organization (2019) also states that uncontrolled gaming behavior can cause significant disruptions in various aspects of life, including sleep patterns and daily functioning. However, the impact on sleep quality is individual and influenced by each adolescent's time management, self-control, and rest habits.

Therefore, theoretically, there is a strong basis for the potential for online gaming intensity to affect sleep quality through biological and behavioral mechanisms. However, if individuals are able to maintain a regular sleep schedule and limit gaming time before bed, sleep quality can be maintained despite high levels of online gaming involvement.

According to researchers, although online gaming addiction is often theoretically associated with sleep disturbances, the results of this study indicate that some adolescents with good sleep quality still fall into the high addiction category. This can be explained by the fact that some adolescents play games for extended periods after school, sacrificing other activities, such as social activities or studying. However, they still limit their gaming time to just before bedtime. Thus, the intensity of gaming involvement remains high, both behaviorally and psychologically, but does not significantly disrupt their sleep patterns.

Furthermore, sleep quality is influenced by various factors, such as a regular sleep schedule, the sleep environment, and individual habits regarding sleep habits. Adolescents who maintain a relatively consistent sleep schedule every night and avoid playing late can maintain good sleep quality despite their tendency to become addicted to gaming. This suggests that gaming addiction does not always directly impact sleep quality, especially if individuals still have control over their sleep schedule.

CONCLUSION

Based on the results of research on the relationship between self-control, learning motivation, peer relationships, and sleep quality with online game addiction in adolescents at SMA Negeri 12 Bandar Lampung in 2026, it can be concluded that: The results of the study showed a significant relationship between self-control ($p = 0.001$), learning motivation ($p = 0.001$), and peer influence ($p = 0.001$) with online game addiction. Meanwhile, sleep quality was not significantly related ($p = 0.846$).

SUGGESTION

For students are expected to improve self-control in managing their time spent playing online games and maintain motivation to learn as a top priority. Awareness of the long-term impacts of gaming addiction needs to be instilled from an early age. For Schools provide education on the healthy use of online games, increase the role of guidance and counseling teachers in early detection of addictive behavior and create character development programs that emphasize strengthening self-control and time management. For parents are expected to be more active in monitoring their children's gadget use, setting limits on playing time, and establishing open communication to prevent addictive behavior. For future researcher use a longitudinal design to determine cause-and-effect relationships, add other variables such as parenting styles, emotional regulation, academic stress, and duration of gadget use, expand the research location to allow for broader generalization of the results and use a more objective sleep quality measurement instrument.

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