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Internet Gaming Addiction among High School Students in Kendawangan against Sleep Quality and Learning's Motivation

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ABSTRACT

With the advance of information technology internet gaming has been showing to increase globally and across Indonesia. This phenomenon has been correlated to the decreasing the quality of sleep as well as learning motivation, and academic performance. This study aimed to analyze the relationship between gaming addiction and sleep quality and learning motivation among high school students in Kendawangan. A cross-sectional study was conducted among 33 high school students using questionnaires to assess the quality of sleep, motivation and gaming addiction. Results showed almost a quarter of sample were highly addicted. There was a significant relationship between gaming addiction and sleep quality (p 0.002, p<0.05) as well as with learning motivation (p 0.002, p<0.05). Thus, gaming addiction influenced quality of sleep and learning motivation among the high school students.

Introduction

American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders (DSM-5) explains gaming addiction as a behavior disorders that leads to a significant decrease or pressure in any life's aspects. Furthermore, it is limited only to gaming and not covering any general use of internet, online gambling, social media or smartphone usage (Ranna Parekh, 2018).

Various evidence revealed the prevalence of gaming addiction worldwide. A systematic review and meta-analysis study across 17 different countries showed that among 226,247 participants there were 3,05% of gaming addicted (CI: 2.38-3.91) (Stevens et al., 2020). Another confirming evidence came from studies among the Southeast Asian countries. A systematic review from Chia et al (2020) revealed 10.1% prevalence with 95% confidence interval (7.3%-13.8%). Despite the scarce source of evidence in Indonesia, one study showed the prevalence of gaming addiction among the students of 2.03% among 639 respondents (Siste et al., 2021).

Gaming addiction has shown to have negative impacts to life satisfaction, higher level of anxiety and depression, and sleep latency (Mentzoni et al., 2011; Higuchi et al., 2005). Moreover, gaming

addiction as part of internet addiction, along with shopping online, has associated with depressive symptoms (Morgan & Cotton, 2003). Students are also affected by this behavior; decreasing learning motivation, skipping classes which is leading to lower academic score are among the impacts (Schmitt & Livingstone, 2015; Masya & Candra, 2016).

This study was aimed to analyze the relationship between gaming addiction and the sleep quality and learning motivation among the high school students.

Method

The study was a descriptive non-experimental with cross sectional study design. From 391 students from all classes, 116 were agreed to involve in the study and based on initial assessment on gaming addiction revealed 33 high school students of SMA N 1 Kendawangan were classified as addicted. Questionnaire on gaming addiction from Desriyanti (2018), the Indonesian version of The Pittsburgh Sleep Quality Index (PSQI) (Agustin, 2012) and learning motivation (Razikin, 2018) were used towards the samples. Gaming addiction was categorized into low, moderate and severe. Sleep quality was measured as good and bad, whereas learning motivation was categorized as low moderate and high. Pearson correlation test was utilized to establish the association between gaming addiction and sleep quality and learning motivation.

Ethical clearance was gained from the Ethical Committee of Faculty of Medicine and Health Sciences, Universitas Muhammadiyah Yogyakarta. All respondents were signed the informed consent through the school administration since they were considered to be insufficiently legal to signed for themselves.

Discussion

The respondents for the study were 33 students who were considered addicted to gaming out of 116 who agreed to be involved in the study. It made 28.5% prevalence of gaming addiction in this study. Indeed, it was not the representative of the population since the participation to the study was only 29.7% (116 out of total population of 391). Hence, there was possibility of a higher number of gaming addiction prevalence should all population was involved.

Respondents' characteristics

Below is the characteristics of the respondents who were gaming addicted.

Table 1. Characteristics of the respondents.

No.	*Characteristics*	*Frequency*	*Percentage (%)*
1.	Gender		
	a. Female	13	35
	b. Male	24	65
2.	Age (years old, average ± SD)	17 ± 1,14	
3.	Class		

	a. X	4	11
	b. XI	14	38
	c. XII	19	51
4	Gaming addiction		
	Low	14	42.4
	Moderate	11	33.3
	Severe	8	24.3
5	Sleep quality		
	Good	7	21.2
	Bad	26	78.8
6	Learning motivation		
	Low	6	18.2
	Moderate	15	45.5
	High	12	36.3

More than half respondents are male with average age of 17 ± 1,14 years old with predominantly came from the third year. Among the addicted, almost half of the participants have a low level of addiction, with most of them have a bad level of sleep quality and almost half of them have a moderate level of learning motivation.

Relationship between gaming addiction and sleep quality and learning motivation.

Pearson test was done to analyze the relationship between gaming addiction and sleep quality and learning motivation (table 2).

Table 2. relationship between gaming addiction and sleep quality and learning motivation.

	Test	Sleep quality	Learning motivation
Gaming addiction	Pearson correlation (r)	0.444	-0.527
	P value	0.01	0.002

Table 2 shows a significant relationship between gaming addiction and sleep quality, and between gaming addiction and learning motivation. Both tests show significant relationships. Gaming addiction correlates with sleep quality with the power of 0.440 and a positive value leads to a linear relationship; the more addicted a person he or she will have worse sleep quality. Gaming addiction, also, correlates with learning motivation with a negative value, which leads to the more addicted a person he or she will have lesser learning motivation.

Among the questions in the gaming addiction, the highest score was gained from the item "online gaming to forget the daily exhaustive activities". Involving deeply into gaming might serve as a media to run away from reality by hiding into the world of game (Chen, Oliffe & Kelly, 2018).

Individuals can benefit from immersing him or herself to the game and forgetting from failed exams as well as other related problems and stressful condition (Wang & Zhu, 2011).

This study also revealed that the participants tended to spend most of their time on their gaming activities, even sacrificed their sleeping time. Among several characteristics of gaming addiction based on the American Psychiatric Association Diagnostic and Statistical Manual of Mental Disorders (DSM-5) are spending more time in gaming activities, inability to reduce the intensity of playing games and even to stop (Parekh, 2018), spending most of their time playing games (Hafeez et al., 2015; Spekman et al., 2013). The addiction has also hindered the students to establishing priority and reducing self-control (Masya & Candra, 2016). Furthermore, the positive feelings coming from this activities such as mood enhancing and relieving grief, might also playing an important role in maintaining the addictive effects (Hafeez at al., 2015; Kuss & Griffiths, 2012).

Most students in this study suffered from bad sleep quality, it is also confirmed by Wong et al (2020), Hafeez et al (2015) and Lam (2014). Gaming addiction has an important impact in delaying the sleep latency, sleep inefficiency and a more sleep disruption (Altintas et al., 2019). Sleep disruption was generated through several pathway. Central neuron and autonomous neuron systems was increasing during the activities. This will lead to the increasing activity in sympathetic and aminergic neuron system which decreasing the phase of rapid eye movement (REM) that affecting the sleep duration (Higuchi et al., 2005).

Technical issues have also influenced the intensity of the impact of gaming addiction to sleep quality. The effect of blue light from the screen has also affected in sleep delaying that led to decrease the duration of sleep and sleep efficiency (Altintas et al., 2019).

Despite the significant results that this study showed, there are several limitations that might play into role. Small number of respondents from one setting might hinder the results to be generalized into the populations. To gain a more comprehensive understanding on the impact of gaming addiction another variable might be beneficial to be involved, such as academic performance.

Conclusion

Despite the inability to be generalized into the population, this study revealed the low prevalence of gaming addiction in SMAN 1 Kendawangan. Nevertheless, this might serve as an early warning system due to the impact it generated as shown from this study.

Among the addicted students, most of them have a bad sleep quality, with most of the students have also a moderate learning motivation. Indeed, those might lead to the decreased of academic performance.

There was a significant relationship between gaming addiction and sleep quality with a moderate power of correlation and a positive direction. There was also a significant relationship between gaming addiction and learning motivation with a negative direction.

Further study needs to be done in establishing a relationship between gaming addiction and academic performance.

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