



THE INFLUENCE OF ONLINE GAMING ADDICTION ON DEPRESSION IN ADOLESCENTS

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ABSTRACT

Nowadays, there is a rapid increase of online games. In fact, Indonesia ranks as the 3rd highest online game users in the world. It is teenagers who become one of the biggest users of online games. An excessive online game playing can have an impact on mental health problems, including online gaming addiction, clinical distress, and even depression. Objective: The purpose of this study was to determine whether there is an effect of online gaming addiction on depression problems in adolescent online game users. Method: The type of research used is a quantitative method with Cross Sectional approach. The sample in the study amounted to 297 high school adolescents in Majene district, West Sulawesi. Determination of the sample used purposive sampling based on the inclusion and exclusion criteria set. Results: The results of this study showed that most adolescents experienced moderate online game addiction, namely 191 adolescents (64.3%) and most adolescents experienced moderate depression as many as 79 adolescents (26.6%). There was a significant relationship between online gaming addiction in adolescents with depression problems experienced by adolescents with p value < 0.05 . Conclusions: Online game addiction in adolescents had a 3 times greater influence on depression problems in adolescents. Joint action was needed from schools, health institutions and families to overcome and to prevent the problem of online game addiction and depression in adolescents.

Keywords: adolescents; depression; online gaming addiction

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INTRODUCTION

Currently, there is a rapid increase of online game in Indonesia. It is ranked as the 3rd highest online game users in the world, a total of 94.5% of internet users who play online games are 16-64 years old (Dihni, 2022). Teenage age is one of the users of online games due to the increasing number of teenagers accessing the internet for the learning process during the Covid-19 pandemic until now, apart from using the internet for the learning process, teenagers also use it to play online games (Rangkuti et al., 2021). An excessive online game playing can have an impact on mental health problems including online game addiction. Playing online games continuously and repeatedly can cause significant clinical distress (American Psychiatric Association, 2013). Studies show the prevalence of online game addiction has reached 3.1% worldwide (Chang et al., 2022), with prevalence in adolescent males (6.8%) and adolescent females (1.3%) (Fam, 2018). Meanwhile, in Indonesia, 1 in 10 adolescents is indicated to have online game addiction by Kemenkes RI (2022). This is supported by the results of another study in one of the cities in Indonesia which showed that 33.3% of adolescents experienced severe addiction, 39.3% of adolescents experienced moderate addiction, and 27.4% experienced mild addiction with the majority of adolescents male (71.4%) (Rahman et al., 2022).

Several studies mentioned the relationship between depression problems in adolescents due to problems with online games (Widyaningrum et al., 2023). Depression is a mood disorder in the form of feelings of sadness that affect thoughts, emotions, social relationships and behavior (Azzahro & Sari, 2021). The problem of depression in adolescents is caused by there is no emotional maturity. Other studies also stated that depressive problems in adolescents are influenced by loneliness and lack of social support (Alia Ainunnida & Hartini, 2022; Bintang & Mandagi, 2021). Adolescents are also at risk of depressive problems due to negative interpersonal relationships and socio-cultural changes (Bernaras et al., 2019). The excessive demands of online game are not in accordance with the abilities of adolescents, resulting in feelings of failure and inadequacy. Playing online games excessively also makes it difficult for adolescents to manage time that has an impact on health decline, especially mental health. This is confirmed by the results of research which stated that online gaming addiction causes sleep disturbances as well as decreased life satisfaction and anxiety among adolescents (Mukherjee et al., 2021; Wei et al., 2022). Based on the description above, the effect of online gaming addiction on depression problems in adolescents cannot be confirmed directly. Thus, a further research is needed to assess the problem. Preliminary studies conducted at SMAN 1 Majene obtained data that most students play online games, and some students experience problems in playing online games. Based on these data, the formulation of the problem in this study is whether there is an effect of online gaming addiction on depression problems in adolescents who play online games.

METHOD

The method used in this study was a quantitative cross-sectional study method. The sample in this study are 297 middle school adolescents in Majene district, West Sulawesi. The sample determination used purposive sampling based on the inclusion and exclusion criteria set by the researcher. The inclusion criteria were adolescents who regularly played online games for approximately the last 1 year and the exclusion criteria were adolescents who refused to become respondents. Researchers conducted informed consent first to adolescent before carrying out the research process. Informed consent was given through an explanation from the researcher regarding the purpose of the study, the process of conducting the study as well as the benefits and impacts of this study. The researcher also explained that he would guarantee the confidentiality of the respondent's personal data. If the adolescent is willing, after getting an explanation from the researcher, Adolescents was asked to sign the informed consent that has been provided as a form of statement of willingness to become a respondent in the study. This research process was first carried out ethical testing to obtain feasibility in the research process before conducting direct research to respondents. This research has passed the ethical test from the ethics commission with number 13/UN55.4/KOM.ETIK/2023.

The instruments used in this study were the internet gaming disorders scale to assess online gaming addiction in adolescents and the depression anxiety stress scale-21. The Internet gaming disorder scale has been declared valid and reliable to measure the problem of online game addiction in adolescents, namely the validity value ($\alpha = 0,769$) while the reliability value is Cronbach's Alpha ($\alpha = 0.894$) (Evren et al., 2018). This questionnaire has also been used to assess the problem of online gaming addiction in adolescents in Indonesia (Nurmagandi et al., 2022). While the depression anxiety stress scale-21 questionnaire has been declared valid and reliable for measuring depression problems in adolescents, namely the validity value for measuring depression ($\alpha = 0,910$) while the reliability value is Cronbach's Alpha ($\alpha = 0.926$) (Ahmad et al., 2018). This questionnaire has also been used to assess depression problems in adolescents (Sary, 2021). Data analysis in this study consisted of univariate analysis, bivariate analysis using the chi-square test and multivariate analysis using the logistic regression test. Univariate data analysis to assess the characteristics of

respondents using central tendency. Bivariate test using chi-square analysis to assess the relationship between online gaming addiction and depression problems in adolescents. In addition, there is a multivariate test to assess the most dominant variable affecting the occurrence of depression problems in adolescent online game users.

RESULT

Univariate analysis was done to assess data of gender characteristic, duration for playing online games in a day, adolescents who experience online gaming addiction and adolescents who experience depression. The results of the univariate analysis can be seen in table 1 below.

Table 1.
Characteristics of Respondents

No	Variable		f	%
1	Gender	Male	150	50,5
		Female	147	49,5
	Total		297	100
2	Length of time gaming in a day	< 1	154	51,9
		2-3	98	33,0
		4-6	30	10,1
		>6	15	5,1
	Total		297	100
3	Online gaming addiction	Normal	61	20,5
		Moderate	191	64,3
		Heavy	45	15,2
	Total		297	100
4	Depression	Normal	79	26,6
		Light	46	15,5
		Moderate	79	26,6
		Severe	44	14,8
		Very heavy	49	16,5
	Total		297	100

Table 2.
Age Characteristics of Respondents

Variable	Mean	SD	SE	Min	Max
Age	15,91	0,93	0,05	14	18

Table 1 above shows that there were 50.5% of male respondents and 49.5% of female respondents. Most respondents who spent < 1 hour to play online games were 51.9% and other who spent > 6 hours to play online games were 5.1%. Most adolescents experienced online gaming addiction at a moderate level of 64.3%, and a small proportion experienced severe online gaming addiction at 15.2%. A total of 26.6% of respondents did not experience depression and another 26.6% of adolescents experienced moderate depression. Furthermore, in table 2, the average age of adolescent respondents was 15.91 years, with a minimum age of 14 years old and a maximum age of 18 years old. The objective of the bivariate analysis is to assess the relationship between gender and the duration of playing online games, the level of depression, and online gaming addiction. Additionally, the analysis aims to assess the relationship between the duration of playing online games and depression, as well as the relationship between online gaming addiction and depression to adolescent online game users. The results of the bivariate analysis can be seen in Tables 3 and 4 below. Table 3. Relationship between online gaming addiction and depression

Table 3.
Relationship between gender, length of time spent playing online games, level of depression and online gaming addiction.

Variabel		Gender		P Value
		Male	Female	
Length of time gaming in a day (Hour)	< 1	n	59	0,0001
		%	19,9	
	2-3	n	60	
		%	20,2	
	4-6	n	20	
		%	6,7	
	> 6	n	11	
		%	3,7	
	Total	n	150	
		%	50,5	
Depression	Normal	n	57	0,0001
		%	19,2	
	Light	n	26	
		%	8,8	
	Moderate	n	30	
		%	10,1	
	Severe	n	18	
		%	6,1	
	Very heavy	n	19	
		%	6,4	
Online gaming addiction	Normal	n	19	0,003
		%	6,4	
	Moderate	n	108	
		%	36,4	
	Heavy	n	23	
		%	7,7	
	Total	n	150	
		%	50,5	

Table 4.
The relationship between the lenght of online gaming and the prevalence of depression and online gaming addiction.

Variabel		Length of time gaming in a day (hour)				P Value
		< 1	2-3	4-6	> 6	
Depression	Normal	n	41	27	7	0,174
		%	13,8	9,1	2,4	
	Light	n	32	11	3	
		%	10,8	3,7	1,0	
	Moderate	n	45	23	6	
		%	15,2	7,7	2,0	
	Severe	n	18	18	6	
		%	6,1	6,1	2,0	
	Very heavy	n	18	19	8	
		%	6,1	6,4	2,7	
	Total	n	154	98	30	
		%	51,9	33,0	10,1	
Online gaming addiction	Normal	n	57	2	1	0,0001
		%	19,2	0,7	0,3	
	Moderate	n	91	73	19	
		%	30,6	24,6	6,4	

Heavy	n	6	23	10	6
	%	2,0	7,7	3,4	2,0
Total	n	154	98	30	15
	%	51,9	33,0	10,1	5,1

Table 5.
Relationship between online gaming addiction and depression

Variabel		Depression					Total	p-value
		Normal	Light	Moderate	Severe	Very heavy		
Online gaming addiction	Normal	n	24	13	16	5	61	0,0001
		%	39,3	21,3	26,2	8,2	20,5	
	Moderate	n	53	32	54	30	191	
		%	27,7	16,8	28,3	15,7	64,3	
	Heavy	n	2	1	9	9	45	
		%	4,4	2,2	20,0	20,0	53,4	

Table 3 reveals that men engage in online games for longer periods than women. At the 2-3 hour mark, 20.2% of men and 12.8% of women are participating, while at the 4-6 hour mark, 6.7% of men and 3.4% of women are playing, and at the 6+ hour mark, 3.7% of men and 1.3% of women are still engaged. Concerning the prevalence of depression, the data revealed that women exhibited a higher incidence of depression than men did. At the level of moderate depression, the prevalence was 16.5% among women and 10.1% among men. At the level of severe depression, the prevalence was 8.8% among women and 6.1% among men. The data on online gaming addiction indicate that the prevalence of online gaming addiction is higher for men than women. Specifically, the prevalence of moderate online gaming addiction is 36.4% among men and 27.95% among women, while the prevalence of severe online gaming addiction is 7.7% among men and 7.4% among women. Table 4 indicates that there is no statistically significant correlation between the duration of online gaming and adolescent depression. However, there is a statistically significant positive correlation between the duration of online gaming and the likelihood of developing online gaming addiction in adolescents. Specifically, adolescents who engage in online games for less than one hour per day are 30.6%, are more likely to experience moderate online gaming addiction, while those who engage in online gaming for two to three hours per day 24.6%, are more likely to experience moderate online gaming addiction and 7.7% are more likely to experience severe online gaming addiction. Table 5 reveals a statistically significant correlation between online gaming addiction and depression in adolescents (p-value <0.05). Table 6 below presents the results of a multivariate analysis, which was conducted to assess the most dominant variables affecting the occurrence of depression problems in adolescents who play online games.

Table 6.
Effect of online gaming addiction and gender on depression problems

Variabel	B	S.E	p value	OR	R Square	P value
Adiksi Game Online	1,117	0,269	0,0001	3,057		
Lama Bermain Game Dalam Sehari	-0,314	0176	0,075	0,731	0,062	0,0001
Konstanta	-0,551	0,458	0,228	0,576		

As evidenced in Table 4, there is a statistically significant correlation between online gaming addiction and adolescent depression, with an odds ratio of 3.0 (p = 0.0001). Furthermore, the addiction to online gaming and the duration of online gaming have been identified to

contribute to the onset of depressive disorders in adolescents, while the remaining factors are influenced by other variables.

DISCUSSION

The findings of the study indicate that adolescents who engage in online gaming exhibit symptoms of addiction and concurrently present with depressive disorders. This finding is consistent with previous research indicating that adolescents are prone to exhibiting addictive behaviors when engaging in online game (Meng et al., 2024). The study revealed that teenage users of online games target all age groups, with a relatively equal percentage of male and female users. This evidence demonstrates that online games are currently in demand by all teenagers, irrespective of gender (Dong & Potenza, 2022). Although both male and female adolescents' express interest in playing online games, there are notable differences in the types of games they play. Adolescents of the male gender are more likely to engage with games that emphasize strategy and competition, whereas those of the female gender are more inclined to play games that feature narrative characters and social interaction. Concerning motivation, male adolescents are driven by a desire to compete or to battle other players, whereas female adolescents are primarily motivated by entertainment and social interaction (Griffiths et al., 2004; Lenhart et al., 2008; Lucas & Sherry, 2004).

The experience of pleasure and satisfaction that can be derived from competition and participation in online games is a phenomenon that has been observed across a range of games, including those that are competitive in nature. The entertainment and social interaction that are integral to many online games are designed to increase feelings of satisfaction or pleasure also contribute to this phenomenon (Larrieu et al., 2022). Nevertheless, the gratification and enjoyment derived by adolescents from online gaming is ultimately an illusory phenomenon. The next positive emotional state that adolescents experience when playing online games is the opportunity to interact with other players. This is an important aspect of the game, as adolescents often have a lack opportunity to engage in social interactions in real life (Nurmagandi & Hamid, 2020). Furthermore, success in online gaming can foster a positive self-concept through the acquisition of game player characters that they do not experience in real life. This phenomenon is frequently observed among adolescents with low self-esteem, who often turn to online gaming as a mean to enhance their self-concept (Rho et al., 2018).

The gratification derived by adolescents from engaging in online gaming is likely to influence the duration of their online gaming activities (Larrieu et al., 2022). These findings are consistent with the existing research literature, which indicates that male adolescents tend to engage in online gaming for a longer period than their female counterparts. It can be reasonably deduced that an increase in the duration of online gaming may precipitate the development of an addiction to that such activities. The findings of this study are corroborated by those of other research projects which posit that the longer the spending time engaged in gaming, the greater the likelihood of developing an addiction to online games (Liu et al., 2021). Online gaming addiction is a psychological disorder characterized by excessive online gaming behaviour (Deng et al., 2024). Online gaming addiction can result in irregular sleep wake syndrome, irregular eating habits and a lack of physical activity, which can lead to unhealthy physical conditions. This can also have an impact on psychological conditions (Leung et al., 2024). The findings of this study indicate that online gaming addiction is associated with an increased risk of depression in adolescents. The risk of depression is threefold for adolescents who experience online gaming addiction. The depression caused by online gaming addiction is a consequence of the inability to achieve a sense of satisfaction, the difficulty in competing or competing, and the inability to overcome challenges or

experience failure in playing online games, which gives rise to feelings of sadness. This finding is consistent with other research indicating a correlation between online game addiction and depression in adolescents (Sit et al., 2023).

The negative emotional state cannot be offset by the positive effect, given the concurrent decline in psychological well-being and the age of the adolescents, who are still developing emotional maturity in dealing with problems. This makes it challenging for them to express emotions and results in the expression of emotions in a negative manner. This condition may result in adolescents persisting in their attempts to achieve success, even in facing repeated failure. However, this can potentially lead to increased psychological pressure and the development of depressive symptoms if they remain unsuccessful. (Wong et al., 2020). The repeated engagement in online gaming, coupled with a tendency to neglect other activities, can lead to a reduction in life satisfaction among adolescents (Yazici & Kumcagiz, 2021). The findings of other studies indicate that adolescents who exhibit symptoms of online game addiction tend to exhibit elevated levels of anxiety and depression (Y. Yu et al., 2022). Depression is a mood disorder characterized by feelings of profound sadness that can impact on an adolescent's cognitive processes, behavioural patterns, physiological functions and social interactions (Azzahro & Sari, 2021). It is possible that adolescent depression levels may increase in conjunction with the prevalence of online gaming addiction or the severity of online gaming disorder (Celik et al., 2022). The phenomenon of online gaming addiction has been observed to result in adolescents' spending time to engage in online gaming activities, which can subsequently lead to a lack of attention to their immediate surroundings. Consequently, this can give rise to social withdrawal behaviours (Kaptsis et al., 2016). The social environment can serve as a source of positive coping resources for adolescents, particularly in the expression of emotional feelings, and especially when they experience failure or difficulties in playing online games. Adolescents who have access to social support tend to engage in good self-care and exhibit positive mental health outcomes (Raufida et al., 2021).

It is imperative to address the issue of online gaming addiction in adolescents in order to prevent its progression into depression. Furthermore, the implementation of nursing interventions aimed at optimizing adolescent psychosocial development, particularly in relation to self-identity formation, can serve as an effective strategy for the prevention of online gaming addiction. Adolescents who have undergone optimal psychosocial development are able to direct their attention towards activities that are constructive and beneficial to themselves and their social environment, as opposed to engaging in online gaming (Nurmagandi et al., 2022). Furthermore, the optimization of adolescents' psychosocial development can facilitate the capacity to regulate emotions, thereby reducing the likelihood of developing psychological disorders such as depression (Wartberg et al., 2019). Adolescents who are physically and mentally healthy are able to perceive themselves in a positive manner, to engage in constructive thinking about themselves, and to form beliefs and ideas about themselves in a positive way (Ducasse et al., 2019).

CONCLUSION

Most of the teenage respondents, who have been active as online game users for the past 1 year, experienced addiction and depression problems. There is a positive relationship between online gaming addiction and depression in adolescents. Online gaming addiction is three times greater to affect depression for adolescents. Treatment measures for adolescents who experience online gaming addiction and depression problems are necessary to prevent them to be more severe. This preventive action is also essential to avoid them to suffer for addiction and depression. The action can be in the form of nursing interventions and direct supervision

from parents or schools on adolescents' online gaming activities.

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