

Original Article

# Association between gadget use and physical and mental health among adolescents: A cross-sectional study

Novita Elisabeth Daeli<sup>1\*</sup>, Sanny Frisca<sup>1</sup>, Aprida Manurung<sup>1</sup>

<sup>1</sup>Program Studi Ilmu Keperawatan, Fakultas Ilmu Kesehatan, Universitas Katolik Misi Charitas, Palembang, Indonesia

**\*Corresponding Author:**

**Novita Elisabeth Daeli**

Program Studi Ilmu Keperawatan,  
Fakultas Ilmu Kesehatan, Universitas  
Katolik Misi Charitas, Palembang,  
Indonesia

Email:  
novita\_daeli@ukmc.ac.id

**Keyword:**

Adolescent; Gadget Use; Mental Health;  
Physical Health

© The Author(s) 2026

**DOI:**

<https://doi.org/10.52235/lp.v7i2.752>

**Article Info:**

Received : March 18, 2026

Revised : April 29, 2026

Accepted : May 13, 2026

**Lentera Perawat**

e-ISSN : 2830-1846

p-ISSN : 2722-2837



This is an Open Access article distributed under the terms of the [Creative Commons Attribution-NonCommercial 4.0 International License](https://creativecommons.org/licenses/by-nc/4.0/).

## Abstract

**Background:** Gadget use has become increasingly common among adolescents and is closely integrated into learning, communication, entertainment, and daily activities. Although gadgets provide educational and social benefits, excessive or problematic use may contribute to physical complaints, including eye strain, hearing problems, and musculoskeletal pain, as well as mental health problems such as depressive symptoms. However, empirical evidence regarding the association between gadget use and adolescent physical and mental health remains limited.

**Objective:** This study aimed to examine the association between gadget use and physical and mental health among adolescents.

**Methods:** A cross-sectional analytic survey was conducted among students at a state vocational high school in Palembang City, Indonesia. A total sampling technique was used, resulting in 50 respondents. Gadget use was measured using an adapted Mobile Phone Problematic Use Scale, while physical health was assessed based on eye health, hearing health, and pain-related complaints. Mental health was measured using the 6-item Kutcher Adolescent Depression Scale. Data were analyzed using univariate analysis and Kendall's tau correlation test, with a significance level of 0.05.

**Results:** Most respondents were middle adolescents aged 16–18 years (90%) and male (68%). The majority were classified as at-risk gadget users (90%). More than half of the respondents had moderate physical health problems (56%), and most respondents were categorized as having depressive symptoms (90%). Bivariate analysis showed no significant association between gadget use and physical health among adolescents ( $r = 0.055$ ;  $p = 0.687$ ). Similarly, no significant association was found between gadget use and mental health ( $r = 0.228$ ;  $p = 0.106$ ).

**Conclusion:** Gadget use was not significantly associated with physical or mental health among adolescents in this study. These findings suggest that adolescent physical and mental health may be influenced by multiple factors beyond gadget use, including lifestyle, social environment, family factors, academic stress, and individual coping mechanisms. Further studies with larger samples and more comprehensive assessment of confounding variables are recommended.

## Background

Technological advancement is a major innovation that helps humans perform many activities more easily and quickly. Adolescents are among the most dominant users of technological development. Adolescence is a developmental stage in which individuals are no longer classified as children but have not yet fully entered adulthood, generally occurring between the ages of 11 and 20 years (Ettinger et al., 2022). Current technological development is widely used in the learning process, particularly among adolescents (Kumar et al., 2023; Kbarek et al. 2025). Today, almost everyone interacts with gadgets. A gadget is a small electronic device with various functions, including computers or laptops, tablet PCs, and mobile phones or smartphones. In the era of globalization, gadgets are very easy to find, and almost all groups in society own them (Budi

Santoso & Dita Hendriani, 2024). Technological advancement has made gadgets one of the closest objects to human activities. Gadgets have both positive and negative impacts.

The positive impacts of gadget use include supporting the learning process. For example, animation-based learning can be easier to understand than theory delivered through conventional lectures (Asmahanim et al., 2024; Sharm & Kappor, 2025). In addition, the learning process is facilitated by materials that can be read repeatedly because they are uploaded to learning platforms such as learning management systems, Google Classroom, and other digital platforms. Another development is online learning, which enables students to learn anywhere and anytime without being limited by time and place (Kumar et al., 2024; Marpuah et al., 2021). However, learning through online platforms also requires students to increase

their screen time, thereby increasing their exposure to gadgets (Budi Santoso & Dita Hendriani, 2024). Almost all students have personal gadgets, allowing them to use these devices anytime and anywhere according to their preferences. Gadget use that initially begins as a learning need may shift toward other needs unrelated to learning. The recommended daily limit for gadget use is two hours for individuals aged 18 years; however, this duration is often only sufficient for completing school assignments. As a result, students may increase their screen time for entertainment or online shopping in addition to academic purposes. The frequency and duration of gadget use can be seen from how often and how long a person uses gadgets in a day or how many days in a week. Increased screen time may lead to negative effects that can endanger users (Panjeti-Madan & Ranganathan, 2023).

The negative impacts of gadget use may potentially interfere with eye health (Zong et al., 2024). Blue light has the shortest spectrum within the spectrum visible to the human eye. Long-term exposure may cause visual health problems. Several signs of eye disorders include blurred vision, unclear color perception, double vision, and glare at night (Barzegari et al., 2025). Prolonged gadget use may also affect eye health, particularly when gadgets are used for more than four hours per day (Kaur et al., 2022). In addition, children may prefer to be alone and become less concerned with their surrounding environment (Eliana & Oktaviana, 2025). Blue light may also increase alertness and reduce the effect of melatonin, thereby decreasing sleepiness. This condition may reduce sleep duration and interfere with the rest time needed to support cognitive processes.

Another possible effect is hearing problems due to prolonged headphone use. When staring at a screen, static movements also occur in the head, neck, and shoulder areas. Looking at a screen for hours in one day may increase stiffness in the neck muscles and contribute to low back pain (El Shunnar et al., 2024; Ellis Sandoval et al., 2025; Mahmoud et al., 2022). However, because the information displayed on the screen is often perceived as interesting and enjoyable, this pain is frequently ignored. In addition, prolonged mouse use may trigger repetitive static movements focused on the thumb and index finger, while the other fingers become stiff (Jamie L et al., 2022). In many conditions, this

may cause pain and cramps in the wrist and shoulder areas (Ellis Sandoval et al., 2025).

In addition to physical impacts, gadget use may also have emotional effects on individuals. The likelihood of experiencing mental health problems increases when the level of gadget addiction continues to rise (Augner et al., 2023; Putri, 2024). Mental health problems continue to increase every year. In Indonesia, the number of people with mental disorders remains high, with one in five people, or approximately 20% of the population, at risk of experiencing mental health problems. Among adolescents, depression occurs in 1.1% of those aged 10–14 years and 2.8% of those aged 15–19 years. Early symptoms include rapid mood changes. Common mental health problems include anxiety, stress, depression, bipolar disorder, schizophrenia, and trauma.

The number of mental health cases remains high because many communities still consider mental health problems to be ordinary or insignificant. In addition to mental health, loneliness, technophobia, and nomophobia also play a role in determining the mental health status of Generation Z (Surat et al., 2021). Brain function disorders may affect the prefrontal cortex, which is the part of the brain responsible for controlling emotions, self-control, responsibility, decision-making, and other moral values. Continuous disruption of brain function may contribute to introverted behavior.

Children may feel restless and anxious when separated from their gadgets, causing most of their time to be spent playing with gadgets. This condition may reduce closeness between children and parents and may cause children to become more introverted (Astuti & Suryadi, 2025). Continuous gadget use may also make children less physically active, preferring to sit or lie down. In addition, children may become less sensitive to their surrounding environment and become too absorbed in their gadgets, causing them to forget to interact or communicate with people around them, including their families. If this condition continues, it may result in adverse consequences (Asmayawati et al., 2025; Widya Ningrum et al., 2025).

Therefore, this study aimed to analyze the association between gadget use and physical and mental health among adolescents.

## Methods

### *Study Design*

This study used an analytical survey design with a cross-sectional approach. This design was applied to examine the association between gadget use and physical and mental health among adolescents. Gadget use referred to the level of gadget addiction among adolescents. Physical health included eye health, hearing health, and neck pain, while mental health referred to the emotional effects experienced by individuals who used gadgets.

### *Sampling*

The population of this study consisted of students from a state vocational high school in Palembang City. The sampling technique used in this study was total sampling, with a total sample of 50 respondents. The inclusion criteria were as follows: students aged 13–18 years, students who owned a smartphone, students who completed the entire research process, students with good vision and hearing, and students who agreed to participate in the study by signing an informed consent form. The exclusion criteria were students who were ill and students who were absent during data collection.

### *Instruments*

The research instruments consisted of questionnaires for each study variable. The questionnaires were completed at one time. Gadget use was measured using an adapted version of the Mobile Phone Problematic Use Scale (MPPUSA). The MPPUSA questionnaire consisted of several aspects, including tolerance, escape from problems, craving, withdrawal, negative consequences, and social motivation. The instrument trial obtained a reliability coefficient of 0.8777. This instrument consisted of 24 statements with five response options: never, rarely, sometimes, often, and always. The gadget use variable was categorized into problematic users, at-risk users, regular users, and occasional users.

Physical health was measured using items related to hearing health, eye health, and pain. The hearing health domain consisted of seven

statements, the eye health domain consisted of five statements, and the pain domain consisted of five statements. The physical health variable was categorized as good, moderate, and fair, with scores of 17–56, 57–97, and >97, respectively. Mental health was measured using the 6-item Kutcher Adolescent Depression Scale, with scores ranging from 0 to 3. The mental health variable was categorized into depression, with a score of  $\geq 6$ , and no depression, with a score of  $< 6$ .

### *Data Collection*

Data were collected directly from respondents by distributing questionnaires containing written statements to be completed by the respondents. The completed questionnaires were then collected, analyzed, and processed. Questionnaire completion was conducted at one time. In this study, the questionnaire was used as a data collection technique by providing respondents with a set of written questions or statements to be answered and completed.

### *Data Analysis*

Data were analyzed using the Kendall's tau test. Kendall's tau was used because the measurement scale of each study variable was ordinal. The level of significance used in this study was 95%, with an alpha value of 0.05.

### *Ethical Consideration*

This study was conducted based on an ethical review appropriate to the respondent group. All respondents received an explanation regarding the objectives and procedures of the study through the informed consent process. Because the respondents were minors and adolescents, approval for data collection was obtained from their guardians and the school where the respondents were enrolled. This process was conducted before data collection began. The researchers ensured the confidentiality of respondents' personal data by using initials. Respondents were also given the full right to withdraw from the study at any time without any sanctions or consequences.

## Results

This study involved a total of 50 respondents. The respondent characteristics included age and sex. The independent variable in this study was gadget use, while the dependent variables were physical health and mental health. The study findings are presented in the following tables.

Based on Table 1, most respondents were middle adolescents aged 16–18 years, with 45 respondents (90%). The majority of respondents were male, with 34 respondents (68%), while 16 respondents (32%) were female. Regarding gadget use, most adolescents were classified as at-risk users, with 45 respondents (90%). In terms of physical health, most respondents were categorized as having fair physical health, with 28 respondents (56%), followed by moderate physical health, with 18 respondents (36%), and good physical health, with 4 respondents (8%). Regarding mental health, most respondents were categorized as

having depression, with 45 respondents (90%), while 5 respondents (10%) were categorized as not having depression.

**Table 1.** Frequency Distribution of Respondent Characteristics

Characteristics	n	%
<b>Age</b>		
Early adolescents (13-15)	5	10
Middle adolescents (16-18)	45	90
<b>Gender</b>		
Female	16	32
Male	34	68
<b>Gadget Use</b>		
Problematic users	3	6
At-risk users	45	90
Regular users	2	4
<b>Physical Health</b>		
Good	4	8
Moderate	18	36
Fair	28	56
<b>Mental Health</b>		
Depression	45	90
No depression	5	10

**Table 2.** Analysis of the Association Between Gadget Use and Physical and Mental Health

Independent Variable	Dependent Variable	Correlation Coefficient (r)	p-value	Interpretation
Gadget use	Physical health	0.055	0.687	No significant association
Gadget use	Mental health	0.228	0.106	No significant association

Based on Table 2, the association between gadget use and physical health showed a p-value of 0.687, indicating no significant association between gadget use and physical health among adolescents ( $p > 0.05$ ). The association between gadget use and mental health showed a p-value of 0.106, indicating no significant association between gadget use and mental health among adolescents ( $p > 0.05$ ). Therefore, gadget use was not significantly associated with either physical health or mental health in this study.

## Discussion

Gadgets are technological devices that can be connected to various applications through the internet. They are portable communication tools that can be carried anywhere (Surat et al., 2021). Gadgets also serve several functions, including communication, fashion,

entrepreneurship, and entertainment. In adolescent life, gadgets can be used as media to support lifestyle improvement. This can be achieved through the use of social media, which is easily accessible through gadgets (Frana, 2022). Appropriate gadget use can facilitate daily needs in the modern era. Conversely, gadget use may also have negative effects that increase the risk of health problems, including physical, psychological, and mental health problems.

Gadget use has become an inseparable part of daily human life. Ranti et al. (2022) stated that excessive gadget use may cause psychological disorders, such as depression, anxiety, stress, insomnia, decreased self-esteem, and other mental disorders (Purdani et al., 2026). Adolescents who spend more than three hours per day using gadgets have a 2.5 times higher

risk of experiencing depression compared with adolescents who use gadgets for less than one hour per day (Putri et al., 2022). Therefore, easy access to gadgets may produce both positive and negative consequences, depending on how individuals use them.

The findings of this study showed that most adolescents had physical health in the fair category. This was indicated by 28 respondents (56%) who reported physical complaints, including pain in the body, head, and other body parts. Health refers to a complete state of physical, mental, and social well-being, not merely the absence of disease or disability (Schramme, 2023). Physical health refers to a condition in which individuals do not experience pain and are clinically free from illness. Physical health can be influenced by healthy lifestyle patterns. Good physical functioning may improve independence and quality of life for each individual (Nailah et al., 2025).

Adequate nutritional intake is needed to support adolescent growth. Physical health problems that may occur among adolescents when nutritional needs are not fulfilled include obesity, undernutrition, stunting, and anemia, particularly among adolescent girls who experience menstruation. These findings are consistent with previous evidence showing that gadget addiction may lead to reduced physical activity among children, which can subsequently interfere with physical health. However, the physical health problems experienced by adolescents in this study may not have been caused only by gadget use. Other factors, such as lack of exercise and inadequate nutritional intake, may also contribute to adolescent physical health problems (Sari et al., 2022).

The analysis of the association between gadget use and physical health showed a p-value of 0.687, indicating no significant association between gadget use and adolescent physical health. Physical health is a condition in which the whole body and its parts are free from illness and pain. Physical health may be influenced by several factors, including social and economic conditions such as income and

social status, physical environments such as water, air, healthy activity spaces, safe housing, community characteristics, individual behavior, education level, genetics, access to health services, sex, and social support. Although excessive gadget use has been reported to be associated with adolescent health (Zong et al., 2024), the absence of a significant association in this study may be explained by the presence of other physical health-related factors among adolescents. These may include environmental conditions such as poor air and water quality, uncertain weather, and decreased immune function, which may contribute to physical health problems among students.

The majority of respondents in this study were categorized as having depression, with 45 respondents (90%). In this context, depression was interpreted based on the condition of adolescents as the dominant gadget users in the digital era. Free access to gadgets and social media may encourage adolescents to compare their personal lives with the seemingly perfect lives displayed by others. This condition may contribute to feelings of inadequacy, low self-esteem, being left behind, and fear of missing out. Mental health is defined as a state of complete physical, mental, and social well-being, not merely the absence of disease, weakness, or disability (Martín-Rodríguez et al., 2024). Mental health may be influenced by life events that affect personality and behavior, such as violence, child abuse, long-term severe stress, and bullying, which is one of the possible causes among adolescents (Han et al., 2025).

Several factors may influence adolescent mental health, including parenting style, environmental health conditions, and the adolescent's social environment. Mental health problems, including depression, may also be caused by other factors related to education, social relationships, and family conditions (Lin & Guo, 2024). In this study, the analysis showed a p-value greater than 0.05, indicating no significant association between gadget use and adolescent mental health. Mental health is a condition in which a person does not experience guilt toward oneself, has a realistic estimation of oneself, accepts personal weaknesses and limitations,

and experiences satisfaction in social life (Augner et al., 2023).

Factors influencing mental health can be divided into internal and external factors. Internal factors include personality, physical condition, psychological condition, attitudes toward life problems, meaning in life, and balanced thinking. External factors include social, economic, political, cultural, environmental, and other contextual conditions. Mental health problems are commonly divided into stress, anxiety, and depression. Mental health and gadget use among adolescents are closely related (Nakshine et al., 2022). However, mental health problems among adolescents may not only be caused by gadget use. Other contributing factors may include adolescents' own attitudes in facing life problems and their developmental process of identity formation.

### Conclusion and Recommendation

This study showed that there was no significant association between gadget use and physical health among adolescents. The findings also showed no significant association between gadget use and adolescent mental health. These results indicate that physical and mental health problems among adolescents may not be determined by gadget use alone, but may also be influenced by other factors, such as lifestyle, physical activity, nutritional intake, family environment, social relationships, academic demands, and individual coping abilities.

Further studies are recommended to examine other factors that may influence adolescent physical and mental health using larger sample sizes and more comprehensive measurement instruments. Future research should also consider potential confounding variables, such as duration of gadget use, type of digital activity, sleep quality, physical activity, nutritional status, parenting style, peer relationships, and academic stress. In practical settings, adolescents are encouraged to manage gadget use wisely as a preventive effort to maintain physical and mental health. Schools, families, and health professionals should also provide education on balanced gadget use, healthy screen-time habits, physical activity, and early detection of mental health problems among adolescents.

### Acknowledgment

The author would like to express deepest gratitude to all respondents who willingly took the time to participate in this research. Your contributions were invaluable to the success of this study.

### Funding Source

None.

### Declaration of conflict of interest

The authors declare no competing interests.

### Declaration on the Use of AI

No AI tools were used in the preparation of this manuscript.

### References

- Asmahanim, H. M., Salim, M. N. F. M., Rusmi, A. S., & Amri, W. N. D. A. W. (2024). Gadget Dependency And Its Impact On Academic Performance: A Study Among Higher Education Students. *International Journal of Modern Education*, 6(23), 227–242. <https://doi.org/10.35631/ijmoe.623016>
- Asmayawati, A., Masliati, T., & Hasnida, H. (2025). The Impact of Gadget Use on the Development of Early Childhood. *Al Tahdzib: Jurnal Pendidikan Islam Anak Usia Dini*, 4(1), 17–30. <https://doi.org/10.54150/altahdzib.v4i1.622>
- Astuti, L. W., & Suryadi. (2025). Dampak Penggunaan Gadget Terhadap Perkembangan Emosional Anak. *Jurnal Pendidikan Islam Dan Anak Usia Dini*, 4, 152–159. <https://doi.org/10.58355/attaqwa.v4i2.162>
- Augner, C., Vlasak, T., Aichhorn, W., & Barth, A. (2023). The association between problematic smartphone use and symptoms of anxiety and depression - a meta-analysis. *Journal of Public Health (United Kingdom)*, 45(1), 193–201. <https://doi.org/10.1093/pubmed/fdab350>
- Barzegari, S., ArabKermani, Z., Mahmoudvand, Z., Arpaci, I., Shabani, F., & Najafi, A. H. (2025). Prevalence and contributing factors of computer vision syndrome among university students in Iran: a cross-sectional study. *BMC Ophthalmology*, 25(1). <https://doi.org/10.1186/s12886-025-04367-3>
- Budi Santoso, & Dita Hendriani. (2024). Analisis Penggunaan Gadget terhadap Perilaku Sosial Remaja di Desa Krandegan Kecamatan Gandusari Kabupaten Trenggalek. *CENDEKIA: Jurnal Ilmu Sosial, Bahasa Dan Pendidikan*, 4(2), 111–122. <https://doi.org/10.55606/cendekia.v4i2.2875>
- El Shunnar, K., Afeef Nisah, M., & Kalaji, Z. H. (2024). The impact of excessive use of smart portable devices

- on neck pain and associated musculoskeletal symptoms. Prospective questionnaire-based study and review of literature. *Interdisciplinary Neurosurgery: Advanced Techniques and Case Management*, 36. <https://doi.org/10.1016/j.inat.2023.101952>
- Eliana, L., & Oktaviana, A. (2025). The Influence of Gadget Use on Early Childhood Social Interaction. *10(1)*, 265–270. <http://ejournal.mandalanursa.org/index.php/JUP/E/index>
- Ellis Sandoval, N., Peña Martinez, M. I., Fernandez Cea, A. B., & Hernandez Rincon, E. H. (2025). Effects on Prolonged Screen Time on Postural Health and Visual Health in Children and Adolescents: A Scoping Review. *Orthopedic Research and Reviews*, 17, 553–562. <https://doi.org/10.2147/ORR.S519541>
- Ettinger, A. K., Risser, L., Rahman, S., Rigas, D., Abromitis, R., Stokes, L. R., Chavis, V., & Miller, E. (2022). Defining and Measuring Child and Youth Thriving: A Scoping Review. *Pediatrics*, 150(5). <https://doi.org/10.1542/PEDS.2022-056902/189736>
- Haleem, A., Javaid, M., Qadri, M. A., & Suman, R. (2022). Understanding the role of digital technologies in education: A review. *Sustainable Operations and Computers*, 3, 275–285. <https://doi.org/10.1016/j.susoc.2022.05.004>
- Han, Z. Y., Ye, Z. Y., & Zhong, B. L. (2025). School bullying and mental health among adolescents: a narrative review. In *Translational Pediatrics* (Vol. 14, Number 3, pp. 463–472). AME Publishing Company. <https://doi.org/10.21037/tp-2024-512>
- Jamie L, Y., Madeline G, S., Oscar, R., Joan E, K., Alexia M, K., Nicole K, C., Claudia, H., & Karthik, M. (2022). Effects of Electronic Usage on the Musculoskeletal System in Adolescents and Young Adults: A Systematic Review. *Journal of Musculoskeletal Disorders and Treatment*, 8(2). <https://doi.org/10.23937/2572-3243.1510114>
- Jaya, & Frana, I. (2022). Perbaikan Gaya Hidup dan Dampaknya Pada Kadar HbA1c Pada Remaja Overweight dan Obesitas yang dimotivasi Melalui Media Sosial: Literature Review. *3(2)*, 66–76.
- Kaur, K., Gurnani, B., Nayak, S., Deori, N., Kaur, S., Jethani, J., Singh, D., Agarkar, S., Hussaindeen, J. R., Sukhija, J., & Mishra, D. (2022). Digital Eye Strain- A Comprehensive Review. In *Ophthalmology and Therapy* (Vol. 11, Number 5, pp. 1655–1680). Adis. <https://doi.org/10.1007/s40123-022-00540-9>
- Kbarek, Y. I., Gurning, M., & Mannopposem, I. A. (2025). Impact of gadget use on the social behavior of elementary school children: A literature review. *Indonesian Journal of Health Services*, 2(1), 21–30. <https://doi.org/10.63202/ijhs.v2i1.54>
- Kumar, L., Doctoral Fellow, P., & Tiwari Sc, D. M. (2023). Use and Utility of Modern Technology in Learning and Teaching Co-editors Dr. Priyam Singh (1st ed.). Atharv Publication.
- Kumar, L., Singh, P., & Tiwari, D. M. (2024). Use and Utility of Modern Technology in Learning and Teaching.
- Lin, J., & Guo, W. (2024). The Research on Risk Factors for Adolescents' Mental Health. In *Behavioral Sciences* (Vol. 14, Number 4). Multidisciplinary Digital Publishing Institute (MDPI). <https://doi.org/10.3390/bs14040263>
- Mahmoud, N. A., Abu Raddaha, A. H., & Zaghamir, D. E. (2022). Impact of Digital Device Use on Neck and Low Back Pain Intensity among Nursing Students at a Saudi Government University: A Cross-Sectional Study. *Healthcare (Switzerland)*, 10(12). <https://doi.org/10.3390/healthcare10122424>
- Marpuah, S., Mardhiah, W. A., Zahari, W., Kirin, A., Mahmudah, U., & Normawati, S. (2021). The Implications of Modern Technology (Gadget) For Students Learning Development in University. In *Turkish Journal of Computer and Mathematics Education* (Vol. 12, Number 2).
- Martín-Rodríguez, A., Gostian-Ropotin, L. A., Beltrán-Velasco, A. I., Belando-Pedreño, N., Simón, J. A., López-Mora, C., Navarro-Jiménez, E., Tornero-Aguilera, J. F., & Clemente-Suárez, V. J. (2024). Sporting Mind: The Interplay of Physical Activity and Psychological Health. In *Sports* (Vol. 12, Number 1). Multidisciplinary Digital Publishing Institute (MDPI). <https://doi.org/10.3390/sports12010037>
- Nailah, I. H., Akhmad Faozi, & Delli Yuliana Rahmat. (2025). Cognitive function and stress as determinants of independence among older adults in institutional care: A cross-sectional study. *Lentera Perawat*, 6(4), 813–820. <https://doi.org/10.52235/lp.v6i4.640>
- Nakshine, V. S., Thute, P., Khatib, M. N., & Sarkar, B. (2022). Increased Screen Time as a Cause of Declining Physical, Psychological Health, and Sleep Patterns: A Literary Review. *Cureus*, 14(10), 1–9. <https://doi.org/10.7759/cureus.30051>
- Panjeti-Madan, V. N., & Ranganathan, P. (2023). Impact of Screen Time on Children's Development: Cognitive, Language, Physical, and Social and Emotional Domains. In *Multimodal Technologies and Interaction* (Vol. 7, Number 5). MDPI. <https://doi.org/10.3390/mti7050052>
- Purdani, K. S., Ridho, M., Safrudin, B., Alamsyah, F., Zain, N. D. R., Wati, P. S., Lestari, S. D., Dewi, C. M., Cholifah, W. N., & Saputra, B. (2026). Psychological factors, digital behaviors, and lifestyle correlates of insomnia among university students: A literature review. *Lentera Perawat*, 7(1), 90–101. <https://doi.org/10.52235/lp.v7i1.674>

- Putri, A. (2024). Promosi Kesehatan untuk Pengetahuan Kesehatan di Kalangan Pelajar tentang Cyber Bullying di Sekolah. *Bakti Nusantara Pengabdian Masyarakat Indonesia*, 1(2), 51-58. <https://doi.org/10.63202/bnmpi.v1i2.66>
- Putri, F. S., Nazihah, Z., Ariningrum, D. P., Celesta, S., & Kharin Herbawani, C. (2022). Depresi Remaja di Indonesia: Penyebab dan Dampaknya Adolescent Depression in Indonesia: Causes and Effects. 10(2).
- Ranti, N. B. P., Boekoesoe, L., & Ahmad, Z. F. (2022). Kebiasaan Konsumsi Kopi, Penggunaan Gadget, Stress dan Hubungannya dengan Kejadian Insomnia pada Mahasiswa. *Jambura Journal of Epidemiology*, 1(1), 20-28. <https://doi.org/10.37905/jje.v1i1.15027>
- Sari, P., Herawati, D. M. D., Dhamayanti, M., & Hilmanto, D. (2022). Anemia among Adolescent Girls in West Java, Indonesia: Related Factors and Consequences on the Quality of Life. *Nutrients*, 14(18). <https://doi.org/10.3390/nu14183777>
- Sharm, A., & Kappor, P. (2025). Investigation of the relationship between internet addiction with emotion regulation in adolescent: A cross-sectional study. *Journal of Community Nursing and Primary Care*, 2(2), 65-74. <https://doi.org/10.63202/jcnpc.v2i2.116>
- Schramme, T. (2023). Health as Complete Well-Being: The WHO Definition and Beyond. *Public Health Ethics*, 16(3), 210-218. <https://doi.org/10.1093/phe/phad017>
- Surat, S., Govindaraj, Y. D., Ramli, S., & Yusop, Y. M. (2021). An Educational Study on Gadget Addiction and Mental Health among Gen Z. *Creative Education*, 12(07), 1469-1484. <https://doi.org/10.4236/ce.2021.127112>
- Widya Ningrum, D., Kusbiantoro, D., Harmiardillah, S., Agung Firmansyah, R., & Suci Aristanto, F. (2025). The Correlation Between Parenting And Gadget Screen Time On Social Interaction Of School-Age Children. In *JoViN Journal of Vocational Nursing* (Vol. 6, Number 1). Number. <https://e-journal.unair.ac.id/JoViN>
- Zong, Z., Zhang, Y., Qiao, J., Tian, Y., & Xu, S. (2024). The association between screen time exposure and myopia in children and adolescents: a meta-analysis. *BMC Public Health*, 24(1). <https://doi.org/10.1186/s12889-024-19113-5>