THE RELATIONSHIP BETWEEN INTERNET ADDICTION AND SLEEP QUALITY: A LITERATURE REVIEW

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ABSTRACT

Internet addiction is a compulsive behavior in which individuals fail to control internet use and dependence on the internet. Individuals with internet addiction are more prone to experience poor sleep quality. Poor sleep quality will cause physical problems, memory and learning disorders, suboptimal performance, mental health problems and are prone to accidents. The purpose of this study was to determine the relationship between internet addiction and sleep quality. This research method uses a literature study approach by searching for articles on the Google scholar database, Garuda Portal, Pubmed and researchgate. The keywords used are internet addiction, sleep quality and internet addiction and sleep quality. The results obtained 11 articles in accordance with the research topic, 10 of which stated that there was a relationship between internet addiction and sleep quality. The conclusions and suggestions of this study are internet addiction can cause poor sleep quality, so the role of nurses as educators is needed as an effort to prevent internet addiction and its bad impact on sleep quality

Keywords: Internet addiction, sleep quality

INTRODUCTION

Based on the We Are Social Global Digital Overview 2020 data, around 4.5 billion out of a total 7.75 billion global population use the internet. Indonesia is among the top three countries with a 17% growth in internet user population in the span of one year from 2019 to early 2020 (Anonim, 2020). According to a recent study conducted by Siste and others in 2020, 79.95% of respondents experienced an increase in internet usage duration during the Covid-19 pandemic (Siste *et al.*, 2020). This condition leads to a problem known as internet addiction.

Internet addiction is a condition where individuals cannot control their internet usage, resulting in problems in physical, psychological, social, and occupational aspects (Longstreet, 2017). An individual may be considered addicted to the internet when using it for more than 7 hours per day (Astati, Hamid and Marhan, 2020).

According to Hootsuite and We Are Social 2019, Indonesia ranks 5th in the world for the highest internet addiction rates (Social, 2019). Citing Dr. Kristiana Siste, Sp.Kj from Cipto Mangunkusumo Hospital (RSCM), internet addiction among teenagers has increased fivefold during the Covid-19 pandemic, with 59% of teenagers experiencing an increase in online duration up to 11.6 hours per day (Siste *et al.*, 2020).

Individuals with internet addiction are more prone to experiencing poor sleep quality. The blue light emitted by gadgets inhibits the production of melatonin hormone, which signals the brain to stay awake, thus delaying sleep time (SIR, 2017). Research conducted by Utami found that internet addiction significantly influences sleep quality compared to other variables (Insan Y and MA, 2019). Poor sleep quality impacts suboptimal performance, daytime fatigue, mental imbalance, physical problems, and susceptibility to accidents (Faoziyah, 2020).

Several studies have been conducted to determine the relationship between internet addiction and sleep quality. Research conducted by Celebioglu on 1487 adolescents in Erzincan showed that internet addiction is associated with poor sleep quality by altering sleep onset (Çelebioğlu A, Özdemir A and G, 2020). A study conducted by Tan, Chen, and Li on 1772 adolescents in China stated that internet addiction causes individuals to have difficulty initiating sleep, leading to irregular sleep patterns (CY-Lg, 2016).

A similar study conducted in Indonesia by Diarti on 33 PSIK UNITRI Malang students found that internet addiction has a significant relationship with a reduced number of hours of sleep at night (Diarti E and W, 2017). This result is supported by research conducted by Ningrum on 325 students in

Yogyakarta, which stated that there is a relationship between internet addiction and sleep quality (Ningrum LL, 2021).

Based on the background described, the researcher is interested in conducting this study to determine whether there is a relationship between internet addiction and sleep quality.

METHODS

This study employs a literature review design aimed at analyzing the relationship between internet addiction and sleep quality. The data used are secondary data obtained from electronic-based search sources, namely Google Scholar, Portal Garuda, PubMed, and ResearchGate, using keywords "kecanduan internet, kualitas tidur" and "internet addiction and sleep quality." The articles used in this study were published in the last 5 years, within the range of 2017-2021. The articles are original research, full-text, and written in Indonesian and/or English. They align with the research topic, specifically the variables of internet addiction and sleep quality. The search was conducted from late August 2021 to early October 2021. Subsequently, the articles were filtered on the Sinta and Scimago websites to determine whether the journals used were indexed and recognized nationally or internationally.

RESULTS

In this study, the following articles were obtained

No	Author, Year	Title	Research Findings
1	Bery J Lambogia, dkk. 2018	The Relationship Between Internet Addiction and Sleep Quality Among Students of SMA Kristen 1 Tomohon	1. The most common level of internet addiction is moderate, accounting for 78.5%. 2. A total of 62.4% of respondents have poor sleep quality. 3. There is a positive relationship with a weak correlation between internet addiction and sleep quality among students of SMA Kristen 1 Tomohon, with a correlation coefficient of 0.018.
2	Maria Alberthin Habut, dkk. 2021	The Relationship Between Internet Addiction and Sleep Quality Among Preclinical Medical Students	1. The results of this study show that 4 respondents (5%) experience severe internet addiction, 62 respondents (77.5%) experience moderate internet addiction, and 14 respondents (17.5%) experience mild internet addiction. 2. A total of 59 respondents (73.8%) have poor sleep quality. 3. There is a positive relationship with a strong correlation between internet addiction and sleep quality among preclinical medical students at Nusa Cendana University, with a p-value of 0.000 ($p<0.05$) and an r-value of 0.529 (strong correlation).

3	Rina Azizah, dkk. 2021	The Relationship Between Internet Addiction and Sleep Quality Among Students of the Faculty of Public Health at Sam Ratulangi University, Manado	1. The results of this study found that 70.8% of students with mild internet addiction had poor sleep quality, and 84.9% of those with moderate internet addiction also experienced poor sleep quality. 2. There is a relationship between internet addiction and sleep quality with a p-value of <0.001 (p<0.05). Students with internet addiction are more likely to experience poor sleep quality.
4	Wika Utari, dkk. 2021	The Relationship Between Internet Addiction and Sleep Quality Among Teenagers	1. The results of this study show that 11 teenagers experience severe internet addiction (6.1%), 95 teenagers have moderate internet addiction (53.1%), and 73 teenagers have mild internet addiction (40.8%). 2. A majority of respondents have poor sleep quality (54.2%). 3. There is a relationship between internet addiction and sleep quality among high school teenagers in Bener Meriah District, with a p-value of 0.001.
5	Rina Maulida dan Hasmila Sari. 2017	The Relationship Between Internet Addiction and Sleep Patterns Among Nursing Faculty Students	1. The research results indicate that more than half of the respondents experience moderate internet addiction (63.7%) and 36.3% experience mild internet addiction. 2. The research findings show that 47 respondents (51.6%) experience disrupted sleep patterns. 3. Chi-square test results yielded a p-value of 0.004 < 0.05, indicating a significant relationship between internet addiction and sleep patterns
6	Melvyn WB Zhang, et al. 2017	Internet Addiction and Sleep Quality Among Vietnamese	1. Research results show that 21.2% of all respondents experience internet addiction, while 78.8% of other respondents do not experience internet addiction. 2. 26.7% of respondents who experience internet addiction have difficulty sleeping an average of 2-3 times per week. 3. Based on multivariate logistic regression analysis, there is a

			relationship between internet addiction and sleep quality. Statistically significant differences were found between respondents with internet addiction and those without internet addiction regarding the frequency of sleep problems, with a p-value of <0.01 (p<0.05).
7	Gulsun Ayran, et al. 2019	Effect of Internet Addiction on Sleep Quality in University Students	1. This study shows that respondents have an average internet addiction score higher than the YIAT-SF average, which is 26.58 2. The research findings indicate that the sleep quality of respondents in this study is poor, with an average total sleep quality test score of 6.51. 4. A positive and statistically significant correlation (26.2%) was found between internet addiction and student sleep quality.
8	Pin Hsuan Lin, et al. 2019	The Relation-ship Between Sleep Quality and Internet Addiction Among Female College Students	1. The research results show that 32.6% of respondents do not experience internet addiction, 52.7% experience mild internet addiction, 13.9% experience moderate internet addiction, and 0.8% experience severe internet addiction. 2. Poor sleep quality is reflected among respondents with moderate and severe levels of internet addiction. 3. Logistic regression analysis indicates a significant correlation between internet addiction and sleep quality with an odds ratio of 1.50:1.3 ~ 1.6, p < 0.01
9	Kshitij Karki, dkk. 2021	Internet Addiction and Sleep Quality Among Adolescents in a Periurban Setting in Nepal: a Cross Sectional School-based Survey	1. The research results show that 21.5% of respondents experience internet addiction, and 31% of respondents have poor sleep quality. 2. Adolescents with internet addiction are more vulnerable to having poor sleep quality. Internet addiction is significantly

				associated with poor sleep quality (p-value: 0.001).
10	Alinta C Thomas, Vigraanth Bapu K.G. 2021	Internet Addiction and Sleep Quality Among Post Graduate Students	1.	The results of this study indicate no relationship between internet addiction and sleep quality among postgraduate students. The significance values of the correlation coefficients are 0.114 and 0.066, resulting in p-values >0.05.

DISCUSSION

Based on the analysis of 11 articles, the characteristic age range of respondents in 9 articles is teenagers aged 15-25 years old. In the study conducted by Gulsun Ayran and Neha Taneja, the characteristic of the respondents is adults aged 25-35 years old. This indicates that teenagers are more prone to internet addiction in terms of age. These findings are consistent with research conducted by Lambogia, which explains that internet addiction is more likely to occur in the adolescent age group (Lombogia, 2018). Teenagers are in a phase of instability and thus have a high curiosity and are easily influenced. Their self-control abilities tend to be lower compared to other age groups, leading them to excessively use the internet to seek happiness (Utari, 2021).

The analysis of 11 articles based on gender shows that internet addiction is predominantly dominated by males. This is because males tend to spend more time playing online games and accessing adult websites. Internet addiction dominated by males can also be explained by the types of internet activities they engage in. Online gaming and pornography sites have higher rates of internet addiction compared to other activities. Online games are often designed with war genres, which are more frequently used by males (Anggraeni, 2020).

Based on the analysis, 10 articles indicate a relationship between internet addiction and sleep quality. The relationship found suggests that higher internet addiction scores correlate with poorer sleep quality scores. According to the analysis, the habit of using the internet before sleep is a significant factor influencing poor sleep quality due to internet addiction. Several articles specify the relationship between internet addiction and problematic components of sleep quality, such as reduced sleep duration, sleep disturbances like insomnia, and feeling tired throughout the day despite sleeping at night. These findings can be explained by the habit of using electronic devices such as smartphones, laptops, or computers that emit blue light. The impulse of light received by the retina is transmitted to the suprachiasmatic nucleus, which then conveys the illumination status to the pineal gland. The pineal gland, responsible for producing melatonin hormone, automatically reduces melatonin production. Changes in melatonin hormone secretion reset the circadian rhythm and influence the brain to maintain alertness, disrupting sleep patterns and reducing individual sleep quality (Habut M, Derri T, 2021). These results align with research by Neha Taneja, showing that 81.3% of respondents who use gadgets before sleep have poor sleep quality. Further research explains that 84.9% of participants with poor sleep quality feel tired throughout the day despite sleeping at night. This is due to disturbances during sleep, which hinder the sleep's function in revitalizing energy. The insufficient energy repair process during sleep causes individuals to lack feelings of freshness and fitness after sleeping (Taneja, 2020).

Based on the analysis of 11 articles, one article indicates no relationship between internet addiction and sleep quality. This study was conducted by Vigraanth Bapu, KG among postgraduate students (Thomas, 2021). This could be due to the lack of control over confounding variables such as age, BMI, smoking habits, alcohol consumption, and religion. These results contrast with research conducted by Pin Hsuan Lin, which found a significant relationship between internet addiction and sleep quality by controlling for confounding variables (Lin PH, 2019).

A person's sleep quality is influenced not only by internet addiction but also by age, temperature, and other external factors such as social activities and work routines. This is supported by research conducted by Lambogia, which states that several factors affect sleep quality, including depression

levels, parental interventions, nighttime electronic device use before sleep, and nighttime social activities (Lombogia, 2018). Therefore, internet addiction is not the sole factor influencing sleep quality, which can introduce bias in research outcomes if other confounding variables are not controlled.

Based on the analysis of 11 articles, internet addiction has a negative impact on sleep quality. The role of nurses as educators is crucial in providing education to the community about the causes of internet addiction, signs and symptoms of internet addiction, and the negative consequences of internet addiction. Educational activities are needed to facilitate early self-detection by the public and to implement prevention efforts to avoid more severe conditions.

CONCLUSIONS

Based on the analysis of 11 articles, 10 articles indicate a relationship between internet addiction and sleep quality, while 1 article states that there is no relationship between internet addiction and sleep quality. The relationship found suggests that higher scores of internet addiction correlate with poorer sleep quality. The more severe the internet addiction, the worse the sleep quality.

REFERENCES

Anggraeni (2020) 'Online Game, Addiction and Learning Achievement of Senior High School Students in Jakarta', *IJDS Indones J Disabil Stud*, 7(2).

Anonim (2020) *Global Digital Overview*.

Astati, A., Hamid, R. and Marhan, C. (2020) 'Hubungan antara Kontrol Diri dengan Kecanduan Internet pada Remaja', *Jurnal Sublimapsi*, 1(3), pp. 163–172. doi: 10.36709/sublimapsi.v1i3.12766.

Çelebioğlu A, A., Özdemir A, K. S. and G, A. (2020) 'The effect of Internet addiction on sleep quality in adolescents', *J Child Adolesc Psychiatr Nurs*, 33(4).

CY-Lg, S.-F. (2016) 'sleep problems and internet addiction among children and adolescents: a longitudinal study', *J Sleep Res*, 25(4). doi: 10.11111/jsr.12388.

Diarti E, S. A. and W, R. H. (2017) 'Hubungan Antara Penggunaan Internet Dengan Gangguan Pola Tidur Pada Mahasiswa Psik Unitri Malang', *Nurs News (Meriden)*, 2(3).

Faoziyah (2020) 'Kualitas dan efisiensi tidur yang buruk pada mahasiswa olahraga tahun pertama srata-1 terhadap pembelajaran gerak', *J Sport J Penelit pembelajaran*, 6(2). doi: 10.1111/jcap.12287.

Habut M, Derri T, H. P. (2021) 'Hubungan Adiksi Internet dengan Kualitas Tidur Pada Mahasiswa Preklinik Fakultas Kedokteran', *Cendana Med J*, 21(1).

Insan Y, U. P. and MA, A. (2019) 'Kualitas Tidur Mahasiswa Polstat Stis Dan Variabel-Variabel Yang Memengaruhinya', *Pros Nas Mat Stat dan Apl*.

Lin PH, L. Y. (2019) 'The relationship between sleep quality and internet addiction among female college students', *Front Neurosci*, pp. 1–9. doi: 10.3389/fnins.2019.00599.

Lombogia (2018) 'Hubungan Kecanduan Internet dengan Kualitas Tidur.', *J Med dan Rehabilitasi*, 1.

Longstreet, P. & B. S. (2017) 'Technology in Society Life Satisfaction: A key to managing internet & social media', *Technol Soc*, 50, pp. 73–77.

Ningrum LL, K. F. (2021) 'Relationship Between Sleep Quality and Internet Addiction Among College Students in Yogyakarta', *Proc 2nd Southeast Asian Acad Forum Sustain Dev*, pp. 360–365.

SIR, A. J. (2017) 'Hubungan Penggunaan Gadget dengan Kualitas Tidur', *J Ilm Mhs Fak Keperawatan*, 2(3).

Siste, K. *et al.* (2020) 'The Impact of Physical Distancing and Associated Factors Towards Internet Addiction Among Adults in Indonesia During COVID-19 Pandemic: A Nationwide Web-Based Study', *Frontiers in Psychiatry*, 11(2). doi: 10.3389/fpsyt.2020.580977.

Social, H. we are (2019) *Tingkat Kecanduan Internet di Indonesia Nomor Lima di Dunia*.

Taneja (2020) 'Study on Internet Addiction and Sleep Quality Among Students of a Private University of Delhi', *Intenational J Sci Res*, 9(6). doi: 10.36106/ijsr.

Thomas, A. C. (2021) 'Internet Addiction and Sleep Quality among Post Graduate Students', 9(2). doi: 10.25215/0902.172.

Utari (2021) 'HUBUNGAN INTERNET ADDICTION DENGAN KUALITAS TIDUR REMAJA', 5(1), pp. 1–8.