



The Relationship Between Playing Online Games and Insomnia in Grade XI Students of Mahardhika High School, Surabaya

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Abstract

Many teenagers were trapped playing online games late into the night, which can lead to insomnia. Insomnia could impact mental and physical health, reducing concentration and affecting mood. Therefore, parents needed to limit online gaming time and provide healthier and more positive entertainment activities for teenagers. The purpose of this study was to determine the relationship between playing online games and the incidence of insomnia. This research method used a correlation analytic design with a cross-sectional approach. The number of samples in this study was 37 students using a total sampling technique. The instrument used a questionnaire. The validity test of the questionnaire in this study used the Spearman Rank test. The results showed that most of the eleventh grade students of SMA Mahardhika Surabaya (62.2%), namely 23 students rarely played online games and most (62.2%), namely 23 students experienced mild insomnia. The results of the study showed $P = 0.092$. with $\alpha = 0.05$. This means that there were no relationship between playing online games and the incidence of insomnia in class XI students of SMA Mahardhika Surabaya. The strength of the relationship was sufficient with a correlation coefficient value = 0.28 and was in the same direction, the lower the frequency of playing online games, the lower the incidence of insomnia. Thus, students were expected to reduce the time playing online games and did other more useful activities.

INTRODUCTION

Addiction to online gaming could lead to physical and psychological dependence and been lead to poor sleep quality. Sleep quality was the state of sleep experienced by an individual, resulting in a feeling of freshness and well-being upon waking. Adequate sleep helped mental health, namely by reducing stress and depression. Adequate sleep helped stabilize emotions and moods, as well as maintaining emotional balance. Meanwhile, lack of sleep could lead to unstable moods (Ministry of Health of the Republic of Indonesia, 2025). One of the impacts of online gaming was sleep disturbances (Amir, 2020). Insomnia was a sleep disorder that occurs at night, where individuals experience difficulty falling a sleep and waking up without enough sleep. Insomnia could have physical health impacts, including increased appetite, which could lead to the risk of obesity, diabetes, coronary heart disease, hypertension, immune system disorders, and memory loss. Sleep was useful for brain resuscitation and memory consolidation. Disruptions to these brain areas caused people to lose several abilities/functions, including attention (focusing on something), executive function (planning and carrying out actions), and inhibition (the ability to limit). These brain changes made it difficult to control impulsive behavior.

In three different European countries, namely Spain, Iceland, and Estonia, in a multivariate study on sleep quality, it was stated that adolescents aged 13-16 years had poor sleep quality in the three countries, amounting to 51%, 41%, and 51%, respectively (Galan-Lopez et al., 2021 (in Zulva, 2022)). The prevalence of insomnia in adolescents worldwide was around 23.8%. Insomnia cases in adolescents in Indonesia reached 38% in urban areas and 37.7% in suburban areas (Laila Wahyuning Tyas, 2022). A study conducted by Savitri, Fitryasari, Zulkarnain, Tristiana, & Yusuf (2021) on high school students in Surabaya showed

that 90% of them had poor sleep quality. Furthermore, a study of male students in Jakarta showed that 40% of them had poor sleep quality (Aminatyas, Sitoayu, Angkasa, Gifari, & Wahyuni, 2021 in Zulva, 2022). During the initial survey, it was found that 4 out of 10 students (40%) reported experiencing sleep disturbances and enjoying gaming. This could lead to waking up late and being unprepared for school lessons. Eleventh-grade high school students had to prepare for their 12th-grade final exams.

Excessive gaming made someone more prone to anxiety or stress, especially if they lose or fail in the game and then lead to depression. Addiction could lead to social isolation and a lack of physical or social activity, which could potentially worsen depression. Another impact was sleep disturbances or insomnia. Playing until late at night or neglecting bedtime can cause chronic sleep disorders (Head of Public Health (Kesmas) of the Depok City Health Office (Dinkes), 2022). Currently, many teenagers relieve fatigue by playing games, which was one of the reasons teenagers sleep late. This caused sleep quality disorders due to exposure to light from electronic devices. Excessive exposure to light from smartphones and tablets caused the brain was not awake, making it difficult for someone to sleep. Teenagers who were addicted to online games would experience physical complaints from a health perspective. Often, teenagers who were addicted to online games experience sleep disorders that could affect their body's metabolic system. One of the basic human needs, especially for teenagers, was sleep.

Creating a comfortable sleeping environment was also crucial for maintaining adolescent health. A dark, quiet, and cool bedroom can help ensure restful sleep. Teens should avoid the blue light from gadget screens, as it could disrupt sleep patterns. By establishing a regular bedtime routine, such as going to bed at the same time every night, adolescents could improve their sleep quality. Furthermore, encouraging physical activity and social interaction could also help reduce stress and improve sleep quality. Encourage adolescents to participate in at least 30 minutes of physical activity per day, such as walking, running, or other sports. Furthermore, avoid using smartphones and consuming caffeine around bedtime (UPK Kemenkes RI, 2021). Encourage them to interact socially with friends and family, as this could provide important emotional support in dealing with stress and sleep problems. A solution that needed to be implemented for students were to limit the time they spent playing online games. Students limit their online gaming time to reduce the risk of addiction and provide healthier and more positive entertainment alternatives for students, such as exercise, reading, or playing music. The relationship between online gaming and insomnia in 11th-grade students at SMA Mahardika Surabaya was unclear, so researchers were interested in further studying the relationship between online gaming and insomnia in 11th-grade students at SMA Mahardhika Surabaya.

RESEARCH METHODS

This study used a quantitative approach with a descriptive correlational research design and a cross-sectional method to examine the relationship between online gaming and insomnia among eleventh-grade students at Mahardhika High School, Surabaya. A cross-sectional method was a research design that involves simultaneous measurements or observations, or examining exposure and disease status at the same point (Aziz, 2017). The population selected as subjects in this study were 37 eleventh-grade students at Mahardhika High School, Surabaya, which means that all objects studied were drawn from the population (Nursalam, 2020). The sample selected for this study was eleventh-grade students at Mahardhika High School, Surabaya, because they still had some free time before entering 12th grade. The sample in this study consisted of 37 students and was permitted by the Principal.

The independent variable in this study was playing online games while the dependent variable was insomnia. To obtain research data for each variable, an instrument in the form of a questionnaire about playing online games and insomnia was used, which was made by the researcher himself and has been tested on students other than grade XI SMA Mahardhika

Surabaya. The questionnaire about playing online games consisted of 7 questions using a Likert scale to assessed each question, if never = 0, rarely = 1, sometimes = 2, often = 3, and very often = 4. While the assessment criteria were a score of 0 = never, 1-13 was Seldom, 14-20 was sometimes, 21-27 was often and 28 was very often. While the questionnaire for insomnia with 7 questions with the answer information no score 0, yes a little score 1, yes enough score 2 and yes a lot score 3. Assessment criteria for insomnia were no insomnia if score 0, mild insomnia score 1-7, moderate insomnia score 8-14, severe insomnia score 15-21.

RESULT

Table 1

Frequency Distribution of Characteristics Age and gender of class XI students of SMA Mahardhika Surabaya

No	Age	Frequency	Percentage (%)
1	16 years	14	37.8
2	17 yeras	17	49.9
3	18 years	6	16.2
	Amount	37	100.0
No	gender	Frequency	Percentage (%)
1	Male	16	38.1
2	Female	21	61.9
	Amount	37	100.0

Table 1 above shows that of the 37 students in class XI of SMA Mahardhika Surabaya, almost half were 17 years old, namely 49.9%, as many as 17 students, and the majority (61.9%) of the 37 students are female.

Table 2

Frequency Distribution of Characteristics Playing Online Games and Insomnia among class XI students at Mahardika High School Surabaya

No	Bermain game online	Frequency	Percentage (%)
1	Never	8	21.6
2	Seldom	23	62.2
3	Often	6	16.2
	Amount	37	100.0
No	Insomnia	Frequency	Percentage (%)
1	No Insomnia	9	24.3
2	Mild Insomnia	23	62.2
3	Moderat Insomnia	4	10.8
4	Severe Insomnia	1	2.7
	Amount	37	100.0

Table 2 shows that the majority (62.2%) of the 37 students seldom played online games, namely 23 students, and the majority (62.2%) of the 37 students experience mild insomnia, namely 23 students.

Table 3
Cross-table of the relationship between playing online games and insomnia in class XI students of SMA Mahardika Surabaya

No	play online games	Insomnia Occurrence									
		No		mild		moderat		severe		Total	
		Insomnia		Insomnia		Insomnia		Insomnia			
		n	(%)	n	(%)	n	(%)	n	(%)		
1	Never	4	50.0	4	50.0	0	0	0	0	8	100
2	Seldom	4	17.4	15	65.2	3	13.0	1	4.3	23	100
3	Often	1	16.7	4	66.7	1	16.7	0	0	6	100
	amount	9	24.3	23	62.2	4	10.8	1	2.7	37	100
	$\alpha=0.05$	P value = 0,093		r Coefficient = 0,280							

Table 3 showed that students who never played online games did not experience insomnia and experience mild insomnia, each amounting to 50%, namely 4 people each. Students who seldom played online games most (65.2%) experienced mild insomnia, a small portion (17.4%) did not experience insomnia, 13% experienced moderate insomnia and 4.3% experienced severe insomnia. While students who often played online games most (66.7%) experienced mild insomnia, a small portion did not experience insomnia and severe insomnia, each amounting to 16.7%, namely 1 person each.

The results of the analysis test used the Spearman Rank test obtained a P value = 0.093 with $\alpha = 0.05$ so there was no relationship between playing online games and insomnia in class XI students of SMA Mahardika Surabaya, with a correlation coefficient of 0.280 which was quite strong and in the same direction, namely students who often played online games mostly experienced mild insomnia and a small portion experienced moderate insomnia, while students who never played games did not experience moderate insomnia.

DISCUSSION

Playing Online Games Among xi th-Grade Students at Mahardhika High School, Surabaya

The data obtained regarding online gaming among eleventh-grade students at Mahardhika High School in Surabaya revealed that the majority (62.2%) rarely played games. Previously, eleventh-grade students at Mahardhika High School had never been interviewed regarding this issue, making it crucial to conduct research to identify students' online gaming activities. One of the underlying findings was a significant association between online gaming addiction and insomnia in adolescents, as conducted by Fraldy Robert Mais et al. (2020).

A study of 37 students found that online games were sometimes used by students as a way to cope with boredom and stress while studying. While this could be an effective way to relax, it WAS important to ensure that this habit DID not interfere with students' academic responsibilities. Most of the students who rarely play online games are girls (61.9%), as many as 21 people. During this period, "Girls' mental and social health tends to develop faster in terms of social and verbal skills." Meanwhile, boys WERE often more focused on physical development and competition. These factors COULD affect how they interactED with peers and their surroundings. These differences resultED from biological and hormonal factors that work differently in boys and girls, and COULD be influenced by

the surrounding social and cultural environment. However, each individual has their own unique developmental path.

Insomnia in 11th-grade students at Mahardhika High School Surabaya

Based on research data from a total of 37 students, 23, or 62.2%, experienced mild insomnia. This means that more than half of the students experienced mild sleep difficulties. This aligns with research conducted by Fraldy R., et al. (2020) on the association between online game addiction and insomnia in adolescents. The results showed that of the 68 respondents, 51 (75%) experienced mild insomnia. Mild insomnia means students experience difficulty sleeping or poor sleep quality, but not severe enough to interfere with daily activities. This could include problems such as difficulty falling asleep or waking up several times during the night.

While mild insomnia didn't always have the same impact as severe insomnia, a significant number experiencing this symptom could indicate a sleep problem that requires further attention. Insomnia, even mild, could impact overall health and well-being, including academic performance and emotional balance. The high percentage of respondents experienced mild insomnia indicates that sleep problems were quite common among students. Understanding and managing mild insomnia was important for improving quality of life and overall health. was not uncommon for people to sacrifice sleep to complete assignments, which could impact their sleep duration. Even mild insomnia could still impact overall health and well-being, including academic performance and emotional balance. Students should also pay attention to time limits for online gaming and not neglect their primary tasks by engaging in meaningful or beneficial activities.

The Relationship Between Playing Online Games and Insomnia in Grade XI Students of Mahardhika High School, Surabaya

From the results of this study it was found that there was no relationship between playing online games and the incidence of insomnia, most students rarely played online games experiencing mild insomnia. The research data that had been analyzed using bivariate analysis obtained the value of p value = $0.092 > \alpha = 0.05$, so H_0 was accepted meaning there was no relationship between playing online games and the incidence of insomnia in grade XI students of SMA Mahardhika Surabaya. In line with research conducted by Erwin Kurniasih showed there was no relationship between the frequency of playing online games and adolescent sleep patterns ($p = 0.236$) but there was a relationship between the duration of playing online games and adolescent sleep patterns ($p = 0.003$). Adolescents who play online games more than 3.5 hours per day have a 2 times higher risk of poor sleep patterns than adolescents who play less than 3.5 hours per day. This proves that adolescents who play online games for a long duration will affect sleep patterns (duration and quality of sleep).

The results of this study were not in line with the results of Denny Eka's research, et al., which showed that online game addiction was related to sleep quality in adolescents at State Senior High School 3 Tuban. Therefore, the study of playing online games with the incidence of insomnia in grade XI students of SMA Mahardhika Surabaya did not apply generally but only applies to the research location in grade XI SMA Mahardhika Surabaya. There were several factors that caused insomnia besides online games, including: stress, depression, chronic disorders such as sleep apnea, diabetes, kidney disease, to arthritis, poor diet, caffeine consumption (UPK Kemenkes RI, 21). This requires further study related to the factors causing insomnia in grade XI students of SMA Mahardhika Surabaya.

Insomnia in individuals could have detrimental physiological and psychological impacts. Physiologically, it involves changes in cortisol levels, increased metabolic and neuroimmunological function, and increased blood pressure and electroencephalographic activity. Insomnia accompanied by short sleep duration was associated with an increased risk of hypertension, coronary heart disease, heart failure, and recurrent acute coronary syndrome. Untreated patients may be at increased risk of developing mental disorders (Natalie A. Grime, 2019). It is very important to prevent these negative

consequences among teenagers, who are the next generation of the nation. This is to improve the quality of life in the future, welcoming the golden generation, where the younger generation will take over the baton of national leadership.

The implications of this research encourage students to improve their sleep schedules by getting into the habit of going to bed earlier. It is hoped that students can meet their individual sleep needs of at least 8 hours per day. To achieve this goal, collaboration between the school and parents or family members living in the same house is needed to remind students. This research is far from perfect; the results only apply to 12th-grade students and cannot represent all students at Mahardika High School. So the ideal sampling technique was done randomly so that it could be generalized. The questionnaire about playing online games with insomnia only 7 questions each so it is not detailed enough for further research to be conducted using a standardized questionnaire. And sufficient data collection time to be able to represent all students. The questionnaire on playing online games with insomnia only contained 7 questions each, so it lacks detail. Further research using a standardized questionnaire was needed. The data collection time should be sufficient to represent all students.

CONCLUSION

Based on research on eleventh-grade students at Mahardhika High School, Surabaya, it was found that most students rarely played online games and experienced mild insomnia. There was no correlation between online game playing and insomnia among eleventh-grade students at Mahardhika High School.

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