Indonesian Journal of Global Health Research
Volume 6 Number 3, Juni 2024
e-ISSN 2715-1972; p-ISSN 2714-9749
http://jurnal.globalhealthsciencegroup.com/index.php/IJGHR

OVERVIEW OF SLEEP QUALITY IN ELEMENTARY SCHOOL CHILDREN WITH ONLINE GAME ADDICTION

Tika Rifa Luthfiyah Pebriana*, Titin Sutini, Dyah Setyorini
Faculty of Nursing, Universitas Padjadjaran, Jl. Raya Bandung Sumedang KM.21, Hegarmanah, Jatinangor, Sumedang, West Java 45363, Indonesia
*tika20003@mail.unpad.ac.id

ABSTRACT
Excessive use of online games can lead to online game addiction behavior. This affects the circadian rhythm and the quality of sleep you will have. Poor sleep quality will affect children's growth and development. The purpose of this study was to determine the description of sleep quality in children with online game addiction at SDN Jati 03. This research is a quantitative descriptive research. The sample of this study was 72 elementary school children with online game addiction with the sampling technique, namely total sampling. This research instrument uses the PSQI questionnaire to assess sleep quality which is translated into Indonesian with the results of the validity test of the calculated r of all items (r = 22) with n = 528 and a reliability test of 0.72. The data analysis used is univariate analysis and the results are displayed in the form of frequency distribution tables. The results of this study found that the majority of elementary school-age children with online game addiction had poor sleep quality, namely 44 children (61.1%) while 28 children (38.9%) had good sleep quality. Special attention is needed to overcome online game addiction behavior and improve.

Keywords: elementary school; game addiction; online; sleep quality

First Received	Revised	Accepted
01 March 2024	14 March 2024	15 March 2024
Final Proof Received		**Published**
17 March 2024		01 April 2024

How to cite (in APA style)
Pebriana, T., Sutini, T., & Setyorini, D. (2024). Overview of Sleep Quality in Elementary School Children with Online Game Addiction. Indonesian Journal of Global Health Research, 6(3), 1145-1160. https://doi.org/10.37287/ijghr.v6i3.3064.

INTRODUCTION

The development of science and technology is currently very rampant, giving various impacts on human life, one of which is in the habit of playing online games (Ismail et al. 2021). Online games are games that can be played by many people at the same time through an internet network that features colours, movements, and levels as well as interesting game rules that can be accessed anytime and anywhere (Nurdilla 2018). According to reports, the number of online game users in the world currently ranges up to 3.5 billion people and Indonesia is the third largest contributor to the global online game market after Brazil and India (Kemp 2020). According to the Indonesian Internet Service Providers Association, online gaming is the third most frequently visited entertainment internet content in Indonesia after online video and online music. (APJII 2023). In Indonesia, there are at least 52 million people who consistently play games and more than 10% of the total online game users in Indonesia are in West Java. The high prevalence rate does not rule out the possibility that many residents of Bandung City are exposed to and are users of online games. Children are one of the classes that have the highest vulnerability, especially in elementary school age children (Susanti, Widodo, and Safitri 2018).

Primary school-age children are those who are in the concrete operational phase and are aged between 6-13 years old (Faza, Attalina, and Widiyono 2022). Children's knowledge can develop rapidly at this age and various other skills can be learnt (Sabani 2019). Children at this age prefer to engage in activities that use their bodies and remember things they have just encountered (Nugroho 2015). According to Albert Bandura's social learning theory, individuals learn things by watching and imitating what others do (Yanuardianto 2019). Mimicking the online gaming habits of peers or elders among children has potentially dangerous risks. Children may imitate violent behavior in online games when prohibited from playing them. Violent behavior often occurs in people with impaired emotion regulation, unresolved interests, etc (Yosep and Sutini 2014). However, if children play online games continuously without parental supervision, it can cause online game addiction or addiction (Yusrina and Yermiandhoko 2022).

Online game addiction or addiction is a condition of individuals who feel that by playing online games, they will feel their own satisfaction and do it continuously (Matur, Simon, and Ndorang 2021). A person is said to experience online gaming addiction if they spend more than 3 hours a day or more than 20 hours a week playing online games (Suplig 2017). This behaviour is characterised by loss of control over online gaming and continued prioritisation of online gaming over other daily activities (WHO 2020). If utilised properly, online games can have a positive impact, including: improving children's focus skills, improving cognitive skills, understanding foreign vocabulary, improving understanding of technology, making new friends, and as a means of entertainment (Rani, Hasibuan, and Barus 2020). However, when used excessively, it can have negative impacts, including: skipping meals, neglecting homework, disrupting learning activities, decreasing academic performance, and disrupting children's social relationships (Putra, Izzatul, and Zahra 2023). In addition, children can also experience health problems, such as: deteriorating eye acuity, emotionality, and decreased sleep time (Janttaka and Juniarta 2020).

Sleep is one of the basic human needs that is very important, especially at the age of children because they are in the phase of growth and development (Sriasih and Rahyanti 2022). Children in primary school often have demands to perform daily activities such as playing and learning (Mutia 2021). Hence, children should get enough rest and sleep time. At the very least, school-age children need about nine hours of sleep each night depending on their individual activities (Widiastuti 2021). According to the Ministry of Health of the Republic of Indonesia, sleep quality is the condition of sleep experienced by a person to produce freshness and fitness when awake (Kemenkes RI 2018). Sleep quality is not only assessed based on sleep quantity or duration, but includes 7 components such as: subjective sleep quality, sleep latency, sleep duration, sleep habit efficiency, sleep disturbances, sleep medication use, and daytime dysfunction (Buysse et al. 1989). Children with poor sleep quality can have problems with growth, motor development, poor metabolism and hormonal imbalances (Hayati 2020). In addition, poor sleep quality in children will disrupt the body's cycle and make it difficult for the brain to learn new things (Panjaitan 2014). Problems in children's cognitive function with disturbed sleep quality are contrary to the phase in primary school-age children, namely the intellectual phase (Adiningtiyas 2017).

Blue light emitted by electronic devices such as smartphones, computers and televisions can affect circadian rhythms by affecting the production of the hormone melatonin, which plays a role in sleep and wake cycles (Amelia et al. 2023). Exposure to light while playing online games can inhibit the production of melatonin, which increases at night when light is reduced and results in affected sleep quantity and quality (Sosso and Kuss 2018). This is in line with

research conducted by Panjaitan (2014) on grade IV and V students at Karangrejo Elementary School (SD) Yogyakarta. The higher the frequency of playing online games, the worse the sleep quality and the lower the frequency of playing online games, the better the sleep quality. Nurses as one of the health workers in charge of improving one's health need to be actively involved in efforts to prevent the level of online game addiction in children (Sanditaria, Fitri, and Mardhiyah 2012). As health professionals, nurses can involve parents in the process of child care namely with Family Centered Care (FCC) based care through communication. Communication in the nursing profession is very important because it is a tool or method in carrying out the nursing process (Stuart and Laraia 2015).

The nurse can serve as a partner and facilitator in the coordination of the FCC, taking full responsibility for monitoring the child's health, providing motivation and information to the family, and respecting the family's role in caring for the child (Sulistyawati 2017). Nurses can also help plan actions given to parents or guardians to help children eliminate online game addiction behavior, guide children towards more positive behavior, and make children more productive (Mutia 2021). A preliminary study with primary school-aged children conducted on 24 children from grade one to grade six at SDN Jati 03 found that 20 out of 24 children play online games every day and the other four play online games three to four times a week. The activity of playing online games carried out by elementary school-age children every day in a relatively long frequency and duration causes several disorders related to sleep activity in some children. A total of 2 children said that they used to sleep less than five hours a day, 17 children slept five to eight hours a day, and five children slept more than nine hours a day. So there are 19 children who have less sleep than needed at this age. Insufficient sleep duration can be one of the aspects that affect the quality of sleep you have. Sleep quality is closely related to children's growth and development, especially during this phase. If the problem is not resolved, it will become a serious problem in the future. Aim this study was to determine the description of sleep quality in elementary school children with online game addiction at SDN Jati 03.

METHOD

This study used a quantitative descriptive research design. The population in this study were elementary school children in grades V and VI of SDN JATI 03 in the 2023/2024 academic year who were 10-12 years old and had online game addiction behaviour. This population was drawn based on a preliminary study that has been conducted using the Game Addiction Scale instrument developed by Lemmens et al., (2009) and has been back translated by Arthy (2019) to assess whether the child has a tendency to experience online game addiction or non-addiction which consists of 7 questions and has a Likert scale of 1-5. The score range on this questionnaire is between 7-35. The population was considered to fit the criteria of having an addiction or internet gaming disorder in the DSM-5 (Diagnostic Statistical Manual of Mental Disorder) if they scored >18 for males and >17 for females on the instrument used. Of the 114 total primary school-age children in grades V and VI at SDN Jati 03, there are 72 children who experience online game addiction so that the population in this study is 72 children with a sampling technique that is total sampling.

Sleep quality was measured using The Pittsburgh Sleep Quality Index (PSQI) measurement scale. The PSQI was developed by Daniel J. Buysse et al., and consists of 18 items with 7 components in it including: subjective sleep quality, sleep duration (length of sleep time), sleep latency (time taken to initiate sleep), sleep efficiency (assessing sleep hours and duration), sleep disturbance (whether there is any disturbance), use of sleep medication and daytime dysfunction (disturbance of daytime activities). The seven components have domains

worth between 0 (no problem) and 3 (severe problem). The scores of each component are then summed into a total score between 0-21. If the score value is ≤ 5 then it is categorised as good sleep quality and if > 5 then it is categorised as poor sleep quality. This PSQI questionnaire has been back-translated by Setyowati & Chung (2020) with the results of the instrument validity test using the Pearson Correlation approach with the validity of each PSQI value with the results of calculating r all items (r = 0.22) with n = 528 and a total of 18 question items are valid and can be used. The reliability test has a coefficient of Cronbach's alpha value of 0.72 for each item ranging from 0.69-0.72. The range of correlation between each domain is r = 0.36-0.56, P < 0.05 so it is declared reliable in this study. In this study, the data analysis used was univariate analysis and displayed in the form of a frequency distribution table.

RESULTS

In this study, the characteristics of existing respondents can be distinguished based on gender, age, and class. For more details, please see the table below.

Table 1.
Respondent characteristics (n= 72)

Respondent characteristics		f	%
Gender	Male	40	55,6
	Female	32	44,4
Age	10 years old	6	8,3
	11 years old	24	33,3
	12 years old	42	58,3
Class	5th Grade	31	43,1
	6th Grade	41	56,9

Based on gender, respondents in this study were dominated by male gender. Based on age, dominated by 12 years old. While based on grade level, dominated by 6th grade.

Table 2.
Frequency distribution of sleep quality (n= 72)

Sleep Quality	f	%
Good	28	38,9
Poor	44	61,1
	71	100

Based on the table above which shows the distribution of sleep quality, it was found that out of 72 respondents of elementary school children with online game addiction at SDN Jati 03, 28 people (38.9%) had good sleep quality and 44 other people (61.1%) had poor sleep quality. This shows that more than half of the respondents had problems in their sleep quality. The majority of poor sleep quality were 12 years old on average and were at grade VI level, but there was no significant difference in the gender of both males and females. In terms of components, the question items that were significant for poor sleep quality were related to the components of sleep latency, sleep disturbance, and daytime dysfunction.

DISCUSSION

Sleep quality is defined as the ability for a person to sleep soundly and wake up feeling refreshed without showing signs of deterioration in physical appearance such as dark circles around the eyes, puffy eyelids, red conjunctiva, and fatigue (Zurrahmi, Hardianti, and Syahasti 2021). Children's growth and development will be affected by the quality of their sleep, so it is very important for children to get enough sleep and rest to support the optimal functioning of their bodies (Tiala, Suryaningsih, and Suntin 2022). Children with adequate and quality sleep have optimal quality of life, memory, focus, and enthusiasm for learning and

better behaviour (Sriasih and Rahyanti 2022). There are several factors that affect sleep quality, including: lifestyle, environment, medications, nutrition and diet, and health and psychological status (Mawo, Rante, and Sasputra 2019). Similar to these factors, lifestyle and environment are contributing factors for elementary school children to potentially become addicted to online games. The emergence of many e-sport competitions and role models who promote online games increases children's interest in their fondness for online games and unwittingly makes them addicted and makes it one of the lifestyles lived (Saputra, Atika, and Sukmawati 2022). In addition, an environment that does not support positive activities, peer behaviour, and lack of parental involvement also have the potential to make children become addicted to online games and can affect various things, one of which is sleep quality.

In this study, the results of elementary school children in grades V and VI with online game addiction who had good sleep quality were 28 people (38.9%) while 44 people (61.1%) had poor sleep quality. Thus, primary school-age children in grades V and VI with online game addiction at SDN Jati 03 who have poor sleep quality are more than those with good sleep quality. These results are in line with research conducted by Matur et al., (2021) of 169 respondents who experienced online game addiction, as many as 136 people (56.7%). Primary school-aged children with online game addiction have poor sleep quality due to various reasons, such as many of them spend their time at night accessing online games and delaying sleep, resulting in shortened sleep duration and wasted rest time (Habibi et al. 2021). This certainly should not happen to school-age children who need a lot of rest. Children's unproductivity in their daily activities, forgetting their need to eat and rest, which results in a deterioration in sleep quality, is often the result of children spending too long and focusing only on online games.

Poor sleep quality in children can also have various effects. According to Rohmah & Santik (2020) children with poor sleep quality have poor endurance, poor neuromuscular health, emotional disturbances, impaired stamina such as fatigue and weakness, unstable vital signs, and lack of enthusiasm for daily routines. Psychological disorders such as depression, excessive anxiety, hallucinations, feelings of hopelessness and confusion, and stress can also occur as a result of poor sleep quality in children (Matur et al. 2021). Therefore, it is important to get enough rest and sleep so that the quality of sleep can be maintained properly because the quality of one's sleep affects the overall health of the body. The quality of sleep that is owned can experience differences when associated with one of them is gender as a basic conditioning factor (Fitri et al., 2022). From the results of this study, it was found that elementary school-age children with online game addiction were male, 19 people (26.4%) had good sleep quality and 21 people (29.2%) had poor sleep quality. Meanwhile, 8 people (11.1%) had good sleep quality and the majority had poor sleep quality, namely 24 people (33.3%). Based on these results, it was found that gender differences in sleep quality were not significant. However, in this study, girls with online game addiction tended to have poor sleep quality compared to boys. These results are in line with research conducted by Yip et al., (2020) which stated that descriptively the percentage of women who reported having poor sleep quality was higher than that of men.

The poor quality of sleep that women have can be influenced by one of the hormones that occur due to changes in the hormones progesterone and estrogen. The hormone oestrogen produced in the hypothalamus of the brain affects circadian rhythms and sleep patterns in women, resulting in an increase in the number of hours of sleep and a reduction in sleep latency. In addition, the premenstrual hormone progesterone can make it difficult to fall asleep and increase the frequency of waking up in the morning. (Viona, Sinaga, and Handini

2013). The impact of hormonal changes also increases women's psychological disorders such as stress, anxiety, restlessness, and uncontrollable emotions that can worsen sleep quality (Lee et al. 2020). Other characteristics such as family history and lifestyle may be another influence on women's tendency to have poor sleep quality, compounded by the higher prevalence of affective disorders in women (Fatima et al. 2016). So in this case, gender only contributes to making a slight difference and is not the main cause of worsening sleep quality. (Fatima et al. 2016).

The ideal sleep also needs to be customised according to age. Relative sleep needs decrease with age (Suwarna and Widiyanto 2016). The sleep needs of school-age children vary, but typically require nine to twelve hours of sleep per day (Widiastuti 2021). From the results of this study, it was found that children with online game addiction at the age of 10 years, 3 people (4.2%) had good sleep quality and 3 people (4.2%) had poor sleep quality. At the age of 11 years, 13 people (18.1%) had good sleep quality while 11 people (15.2%) had poor sleep quality. At the age of 12 years, 11 people (15.2%) had good sleep quality while the majority had poor sleep quality with 31 respondents (43.1%). So it was found that elementary school children with online game addiction who had the worst sleep quality were at the age of 12 years or the oldest age in this study. This is in line with research conducted by Rudimin et al., (2017) which states that there is a relationship between sleep quality and a person's age, namely as a person ages, there are changes in the physical and differences in daily activities undertaken and affect the quality of sleep they have.

The grade levels taken in this study are grades 5 and 6 which fall into the category of high school grades. The results of this study were obtained at the fifth grade level as many as 17 people (23.6%) had good sleep quality and 14 people (19.4%) had poor sleep quality. While at the VI grade level as many as 10 people (13.9%) had good sleep quality and the majority had poor sleep quality with a total of 31 people (43.1%). This is in line with research conducted by Zhou et al., (2015) in China which states that senior students (62.28%) tend to have worse sleep quality compared to junior students (36.38%). The presence of external factors such as academic stress in grade VI students is thought to be a contributor to the deterioration in sleep quality. According to Palupi (2020), Large primary school-aged children on average experience higher levels of stress than small primary school-aged children. This is due to the excessive stress and anxiety experienced due to the many exams that need to be faced by children of 6 grade primary school age and results in disruption of their sleep quality.

From the results of the research previously described, sleep quality in elementary school children with online game addiction at SDN Jati 03 has seven components of sleep quality based on the PSQI questionnaire. The first component is subjective sleep quality. Subjective sleep quality is a person's assessment of how good or bad their sleep quality is. Based on this study, 25 people (34.7%) rated their sleep quality as very good, 37 people (51.4%) rated their sleep quality as good, 8 people (11.1%) rated their sleep quality as poor, and 2 people (2.8%) rated their sleep quality as poor. The results of this study are in line with research conducted by Ratnaningtyas & Fitriani (2019) which states that most respondents rated their sleep quality as very good or good with a percentage of 63.9%.

The diverse statements can be due to the different perceptions related to sleep quality in each individual (Sukartini 2022). The discrepancy between subjective sleep quality assessment and actual sleep quality measured by the PSQI (The Pittsburgh Sleep Quality Index) questionnaire is also due to the absence of knowledge regarding what constitutes good or poor sleep quality. One cannot assess the quality of sleep by looking at only one aspect, but must be seen from

all components in it because it will affect each other. The second component is sleep duration. Sleep duration is the time a person gets from the start of sleep to waking up in the morning (Corbafo, Choiryah, and Sukarno 2018). In this study, it was found that 35 children (48.6%) had a sleep duration of more than 7 hours, 24 children (33.3%) had a sleep duration of six to seven hours, and 13 children (18.1%) had a sleep time of five to six hours. The duration of sleep needed by elementary school children to fulfil their sleep needs is around 9-12 hours a day (Widiastuti 2021). Most primary school-aged children with online gaming addiction have sleep duration that is less than their needs. There are various reasons for shortening the duration of sleep in children, for example, the activities that children undertake when they are about to fall asleep cause them to start sleeping too late, consistent waking hours in the morning due to school activities. In addition, the presence of sleep disorders causes a person to wake up in the middle of the night and find it difficult to fall back to sleep (Maisharoh and Purwito 2020).

Insufficient sleep duration certainly has an impact on health and wellness. The appearance of children who experience sleep deprivation can look like frequent drowsiness, muscles feel weak or tired, and there is a decrease in the body's immunity which will interfere with the child's daily activities (Budyawati, Utami, and Widyadharma 2019). Children with shorter sleep duration also release more cortisol in the morning and evening which can result in emotional and behavioural problems, such as: irritability, difficulty making decisions, and difficulty concentrating. (Hasanah, Thursina, and Dahlan 2020). In addition, sleep duration is related to the body's metabolism and weight regulation (Daulay and Akbar 2021). According to Leenaars et al., (2016) Individuals with short sleep duration are associated with increased consumption of highly flavoured and energising snacks. However, the state of fatigue allows individuals to decrease their physical activity during the day and results in weight gain as there is no calorie burn (Irawan et al. 2020). This is in line with research Septiana & Irwanto (2018) which states that there is a correlation between sleep duration and childhood obesity.

The third component is sleep latency. Sleep latency is the length of time between starting to fall asleep and actually falling asleep. (Purwanto 2016). The contribution of the latency aspect is considered the most significant, namely the longer a person's sleep latency, the worse the quality of sleep they have. In this study, it was found that the score 0 was 3 people (4.2%), score 1-2 was 24 people (33.3%), score 3-4 was 37 people (51.4%) and score 5-6 was 8 people (11.1%). According to Purwanto (2016), There are several factors that can affect sleep latency including: environmental factors, psychological factors such as tension and anxiety, and physiological factors. When going to sleep, your mind often wanders to negative things, making it difficult to close your eyes. In addition, the activity factors carried out especially while in bed are also considered to be able to slow down the incidence of sleep. According to Sonda et al., (2021) activities done just before bedtime such as watching films, using social networks, and playing games on gadgets tend to make it more difficult for individuals to fall asleep and sleep time becomes later. Use of electronic devices before bedtime for more than two hours will prolong sleep latency (Yolanda et al. 2019). To prevent prolonged sleep latency and delayed bedtime in children, it is possible to reduce media use before bedtime (Albqoor and Shaheen 2020). The child also needs to reduce thoughts that can interfere with the start of sleep and keep the mind relaxed.

The fourth component is sleep habit efficiency. Sleep habit efficiency is the percentage of the total hours of sleep divided by the total time spent in bed then multiplied by 100%. (Safitrie and Ardani 2013). If the percentage of a person's sleep efficiency ratio has a value of more than 85%, then they are considered to have good sleep quality (Prasani, Mutmainnah, and

Mawarti 2023). From the results of the study, it was found that more than half of the respondents had a good percentage of sleep efficiency, namely 47 people (65.3%) with a value of >85%, 16 people (22.2%) had a percentage of 74-84%, and 9 people (12.5%) had a percentage of 65-74%. The results of this study are in line with research conducted by Hotijah et al., (2021) more than half of the total respondents had a sleep efficiency score of >85% with 93 respondents (90.3%). Sleep efficiency can change due to changes in sleep patterns and external influences such as an uncomfortable environment or other things. (Khasanah and Hidayati 2012). The large number of adequate sleep efficiency scores in this study may also be due to children's increasingly regular sleep patterns (Sukartini 2022). With or without parental help, a child's sleep pattern can be changed, for example by requiring the child to fall asleep immediately without doing any activities after being in bed.

The fifth component is sleep disturbance. Sleep disorders are conditions characterised by disturbances in the quantity, quality, or pattern of a person's sleep (Hepilita and Gantas 2018). This can be characterised by symptoms of sleep disturbance, such as: difficulty starting to fall asleep, waking up in the middle of the night or waking up too early in the morning, waking up to go to the bathroom, difficulty breathing, coughing or snoring, feeling hot or cold, having nightmares, and body aches. According to Harmoniati et al., (2016), it is possible that the child has multiple types of sleep disorders due to the correlation between one sleep problem and another. When viewed from sleep disturbances based on the results of data processing shows that all respondents experience sleep disturbances with sleep disturbance scores, namely 30 people (41.7%) have sleep disturbance scores 1-9, 39 people (54.1%) have sleep disturbance scores 10-18, and 3 people (4.2%) others have sleep disturbance scores 19-27. School-age children who experience persistent sleep disturbances can affect their daily activities such as weakness, sleepiness throughout the day, irritability, and difficulty concentrating during class. (Hartini, Nisa, and Herini 2021). Therefore, children need to be educated on the importance of healthy sleep patterns and quality in order to establish a regular sleep routine, avoid sleep disorders, and ensure optimal sleep benefits. (Harmoniati et al. 2016).

The sixth component is daytime dysfunction. Daytime dysfunction is a disorder that arises from short sleep duration and affects a person's daily functions, such as drowsiness during activities, such as school, work, and other social activities (Sulistiyani 2012). This aspect is also a result of decreased sleep quality (Maharianingsih, Iryaningrat, and Putri. Dhiancinantyan Windidaca Brata 2020). This decline in sleep quality is associated with disruption of daily activities and can reduce productivity (Yaqin 2016). In addition, a person with daytime dysfunction exhibits lethargy, fatigue, and a desire to sleep during activities, as well as a lack of enthusiasm for work (Nursita 2023). The daytime dysfunction scores in this study were score 0 as many as 25 people (34.7%), score 1-2 as many as 32 people (44.4%) and score 3-4 as many as 15 people (20.9%). The higher the score, the worse the problems in maintaining wakefulness and the more problems with daytime activities. The majority or almost the total number of respondents had a daytime dysfunction score of 1-2, which refers to respondents having difficulty staying awake during the day less than once a week and feeling very little problem in enthusiasm for daytime activities. These results are in line with research conducted by Araújo et al., (2014) which showed the results that more than half of the respondents with a percentage of 88.5% experienced interference to stay awake during the day in the form of drowsiness and weakness due to poor sleep quality. According to Lestari et al., (2024) If daytime dysfunction occurs in children, it will have an impact on how well elementary school-age children perform in learning and playing activities as a student, such

as: the appearance of feelings of drowsiness, yawning, fatigue and difficulty concentrating while in the classroom.

The seventh component is the use of sleeping pills. In this study, there was no use of sleeping pills by respondents or in other words, all respondents did not consume sleeping pills during the past month (100%). The use of sleeping pills indicates a disturbance or problem in the fulfillment of sleep (Pinalosa, Dhawo, and Sapariah 2018). This relates to the responses on the subjective sleep quality aspect which stated that most rated their sleep quality as very good and good enough to not require the use of sleeping pills. (Sukartini 2022). In addition, there are cultural differences between the United States and countries in Asia, including Indonesia, where the use of sleeping pills and psychiatric visits are less common (Sukmawati and Putra 2019). It is important to keep this habit in check as using sleeping pills to aid sleep can be detrimental to your health. People who take sedative medications can experience sleep-related problems, such as frequent nighttime awakenings, difficulty in falling back asleep, and this can negatively affect their sleep quality (Pinalosa et al. 2018). In addition, if used in the long term, it will have an impact on emotional health, such as feelings of anxiety or irritability when stopping taking sleeping pills (Thayeb, Kembuan, and Khosama 2015). Therefore, sleeping pills are usually only used as a short-term treatment and need to be supervised by a doctor (Pinalosa et al. 2018).

Based on the discussion that has been described, it can be seen that most respondents experience poor sleep quality. This is because the online game addiction behavior experienced affects how the fulfillment of children's sleep needs, such as: slow sleep latency, shortened sleep duration, poor sleep efficiency percentage, sleep disturbances at night and activity dysfunction during the day. Therefore, it is important to ensure that children have good quality sleep and sleep according to their needs so that their physical, emotional and cognitive development can achieve optimal health. The participation of parents, schools, and health workers and other parties needs to be involved in order to change the behavior of children who experience online game addiction to the quality of sleep obtained.

CONCLUSION

Based on the research that has been conducted by researchers, the results show that most elementary school-age children with online game addiction at SDN Jati 03 have poor sleep qualityHowever, there are children with online game addiction who still have good sleep quality and this is due to various factors. There needs to be a firm appeal from parents and educational institutions to implement a healthy lifestyle and provide more education or understanding to elementary school children that it is necessary to implement restrictions on the use of online games every day, so that night sleep can start earlier and sleep quality is expected to improve. Diversion of online gaming behavior habits can be changed to a more positive direction so that children's productivity can increase

REFERENCES

Adiningtiyas, Sri Wahyuni. 2017. “Peran Guru Dalam Mengatasi Kecanduan Game Online.” KOPASTA: Jurnal Konseling Pancawaskita 4(1):28–40. doi: 10.33373/kop.v4i1.1121.

Albqoor, Maha Alkaid, and Abeer M. Shaheen. 2020. “Sleep Quality, Sleep Latency, and Sleep Duration: A National Comparative Study of University Students in Jordan.” Sleep and Breathing 25(2):1147–54. doi: 10.1007/s11325-020-02188-w.

Amelia, Nina, Ana Zuyyina Ulfah, Rista Setiani, Ayu Sulistiyowati, and Rif’ati Dina Handayani. 2023. “Mekanisme Paparan Radiasi Handphone Pada Tubuh Manusia Saat

Tidur." Jurnal Ilmiah Wahana Pendidikan 9:454–60.

APJII. 2023. "Survei Penetrasi Dan Perilaku Pengguna Internet." Pp. 1–104.

Araújo, Daísy Vieira de, Romanniny Hévillyn Silva Costa, Dayane Caroliny Pereira Justino, Batista. Fabricya da Guia Araujo, Fabia Barbosa Andrade, and Iris do Ceu Clara Costa. 2014. "Evaluation of Sleep Quality in Patients with Breast Cancer." Journal of Sleep Disorders: Treatment and Care 3(4). doi: 10.4172/2325-9639.1000142.

Arthy, Cind Chias. 2019. "Validitas Dan Reliabilitas Game Addiction Scale (GAS) Versi Bahasa Indonesia."

Budyawati, Ni Putu Luh Wulan, Desak Ketut Indrasari Utami, and I. Putu Eka Widyadharma. 2019. "Proposi Dan Karakteristik Kualitas Tidur Buruk Pada Guru-Guru Sekolah Menengah Atas Negeri Di Denpasar." E-Jurnal Medika 8(3):1–7.

Buysse, Daniel J., Charles F. Reynolds, Timothy H. Monk, Susan R. Berman, and David J. Kupfer. 1989. "The Pittsburgh Sleep Quality Index: A New Instrument for Psychiatric Practice and Research." Psychiatry Res 28:193–213.

Corbafo, Fernando Teti Dacosta, Zumrotul Choiryah, and Sukarno. 2018. "Gambaran Kualitas Tidur Anak Usia Sekolah Pengguna Gadget Di Sd Negeri Banyumanik 01 Kota Semarang." Journal of Chemical Information and Modeling 53(9):1–10.

Daulay, Nadila Syafitri, and Surya Akbar. 2021. "Hubungan Durasi Tidur Dengan Imt (Indeks Massa Tubuh) Yang Dipengaruhi Oleh Jenis Kelamin Pada Mahasiswa Fk Uisu." Jurnal Kedokteran STM (Sains Dan Teknologi Medik) 4(1):10–16. doi: 10.30743/stm.v4i1.64.

Fatima, Yaqoot, Suhail A. R. Doi, Jake M. Najman, and Abdullah Al Mamun. 2016. "Exploring Gender Difference in Sleep Quality of Young Adults: Findings from a Large Population Study." Clinical Medicine and Research 14(3–4):138–44. doi: 10.3121/cmr.2016.1338.

Faza, Ahmad Wildan;, Syailin Nichla Choirin; Attalina, and Aan Widiyono. 2022. "Analisis Dampak Game Online Pada Interaksi Sosial Anak Usia Sekolah Dasar Di Desa Bawu RT 06 RW 01." Jurnal Pendidikan Dan Konseling 4(3):534–41.

Fitri, Lailatur, Riski Amalia, and Juanita. 2022. "Hubungan Jenis Kelamin Dengan Kualitas Tidur Lansia." JIM FKep 5(4):65–69.

Habibi, Alem, Wahyudi Qorahman MM, Rastia Ningsih, and Rukmini Syahleman. 2021. "Hubungan Kebiasaan Bermain Game Online Dengan Kualitas Tidur Remaja Pada Kelas XI Di SMKN 1 Seruyan Tengah." Jurnal Borneo Cendekia 5(1):16–30.

Harmoniati, Eva Devita, Rini Sekartini, and Hartono Gunardi. 2016. "Intervensi Sleep Hygiene Pada Anak Usia Sekolah Dengan Gangguan Tidur: Sebuah Penelitian Awal." Sari Pediatri 18(2):93–99. doi: 10.14238/sp18.2.2016.93-9.

Hartini, Sri, Khairun Nisa, and Elisabeth Siti Herini. 2021. "Faktor-Faktor Yang Berhubungan Dengan Masalah Tidur Remaja Selama Pandemi Covid-19." Sari Pediatri 22(5):311–17. doi: 10.14238/sp22.5.2021.311-7.

Hasanah, Murtafiqoh, Cempaka Thursina, and Pemodjo Dahlan. 2020. "Pengaruh Gangguan

Tidur Terhadap Prestasi Akademik Pada Murid Sekolah Dasar Di Kabupaten Sleman." Berkala Neurosains 19(1):11–17.

Hayati, Nila. 2020. "Hubungan Kebiasaan Bermain Game Online Pada Anak Usia Sekolah Dengan Kebutuhan Istirahat Dan Tidur Di SD Negeri 010083 Kisaran Kabupaten Asahan." Jurnal Kesehatan Global 3(3):116–22. doi: 10.33085/jkg.v3i3.4710.

Hepilita, Yohana, and Agripina Aprililian Gantas. 2018. "Hubungan Durasi Penggunaan Media Sosial Dengan Gangguan Pola Tidur Pada Anak Usia 12 Sampai 14 Tahun Di SMP Negeri 1 Langke Rembong." Jurnal Wawasan Kesehatan 3(2):78–87.

Hotijah, Siti, Erti Ikhtiarini Dewi, and Enggal Hadi Kurniyawan. 2021. "Hubungan Tingkat Kecemasan Dengan Kualitas Tidur Pada Mahasiswa Baru Luar Pulau Jawa Universitas Jember." E-Journal Pustaka Kesehatan 9(2):111–15.

Irawan, Andi Muh Asrul, Zakia Umami, Andi Mukramin Yusuf, and Harna. 2020. "Aktivitas Fisik, Durasi Tidur Dan Tingkat Kecukupan Energi Pada Anak Obesitas Di SD Islam Al Azhar 1." Jurnal Al-Azhar Indonesia Seri Sains Dan Teknologi 5(4):186–90.

Ismail, Nurazah, Ahmad Izzat Tajjudin, Hafiz Jaafar, Nik Ruzyanei Nik Jaafar, Azlin Baharudin, and Normala Ibrahim. 2021. "The Relationship between Internet Addiction, Internet Gaming and Anxiety among Medical Students in a Malaysian Public University during Covid-19 Pandemic." International Journal of Environmental Research and Public Health 18(22). doi: 10.3390/ijerph182211870.

Janttaka, Nugrananda;, and Wahyu Juniarta. 2020. "Analisis Dampak Game Online Mobile Legend Pada Anak Usia Sekolah Dasar Di Desa Junjung Kecamatan Sumbergempol Kabupaten Tulungagung." Inventa 4(2):132–41. doi: 10.36456/inventa.4.2.a2683.

Kemenkes RI. 2018. Laporan Riskesdas 2018 Kementrian Kesehatan Republik Indonesia. Vol. 53. Jakarta: Badan Penelitian dan Pengembangan Kesehatan.

Kemp, Simon. 2020. Global Digital Overview.

Khasanah, Khusnul, and Wahyu Hidayati. 2012. "Kualitas Tidur Lansia Balai Rehabilitasi Sosial ' MANDIRI ' Semarang." Jurnal Nursing Studies 1(1):189–96.

Lee, Soon Young, Yeong Jun Ju, Joo Eun Lee, Young Taek Kim, Seung Chul Hong, Yun Jung Choi, Min Kyoung Song, and Hye Yun Kim. 2020. "Factors Associated with Poor Sleep Quality in the Korean General Population: Providing Information from the Korean Version of the Pittsburgh Sleep Quality Index." Journal of Affective Disorders 271(January):49–58. doi: 10.1016/j.jad. 2020.03.069.

Leenaars, Cathalijn H. C., Janneke C. Zant, Audrey Aussems, Vivian Faatz, Daphne Snackers, and Andries Kalsbeek. 2016. "The Leeds Food Preference Questionnaire after Mild Sleep Restriction - A Small Feasibility Study." Physiology and Behavior 154:28–33. doi: 10.1016/j.physbeh.2015. 11.007.

Lemmens, Jeroen S., Patti M. Valkenburg, and Jochen Peter. 2009. "Development and Validation of a Game Addiction Scale for Adolescents." Media Psychology 12(1):77–95. doi: 10.1080/15213260802669458.

Lestari, Dini Ristya, Siti Haniyah, and Ikit Netra Wirakhmi. 2024. "Hubungan Premenstrual Syndrome (PMS) Dengan Kualitas Tidur Mahasiswi Program Studi Keperawatan

Program Sarjana Universitas Harapan Bangsa." Journal Innovation in Education (INOVED) 2(1):215–26.

Maharianingsih, Ni Made, Anak Agung Sagung Istri Iryaningrat, and Putri. Dhiancinantyan Windidaca Brata. 2020. "Pemberian Aromaterapi Lavender (Lavandula Angustifolia) Untuk Meningkatkan Kualitas Tidur Lansia." Ad-Dawaa' Journal of Pharmaceutical Sciences 3(2):72–82. doi: 10.24252/djps.v3i2.13945.

Maisharoh, Rizka, and Maisharoh Purwito. 2020. "Faktor-Faktor Yang Mempengaruhi Kejadian Insomnia Pada Lansia Di Wilayah Kerja Puskesmas Patikraja Kabupaten Banyumas." Jurnal Keperawatan Muhammadiyah (September):138–47.

Matur, Yustina Prima, Maria Getrida Simon, and Theofilus Acai Ndorang. 2021. "Hubungan Kecanduan Game Online Dengan Kualitas Tidur Pada Remaja Sma Negeri Di Kota Ruteng." Jurnal Wawasan Kesehatan 6(2):55–66.

Mawo, Petronela R., Su Djie To Rante, and I. Nyoman Sasputra. 2019. "Hubungan Kualitas Tidur Dengan Kadar Hemoglobin Mahasiswa Fakultas Kedokteran Undana." Cendana Medical Journal 17(2):158–63.

Mutia. 2021. "Characteristics of Children Age of Basic Education." FITRAH 3(1):114–31.

Nugroho, Aditya Dwi. 2015. "Tingkat Kemampuan Motorik Siswa Kelas 3, 4, Dan 5 Di Sekolah Dasar Negeri Banyuurip 1 Turi Sleman." Universitas Negeri Yogyakarta.

Nurdilla, Nesha. 2018. "Hubungan Kecanduan Bermain Game Online Dengan Kualitas Tidur Remaja." Jurnal 5(2):120–26.

Nursita, Ika Noni. 2023. "Gambaran Asupan Kafein Dan Pola Tidur Pada Mahasiswa Program Studi Ilmu Gizi Fakultas Ilmu Kesehatan Universitas Muhammadiyah Surakarta."

Palupi, Tri Nathalia. 2020. "Tingkat Stres Pada Siswa-Siswi Sekolah Dasar Dalam Menjalankan Proses Belajar Di Rumah Selama Pandemi Covid-19." JP3SDM 9(2):18–29.

Panjaitan, Ara Dewi Ratna Sari. 2014. "Hubungan Antara Frekuensi Bermain Game Online Dengan Kualitas Tidur Pada Anak Kelas IV Dan V Di SDN Karangjero Yogyakarta." 1–18.

Pinalosa, Luis, Maria Silvana Dhawo, and Anggraini Sapariah. 2018. "Perbandingan Kualitas Tidur Siswa/Siswi Kelas X SMA Negeri Dengan Kualitas Tidur Siswa/Siswi Kelas X SMA Swasta." Jurnal Keperawatan Suaka Insan (JKSI) 3(2):1–17.

Prasani, Mutiara, Muthia Mutmainnah, and Indah Mawarti. 2023. "Gambaran Kualitas Tidur Pada Perempuan Lansia Di Puskesmas Simpang IV Sipin Kota Jambi." JURNAL NERS 7(2):1567–75.

Purwanto, Setiyo. 2016. "Hubungan Antara Intensitas Menjalankan Dzikir Nafas Dengan Latensi Tidur." Indigenous: Jurnal Ilmiah Psikologi 1(1):32–38. doi: 10.23917/indigenous.v1i1.3713.

Putra, Patria Yudha, Fithriyah Izzatul, and Zulfa Zahra. 2023. "Internet Addiction and Online Gaming Disorder in Children and Adolescents During COVID-19 Pandemic: A

Systematic Review." Psychiatry Investigation 20(3):196–204. doi: 10.30773/pi.2021.0311.

Rani, Devita, Effiati Juliana Hasibuan, and Rehia K. Isabela Barus. 2020. "Dampak Game Online Mobile Legends: Bang Bang Terhadap Mahasiswa." Perspektif 7(1):6–12. doi: 10.31289/perspektif.v7i1.2520.

Ratnaningtyas, Tri Okta, and Dwi Fitriani. 2019. "Hubungan Stres Dengan Kualitas Tidur Pada Mahasiswa Tingkat Akhir." Edu Masda Journal 3(2):181–91. doi: 10.52118/edumasda.v3i2.40.

Rohmah, Wulan Khoirul, and Yunita Dyah Puspita Santik. 2020. "Determinan Kualitas Tidur Pada Santri Di Pondok Pesantren." Higeia Journal of Public Health Research and Development 4(3):649–59. doi: https://doi.org/10.15294/higeia.v4iSpecial%203/41257.

Rudimin, Tanto Harianto, and Wahidyanti Rahayu. 2017. "Hubungan Tingkat Umur Dengan Kualitas Tidur Pada Lansia Di Posyandu Permadi Kelurahan Tlogomas Kecamatan Lowokwaru Malang." Nursing News : Jurnal Ilmiah Keperawatan 2(1):119–27.

Sabani, Fatmaridha. 2019. "Perkembangan Anak - Anak Selama Masa Sekolah Dasar (6 - 7 Tahun)." Didakta: Jurnal Kependidikan 8(2):89–100.

Safitrie, Amalia, and M. Hasib Ardani. 2013. "Studi Komparatif Kualitas Tidur Perawat Shift Dan Non Shift Di Unit Rawat Inap Dan Unit Rawat Jalan." Pp. 17–23 in Prosiding Konferensi Nasional PPNI Jawa Tengah.

Sanditaria, W., Siti Yuyun Rahayu Fitri, and Ai Mardhiyah. 2012. "Adiksi Bermain Game Online Pada Anak Usia Sekolah Di Warung Internet Penyedia Game Online Jatinangor Sumedang [Online Gaming Addiction on School Age Children in Online Gaming Café in Jatinangor Sumedang]." Students E-Journal 1(1):1–15.

Saputra, Rian, Amelia Atika, and Ema Sukmawati. 2022. "Analisis Kecanduan Game Online Terhadap Siswa Kelas Vii Smp Negeri 3 Siding." Bikons: Jurnal Bimbingan Konseling 2(3):20–29.

Septiana, Puput, and Irwanto. 2018. "Hubungan Durasi Tidur Dengan Kejadian Obesitas Pada Anak Usia 3-8 Tahun." Global Medical and Health Communication 6(1):63–67.

Setyowati, Anggi, and Min Huey Chung. 2020. "Validity and Reliability of the Indonesian Version of the Pittsburgh Sleep Quality Index in Adolescents." International Journal of Nursing Practice 27(5):1–7. doi: 10.1111/ijn.12856.

Sonda, Iftitah M. P., Windy M. V Wariki, and Frelly V Kuhon. 2021. "Gangguan Kualitas Tidur Dan Indeks Prestasi Siswa Kelas XII SMA Negeri 1 Manado Di Masa Pandemi COVID-19." J Kedokt Tropik 9, No. 2:334–40.

Sosso, Faustin Armel Etindele, and Daria J. Kuss. 2018. "Insomnia and Problematic Gaming: A Study in 9 Low- and Middle-Income Countries." BioRxiv 451724.

Sriasih, Ni Kadek, and Ni Made Sri Rahyanti. 2022. "Gambaran Kualitas Tidur Pada Anak Usia Sekolah Di Masa Pandemi Covid-19." Menara Medika 4(2):137–44. doi: 10.31869/mm.v4i2.3187.

Stuart, Gail Wiscarz, and Michele T. Laraia. 2015. Principles & Practice of Psychiatric

Nursing 7th Edision. St.louise: Elsevier Mosby.

Sukartini, Ni Luh Ade. 2022. "Gambaran Kualitas Tidur Pada Mahasiswa Program Studi Sarjana Keperawatan ITEKES Bali Di Masa Pandemi Covid-19." Institut Teknologi dan Kesehatan Bali.

Sukmawati, Ni Made Hegard, and I. Gede Sandi Widarta Putra. 2019. "Reabilitas Kuesioner Pittsburgh Sleep Quality Index (PSQI) Versi Bahasa Indonesia Dalam Mengukur Kualitas Tidur Lansia." Jurnal Lingkungan & Pembangunan 3(2):30–38.

Sulistiyani, Cicik. 2012. "Beberapa Faktor Yang Berhubungan Dengan Kualitas Tidur Pada Mahasiswa Fakultas Kesehatan Masyarakat Universitas Diponegoro Semarang." Jurnal Kesehatan Masyarakat 1(2):280–92.

Sulistyawati, Ema. 2017. "Gambaran An Perilaku Perawat Anak Dalam Aplikasi Family Centered Care Di Ruang Anak Rumah Sakit Roemani Semarang." Universitas Muhammadiyah Semarang.

Suplig, Maurice Andrew. 2017. "Pengaruh Kecanduan Game Online Siswa SMA Kelas X Terhadap Kecerdasan Sosial Sekolah Kristen Swasta Di Makassar." Jurnal Jaffray 15(2):177–200. doi: 10.25278/jj71.v15i2.261.

Susanti, Meity Mulya, Wahyu Unggul Widodo, and Darmawati Indah Safitri. 2018. "Hubungan Kecanduan Bermain Game Online Pada Smartphone (Mobile Online Games) Dengan Pola Makan Anak Sekolah Dasar Kelas 5 Dan 6 Di Sd Negeri 4 Purwodadi." The Shine Cahaya Dunia Ners 3(2):28–39. doi: 10.35720/tscners.v3i2.122.

Suwarna, Arif Hidayat, and Widiyanto. 2016. "Perbedaan Pola Tidur Antara Kelompok Terlatih Dan Tidak Terlatih." Medikora VX(1):85–96.

Thayeb, Ricky R. T. A., Mieke A. H. N. Kembuan, and Herlyani Khosama. 2015. "Gambaran Kualitas Tidur Pada Perawat Dinas Malam Rsup Prof. Dr. R. D. Kandou Manado." E-Clinic 3(3):853–57. doi: 10.35790/ecl.3.3.2015.10457.

Tiala, Nur Hijrah, Nining Suryaningsih, and Suntin Suntin. 2022. "Sleep Hygine Intervention for Sleep Quality in School-Age Children: A Literature Review." Media Keperawatan Indonesia 5(4):326–33. doi: 10.26714/mki.5.4.2022.326-333.

Viona, Jojor Putrini Sinaga, and Mitra Handini. 2013. "Hubungan Antara Karakteristik Mahasiswa Dengan Kualitas Tidur Pada Mahasiswa Program Studi Pendidikan Dokter Fakultas Kedokteran Universitas Tanjungpura." Universitas Tanjungpura.

WHO. 2020. "Addictive Behaviours: Gaming Disorder." World Health Organization. Retrieved (https://www.who.int/news-room/questions-and-answers/item/addictive-behaviours-gaming-disorder).

Widiastuti, Ida Ayu Kade Sri. 2021. Pemenuhan Kebutuhan Tidur Pada Anak.

Yanuardianto, Elga. 2019. "Teori Kognitif Sosial Albert Bandura (Studi Kritis Dalam Menjawab Problem Pembelajaran Di Mi)." Auladuna : Jurnal Prodi Pendidikan Guru Madrasah Ibtidaiyah 1(2):94–111. doi: 10.36835/au.v1i2.235.

Yaqin, Umamul Faqih Nurul. 2016. "Hubungan Kualitas Tidur Dengan Tekanan Darah Pada Mahasiswa Program Studi Ilmu Keperawatan Universitas Jember."

Yip, Tiffany, Yuen Mi Cheon, Yijie Wang, Wen Qin Deng, and Amber Levanon Seligson. 2020. "Sociodemographic and Environmental Factors Associated with Childhood Sleep Duration." Sleep Health 16(15):1–11. doi: 10.1016/j.sleh.2020.05.007.

Yolanda, Anisa Ayu, M. Arie Wuryanto, Nissa Kusariana, and Lintang Dian Saraswati. 2019. "Hubungan Aktivitas Fisik, Screen Based Activity Dan Sleep Hygiene Dengan Kualitas Tidur Pada Remaja Usia 15-18 Tahun (Studi Pada Siswa Di SMA Negeri 1 Ungaran)." Jurnal Kesehatan Masyarakat (e-Journal) 7(1):123–30.

Yosep, H. Iyu., and Titin Sutini. 2014. Buku Ajar Keperawatan Jiwa Dan Advance. Bandung: Refika Aditama.

Yusrina, Jihan, and Yoyok Yermiandhoko. 2022. "Pengaruh Adiksi Game Online Dengan Hasil Belajar Pada Siswa Kelas 6 Sekolah Dasar." Jurnal Penelitian Pendidikan Guru Sekolah Dasar 10.

Zhou, Ying, Lan Guo, Ci Yong Lu, Jian Xiong Deng, Yuan He, Jing Hui Huang, Guo Liang Huang, Xue Qing Deng, and Xue Gao. 2015. "Bullying as a Risk for Poor Sleep Quality among High School Students in China." PLoS ONE 10(3):1–14. doi: 10.1371/journal.pone.0121602.

Zurrahmi, Sri Hardianti, and Fitria Meiriza Syahasti. 2021. "Hubungan Tingkat Stres Dengan Kualitas Tidur Pada Mahasiswa Akhir S1 Kesehatan Masyarakat Universitas Pahlawan Tuanku Tambusai Tahun 2021." PREPOTIF : Jurnal Kesehatan Masyarakat 5(2):963–68. doi: 10.31004/prepotif.v5i2.2092.