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THE RELATIONSHIP BETWEEN GADGET USE AND STRESS LEVELS ON ADOLESCENT SLEEP QUALITY

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ABSTRACT

One of the problems faced by adolescents today is the lack of adequate sleep quality, which impacts the decline in their cognitive performance. In Indonesia, adolescents who experience sleep quality disturbances fall into a relatively high category, with several studies showing that more than 30% of adolescents have poor sleep quality. One of the factors contributing to poor sleep quality among adolescents is lifestyle changes, including gadget use. This study aims to determine the relationship between gadget use and stress levels on sleep quality among adolescents at SMP Negeri 10 Kendari in 2022. This research is an observational analytic study using a cross-sectional design. The population consisted of all eighth-grade students at SMP Negeri 10 Kendari, totaling 202 students, with a sample size of 133 obtained using the Lameshow formula. Samples were selected using a proportionate stratified random sampling technique. The instruments used were the Pittsburgh Sleep Quality Index (PSQI) questionnaire (to measure sleep quality) and the Depression Anxiety Stress Scale 42 (to measure stress levels). The analysis results showed significant relationships between gadget use and sleep quality (p=0.000), duration of gadget use (p=0.000), type of gadget use activity (p=0.000), and stress levels (p=0.004). It can be concluded that there is a significant relationship between gadget use and stress levels on adolescent sleep quality.

Kata Kunci:

Keterbelakangan mental;
Parenting;
Prestasi belajar

ABSTRAK

Salah satu permasalahan remaja saat ini adalah kurangnya pemenuhan kualitas tidur yang berdampak pada penurunan tingkat kognitif remaja. Di Indonesia, remaja yang mengalami gangguan kualitas tidur termasuk dalam kategori yang cukup tinggi, dimana beberapa hasil penelitian menunjukkan bahwa lebih dari 30% remaja mengalami kualitas tidur yang buruk. Salah satu faktor yang menyebabkan remaja mengalami kualitas tidur yang buruk antara lain adalah perubahan gaya hidup termasuk penggunaan gadget. Penelitian ini bertujuan untuk mengetahui hubungan penggunaan gadget dan tingkat stres terhadap kualitas tidur pada remaja di SMP Negeri 10 Kendari tahun 2022. Jenis penelitian ini adalah analitik observasional dengan menggunakan desain Cross Sectional Study. Populasi dalam penelitian ini adalah seluruh siswa kelas VIII SMP Negeri 10 Kendari yang berjumlah 202 orang, sedangkan jumlah sampel sebanyak 133 yang diperoleh dengan menggunakan rumus lameshow. Penarikan sampel dilakukan dengan menggunakan teknik Proportionate Stratified Random Sampling. Alat ukur yang digunakan adalah kuesioner Pittsburgh Quality Index (PSQI) (untuk mengukur kualitas tidur) sedangkan stres diukur dengan kuesioner (Depression Anxiety Stress Scale 42). Hasil analisis didapatkan hubungan antara penggunaan gadget dengan kualitas tidur (p=0,000), durasi penggunaan gadget (p=0,000), aktivitas menggunakan gadget (p=0,000, stres (p=0,004). dapat disimpulkan bahwa ada hubungan yang signifikan antara penggunaan gawai dan tingkat stres terhadap kualitas tidur remaja.

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INTRODUCTION

One of the problems faced by teenagers today is the lack of fulfillment of sleep needs, which results in poor sleep quality. Sleep quality is very important for the cognitive function of adolescents because many physiological and psychological restoration processes occur during sleep (Irfan et al., 2020). The National Sleep Foundation states that normal sleep duration for adolescents aged 14–18 years is 8–10 hours per night, and good sleep quality allows adolescents to experience better rest (Lewien et al., 2021). After a day of activities, sleep serves to restore and rest the body physically,

reduce stress or anxiety, and improve memory and concentration. Therefore, if sleep quality is inadequate, it can affect other aspects of health and daily function (Gurusinga, 2022).

The prevalence of sleep quality disturbances among adolescents varies across studies. In Beijing, 21.2% of adolescents experienced sleep disturbances, while among junior and senior high school students, the prevalence ranged from 15.3% to 39.2% (Ivana et al., 2021). Meanwhile, in Indonesia, epidemiological studies assessing sleep quality in adolescents are still limited. However, a study using the Sleep Disturbances Scale for Children found that the prevalence of poor sleep quality was 73.4% in the control population and 63% among adolescents who slept less than seven hours each night (Krisnana et al., 2022).

One of the factors causing poor sleep quality among adolescents is lifestyle changes, particularly the use of gadgets. Compared to other factors, gadget use has become an unavoidable aspect of adolescent life. With the sophistication and convenience of modern devices, many people carry out most of their activities using gadgets (Pratiwi et al., 2020).

Globally, the number of gadget users continues to increase each year. In 2019, gadget users reached 3.2 billion, up from around 5.6% growth from the previous year. Meanwhile, active device usage reached 3.8 billion units. The number of gadget users in 2022 was estimated to reach 3.9 billion, driven mainly by growth in developing regions, including the Middle East, Africa, Latin America, and Southeast Asia (Neewzo, 2019). In Indonesia, internet use increased significantly from 2019 to 2020, reaching 184.94 million users (73.3%), based on a survey conducted by APJII (Association of Indonesian Internet Service Providers) (Gunawan et al., 2021).

Excessive gadget use makes it difficult for individuals to fall asleep quickly, causing them to stay up late, which affects both the quality and duration of sleep. In the United States, 90% of people admit to using gadgets for at least an hour before going to bed. Using gadgets before sleep can stimulate physiological and psychological effects that disrupt the sleep process. It can delay the body's internal clock (circadian rhythm), suppress the release of melatonin (the sleep-inducing hormone), and make it harder to fall asleep. As a result, adolescents tend to sleep later than usual. Furthermore, constant exposure to gadget screens can cause eye strain, nerve disturbances, and frequent dizziness (Keswara et al., 2019).

In addition to gadget use, several studies have identified stress as another factor influencing sleep quality. Hidayat (2009) revealed that stress, psychological tension arising from mental strain, can significantly affect sleep. This can be observed when individuals with psychological problems experience anxiety that makes it difficult to sleep (Pangestika et al., 2018). During stress, levels of epinephrine, norepinephrine, and cortisol increase, affecting the central nervous system, heightening alertness, and disrupting both Non-Rapid Eye Movement (NREM) and Rapid Eye Movement (REM) sleep cycles. Consequently, individuals may wake up frequently during the night or experience nightmares (Faizi & Kazmi, 2017).

Based on preliminary observations conducted in February 2022, interviews with 10 students and counseling teachers at SMP Negeri 10 Kendari revealed that students tend to be highly active in using gadgets. They use gadgets for assignments, social media, or gaming. Many admitted to using gadgets late at night, not only for schoolwork but also for entertainment, making it difficult to sleep early and wake up in the morning. As a result, they experience stress from studying while feeling sleepy and from excessive gadget use at night.

METHOD

Type of Research

This type of research is observational analytic using a cross-sectional study design, where the variables of gadget use, stress, and adolescent sleep quality were measured simultaneously in one period.

Place and Time of Research

This research was conducted at State Junior High School 10 Kendari from September to October 2022.

Population and Sample

The population in this study consisted of all eighth-grade students at SMP Negeri 10 Kendari, totaling 202 students, while a sample of 133 students was obtained using the Lameshow formula. Samples were selected using a proportionate stratified random sampling technique.

Class		Number of Students	Number of Samples
VIII	VIII A	30	$ni = \frac{30 \times 133}{202} = 20$
	VIII B	29	$ni = \frac{29 \times 133}{202} = 19$
	VIII C	28	$ni = \frac{28 \times 133}{202} = 18$
	VIII D	29	$ni = \frac{29 \times 133}{202} = 19$
	VIII E	29	$ni = \frac{29 \times 133}{202} = 19$
	VIII F	30	$ni = \frac{30 \times 133}{202} = 20$
	VIII G	27	$ni = \frac{27 \times 133}{202} = 18$

After determining the number of samples for each class, the next step was to use a shuffling technique based on an *arisan* (lottery) model to randomly select participants from each class.

Data Collection

The instruments used in this study were questionnaires consisting of: (1) Pittsburgh Sleep Quality Index (PSQI), to measure adolescent sleep quality, (2) Depression Anxiety Stress Scale (DASS-42), to measure stress levels, (3) Smartphone Addiction Scale (SAS), to measure smartphone use. The questionnaires were distributed face-to-face by the researcher at the school. Data collection took place over a set period (approximately 1–2 weeks) until the targeted number of respondents was achieved. Afterward, the collected questionnaires were checked for completeness, and invalid responses were identified. The data were then coded into numerical format and entered into Microsoft Excel and SPSS statistical software for analysis.

Data Analysis and Processing

Data were analyzed using the SPSS version 25.0 program with the chi-square test at a significance level (α) of 0.05. If $p < 0.05$, H_0 was rejected and H_1 accepted, indicating a significant relationship between gadget use and adolescent sleep quality. If $p > 0.05$, H_0 was accepted, meaning there was no significant relationship between gadget use and adolescent sleep quality.

RESULTS

a. Characteristics of Respondents

Based on Table 1, most respondents were 13 years old (52.6%) and most of them are male, totaling 70 respondents (52.6%).

Table 1. Distribution of Respondents N = 133

No	Characteristics of Respondents	Frequency (n)	Percentage (%)
1	**Age (years)**		
	12	12	9.0
	13	70	52.6
	14	46	34.6
	15	5	3.8
2	**Gender**		
	Male	70	52.6
	Female	63	47.4

b. Correlation between Gadget Use Time, Duration of Gadget Use, Activities using Gadgets, Stress and Sleep Quality

Table 2. The relationship between gadget use and sleep quality among adolescents at SMP Negeri 10 Kendari, 2022

Variable	Sleep Quality				Total		*ρ-value*
	Good		Bad				
	n	%	n	%	N	%	
Gadget Usage Time							
Bad	17	23,6	55	76,4	72	100,0	0,000
Good	37	60,7	24	39,3	61	100,0	
Gadget Usage Duration							
Bad	14	18,7	61	81,3	75	100,0	0,000
Good	40	69,0	18	31,0	58	100,0	
Activities Using Gadgets							
Bad	17	23,0	57	77,0	74	100,0	0,000
Good	37	62,7	22	37,3	59	100,0	
Stress							
Yes	20	28,6	50	71,4	70	100,0	0,004
No	34	54,0	29	46,0	63	100,0	
Total	**54**	**40,6**	**79**	**59,4**	**133**	**100**	

DISCUSSION

a. Correlation between Gadget Use Time and Sleep Quality

Based on the results of the bivariate analysis, it was found that there was a relationship between the time of gadget use and sleep quality among adolescents at SMP Negeri 10 Kendari in 2022, with a p-value of 0.000. The results of this study are in line with the research of Rugaiyah (2021), which stated that there is a relationship between gadget use and sleep quality in adolescents. In her study, it was explained that using gadgets at night can disrupt a person's sleep schedule, especially when used for a long period (Rugaiyah, 2021).

Other studies have also shown that using gadgets before going to bed is associated with impaired sleep health, mainly through delayed bedtimes and reduced sleep duration. This can be caused by several factors, including time displacement (spending more time on gadgets than on other activities), psychological stimulation from gadget-based activities, and the effect of blue light emitted from gadget screens that affect circadian rhythms (Sohn et al., 2021).

In this study, it was found that most teenagers often bring several electronic devices into their bedrooms and access them before going to sleep. Some respondents reported that they enjoy accessing social media before bedtime, which they find entertaining and often leads to staying up late, resulting in sleep deprivation. Even simply engaging in chatting or online interactions before bedtime can delay sleep onset, disrupt sleep patterns, and trigger insomnia, headaches, and difficulty concentrating (Andira et al., 2022).

In addition to the excitement of using gadgets, prolonged and late-night gadget use can physiologically and psychologically stimulate the body in ways that interfere with sleep. This is largely

due to the artificial blue light emitted by screens. The more electronic devices adolescents use at night, the more difficult it becomes for them to fall asleep or stay asleep. Gadgets also tend to keep users alert, delaying both the body and mind from preparing for rest, which reduces overall sleep quality. Gadget use should ideally be stopped at least one hour before bedtime, or even longer if possible (Lewien et al., 2021).

The findings from this study showed that time spent using gadgets is significantly related to sleep quality. Questionnaire results revealed that most respondents used gadgets after 10 p.m. This habit causes adolescents to stay awake longer before actually falling asleep, leading to delayed bedtimes and difficulty initiating sleep (Zahra et al., 2024).

The study also found that there were more respondents in the poor category of gadget use time compared to those in the good category. Out of 72 respondents (100%) categorized as having poor gadget use time, 55 (76.4%) had poor sleep quality. This indicates that staying up late due to gadget use contributes to delayed bedtimes and insufficient sleep duration. Using gadgets before bed has become a daily habit for many adolescents, often seen as an essential routine. This habit negatively affects health, particularly through disrupted sleep patterns that can lead to insomnia.

Meanwhile, among 61 respondents (100%) categorized as having good gadget use time, 24 (39.3%) still had poor sleep quality. This indicates that poor sleep patterns in some respondents were also influenced by short sleep duration and disturbances during sleep, which reduced sleep quality. Therefore, to minimize sleep disturbances caused by gadget use, adolescents, and their parents, should establish time limits for gadget use before bedtime.

b. Correlation between Duration of Gadget Use and Sleep Quality

The duration of gadget use or screen time often has recommended limits to prevent excessive exposure. According to the Australian Government Department of Health, children under two years of age should have no screen time, those aged two to five years should have less than one hour per day, and those aged five to seventeen years should have less than two hours per day. These limits exclude gadget use for online learning purposes. The rapid increase in screen time has occurred as technology and information have become central to socialization, education, and everyday life (Isnaningsih & Sari, 2022).

Based on the results of the bivariate analysis, there was a significant relationship between the duration of gadget use and sleep quality among adolescents at SMP Negeri 10 Kendari in 2022, with a *p*-value of 0.000 (< 0.05). This finding is similar to the study by Chandra et al., (2022), which reported that the duration of gadget use affects sleep quality in school-age children. Adolescents tend to view gadgets as essential and have difficulty controlling their use, leading to prolonged screen time that impacts sleep quality (Chandra et al., 2022).

This result is also in line with research conducted by Isnaningsih & Widya Sari, (2022), which stated that playing gadgets not only disrupts sleep schedules but also causes difficulty falling asleep when staring at gadget screens for a long time, due to blue light exposure that mimics daylight (Isnaningsih & Sari, 2022). Similarly, Andira et.al, (2022) found that respondents who used gadgets excessively had poor sleep quality (46.0%), with a *p*-value of 0.001 and an odds ratio (OR) of 5.000, indicating a significant relationship between gadget use duration and students' sleep quality (Andira et al., 2022)

Prolonged exposure to gadget screens can worsen natural sleep cycles and make it harder for individuals to fall asleep. A person falls asleep more easily in dim light because melatonin production increases in darkness. Using gadgets before bed requires users to stay alert, which raises adrenaline levels and makes it harder to fall asleep (Jarmi & Rahayuningsih, 2017).

The findings of this study also support the idea that longer gadget use duration is related to poor sleep quality. Questionnaire results showed that most respondents used gadgets for extended periods, often losing track of bedtime. Excessive gadget use causes adolescents to need more time to fall asleep than usual. The study revealed that many adolescents use gadgets for more than two hours per day, including before bedtime, which significantly affects sleep patterns at night and daytime alertness.

The study further found that there were more respondents in the poor category of gadget use duration compared to the good category. Of 75 respondents (100%) in the poor category, 61 (81.3%)

had poor sleep quality. This suggests that adolescents are unable to manage their time properly in using gadgets, both at school and at home, which contributes to irregular rest patterns.

Meanwhile, among respondents categorized as having good gadget use duration, 18 (31.0%) still had poor sleep quality. This indicates that some adolescents experience other factors affecting their sleep, such as room temperature (too hot or too cold), nightmares, or physical discomfort that disrupts sleep quality.

c. Relationship of Activity Using Gadgets with Sleep Quality

Based on the results of the bivariate analysis, it was found that there was a relationship between gadget use activities and sleep quality among adolescents at SMP Negeri 10 Kendari in 2022, with a ρ-value (0.000 < 0.05). This is in line with the research conducted by Keswara, Syuhada and Wahyudi (2019), which explained that there is a significant relationship between the behavior of using gadgets for social media activities and the quality of adolescent sleep, with a ρ-value = 0.000. This means that the poorer a person's gadget-use behavior, the higher the risk of experiencing sleep problems.

This study is also similar to that of Dungga & A. Dulanimo (2021), which explained that the activities carried out by adolescents at night before going to bed affect their sleep quality. One such activity is playing games or watching videos using gadgets for a long time at night, which keeps teenagers awake until late. As a result, the quantity of sleep among adolescents decreases, leading to poorer sleep quality (Dungga & A. Dulanimo, 2021).

Children and adolescents are particularly vulnerable to sleep problems caused by electronic devices emitting blue light. Several studies have established a link between gadget use before bedtime and increased sleep latency, or the time it takes to fall asleep. In addition, children and adolescents who use gadgets at night often experience poor sleep quality and tend to feel tired the next day. According to Margaret et al (2023), disrupted sleep patterns in adolescents occur because they have difficulty falling asleep due to the intense use of social networking sites accessed through smartphones and gadgets, which affect brain function and cause insomnia symptoms (Margaret et al., 2023).

Based on field observations at SMP Negeri 10 Kendari, the results showed that the activity of using gadgets is related to sleep quality. Questionnaire distribution revealed that respondents used gadgets for various activities such as using applications, playing games, accessing social media, browsing online media sites, watching movies, and engaging in other pleasurable online interactions. This causes adolescents to spend more time on gadgets, often neglecting time for rest and sleep.

In this study, it was also found that among respondents categorized as having good gadget-use activity, 22 respondents (37.3%) still had poor sleep quality. This suggests that poor sleep quality among adolescents can also be caused by other factors such as excessive daytime activity, long naps, and daily lifestyle habits. Consequently, adolescents' sleep function becomes less optimal.

d. Stress Relationship with Sleep Quality

Based on the results of the bivariate analysis, it was found that there was a relationship between stress and sleep quality among adolescents at SMP Negeri 10 Kendari in 2022, with a ρ-value = 0.004 (ρ < 0.05). The results of this study are in line with research by Jumilia (2020), which stated that there is a relationship between stress and sleep quality among high school adolescents, with a p-value of 0.000. This means that the greater the stress experienced by adolescents, the higher the risk of sleep difficulties and the lower the likelihood of meeting the recommended 8–10 hours of sleep per day (Jumilia, 2020).

Kyung et al (2021) stated that stress is closely related to reduced sleep duration. Moreover, stress strongly influences nightmares and sleep complaints. Emotional stress can cause individuals to have difficulty falling asleep, frequently wake up during the night, or oversleep. If stress persists, it can lead to poor sleep habits (Kyung et al., 2021).

This study is also in line with the research of Oktaviani et al. (2021), which found that most respondents experienced mild stress (48.5%) and moderate sleep disturbances (71.2%). Data analysis using Spearman's rank correlation test showed a p-value of 0.001 and an r-value of 0.445, indicating a significant relationship between stress levels and sleep quality among final-year students at Harapan Bangsa University (Oktaviani et al., 2021).

Based on field findings at SMP Negeri 10 Kendari, it was observed that stress levels were related to sleep quality. Questionnaire data showed that most respondents had difficulty resting and relaxing, making it hard to fall asleep and causing frequent awakenings during the night.

The study also found that more respondents experienced stress compared to those who did not. Of the 70 respondents (100%) who were stressed, 50 respondents (71.4%) had poor sleep quality. This shows that stress can lead to disturbances in adolescents' sleep patterns. During stress, there is an increase in the hormones epinephrine, norepinephrine, and cortisol, which stimulate the central nervous system and cause wakefulness. These hormonal changes also affect the Non-Rapid Eye Movement (NREM) and Rapid Eye Movement (REM) sleep cycles, causing frequent awakenings and nightmares (Zurrahmi et al., 2021).

Meanwhile, of the 63 respondents (100%) who were not stressed, 29 respondents (46.0%) still had poor sleep quality. This indicates that poor sleep quality in adolescents may also be caused by other factors such as fatigue, anxiety, lifestyle demands related to school and social activities, and environmental influences.

Stressful experiences can occur in anyone, including adolescents and adults, as they face both mental and material pressures. For adolescents, school life is an exciting yet challenging time filled with new experiences. When exams approach, some adolescents experience stress and may react negatively. Stress represents both a physical and mental response to demands that can come from school, friendships, and family. Such pressures can cause stress that manifests through behavior changes. For example, some adolescents feel anxious about failing exams or not being promoted to the next grade. However, parents often do not recognize this as a mental health issue (Ajeng, 2021).

CONCLUSION AND SUGGESTION

Of the 133 respondents, most adolescents had poor sleep quality, with 79 respondents (59.4%) experiencing poor sleep quality and 54 respondents (40.6%) having good sleep quality. Gadget use, duration of gadget use, activities involving gadgets, and stress were found to be related to adolescent sleep quality at SMP Negeri 10 Kendari in 2022.

Students are expected to pay more attention to their daily sleep patterns and limit gadget use to avoid addiction and prevent negative impacts on their social life and health. Meanwhile, schools are expected to supervise students' gadget use outside of class hours. It is also recommended that schools collaborate with health workers to conduct counseling on proper gadget use and the risks of stress related to sleep disturbances, in order to improve adolescents' knowledge and awareness.

REFERENCES

Ajeng, A. K. (2021). Hubungan Tingkat Stres Dengan Kualitas Tidur Mahasiswa / I Fakultas Kedokteran Universitas Prima Indonesia Pada Saat Pandemi Covid-19. *Kedokteran*, *44*(6), 378–389.

Andira, A. D., Usman, A. M., & Wowor, T. J. F. (2022). Hubungan Penggunaan Gadget Terhadap Kualitas Tidur Pada Mahasiswa Keperawatan di Universitas Nasional. *Jurnal Promotif Preventif*, *4*(2), 51–56. https://doi.org/10.47650/jpp.v4i2.354

Chandra, I. *et al.* (2022). Pengaruh Durasi Bermain Gadget Terhadap Kualitas Tidur Pada Anak Usia Sekolah Kelas V dan VI (Sekolah Dasar Kristen Citra Bangsa). *CHMK HEALTH JOURNAL*, 6(1), pp. 2615–1154. http://cyber-chmk.net/ojs/index.php/kesehatan/article/view/1145

Dungga, E.F. and Dulanimo, A. (2021). Hubungan Intensitas Penggunaan Smartphone Dengan Kualitas Dan Kuantitas Tidur Pada Remaja. *Jambura Nursing Journal*, 3(2), pp. 59–69. https://doi.org/10.37311/jnj.v3i2.11912

Faizi, N., & Kazmi, Shahwar. (2017). Universal health coverage - There is more to it than meets the eye. *Journal of Family Medicine and Primary Care*, *6*(2), 169–170. https://doi.org/10.4103/jfmpc.jfmpc_13_17

Gunawan, R., Aulia, S., Supeno, H., Wijanarko, A., Uwiringiyimana, J. P., & Mahayana, D. (2021). Adiksi Media Sosial dan Gadget bagi Pengguna Internet di Indonesia. *Techno-Socio Ekonomika*, *14*(1), 1. https://doi.org/10.32897/techno.2021.14.1.544

Gurusinga, M. F. (2022). The Relationship of Smartphone Use With Quality Disorders Sleeping in Sma Negeri 2 Pematang Siantar. *Jurnal Penelitian Keperawatan Medik*, *5*(1), 8–16. https://doi.org/10.36656/jpkm.v5i1.1044

Irfan, Aswar, & Erviana. (2020). Hubungan Smartphone Dengan Kualitas Tidur Remaja Di Sma Negeri 2 Majene. *Journal of Islamic Nursing*, *5*(2), 95. https://doi.org/10.24252/join.v5i2.15828

Isnaningsih, T., & Widya Sari, F. (2022). Hubungan Perilaku dan Frekuensi Penggunaan Gadget dengan Kualitas Tidur pada Remaja. *Formosa Journal of Science and Technology (FJST)*, *1*(4), 205–216. https://doi.org/10.55927/fjst.v1i4.877

Ivana, I., Murniati, M., & Ayu Trisno Putri, N. R. I. (2021). The Relationship Between Gadget Usage and Adolescent Sleep Quality. *Journal of Public Health for Tropical and Coastal Region; Vol 4, No 1 (2021): Journal of Public Health for Tropical and Coastal. https://doi.org/10.14710/jphtcr.v4i1.10776*

Jarmi, A., & Rahayuningsih, S. I. (2017). Hubungan Penggunaan Gadget Dengan Kualitas Tidur Pada Remaja. *Jurnal Keperawatan*, 1–7. https://jim.usk.ac.id/FKep/article/view/3872

Jumilia (2020) "Faktor-Faktor Yang Berhubungan Dengan Kualitas Tidur Pada Remaja Di Sma Pgri 2 Padang" *Jurnal Ensiklopediaku*, 2(3), pp. 313–322. https://jurnal.ensiklopediaku.org/ojs-2.4.8-3/index.php/ensiklopedia/article/view/760

Keswara, U. R., Syuhada, N., & Wahyudi, W. T. (2019). Perilaku penggunaan gadget dengan kualitas tidur pada remaja. *Holistik Jurnal Kesehatan*, *13*(3), 233–239. https://doi.org/10.33024/hjk.v13i3.1599

Krisnana, I., Hariani, V., Kurnia, I. D., & Arief, Y. S. (2022). The use of gadgets and their relationship to poor sleep quality and social interaction on mid-adolescents: a cross-sectional study. *International Journal of Adolescent Medicine and Health*, *34*(1). https://doi.org/10.1515/ijamh-2019-0101

Kyung, C.A. *et al.* (2021) "Factors Affecting the Quality of Sleep in Young Adults," *Journal of Korean Academy of Community Health Nursing*, 32(4), pp. 497–505. Available at: https://doi.org/10.12799/JKACHN.2021.32.4.497

Lewien, C., Genuneit, J., Meigen, C., Kiess, W., & Poulain, T. (2021). Sleep-related difficulties in healthy children and adolescents. *BMC Pediatrics*, *21*(1), 82. https://doi.org/10.1186/s12887-021-02529-y

Margaret, T. *et al.* (2023). Hubungan Penggunaan Media Social Dengan Kualitas Tidur Pada Remaja Di Smk Negeri 2 Tahun 2022. *Jurnal Keperawatan Sisthana*, 8(2), pp. 47–60. https://doi.org/10.55606/sisthana.v8i2.562

Neewzo. (2019). *Newzoo Global Games Market Report 2019 | Light Version*.

Oktaviani, lani T., Apriliyani, I., Yudono, D. T., & Dewi, F. K. (2021). Hubungan Tingkat Stres dengan Kualitas Tidur pada Mahasiswa Tingkat Akhir Dimasa Pandemi Penyakit COVID-19 di Universitas Harapan Bangsa, Purwokerto. *Health Information: Jurnal Penelitian*, *13*(2), 54–60.

Pangestika, G., Lestari, D. R., & Setyowati, A. (2018). Stres dengan Kualitas Tidur pada Remaja. *Dunia Keperawatan*, *6*(2), 107–115. https://doi.org/10.20527/dk.v6i2.4412

Pratiwi, E. A., Ananda, L., Rispawati, B. H., & Safitri, R. P. (2020). Relationship of Gadget Use With Sleep Quality in Pandemy Covid-19 In School Age Children in State Elementary School Goa Jereweh District West Sumbawa. *STRADA Jurnal Ilmiah Kesehatan*, *9*(2), 1680–1686. https://doi.org/10.30994/sjik.v9i2.497

Rugaiyah. (2021). Hubungan Perilaku Penggunaan Gadget Dengan Kualitas Tidur Pada Remaja SMA Negeri 21 Makassar. *Universitas Hasanudin*.

Sohn, S. Y., Krasnoff, L., Rees, P., Kalk, N. J., & Carter, B. (2021). The Association Between Smartphone Addiction and Sleep: A UK Cross-Sectional Study of Young Adults. *Frontiers in Psychiatry*, *12*(March), 1–10. https://doi.org/10.3389/fpsyt.2021.629407

Zahra, N. M., Shuarmanto, Musyabiq Wijaya, S. (2024). Hubungan Penggunaan Gadget dengan Kualitas Tidur Remaja. *Journal of Language and Health*, *5*(3). Hubungan Penggunaan Gadget dengan Kualitas Tidur Remaja | Journal of Language and Health

Zurrahmi, Hardianti, S., & Syahasti, F. M. (2021). Hubungan Tingkat Stres Dengan Kualitas Tidur Pada Mahasiswa Akhir S1 Kesehatan Masyarakat Universitas Pahlawan Tuanku Tambusai. *Jurnal Assyifa' Ilmu Keperawatan Islami*, *6*(2). https://doi.org/10.31004/prepotif.v5i2.2092