

The Relationship between Addiction to Massively Multiplayer Online Role-Player Games and the Sleep Quality of Students in Higher Education

Desy Safitri^{1*}, K. Diah Ambarwati² 

^{1,2}Psikologi, Universitas Kristen Satya Wacana, Salatiga, Indonesia

ARTICLE INFO

Article history:

Received February 12, 2024

Accepted April 20, 2024

Available online April 25, 2024

Kata Kunci:

Kecanduan Game Online,
Kualitas Tidur, Mahasiswa

Keywords:

Online Game Addiction, Sleep
Quality, College Student



This is an open access article under the [CC BY-SA](https://creativecommons.org/licenses/by-sa/4.0/) license.

Copyright © 2024 by Author. Published by Universitas Pendidikan Ganesha.

ABSTRAK

Kecanduan game online menimbulkan keinginan untuk terus mengulang kegiatan tersebut. Terlalu lama menatap atau menggunakan ponsel saat bermain game online dapat membuat kualitas tidur menjadi buruk yang akan berdampak pada kesehatan fisiologis dan psikologis seseorang. Penelitian ini bertujuan untuk menganalisis hubungan kecanduan game online Massively Multiplayer Online Role-Player Games (MMORPG) terhadap kualitas tidur pada mahasiswa. Penelitian ini menggunakan metode kuantitatif korelasional dengan subjek sejumlah 90 orang kecanduan game online MMORPG di beberapa universitas di Indonesia. Sampel dipilih dengan teknik non probability sampling. Pengumpulan data dilakukan menggunakan kuesioner pengukuran bermain game online dan kualitas tidur. Selanjutnya, data dianalisis dengan korelasi Pearson Product Moment yang dibantu dengan program komputer Statistical Packages for Social Sciences (SPSS) 25. Hasil penelitian menunjukkan kecanduan game online yang paling tinggi adalah tingkat sedang sebanyak 70 responden (77.8%) dan kualitas tidur yang paling tinggi adalah kualitas tidur buruk sebanyak 86 responden (95.6%). Dapat disimpulkan bahwa, terdapat hubungan negatif yang signifikan antara kecanduan game online MMORPG terhadap kualitas tidur pada mahasiswa. Informasi terbaru pada penelitian ini berimplikasi pada upaya penanggulangan dampak buruk kecanduan game online pada bidang kesehatan fisiologis dan psikologis mahasiswa.

ABSTRACT

Online games addiction creates a desire to continue repeating these activities. Staring at or using a cellphone for too long while playing online games can result in poor sleep quality which will have an impact on a person's physiological and psychological health. This study aims to analyze the relationship between Massively Multiplayer Online Role-Player Games (MMORPG) online game addiction and sleep quality in students. This research used quantitative correlational methods with subjects of 90 people addicted to MMORPG online games at several universities in Indonesia. The sample was selected using non-probability sampling techniques. Data collection was carried out using a questionnaire measuring online game playing and sleep quality. Next, the data was analyzed using Pearson Product Moment correlation assisted by the Statistical Packages for Social Sciences (SPSS) 25 computer program. The results showed that the highest level of online game addiction was moderate level at 70 respondents (77.8%) and the highest quality of sleep was Poor sleep quality was 86 respondents (95.6%). It can be concluded that there is a significant negative relationship between MMORPG online game addiction and sleep quality in students. The latest information in this research has implications for efforts to overcome the negative effects of online game addiction on the physiological and psychological health of students..

1. INTRODUCTION

Humans have certain needs that must be met properly through the process of homeostasis, both physiological and psychological. Needs are something that is very important, useful, or necessary to maintain homeostasis and life itself (Ahmad et al., 2020; Fernando & Hidayat, 2020). When someone has several unfulfilled needs, then that person will fulfill their physiological needs first compared to other needs. One of these physiological needs is rest and sleep (Devi & Heri, 2021; Woran et al., 2021). Sleep is a

*Corresponding author

E-mail addresses: dssafitry872@gmail.com, (Desy Safitri)

state of rest that a person needs (Madeira et al., 2019; Moi et al., 2017). Meanwhile, sleep quality is defined as a person's satisfaction with sleep (Pramana & Harahap, 2022; Wahyuni, 2018). Poor sleep quality can result in decreased physiological and psychological health (Manoppo et al., 2023; Haryati et al., 2020). There are many factors that determine sleep quality, some of the important ones are age, gender, place of residence, body mass index (BMI), physical activity or exercise, and smoking habits (Haryati et al., 2020; Riskawati et al., 2020). There is one factor that can affect sleep quality, namely cell phone use (Ainida et al., 2020; Putri & Ningsih, 2020; Jarmi & Rahayuningsih, 2017). Sleep quality worsens with increasing levels of excessive mobile phone use (Hadiansyah & Sarwendah, 2023; Pandey et al., 2019).

Mobile devices include many services, such as internet access and social networking, multimedia, video, messaging, navigation, and games. Games that are played with the internet are called online games. Online games are games that can be played when the device used is connected to the internet (Mais et al., 2020; Kusumawardani, 2015). Playing online games can have negative impacts on the players (Zendrato & Harefa, 2022; Umam & Muhid, 2021). Some of the negative impacts that arise, such as making players addicted to playing online games because of the level system in online games, which causes players to want to continue playing online games to reach the highest level (Utami et al., 2022; Mais et al., 2020). Game addiction is excessive use of computers or smartphones which can cause problems in social and emotional aspects and the inability to control excessive gaming activities (Sadif & Rasmi, 2023; Virlia & Setiadji, 2016). Some types of online games that are currently popular in Indonesia are Massively Multiplayer Online Role-playing Games (MMORPG), a game with the role of fictional characters who collaborate to weave a story together. RPGs are usually more directed towards social collaboration than competition.

There are 3 types of MMORPG games, namely Mobile Legends Game, Garena Free - Fire Game, Playerunknown's Battlegrounds Mobile. People who like MMORPG games because of the freedom to develop their respective characters, plus the level system makes players want to continue to raise their characters to the maximum level. MMORPG games are also able to attract players to spend most of their time involved in this type of game. Involvement in the type of MMORPG game that reaches the level of addiction has an impact on life, both in physical and physiological aspects. Several previous research results show that many students are addicted to playing online games (Subandi et al., 2022; Akbar, 2020; Suplig, 2017; Adiningtiyas, 2017). In addition, previous research also showed a significant relationship between online game addiction and students' sleep quality (Nashir et al., 2023; Anggraini, 2022).

Based on the results of previous studies, there are several studies that state that there is a positive relationship between online game addiction and sleep quality. In addition, there are also studies that show a weak relationship between online game addiction and sleep quality of students. Therefore, researchers are interested in re-examining the relationship between online game addiction and sleep quality of students, specifically in students who play online games of the Massively Multiplayer Online Role-Play Games or MMORPG type, namely Mobile Legends Game, Garena Free - Fire Game, and Playerunknown's Battlegrounds Mobile.

The urgency of this research is based on the limitations of previous research which stated that researchers could not find out what types of online games were used by participants (Luntungan et al., 2022). In addition, based on a report released by the Global Statshot report in April 2022 April in Grid Game.id, it was stated that Indonesia ranks second in the world with 95.4% of internet usage for playing online games. This makes researchers interested in knowing the effects of online game addiction, one of which is the effect on the quality of sleep of the players. This study aims to analyze the relationship between online game addiction Massively Multiplayer Online Role-Player Games (MMORPG) and sleep quality in college students. The latest information in this study is expected to provide the latest information regarding the negative impacts of online game addiction. Thus, related parties can overcome the negative impacts of online game addiction on the physiological and psychological health of college students.

2. METHOD

This study is a quantitative research type with a correlational design. This design was chosen because it aims to test the relationship between two variables, namely the level of addiction to MMORPG online games and sleep quality. Correlational research allows researchers to determine the direction and strength of the relationship between variables without conducting experimental manipulation. This approach is suitable for understanding the phenomenon of online game addiction in the real-life context of students who often spend significant time playing games. Participants in this study were students who were addicted to playing MMORPG online games, such as Mobile Legends, Garena Free Fire, and PlayerUnknown's Battlegrounds Mobile, with a playing duration of 4-6 hours or more every day. Since the

population of students who met these criteria was not known with certainty, sampling was carried out using a non-probability sampling technique. With this technique, 90 students from various universities in Indonesia were selected as research subjects. These inclusion criteria help ensure that participants are individuals who are truly relevant to the objectives of the study.

The data collection method was carried out using a questionnaire distributed online to facilitate access to participants in various regions. Two psychological scales were used in this study, namely the Game Addiction Scale (GAS) to measure the level of online game addiction and The Pittsburgh Sleep Quality Index (PSQI) to measure the quality of participants' sleep. The use of this questionnaire is considered effective because it allows for the collection of large amounts of data quickly and efficiently. The collected data were analyzed using the Pearson Product Moment correlation analysis technique. This analysis is used to measure the level of linear relationship between online game addiction and sleep quality. The data analysis process was assisted by Statistical Packages for Social Sciences (SPSS) software version 25. The use of the SPSS program allows for accurate and efficient calculations, so that the results of the analysis can be interpreted appropriately to answer research questions.

3. RESULTS AND DISCUSSION

Result

This research was conducted at several universities in Indonesia, the research was conducted in May 2023. The data collection process was carried out using a questionnaire via Google Form which was distributed to the research subjects. The questionnaire contains statements according to the predetermined research variables to obtain data on playing online games and sleep quality. Data collection began on May 5, 2023 to May 28, 2023 and obtained a total of 90 participants, but only 90 participants met the criteria. Most participants were aged 18-20 years and were dominated by men. Descriptive statistics of sleep quality, frequency distribution of sleep quality, frequency distribution of online game addiction, and correlation test results can be presented in Table 1, Table 2, Table 3, and Table 4.

Table 1. The Descriptive Statistics Table of Sleep Quality

	N	Good	Bad
Sleep Quality	90	4	86
Subjective sleep quality	90	59	31
Sleep Duration	90	50	40
Sleep Latency	90	55	35
Sleep Efficiency	90	50	40
Sleep Disorders	90	52	38
Use of Sleeping Pills	90	87	3
Daytime Dysfunction	90	42	58

Table 2. The Frequency Distribution Table of Sleep Quality

Sleep quality	Frequency (f)	Percentage (%)
Good	4	4.40%
Bad	86	95.60%
Total	90	100%

Table 3. The Frequency Distribution Table of Online Game Addiction

Online game addiction	Frequency (f)	Percentage (%)
Light	6	6.60%
Currently	70	77.80%
Heavy	14	15.60%
Total	90	100%

Table 4. The Correlation Test Table

		GAS	PSQI
Online game addiction	Pearson Correlation	1	-0.218
	Sig. (1-tailed)		0.020

		GAS	PSQI
Sleep Quality	N	90	90
	Pearson Correlation	-0.218	1
	Sig. (1-tailed)	0.020	
	N	90	90

The results above show a correlation coefficient value of -0.218 with a significance of $p < 0.05$. Thus, it is known that there is a negative relationship between addiction to playing MMORPG online games and sleep quality in students.

Discussion

This study aims to analyze the relationship between addiction to playing MMORPG online games and sleep quality in college students. The results of the study indicate that addiction to playing MMORPG online games has a negative and significant relationship to the quality of sleep in college students, this means that H_0 is rejected and H_1 is accepted. The higher the level of addiction to playing online games, the worse the quality of sleep. The results of this study are in line with previous studies which state that playing online games has a negative relationship to the quality of sleep of players (Winanta et al., 2022).

People with online gaming addiction or dependency have problems with the quality of their sleep (Nashir et al., 2023; Anggraini, 2022). Online game addiction is closely related to sleep disorders/problems. One of the factors causing insomnia is a monotonous lifestyle, namely someone will prioritize playing rather than fulfilling their rest and sleep needs (Pramesti et al., 2023; Mais et al., 2020). Students with online game addiction will feel physically exhausted, emotionally students will feel satisfied if they win, and angry if they lose when playing, have the desire to continue playing, if they don't play their concentration will be disturbed when doing other activities. The impact on the social aspect is that students will find it difficult to understand others, lack a sense of responsibility, and often have conflicts with others. Online game addiction has several risks, one of which is that it can cause a lack of time to sleep so that they experience insomnia (Nursyifa et al., 2020; Manuputty et al., 2019).

In this study, the demographic data of the respondents' ages obtained the most results were 20 years old, totaling 30 (3.33%), 21 years old, totaling 27 (30%), 19 years old, totaling 12 (13.3%), 23 years old, totaling 8 (8.9%), 22 years old, totaling 6 (6.7%), 18 years old, totaling 5 (5.5%), and 24 years old, totaling 2 (2.2%). The most game players were 20 years old. At this age, they are still looking for pleasure to satisfy their curiosity to try the latest games. This study is in line with previous studies which showed that those in their twenties are more addicted to online games and are unable to refuse invitations from friends (Monding et al., 2020; Anhar, 2014). Someone who has played online games will continue playing and will not stop before their curiosity about the game is satisfied, so that the time that should be spent sleeping is used to play games.

In this study, the demographic data of the gender of 90 respondents was dominated by men, namely 77 respondents (85.6%), while the female gender was 13 respondents (14.4%). This study is in line with several previous studies that showed that playing online games was mostly done by men (Halawa, 2021; Monding et al., 2020). Based on research conducted on 90 respondents, it is known that the most dominant level of addiction is moderate addiction as many as 70 respondents (77.8%), severe addiction level as many as 14 respondents (15.6%), and mild addiction level as many as 6 respondents (6.6%). The results of this study are in line with previous research which stated that most of the categorization of online game addiction is at a moderate level (Anggraini, 2022; Chiesa, 2021).

Based on research conducted on 90 respondents, it was found that respondents with good sleep quality were 4 respondents (4.4%) and respondents with poor quality were 86 respondents (95.6%). This result is in line with previous research which showed similar results, namely that most respondents had poor sleep quality due to the influence of online games (Pramesti et al., 2023; Widiyani et al., 2021). Based on the research results, students have poor sleep quality and sleep disorders due to several factors such as losing playing online games, making it difficult to sleep, being disturbed by sounds around them, and overthinking. Students can only sleep about 5-6 hours from normal time. In addition, students also have difficulty starting to sleep, on average teenagers can only fall asleep after 15 minutes. Students also experience sleep problems such as feeling cramps in the legs and waking up because they hear sounds or waking up from sleep because they feel hungry. Poor sleep quality is also one of the impacts of technological developments such as smartphones and the internet.

Using a smartphone before bed will result in slow sleep latency and reduce sleep duration (Murwani & Umam, 2021; Lin et al., 2019). The ease of internet access through electronic devices that are owned causes an increase in the duration of internet use, such as being able to enjoy various fun social activities, namely playing online games, watching movies, and using social media. Meanwhile, for student

sleep patterns, more people experience disturbed sleep patterns than undisturbed sleep patterns. This is because playing online games for too long will cause students to forget the time to sleep so that they experience disturbed sleep patterns. Students who have irregular sleep patterns or lack of sleep will cause drowsiness during the day, fatigue also affects mood, which means it can also have an impact on declining performance (Aminuddin, 2020; Marlianti, 2015). Apart from online game addiction, there are other factors that play a role in sleep quality.

The latest information in this study has implications for efforts to overcome the negative impacts of online game addiction on students' physiological and psychological health. Meanwhile, The limitations of this study are that because data collection was done through Google Form, researchers were unable to observe respondents' behavior while playing online games. In addition, the number of respondents obtained was limited due to difficulties in accessing or reaching online gaming communities. Further research can collect data using direct observation methods on online gaming behavior and examine other factors such as physiological factors that can affect sleep quality in students. Further research can also expand the distribution of data to obtain more respondents.

4. CONCLUSION

Based on the description and results of the study, it can be concluded that there is a significant negative relationship between MMORPG online game addiction and students' sleep quality. Online game players are expected to be wiser in managing their playing time in order to manage their sleep time well. The latest information in this study may have implications for efforts to overcome the negative impacts of online game addiction on students' physiological and psychological health.

5. REFERENCES

- Adiningtiyas, S. W. (2017). Peran guru dalam mengatasi kecanduan game online. *KOPASTA: Journal of the Counseling Guidance Study Program*, 4(1). <https://doi.org/10.33373/kop.v4i1.1121>.
- Ahmad, Z., Maifita, Y., & Ameliati, S. (2020). Hubungan Penggunaan Media Sosial Dengan Kejadian Insomnia Pada Mahasiswa: A Literature Review. *Menara Medika*, 3(1). <https://doi.org/10.31869/mm.v3i1.2200>.
- Ainida, H. F., Lestari, D. R., & Rizany, I. (2020). Hubungan penggunaan media sosial dengan kualitas tidur remaja di madrasah aliyah negeri 4 Banjar. *CNJ: Caring Nursing Journal*, 4(2), 47–53. Retrieved from <https://www.journal.umbjm.ac.id/index.php/caring-nursing/article/view/536>.
- Akbar, H. (2020). Penyuluhan Dampak Perilaku Kecanduan Game Online Terhadap Kesehatan Remaja di SMA Negeri 1 Kotamobagu. *Community Engagement and Emergence Journal (CEEJ)*, 1(2), 42–47. <https://doi.org/10.37385/ceej.v1i2.108>.
- Aminuddin, M. (2020). Hubungan Antara Kualitas Tidur Dengan Prestasi Belajar Mahasiswa Akademi Keperawatan Pemprov Kaltim Samarinda. *Jurnal Kesehatan Pasak Bumi Kalimantan*, 1(1), 51–71. <https://doi.org/10.30872/j.kes.pasmi.kal.v1i1.3618>.
- Anggraini, N. (2022). The Relationship of Online Game Additionality with Sleep Quality. *Jurnal Kesehatan Dan Pembangunan*, 12(24). <https://doi.org/10.52047/jkp.v12i24.157>.
- Anhar, R. (2014). Hubungan kecanduan game online dengan keterampilan sosial remaja di 4 game centre di Kecamatan Klojen Kota Malang. *Diss Universitas Islam Negeri Maulana Malik Ibrahim*. Retrieved from <http://etheses.uin-malang.ac.id/id/eprint/5993>.
- Chiesa, S. A. (2021). Hubungan antara Kecanduan Game Online dengan Kualitas Tidur pada Mahasiswa yang Bermain Game Online X di Kota Padang. *Socio Humanus*, 3(1), 1–11. Retrieved from <http://ejournal.pamaaksara.org/index.php/sohum>.
- Devi, N. K. A., & Heri, M. (2021). Pemenuhan Kebutuhan Istirahat Dan Tidur Pada Anak: Literature Review. *Jurnal Online Keperawatan Indonesia*, 4(1), 7–16. <https://doi.org/10.51544/keperawatan.v4i1.1444>.
- Fernando, R., & Hidayat, R. (2020). Hubungan lama penggunaan media sosial dengan kejadian insomnia pada mahasiswa fakultas ilmu kesehatan universitas pahlawan tuanku tambusai tahun 2020. *Jurnal Ners*, 4(2), 83–89. <https://doi.org/10.31004/jn.v4i2.1117>.
- Hadiansyah, T., & Sarwendah, E. (2023). Hubungan Penggunaan Smartphone Dengan Kualitas Tidur Pada Mahasiswa Keperawatan RS. Dustira. *Jurnal Keperawatan Komplementer Holistic*, 1(2). Retrieved from <https://journalhadhe.com/index.php/jkkhc/article/view/13>.
- Halawa, A. (2021). Kecanduan game online pada remaja dengan tingkat kecemasan orang tua. *Jurnal Keperawatan*, 10(2), 38–53. <https://doi.org/10.47560/kep.v10i2.293>.
- Haryati, H., Yunaningsi, S. P., & RAF, J. (2020). Faktor yang Mempengaruhi Kualitas Tidur Mahasiswa

- Fakultas Kedokteran Universitas Halu Oleo: Factors Affecting the Sleep Quality of Halu Oleo University Medical School Students. *Jurnal Surya Medika (JSM)*, 5(2), 22–33. <https://doi.org/10.33084/jsm.v5i2.1288>.
- Jarmi, A., & Rahayuningsih, S. I. (2017). Hubungan penggunaan gadget dengan kualitas tidur pada remaja. *Jurnal Ilmiah Mahasiswa Fakultas Keperawatan*, 2(3). Retrieved from <https://jim.usk.ac.id/FKep/article/view/3872/2942>.
- Kusumawardani, S. P. (2015). Game Online Sebagai Pola Perilaku (Studi Deskriptif Tentang Interaksi Sosial Gamers Clash Of Clans Pada Clan Indo Spirit). *Jurnal Antropologi FISIP Universitas Airlangga*, 4(2), 154–163. Retrieved from <http://journal.unair.ac.id/download-fullpapers-aun83bacf15affull.pdf>.
- Lin, P.-H., Lee, Y.-C., Chen, K.-L., Hsieh, P.-L., Yang, S.-Y., & Lin, Y.-L. (2019). The Relationship Between Sleep Quality and Internet Addiction Among Female College Students. *Frontiers in Neuroscience*, 13, 599. <https://doi.org/10.3389/fnins.2019.00599>.
- Luntungan, M. M., Pitoy, F. F., & Lotulung, C. V. (2022). Game Online dan Kualitas Tidur Siswa Sekolah Menengah Atas. *Nutrix Journal*, 6(2), 14–20. <https://doi.org/10.37771/nj.Vol6.Iss2.837>.
- Madeira, A., Wiyono, J., & Ariani, N. L. (2019). Hubungan Gangguan Pola Tidur Dengan Hipertensi Pada Lansia. *Nursing News: Jurnal Ilmiah Keperawatan*, 4(1). <https://doi.org/10.33366/nn.v4i1.1471>.
- Mais, F. R., Rompas, S. S. J., & Gannika, L. (2020). Kecanduan game online dengan insomnia pada remaja. *Jurnal Keperawatan*, 8(2), 18–27. <https://doi.org/10.35790/jkp.v8i2.32318>.
- Manoppo, M. W., Pitoy, F. F., & Abigael, T. (2023). Kualitas Tidur pada Mahasiswa Profesi Ners Universitas Klabat. *MAHESA: Malahayati Health Student Journal*, 3(7), 2098–2107. <https://doi.org/10.33024/mahesa.v3i7.10717>.
- Manuputty, J. C., Sekeon, S. A. S., & Kandou, G. D. (2019). Hubungan antara kecanduan bermain game online dengan kualitas tidur pada gamer online pengguna komputer di warung internet M2G Supernova Malalayang. *Kesmas*, 8(7). Retrieved from <https://ejournal.unsrat.ac.id/index.php/kesmas/article/view/26552>.
- Marlianti, D. (2015). *Hubungan kecanduan bermain game online dengan pola tidur dan motivasi belajar anak usia 10-12 tahun di SD Mattoangin 2 Kecamatan Mariso kota Makassar* (Universitas Islam Negeri Alauddin Makassar). Retrieved from <https://core.ac.uk/download/pdf/198220886.pdf>.
- Moi, M. A., Widodo, D., & Sutriningsih, A. (2017). Hubungan gangguan tidur dengan tekanan darah pada lansia. *Nursing News: Jurnal Ilmiah Keperawatan*, 2(2). <https://doi.org/10.33366/nn.v2i2.456>.
- Monding, F. F., Kawatu, P. A. ., & Kalesaran, A. F. . (2020). Hubungan Kecanduan Game Online Dengan Keluhan Neck Pain Pada Mahasiswa Fakultas Kesehatan Masyarakat Universitas Sam Ratulangi. *Kesmas*, 9(6). Retrieved from <https://ejournal.unsrat.ac.id/v3/index.php/kesmas/article/view/30943>.
- Murwani, A., & Umam, M. K. (2021). Hubungan intensitas penggunaan smartphone dengan kualitas tidur pada mahasiswa angkatan 2017 program studi ilmu keperawatan di Stikes Surya Global Yogyakarta. *Jurnal Formil (Forum Ilmiah) Kesmas Respati*, 6(1), 79–90. <https://doi.org/10.35842/formil.v6i1.339>.
- Nashir, H., Budiman, & Putra, A. R. (2023). Hubungan Kecanduan Game Online dengan Kualitas Tidur Mahasiswa FK Unisba Angkatan 2021. *Bandung Conference Series: Medical Science*, 3(1). Retrieved from <https://garuda.kemdikbud.go.id/documents/detail/3285780>.
- Nursyifa, F. I., Widiyanti, E., & Herliani, Y. K. (2020). Gangguan Tidur Mahasiswa Fakultas Keperawatan Universitas Padjadjaran Yang Mengalami Kecanduan Game Online. *Jurnal Keperawatan BSI*, 8(1). Retrieved from <https://ejournal.ars.ac.id/index.php/keperawatan/article/view/166>.
- Pandey, C. M., Ratag, B. T., & Langi, F. L. F. G. (2019). Hubungan antara kecanduan smartphone dengan kualitas tidur pada siswa SMA Negeri 1 Maesaan Kabupaten Minahasa Selatan. *Kesmas*, 8(2). Retrieved from <https://ejournal.unsrat.ac.id/index.php/kesmas/article/view/23935>.
- Pramana, I. D. B. K. W., & Harahap, H. S. (2022). Manfaat Kualitas Tidur yang Baik dalam Mencegah Demensia pada Lansia. *Lombok Medical Journal*, 1(1), 49–52. <https://doi.org/10.29303/lmj.v1i1.522>.
- Pramesti, A., Embrik, I. S., & Pratiwi, A. (2023). Hubungan Kecanduan Game Online Dengan Kualitas Tidur Pada Remaja Di SMK Negeri 5 Kabupaten Tangerang. *Jurnal Dunia Ilmu Kesehatan (JURDIKES)*, 1(2), 45–49. <https://doi.org/10.59435/jurdikes.v1i2.156>.
- Putri, A., & Ningsih, Y. T. (2020). Hubungan Antara Kesepian dengan Kecanduan Game Online pada Mahasiswa yang Bermain Game Online X di Kota Padang. *Jurnal Pendidikan Tambusai*, 4(3), 2760–2767. Retrieved from <https://jptam.org/index.php/jptam/article/download/771/690/1532>.
- Riskawati, Y. K., Savitri, K. A., Ramdani, P. R., & Mufid, A. F. (2020). Hubungan Tingkat Aktivitas Fisik Dengan Indeks Massa Tubuh Mahasiswa Program Studi Sarjana Kedokteran Fakultas Kedokteran

- Universitas Brawijaya. *Majalah Kesehatan*, 7(4), 231-238. <https://doi.org/10.21776/ub.majalahkesehatan.2020.007.04.3>.
- Sadif, R. S., & Rasmi, R. (2023). Dampak Kecanduan Game Online pada Remaja. *Jurnal Pendidikan Dan Konseling (JPDK)*, 5(1), 6122-6128. <https://doi.org/10.31004/jpdk.v5i1.13685>.
- Subandi, S. P., Iman, N., & Syam, A. R. (2022). Dampak Kecanduan Game Online Terhadap Pendidikan Anak. *Al Kamal*, 2(1), 243. Retrieved from <https://ejournal.staika.ac.id/index.php/alkamal/article/download/23/23>.
- Suplig, M. A. (2017). Pengaruh Kecanduan Game Online Siswa SMA Kelas X Terhadap Kecerdasan Sosial Sekolah Kristen Swasta Di Makassar. *Jurnal Jaffray*, 15(2), 177-200. <https://doi.org/10.25278/jj71.v15i2.261>.
- Umam, K., & Muhid, A. (2021). Sisi Negatif Game Online Perspektif Islam dan Psikologi Islam. *Psikoislamedia: Jurnal Psikologi*, 5(2), 153-167. <https://doi.org/10.22373/psikoislamedia.v5i2.7071>.
- Utami, A. T., Bandarsyah, D., & Sulaeman. (2022). Dampak Game Mobile Legends Terhadap Pola Interaksi Sosial Siswa Kelas V di Sekolah Dasar. *Jurnal Educatio FKIP UNMA*, 8(3), 899-907. <https://doi.org/10.31949/educatio.v8i3.2710>.
- Utami, R. J., Indarwati, R., & Pradanie, R. (2021). Analisa Faktor Yang Mempengaruhi Kualitas Tidur Lansia Di Panti. *Jurnal Health Sains*, 2(3), 362-380. <https://doi.org/10.46799/jhs.v2i3.135>.
- Virlia, S., & Setiadi, S. (2016). Hubungan Kecanduan Game Online Dan Keterampilan Sosial Pada Pemain Game Dewasa Awal Di Jakarta Barat. *Psibernetika*, 9(2). <https://doi.org/10.30813/psibernetika.v9i2.460>.
- Wahyuni, L. T. (2018). Hubungan stres dengan kualitas tidur mahasiswa profesi keperawatan STIKes Ranah Minang Padang tahun 2016. *Menara Ilmu: Jurnal Penelitian Dan Kajian Ilmiah*, 12(3). <https://doi.org/10.33559/mi.v12i3.712>.
- Widiyani, K. R., Amelia, F., & Chairani, A. (2021). Hubungan Adiksi Game Online Dengan Kualitas Tidur Pada Anak Di Smp Teratai Putih Global Bekasi Tahun 2020. *Jurnal Muara Sains, Teknologi, Kedokteran Dan Ilmu Kesehatan*, 5(1), 95-102. <https://doi.org/10.24912/jmstkk.v5i1.8277>.
- Winanta, Y. Y., Angraini, W., Pratiwi, B. A., & Yanuarti, R. (2022). Hubungan Kebiasaan Bermain Game Online Dengan Kualitas Tidur Mahasiswa. *Jurnal Ilmiah Mahasiswa Miracle*, 2(1), 170-177. Retrieved from <https://jurnal.umb.ac.id/index.php/miracle/article/view/3787>.
- Woran, K., Kundre, R. M., & Pondaag, F. A. (2021). Analisis hubungan penggunaan media sosial dengan kualitas tidur pada remaja. *Jurnal Keperawatan*, 8(2), 1-10. <https://doi.org/10.35790/jkp.v8i2.32092>.
- Zendrato, Y., & Harefa, H. O. N. (2022). Dampak game online terhadap prestasi belajar siswa. *Educativo: Jurnal Pendidikan*, 1(1), 139-148. <https://doi.org/10.56248/educativo.v1i1.21>.