

Increased Online Gaming Addiction Corresponds to Reduced Social Interaction in Adolescents

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ABSTRACT

Online gaming addiction is characterized by excessive and uncontrolled gaming behavior, driven by persistent urges to play and difficulty regulating duration and frequency. This behavioral pattern has the potential to affect various aspects of adolescent functioning, particularly their social interaction, which includes relationships between individuals, between individuals and groups, and among groups. The purpose of this study was to examine the relationship between online gaming addiction and social interaction among adolescents. A quantitative cross-sectional design was applied, involving 42 adolescents selected through purposive sampling. Data were collected using standardized questionnaires assessing the level of online gaming addiction and the quality of social interaction. Statistical analysis was performed using the Rank-Spearman test. The results showed that 59.5% of participants were categorized as having a high level of online gaming addiction, and 54.5% demonstrated poor social interaction. Statistical testing revealed a significant relationship between the two variables ($p < 0.005$). In conclusion, the study demonstrates a clear inverse association: higher levels of online gaming addiction are linked to lower quality of social interaction among adolescents, indicating that excessive gaming may hinder adolescents' ability to engage effectively in social relationships.

Keywords: online gaming addiction; social interaction; adolescents

INTRODUCTION

The rapid advancement of technology has transformed many aspects of daily life, including digital entertainment such as online gaming. Initially designed merely as a recreational activity, online games have evolved into one of the world's largest industries. This growth demands greater attention to its potential impacts, particularly on younger generations. The ease of digital access also presents challenges, as individuals often struggle to regulate their technology use responsibly [1]. In the digital era, online games function not only as entertainment but also as a medium for social interaction. Online gaming addiction is excessive and uncontrollable gaming behavior that disrupts social, academic, and physical functioning. Such conditions may diminish adolescents' ability to interact with others, even though social interaction plays a crucial role in the development of social skills [2].

The global rise in internet use has further expanded the prevalence of online gaming. The number of internet users worldwide reached approximately 4.54 billion, nearly 60% of the global population [3]. In Indonesia, increased internet access and widespread smartphone ownership have contributed to high levels of online gaming activity. Of the 82 million smartphone users, around 52 million actively play online games, placing Indonesia 17th globally in terms of the number of online gamers, with adolescents comprising the majority [4]. This trend is reinforced by recent data from the Indonesian Internet Service Providers Association (APJII), which reported that in 2024 Indonesia had 221.56 million internet users (79.50%), increasing to an estimated 229.43 million users (80.66%) in 2025 [APJII, 2024]. Despite abundant global and national data, studies examining the direct relationship between online gaming intensity and adolescent social interaction in Indonesia remain limited.

Online games vary widely, including popular titles such as Mobile Legends and Free Fire. Winning provides a sense of satisfaction that motivates players to continue, whereas losing often triggers the urge to try again [6]. This cycle frequently leads to addictive behaviors that are difficult to control. A study found that online gaming addiction drives adolescents to spend several hours playing each day, disrupting essential activities such as studying, resting, and engaging in direct interaction with peers and family members [7].

This phenomenon is also evident in various regions, where preliminary observations show that adolescents spend between 2–8 hours per day playing online games. Consistent with previous research, excessive online gaming use has been shown to reduce the quality of adolescents' social interaction [8], forming a strong rationale for examining the relationship between online gaming addiction and social interaction.

The impact of online gaming addiction extends beyond psychological effects to physical consequences as well [9]. Adolescents with gaming addiction often experience reduced sleep quality, which can lead to health problems and decreased concentration. These conditions negatively affect academic performance and impair adolescents' ability to engage in social interactions, thereby disrupting relationships with peers and family members [10]. Adolescents who spend excessive time gaming tend to have fewer opportunities for direct interaction, hindering the development of essential social skills. Online gaming addiction may interfere with social development processes, including communication skills and increasing social isolation [11]. Other studies have demonstrated a negative relationship between online gaming addiction and adolescent social interaction, indicating that higher levels of addiction correspond to lower social interaction quality [12]. These findings highlight that online gaming addiction is not merely an individual issue but a broader social phenomenon requiring serious attention [13]. Based on this background, the present study aims to examine the relationship between the level of online gaming addiction and social interaction among adolescents.

METHODS

The study was conducted in Pataruman, Banjar, in December 2024. This research employed an analytical quantitative approach with a cross-sectional design. The study sample consisted of 42 adolescents, selected using purposive sampling based on the Notoadmodjo (2018) formula [14] with a 10% confidence level. Inclusion criteria included adolescents aged 15–21 years, actively engaged in online gaming, and willing to participate as respondents. Exclusion criteria were adolescents experiencing health conditions or special circumstances that could interfere with their ability to complete the questionnaire.

Two primary variables were examined: the level of online gaming addiction and the quality of social interaction. Online gaming addiction was measured using a single-item question assessing daily gaming duration, categorized as mild (≤ 30 minutes), moderate (3–4 hours), and severe (≥ 5 hours). Social interaction was assessed using a 33-item questionnaire with four response options: Never, Sometimes, Often, and Always. Favorable items were scored from 1 to 4, while unfavorable items were reverse-scored. Instrument validity was tested using the Pearson Product Moment, with items considered valid when r -value > 0.444 . Reliability testing using Cronbach's Alpha yielded a coefficient of 0.980, indicating excellent internal consistency.

Data collection was carried out through questionnaire distribution after obtaining informed consent from all participants. Univariate analysis was used to describe respondent characteristics, while bivariate analysis employed the Spearman Rank correlation test to examine the relationship between the study variables.

RESULTS

Table 1 shows that the majority of respondents fell into the severe addiction category, with 59.5% reporting more than five hours of daily online gaming. Only a small proportion reported mild or moderate gaming duration. Table 2 indicates that most adolescents demonstrated poor social interaction, with 54.8% categorized in the lowest interaction level. Only a minority showed moderate or good social interaction.

Based on Table 3, the analysis demonstrates a significant association between online gaming addiction and adolescents' social interaction ($p < 0.001$). Adolescents with severe addiction predominantly exhibited poor social interaction, whereas those with mild addiction were more likely to show good interaction. These findings indicate a clear inverse relationship: as online gaming addiction increases, the quality of social interaction decreases.

Table 3. The correlation between level of online gaming addiction and social interaction

Online gaming addiction	Social interaction						p-value
	Good		Moderate		Poor		
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	
Mild	5	71.4	1	14.3	1	14.3	< 0.001
Moderate	2	20.0	6	60.0	2	20.0	
Severe	1	4.0	4	16.0	20	80.0	

DISCUSSION

The findings of this study indicate that most adolescents were categorized as having a severe level of online gaming addiction. This result aligns with previous research showing that the majority of adolescents tend to fall within the high-addiction category, with only a small proportion classified as very low [15]. These findings reinforce that online gaming addiction is a common phenomenon among adolescents and warrants greater attention, particularly in efforts to balance gaming activities with social engagement.

Consistent with earlier studies, adolescents with severe addiction typically spend more than five hours per day playing online games. Such behavior affects multiple aspects of their lives, including reduced academic focus, diminished direct social interaction, and increased risks of sleep disturbances and mental health problems. Preventive and control measures are therefore essential, such as parental supervision, time-management education, and encouraging adolescents to participate in productive alternative activities [7].

Hidayah (2024) [16] emphasized that one strategy to address excessive gaming among adolescents is to establish clear limits on daily gaming duration—such as one to two hours per day—while reinforcing the importance of study time and encouraging participation in productive activities such as sports or the arts. Other studies have shown that adolescents with severe addiction often become preoccupied with maintaining or improving their in-game ranking, leading them to devote most of their time to online gaming [17].

This study also identified variations in adolescents' social interaction levels, ranging from good to poor. However, the majority were categorized as having poor social interaction, highlighting the need for interventions to strengthen their interpersonal skills. Previous research similarly reported that social interaction tends to decline during gaming activities, as adolescents become more focused on gameplay than on gathering or exchanging information with peers. Social interaction itself is a dynamic process involving relationships between individuals, between individuals and groups, and among groups [18]. Human beings are inherently social creatures who require interpersonal relationships to live and develop normally [19]. Poor social interaction is often attributed to high levels of online gaming addiction. One negative impact of excessive gaming is social isolation, as individuals become detached from their surroundings due to prolonged gaming sessions, leading them to neglect real-world social relationships [20].

The present findings further demonstrate that many respondents exhibited poor social interaction, suggesting that online gaming addiction negatively affects adolescents' ability to engage socially, both directly and within broader social environments. The more frequently adolescents play online games, the lower their quality of social interaction tends to be.

This study also confirmed a significant relationship between online gaming addiction and social interaction among adolescents. Online gaming addiction appears to be a contributing factor to the decline in social interaction quality. Adolescents who are addicted tend to focus more on gaming and pay less attention to their surroundings. As a result, they spend more time playing games than participating in real-world social interactions, which may lead to reduced sociability, antisocial tendencies, and neglect of direct communication with peers [21].

Riyana (2023) [22] also reported a significant negative relationship between online gaming addiction and social interaction. Many adolescents perceive online games as a means of relieving stress; however, this behavior ultimately reduces their ability to interact with their environment. Higher levels of addiction are associated with lower social adjustment. In addition, addiction negatively affects physical and psychological health, as lack of physical activity, sleep disturbances, and irregular eating patterns may weaken the immune system. Violent content in games may also influence adolescents' thinking and behavior—sometimes subconsciously—leading them to perceive real life as similar to the virtual world [21].

Online gaming may also reduce adolescents' concern for their surroundings, as they become accustomed to interacting primarily through smartphones. Playing late into the night can further compromise health and contribute to social withdrawal. These issues are often a source of concern for parents when their children spend excessive time gaming [23].

Excessive online gaming among adolescents requires appropriate intervention to prevent negative impacts on physical health, psychological well-being, and social interaction. Effective management requires active involvement from families, particularly parents, in supervising and guiding adolescents to develop self-control. One recommended strategy is setting clear limits on gaming time, enabling adolescents to prioritize academic activities while avoiding the risks associated with gaming addiction [24].

Overall, this study demonstrates that adolescents with online gaming addiction tend to exhibit poorer social interaction due to the substantial amount of time and attention devoted to gaming. To address this issue, parents and educators should limit gaming duration, emphasize academic priorities, and

Table 1. The level of online gaming addiction

Gaming duration	Frequency	Percentage
> 30 minutes (mild)	7	16.7
3–4 hours (moderate)	10	23.8
> 5 hours (severe)	25	59.5

Table 2. Level of social interaction

Social interaction score	Frequency	Percentage
100–132 (good)	8	19.0
67–99 (moderate)	11	26.2
33–66 (poor)	23	54.8

encourage participation in positive activities such as sports, arts, or social programs. Education on time management and the negative effects of online gaming is also essential to help adolescents balance digital and real-world life while maintaining physical health, mental well-being, and social skills.

This study has several limitations. First, the cross-sectional design restricts the ability to infer causality between online gaming addiction and social interaction. Second, the measurement of gaming addiction relied on a single-item duration-based indicator, which may not fully capture the multidimensional nature of gaming addiction. Third, the sample size was relatively small and limited to one geographic area, which may reduce the generalizability of the findings. Future research should consider using larger samples, multi-site data collection, and more comprehensive instruments to assess gaming addiction and social interaction.

CONCLUSION

This study concludes that online gaming addiction is significantly associated with poorer social interaction among adolescents. Higher levels of addiction correspond to reduced engagement in real-world social relationships, as excessive gaming diverts time, attention, and motivation away from meaningful interpersonal activities. These findings highlight the need for preventive efforts involving parents, educators, and communities. Establishing clear limits on gaming duration, strengthening time-management skills, and encouraging participation in positive activities—such as sports, arts, and social programs—may help adolescents maintain a healthier balance between digital entertainment and real-life interaction, supporting their overall physical, psychological, and social well-being.

Ethical consideration, competing interest and source of funding

-This research adhered to ethical principles, including respect for autonomy, confidentiality, and informed consent, ensuring that participants' rights and well-being were protected throughout the study.

-There is no conflict of interest related to this publication.

-Source of funding is authors.

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