THE IMPACT OF GADGET USE ON ADOLESCENTS: A LITERATURE REVIEW

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ABSTRACT

The use of gadgets by adolescents without balanced knowledge will impact health. The purpose of this study is to analyze the impact of gadgets on adolescents so that the impact of using gadgets can be prevented and minimized. This research method uses a literature review. Where in the process of searching for literature in this literature review using Pubmed, Scopus, Proquest, and Google Scholar databases with a range of published years 2019-2024. The search was done using several keywords "Impact" "Gadget" AND "Use". The results found 10 articles that show that excessive use of gadgets above the maximum use limit in adolescents causes various problems including physical health such as headaches, back pain, visual disturbances, neck pain, obesity, cognitive development disorders, and psychological health such as sleep disorders, loneliness, easy emotions and stress. Factors such as the lack of knowledge among adolescents about the time limit of gadget use, teacher control when adolescents are in the school environment and lack of parental control over adolescents in the use of gadgets at home trigger the emergence of gadget use in adolescents above the time limit determined by WHO so that it will cause addiction and impact on adolescent health. Therefore, collaboration between adolescents, families, educational institutions and health institutions is needed to prevent and reduce the impact of gadget use on adolescents.

Keywords: Gadget Addiction, The Impact of Teen Gadget Use, Teen Health

INTRODUCTION

Teenagers are the most adept age group in adopting and adapting to the internet compared to other age groups (Chemnad et al., 2023). A study in the United States explains that 95% of teenagers report the use of 1 social media platform and 97% of teenagers report that most teenagers spend their time opening social media and it is very difficult to avoid it, (Liang et al., 2023). According to the Association of Internet Service Providers (APJII, 2023), East Java ranks fifth in the province with the highest internet usage rate in Indonesia in 2023, which is 81.26%.

Based on age, internet usage is highest in the age group of 13-18 years. Almost all (99.16%) of this age group are connected to the internet. Gadgets have many features and applications that can facilitate human life and gadget manufacturers from time to time always innovate in perfecting their features, so that their functionality is increasing (Farida et al., 2021). In

addition to communication, most teenagers use gadgets for entertainment such as playing games, watching videos, listening to music or playing social media (Setyaningsih & Setyowatie, 2023).

According to WHO, adolescents have the ideal time to do online activities or play gadgets is 257 minutes or about 4 hours 17 minutes a day. But the reality is currently experiencing an increase in the use of gadgets. Such research conducted by (Saniyyah et al., 2021) shows that teenagers in Lamdom village use *gadgets* 5-7 hours a day, which means that the teenagers have experienced addiction to *gadgets*. Excessive use of *gadgets* has a negative impact (Syifa et al., 2019).

Gadget addiction can result in various kinds of physical disorders such as dry eyes, back pain due to wrong positions when playing gadgets, sleep pattern disorders, psychological and social problems such as memory decline, euphoria when online, excessive internet time, withdrawal from the social environment, feeling anxious and depressed when *offline* (Setyaningsih & Setyowatie, 2023). This study aims to analyze the impact of gadgets on adolescents so that the effects of using gadgets can be prevented and minimized.

LITERATURE REVIEW

Impact of Using Gadgets Gadgets have positive and negative impacts. One example of the positive impact obtained is making it easier for technology users to communicate without requiring a long time to communicate. The negative impact for users is that it makes users more comfortable individually.

The role of gadgets to make it easier for users to communicate becomes negative if the users are more individual towards each other. The impact is felt not only by adults, but can also be felt by children. The positive impact of using gadgets includes making it easier for a child to hone their creativity and intelligence. However, the use of gadgets also has quite a big negative impact on children, with the ease of accessing various information media and technology, causing children to become lazy about moving and doing activities (Mukminiati, 2020).

The positive effect of gadgets will create creativity and intelligence in children, while the negative effect of gadgets is that they create a lazy attitude towards movement and activities. There are positive and negative impacts resulting from the use of gadgets. The positive impacts of using gadgets include the following:

a. Facilitate communication between fellow gadget users without any distance and time limitations. Being separated by quite a distance is not an obstacle. Ease and fluency in communication knows no time, under any circumstances it can be done at any time.
b. Increase knowledge. Information and knowledge can be obtained through gadgets by accessing knowledge source sites. The site on the gadget has many choices according to what is needed. Starting from education, technology and communication, transportation, and the latest science (Putriana, 2024).

However, the negative impacts of gadgets also need to be considered. The negative impacts of using gadgets include the following:

a. Damages the eyes. Using gadgets for too long will make the eyes dry and can cause eye infections. The eyes become red due to inflammation due to

using gadgets for too long. If left for longer, it can cause the eyes to experience decreased vision.

b. Changing body posture. Body shape will look different or change, this is due to the influence of uncontrolled use of gadgets, so that habits that are often carried out in daily life can change body posture. Improper sitting position when using gadgets can cause your body posture to become hunched (Wijaya, 2022).

METHOD RESEARCH

The method used is a literature review by searching for articles on the Pubmed, Scopus, Proquest and Google Scholar databases. In the initial stage of searching using English keywords with the keywords "Impact" AND "Gadget" AND " Use" obtained the results of 10 International Articles with a range of 2019 to 2024 following inclusion and exclusion criteria. The inclusion criteria used in the study selection for this review literature are: 1) Internationally accredited reputable articles 2) published after 2019 3) Research related to gadget use 4) impact of special gadget use on adolescents.

The exclusion criteria in this study are: 1) Literature review 2) published before 2019 3) Impact of gadget use on other than adolescents. The number of articles found was 180,064 articles. Then identified by year found 51,365 articles, then identified for titles and abstracts found 32,714 articles were not included because they did not fit the topic. The remaining 18,653 articles were reviewed in full. After review, 18,643 articles did not meet the inclusion criteria. Articles and final steps that fit the inclusion criteria as many as 10 articles. The study selection process follows the PRISMA approach.

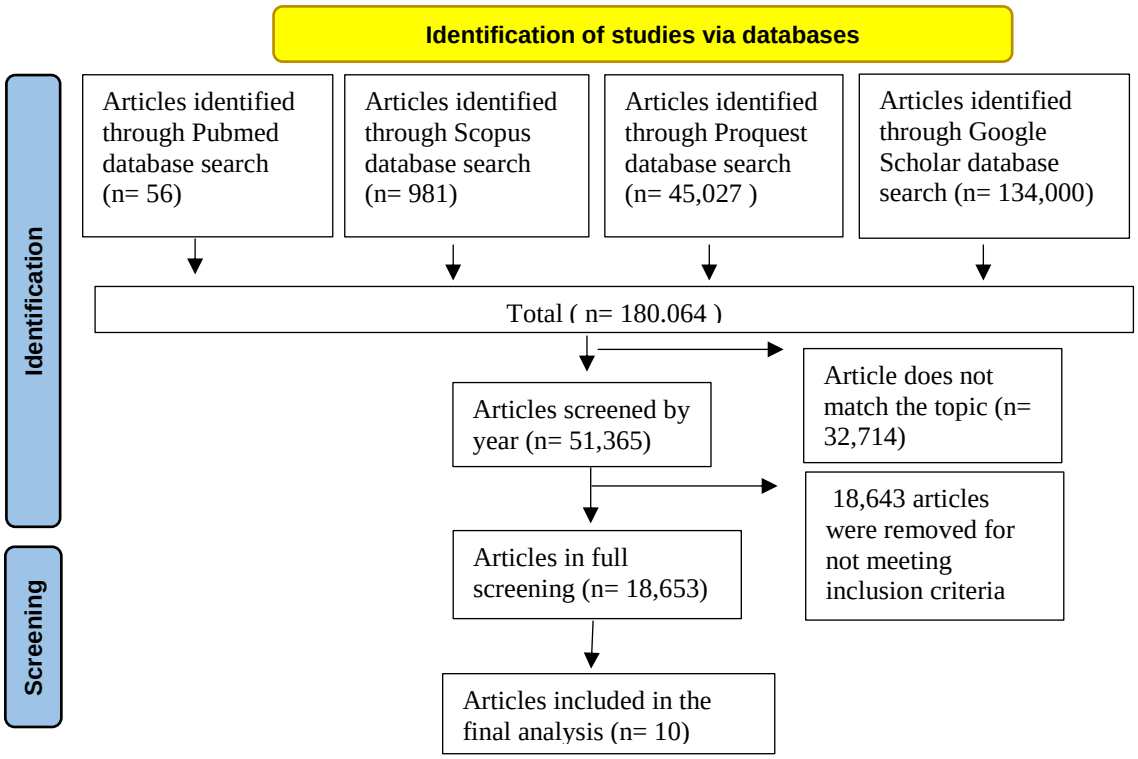

Figure 1. Study Selection (PRISMA Flowchart)

Table 1. Journal Review 2019-2023

No	Author and Journal Identity	Journal Titles	Objective	Population and Sample	Method	Summary of Results
1.	Rashid et al. (2021) Health Science Reports	Prevalence and impact of the use of electronic gadgets on the health of children in secondary schools in Bangladesh: A cross-sectional study	The study aims to look at the prevalence of gadget use as well as health-related complications in secondary school students in Bangladesh	The study was conducted on 1803 middle school students and teenagers from grade 6 to grade coming from 21 districts in Bangladesh. This number includes the population studied in the study.	The study used a quantitative approach with a cross-sectional descriptive study	Most respondents use electronic gadgets, with more than 87% There was a link between gadget use and health problems such as headaches, back pain, visual disturbances, and sleep disturbances, and More obese participants were found to use gadgets than underweight participants

2.	Budianto et al. (2022) International Journal of Public Health Science (IJPHS)	The impact of gadget use for medical education during covid-19 pandemic on neck pain, neck disability, and sleep quality among medical students in Indonesia	The goal was to determine the relationship between the duration of gadget use with neck pain, neck disability, and sleep quality among medical students.	This study involved 800 medical students from Eleven March University who entered from 2017 to 2020, the number of samples involved in this study was 271 students	This study used an analytical observational study with a cross-sectional design.	The results of this study showed a significant correlation between the duration of gadget use and the Numeric Pain Rating Scale (NRS) score for neck pain. The coefficient of determination for the use of gadgets against neck pain is 0.414. In addition, this study also found that there was a significant correlation between the duration of gadget use and neck disability and quality of

						sleep. The coefficient of determination for gadget use on sleep quality was 0.340, indicating that 34.0% of sleep quality was related to the duration of gadget use.
3.	Zhang et al. (2023) Plos One	The relationship between loneliness and mobile phone addiction among Chinese College students: The mediating role of anthropomorphism and moderating role of family support	The study aimed to expand knowledge of the mechanisms underlying the link between loneliness and mobile phone addiction among Chinese college students.	The population in this study was Chinese college students. The study sample consisted of 279 men and 303 women with an age range between 17 and 24 years	The study used a quantitative approach with a moderated mediation model.	The results of this study show a link between loneliness and mobile phone addiction, where loneliness is positively correlated with cell phone addiction.

4.	Widiasih et al. (2022) Iranian Journal of Nursing and Midwifery Research	The Impact of Online Learning among Adolescents during the COVID-19 Pandemic: A Qualitative Study of Mothers' Perspectives	The study aimed to provide an understanding of adolescent internet use from their mothers' perceptions and recommend parents support adolescents to be prudent in using the internet.	This study involved 13 mothers who had children at the high school level using *purposive sampling*	The methodology used is qualitative phenomenological design using collaizzi method data analysis and NVIVO software in the process of managing coding.	The results of the themes obtained in this study are four of them, four themes were obtained, namely the formation of adolescent behavior by the internet, prevention of internet addiction by adolescents, the influence of cognitive development on adolescents, and the negative impact caused by online learning.

5.	Donthu et al. (2022) Journal of Indian Association for Child and Adolescent Mental Health	Association of Screen Time with Physical and Mental Health Among Children: A Cross-Sectional Study	The purpose of this study was to analyze the pattern of gadget use in adolescents and their impact on their physical and mental health.	This study was conducted on parents of children and adolescents aged 5 to 15 years who came to the outpatient department of pediatrics and psychiatry at Indian hospitals, unfortunately, did not explain in detail the place where the study was conducted. The number of samples involved in this study was 321 respondents.	The research method used is cross-sectional, parents of children are given questionnaires where the questionnaire has been tested for reliability validity.	There is a significant relationship between the use of gadgets and physical health problems. Common physical problems reported as a result of gadget use Such as sleep disorders, avoiding playing outdoors, and eyes feeling easily dry. In addition, there was no significant association with mental health.

6.	Skoblina et al. (2020) Klinika Oczna/Acta Ophthalmologica Polonica	Eye health risks associated with the use of electronic devices and awareness of youth	The purpose of this study was to determine the relationship between gadget use and eye health in adolescents	The number of respondents used in this study was 768 students and university students from Russia and Belarus	The methodology used in this study involves calculating quantitative indicators in addition to statistical analysis carried out using Statistica V software. 13, with the use of the t-student test to compare the values of quantitative variables between two groups.	The use of gadgets in adolescents today cannot be avoided, exposure to modern information and communication technology has increased negative impacts, especially on vision health in adolescents 33.5% experience poor vision due to the use of gadgets for more than 2 hours

7.	Lis Thomas et al. (2022) Rwanda Medical Journal	Night Time Gadget Use and Quality of Sleep among Health Science Students in Bangalore, India	This study aims to correlate between Patterns of Gadget Use at Night with Sleep Quality in Health Science Students	The population in this study was students of health study programs at universities in Bangalore, India. While the research sample consisted of 243 students including pharmacy students 79 (32.6%), physiotherapy 79 (32.6%) and nursing 84 (34.7%).	The methodology used is cross-sectional by providing questionnaires to obtain the characteristics of respondents, patterns of gadget use at night, and the impact of gadget use on daily activities. then use the Pittsburgh Sleep Quality Index (PSQI) to see the quality of sleep. Then the collected data was analyzed using spss version 20	Linear regression analysis explains that the habit of looking at gadgets, especially at night and staying up late at night, will have an impact on student activities during the day. Subjective sleep quality, sleep latency, sleep duration, And sleep efficiency is significantly affected by the use of gadgets at night.
8.	Wulandari & Alfan (2022) Jurnal Komunikasi dan Penyiaran Islam	The Impact Of Excessive Gadget Use On Adolescent Behavior In Al- Hidayah Dorm	This study aims to find out how the influence of gadgets on adolescent behavior in the Al-Hidayah	The informant used in this study was a teenage resident of the Al Hidayah dormitory who used excessive	This research uses a qualitative approach with a descriptive method. The data was obtained through the observation of several	Excessive use of gadgets can harm adolescent behavior in their social associations, including emotional

			dormitory environment	gadgets for more than 10-12 hours per day.	residents of the Al-Hidayah dormitory who used gadgets excessively.	instability which results in irritability, emotion, and anxiety which ultimately reduces the productivity of dormitory residents, thus impacting the frequent dormitory residents. Woke up late, and did not go to school. 'I had time, not attending lectures, and there are many other bad effects.
9.	Machado et al. (2023) Journal of Education and Health Promotion	The pattern of smartphone usage, smartphone addiction, and associated subjective health problems associated with smartphone use among undergraduate nursing students	This study aims to determine the pattern of smartphone use, smartphone addiction, and health problems arising from	In this study, the population consisted of third and fourth-year undergraduate nursing students from five different nursing colleges	This study used a cross-sectional survey design. Data was collected between January and March 2020 from five different nursing colleges in Udupi District,	More than two-thirds of participants experienced moderate levels of smartphone addiction. Many participants reported health problems

			smartphone use.	in Udupi District, Karnataka, India. The sample of this study consisted of 270 selected nursing students using technical convenience sampling.	Karnataka, India	especially headaches, followed by eye strain. Awareness of smartphone addiction and health issues related to smartphone use has been shown to reduce its impact. The study concluded that it is crucial to identify patterns of smartphone use, to prevent the impact of addiction and problems health associated with smartphone use.
10.	Handayani et al. (2021) Jurnal Kedokteran Kesehatan Masyarakat Malaysia	Gadget Addiction And The Effect Of Sleep Habit, Stress, and Physical	The purpose of this study was to analyze the direct and	The population in this study involved obese middle and high school	Bivariate analysis with a chi-square test is used for categorical data and an independent T-test for	Gadget addiction is directly related to sleep habits, stress, and physical

	Activity On Obesity	indirect effects of gadget use, sleep habits, stress, and physical activity on obesity	adolescents totaling 150 people. Sample determination is taken by simple random sampling.	numerical data. Multivariate analysis was performed with path analysis, using the Amos software program version 22.0.	activity, and indirectly to obesity.

DISCUSSION

The main focus of this literature review is the impact of gadget use on adolescents, In this review summarizes 10 articles that meet the inclusion criteria that have been set. The research articles used are articles from various countries including Bangladesh, China, India, Russia, Belarus and Indonesia. Based on the results of a review of 10 articles, it was found that 5 articles, namely articles 1, 2, 5, 7 and 10 mentioned that adolescents experience sleep disorders. The most dangerous negative influence of the use of gadgets is to make users addicted (Sumarni et al., 2020).

Along with the times, the features of gadgets offered are increasingly diverse, which makes teenagers take advantage of their free time to play with gadgets (Rashid et al., 2021). This contributes to the occurrence of various adolescent health problems, one of which is sleep disorders. Based on research conducted by Keswara et al. (2019) states that the prevalence in the world of sleep pattern disorders is around 15.3% to 39.2%, and in Indonesia shows that most sleep quality in adolescents is less fulfilled by 63%.

This can have an impact on health, and one of the factors that causes 80% of teenagers to use gadgets in a day is> 4 hours 17 minutes. According to Kurniawati (2020), Excessive use of gadgets can cause dependence on gadgets and can interfere with planning that must be done for example studying because it is too cool with gadgets, teenagers forget to play with gadgets until late at night so they will be sleepy and lose concentration during class learning as a result of which their achievement will decrease. It is supported by Andira et al. (2022) Gadget Excess associated with poor sleep quality performed on nursing students at National University with a P value of 0.001 with an OR of 5% is caused by the release of blue light which can interfere with the hormone melatonin.

Articles 1, 6, and 9 (research in Bangladesh, Russia, and Belarus as well as in India) show that the use of gadgets can cause visual disturbances such as tired eyes and can cause head and neck pain. Like research conducted by Abdul et al. (2021), The wrong position when using a gadget can cause headaches and neck pain. The pain that occurs is caused by the wrong position of the neck and tension due to frequently looking at the gadget

screen, the headaches that are experienced occur due to eye fatigue.

In line with research Susanti (2021) revealed that there was a relationship between the duration of gadget use and decreased eye vision in respondents at the UISU Faculty of Medicine, namely that in the right eye a P value was found to be 0.011 and in the left eye a P value was found to be 0.018. Visual complaints can arise due to a screen display that is not bright enough, lack of lighting can result in visual complaints in the form of eye fatigue so that device users will move their eyes closer to objects to increase the size seen on the device screen. This will make the eye's accommodation process more forced and can cause double or blurred vision.

In Article 1 and Article 10, it is stated that gadgets can also have an impact on obesity where it was found that more obese teenagers use gadgets than those who do not use gadgets excessively. (Handayani et al., 2021)And(Rashid et al., 2021).From articles that have been reviewed Machado et al. (2023) explained that gadgets also have an impact on physical health, one of which is obesity. Teenagers tend to be lazier, they will only spend their relaxing time with gadgets, and gadget use is usually done while sitting or lying down (Mayyoni et al., 2019). Lack of physical activity risks obesity.

In Article 3, gadgets have a significant relationship with gadget addiction in teenagers, usually, this happens to those who have low family support. Lonely teenagers will fill their free time by playing with gadgets, potentially becoming addicted (Lebho et al., 2020). So it will have a negative influence on teenagers' cognitive development as in article 4.

In article 8, gadgets cause stress and emotions in teenagers. In line with Research et al. (2019)Teenagers who are addicted to gadgets will experience failure in controlling their use of gadgets, they consider gadgets to be very important. Not infrequently this can cause social anxiety in the form of fear of negative evaluation by other people. In line with research by Ulfa Suryani & Yazia (2023) there is a relationship between gadget addiction and emotional disorders in teenagers at SMA Pertiwi 2 Padang in 2022 with a P value of 0.001. The research results show that more than half (57.4%) of teenagers experience emotional disorders and more than half (55.6%) of teenagers have gadget addiction.

CONCLUSION

Of the 10 articles obtained, the majority were done on teenagers. 5 articles review the impact of gadget use on sleep disorders, 3 articles review visual disturbances caused by gadgets, and 2 articles about headaches, obesity, and cognitive disorders. As well as other impacts caused by the use of gadgets such as back pain, neck pain, loneliness, easy stress, and emotions. Based on the negative impact caused by the use of gadgets, it is very necessary for the role of parents as companions and supervisors of children at home and the role of teachers as educators who can supervise adolescents at school. It is also necessary for the participation of the government that regulate the use of gadgets in adolescents because adolescents are the next generation of the nation.

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