

## The Impact Of Gadget Use On Eye Health Disorders In Elementary School Students

Indirwan Hasanuddin\*, Zainab, Dewi Aulia Harianto

Nursing Study Program, Nursing & Midwifery Faculty, ITKeS Muhammadiyah Sidrap, Indonesia

### ABSTRACT

#### Article Info

##### Article History

Received : 14 october 2022

Revised : 24 October 2022

Accepted: 14 November 2022

#### \*Corresponding Author :

[indirwan.hasanuddin02@gmail.com](mailto:indirwan.hasanuddin02@gmail.com)

#### DOI

<https://doi.org/10.37362/jch.v6i3.844>

P- ISSN : [2722-1563](#)

E -ISSN : [2580-7137](#)



This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License, which allows others to remix, tweak, and build upon the work non-commercially as long as the original work is properly cited. The new creations are not necessarily licensed under the identical terms

One of the communication tools that are often used today is a gadget. Gadget communication tools are one of the results of technological advances at this time. Over time many children and teenagers have used gadgets as both entertainment and learning media. As we know that the gadget screen itself uses small writing compared to books. So this results in a closer reading distance and will certainly increase the need for vision in its use which can cause visual symptoms such as eye fatigue blurred vision dizziness and dry eyes. This research is a type of quantitative research using analytic method with a retrospective design with a sample of 30 people with a total sampling technique. This research was conducted by carrying out eye examinations and filling out questionnaires by respondents to determine the impact of using gadgets on eye health problems in students at SDN 20 Pangsid Sidenreng Rappang Regency. The data obtained were then analyzed by univariate and bivariate using chi-square test. The results of this study are the results of measuring the intensity of gadget use and the status of eye health problems in students after filling out the questionnaire and eye examination using the Snellen chart the p-value 0.000 with a significance level of  $p < \alpha$  (0,05) which means There is an Impact of Use Gadgets Against Eye Health Disorders in Students of SDN 20 Pangsid Sidenreng Rappang Regency.

**Keywords:** Gadgets; Eye Health Disorders; Pupils

### INTRODUCTION

One of the communication tools that are often used today is a gadget. Gadget communication tools are one of the results of technological advances at this time. Over time many children and teenagers have used gadgets as both entertainment and learning media. As we know that the gadget screen itself uses small writing compared to books. So this results in a closer reading distance and will certainly increase the need for vision in its use which can cause visual symptoms such as eye fatigue blurred vision dizziness and dry eyes. This can happen when using gadgets for a long time and excessively (Puspa et al. 2018).

The use of gadgets that continues to grow affects many things including eye health problems especially in children this occurs due to prolonged use of gadgets at close distances especially when playing online games. The habit of playing gadgets with close

and long distances can cause visual disturbances such as eye fatigue which makes the eyes red watery eyes sore eyes and blurred vision (Millatun Nadlifah & Novitasari, 2018).

At this time many children experience eye health problems this is due to the use of gadgets for a long time poor body position when using gadgets and frequent use of gadgets in dark places so that this can lead to a lack of sharp eyesight in children (Putra et al, 2018)

The eyes of children can actually adjust to be able to see in focus even though they are looking at the gadget screen at a close distance because the eyes of children still have the ability of the eye lens to thin and thicken when focusing the incoming light. However if this continues to occur it will have a negative impact on the child's eyeball which will experience changes in growth resulting in the walls of the eyeball becoming weak causing various health problems in the eye (Mardiana et al. 2019).

In this modern era, the use of gadgets is very much needed in everyday life. Gadgets are all electronic goods that have special uses, the form can be in the form of mobile phones, PC computers, laptops, tablets, smartphones, video games, and others. The number of Internet users in Indonesia in 2016 was 132.7 million users or about 51.5% of the total population of Indonesia of 256.2 million. Internet users by age, the most users are aged 35-44 years at 29.2% and for ages 10-24 years to reach 18.4% or 24.4 million users (APJII, 2017).

Children with the habit of playing gadgets with the distance between the gadget screens to the eyes of less than 30 cm will experience visual impairment by 66.7%. The use of gadgets with a distance of less than 30 cm can cause health problems in the eyes such as blurred vision eyes become tired sore and feel itchy (Nunung Nurjanah, 2020).

Based on a survey conducted by the Basic Health Research (Riskesdas) in 2013 the prevalence of blindness was 0.4%, then validated by the Indonesian Ophthalmologist Association (Perdami) of 0.6%. Based on the age group, the highest severe low vision rate was in the age group 75 years with 13.90%. While in the 5-14 year age group it was 0.03% (Riskesdas, 2013).

According to data on visual impairments worldwide in 2010 there were 285 million or (4.24%) of the population 39 million or (0.58%) of people suffering from blindness and 246 million or (3.65%) of people experiencing decreased vision function. (Kementerian Kesehatan RI, 2014).

In 2013 the prevalence of visual acuity disorders in school-age children was 0.8 in West Java. The prevalence of vision is more common in children in rural areas than in

children in urban areas. This can be seen based on Riskesdas data in 2013 where the prevalence of vision in children in urban areas is 0.8 while in rural areas it is 1.1% (Rudhiati et al. 2015).

According to research by (Riska Wandini et al, 2020) regarding the relationship between gadget use and children's eye health in elementary school it was stated that the results of the examination showed that 106 children 55.8 used gadgets badly while 90 children 47.4 had health problems. eye. From the results of statistical tests the results obtained P-value 0.003 or P-value 0.05 which means that there is an influence between the use of gadgets on eye health in children in elementary schools.

### METHODS

This research was conducted at SDN 20 PANGSID. on May 3 to July 5, 2022. This type of research is a quantitative study using analytics where researchers try to find out how and why health phenomena occur. The research design used was retrospective. The population in this study were all 5th grade students of SDN 20 PANGSID who collected 30 students by taking samples using total sampling. In this study, data and information were collected from respondents using a questionnaire. Data were analyzed by univariate and bivariate.

### RESULTS

Based on the age group is 10 years namely 53.3% and by gender the most gender is 21 men namely 70.0%.

**Table 1 : Characteristics of Respondents**

Variable	Frekuensi (F)	Percentage (%)
<b>Age</b>		
10 years old	16	53.3
11 years old	14	46.7
<b>Gender</b>		
Male	21	70.0
Female	9	30.0
<b>Total</b>	<b>30</b>	<b>100</b>

Based on the gadget use variable it was found that the respondents with low gadget use intensity were 19 people 63.3% while the high gadget usage intensity was 11 people 36.7% while for the eye health status variable eye examination using the Snellen chart

Respondents found no complaints. as many as 18 people 60.0% while there were complaints as many as 12 people 40.0%.

**Table 2. Distribution Frequency of Respondents Based on Intensity of Gadget Use and Status of Eye Health Disorders**

Variable	Frekuensi (F)	Percentage (%)
<b>Intensity of Gadget Use</b>		
Low	19	63.3
Tall	11	36.7
<b>Eye Health Status</b>		
No Complaints	18	60.0
There Are Complaints	12	40.0
<b>Total</b>	<b>30</b>	<b>100</b>

Based on the table 3, it shows that based on the *chi-square test* the *p-value* 0.000 which has a significance value of 0.05 it can be concluded that there is an impact of using gadgets on eye health in students at SDN 20 Pangsid.

**Table 3. The Impact of Gadget Use on Health Problems Eyes on Disciples**

<i>Use of gadgets</i>	<i>Eye Health Disorders</i>				<b>Total</b>	<i>P=</i> <b>value</b>
	No Complaints		There Are Complaints			
	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>		
Low	18	94,7	0	0	18	60
Tall	1	5,3	11	100	2	40
<b>Total</b>	<b>19</b>	<b>100</b>	<b>11</b>	<b>100</b>	<b>30</b>	<b>100</b>

*0,000*

## DISCUSSION

When conducting an eye examination using a Snellen chart with a distance of 6 meters between the Snellen chart and the respondent the results showed that there were respondents who experienced eye health problems such as blurred vision respondents could not clearly see the letters indicated by the researcher. And the results of filling out the questionnaire were also found that there were some respondents who used gadgets with an intensity of time that exceeded the normal limit. This happens because the eyes leak gadget screens too often and often use gadgets in dark places with abnormal gadget light coupled with poor body position when using gadgets causing the eyes to become tense and tired this causes interference. eye health one of which is blurred vision.

The results of research conducted by (Wandini, R., et al, 2020) Based on the results of statistical tests, obtained p-value 0.003 or p-value <0.05, which means that there is an

effect of using gadgets on children's eye health at Al Azhar I Elementary School Bandar Lampung In 2019. Based on the results of the study, it is known that the OR value is 2.571 (1.422 -4.648) which means that children who use gadgets poorly have a 2.571 times greater chance of experiencing poor eye health problems as well.

The results of this study are in line with research (Muallima et al. 2019) which states that there is a significant relationship between the variable frequency of gadget use and decreased visual acuity with the chi-square test results obtained  $p = 0,000$  ( $p < 0,05$ ). The results showed that 58 (51.8%) students used gadgets excessively with decreased vision then 10 (8.9%) students used gadgets excessively with normal vision while 23 (20.5%) students used gadgets. with normal frequency and normal vision then as many as 21 (18.8%) students use gadgets with normal frequency with decreased vision.

The author's research is in line with research conducted by (Rahmawati, 2018) regarding the relationship between gadget use and visual acuity in grade VII and VIII students at MTS Riyadlatul Fallah Jombang which shows that there are differences in visual acuity between students who use gadgets with normal vision and students using gadgets with abnormal vision. There is a significant difference where normal visual acuity with the use of gadgets is 5 (7%). Visual acuity is almost normal with the largest use of gadgets as much as 8 (11%) and low visual acuity with the use of gadgets as much as 15 (21%). The results of the statistical test showed a significant value of 0.000. Significant effect using  $p$  with an error rate of 0.05. Because the value of  $p = 0,000$  ( $p < 0,05$ ) then  $H_0$  is rejected which means that there is a relationship between gadget use and visual acuity in students at MTS Riyadlatul Fallah Jombang.

This study is also in line with research conducted (Diningsih, K. C, 2018) entitled the relationship of the effect of using gadgets on the decrease in visual acuity in students of SMP Negeri 30 Makassar City where from the analysis test results it was found that there was a significant relationship between the duration of gadget use and a sharp decline. vision in SMP Negeri 30 Makassar students where as many as 39 (76.5%) respondents use gadgets with abnormal durations while 12 (23.5%) respondents use gadgets with normal durations.

According to research by (Ekawaty. D, et al 2018) about the effect of using gadgets on eye health problems in PAM Makassar Pilot State Elementary School Students. see the results of the Chi-Squer test is  $P\text{-value} = 0,820$  ( $P\text{-value} \geq \alpha = 0,05$ ), then the results show that  $H_a$  is rejected and  $H_0$  is accepted. Which means that there is no influence between

the use of gadgets on eye health problems in children. The results of the study obtained that 69.7% of children used gadgets in a good way and did not experience eye health problems. Meanwhile 2.3% of children use gadgets in a bad way and experience eye health problems.

The results of this study are in line with research conducted by (Wahyu, 2020) the results of the study of the  $p$  . value value 0.000 so  $< \alpha$  (0,05) means that there is a relationship between use of gadgets with distraction eye health with an  $r$  value of 0.444 which means that the two variables have a relationship which is medium it means more children use gadgets within normal limits the eye health will also be maintained.

According to the research of (Nisaussholihah, N, et al, 2020) About the effect of using gadgets on the incidence of myopia in school-age children (4-17 years) at the eye clinic of the Sunsari Islamic Hospital Surabaya that distance in using gadgets greatly affects eye health problems such as the occurrence of myopia in children. school age (4-7 years). Most of the respondents use gadgets with a distance of 30 cm so it is very influential on eye health. Some respondents also use gadgets in a lying position with a duration of 2 hours but this has no significant effect on the occurrence of myopic eye health problems in children.

A good position for using gadgets should be by sitting. In a sitting position users can more easily keep their eyes away from the gadget screen. Compared to lying down when the user uses the gadget in a lying position the body will not feel relaxed and the eyeballs will work harder in following the location of objects on the cellphone screen so that it can cause eye health problems (Mumtaza, 2019)

According to the researcher after an eye health examination was carried out and the respondents filled out the questionnaire sheet it was found that there was a significant impact on the health of students' eyes due to the use of gadgets. As we know that the eye is a very important sense tool for humans with our eyes we can get various information and carry out daily activities the eye is included in a sensitive organ therefore we need awareness in maintaining its health one of which is by not using the gadget excessively for a long time and the visibility is too close to the gadget. And in this study it was found that there were several respondents who experienced eye complaints such as blurred vision and could not see the letters clearly shown by the researcher this happened due to the use of gadgets with bright gadget backlight contrast and the intensity of gadget use that exceeded normal limit or 3 hoursday therefore we need awareness to be wiser in

using gadgets.

## CONCLUSIONS

Based on research that has been conducted at the SDN 20 Pangsid school, the results of the impact of using gadgets on eye health problems in students at SDN 20 Pangsid, Sidenreng Rappang Regency. there are 11 respondents (36.7%) who use gadgets with high intensity. there were 12 respondents (40.0%) who experienced eye health problems. As we know it is sensitive that the eye is a very important sense tool for humans, with our eyes we can obtain information and carry out daily activities, the eye is included in an organ which, therefore, needs awareness for us to take care of it, one of which is not using gadgets excessively for a long time and the viewing distance is too close to the gadget.

## REFERENCES

- APJI. (2017). Data Statistik Pengguna Internet Indonesia Tahun 2016. <https://apji.or.id/downfile/file/BULETINAPJI05November2016.pdf>
- Diningsih, K. C. (2018). Hubungan Pengaruh Penggunaan Gadget Terhadap Penurunan Tajam Penglihatan Mata Pada Murid SMP Negeri 30 Kota Makassar.
- Ekawaty, D. (2018). Pengaruh Penggunaan Gadget Terhadap Gangguan Kesehatan Mata Pada Murid Sekolah Dasar Negeri Percontohan Pam Makassar. *Patria Artha Journal of Nursing Science*, 2(2), 81–87. <https://doi.org/10.33857/jns.v2i2.152>
- Kementerian Kesehatan RI. (2014). Infodatin (Situasi Gangguan Penglihatan Dan Kebutaan). In Kementerian Kesehatan RI (Vol. 53, Issue 9). <file:///C:/Users/ASUS/AppData/Local/Temp/infodatin-penglihatan.pdf>
- Mardiana, S. S., Hartinah, D., Faridah, U., & Prabowo, N. (2019). *Hubungan Antara Bermain Gadget dengan Ketajaman Nilai Visus Mata pada Anak Usia Sekolah TPQ Mamba ' ul Ulum Wedarijaksa Pati Tahun 2018*. 228–237. <http://repository.urecol.org>
- Millatun Nadlifah, I., & Novitasari, A. (2018). Gambaran Penggunaan Gadget Pada Anak Berkacamata Di Sekolah Dasar. *Jurnal Keperawatan*, XI(2), 87–91. <http://journal.poltekkesdepkes-sby.ac.id/index.php/KEP/article/view/1463>.
- Muallima, N., Febriza, A., Putri, R. K., Kedokteran, F., Kesehatan, I., & Muhammadiyah Makassar, U. (2019). Hubungan Penggunaan Gadget Dengan Penurunan Tajam Penglihatan Pada Siswa Smp Unismuh Makassar. *JIKI Jurnal Ilmiah Kesehatan IQRA*, 7(02), 79–85. <https://stikesmu-sidrap.e-journal.id/JIKI/article/view/156>
- Mumtaza, H. I. (2019). Digital Digital Repository Repository Universitas Universitas

Jember Jember Digital Digital Repository Repository Universitas Universitas Jember Jember.

- Nissausholihah, N., Faradis, H., Roesbiantoro, A., Muhammad, D., & Salim, H. (2020). Pengaruh Penggunaan Gadget Terhadap Kejadian Miopia Pada Anak Usia Sekolah (4-17 Tahun) Di Poli Mata Rumah Sakit Islam Jemursari Surabaya. *Jurnal Kesehatan Islam : Islamic Health Journal*, 9(2), 55. <https://doi.org/10.33474/jki.v9i2.8872>
- Nunung Nurjanah, S. D. R. (2020). STUDI KOMPARASI PENGETAHUAN SEBELUM DAN SESUDAH EDUKASI. *JURNAL ILMIAH*, 2(1), 58–64. <http://ejournal.stikesjayc.id/index.php/PLT/article/view/12>
- Puspa, A. K., Loebis, R., & Nuswantoro, D. (2018). Pengaruh Penggunaan Gadget terhadap Penurunan Kualitas Penglihatan Siswa Sekolah Dasar. *Global Medical and Health Communication*, 6(1), 28–33. <https://doi.org/10.29313/gmhc.v6i1.247>
- Putra, K. P., Kristen, U., Wacana, S., Sanubari, T., Kristen, U., & Wacana, S. (2018). Gambaran Perilaku Penggunaan Gawai dan Kesehatan Mata Pada Anak Usia 10-12 Tahun. *Keperawatan Muhammadiyah*, 3(June), 1. <https://doi.org/10.30651/jkm.v3i1.1451>
- Rahmawaty, D. R. I. (2018). Hubungan Penggunaan Gadget Dengan Ketajaman Penglihatan Pada Siswa Kelas VII dan VIII. In *the Relation With the Use of Gadgets Acuteness of Sight To Students*. 143210009.
- Riskesdas (2013). Riset Kesehatan Dasar, RISKESDAS. Jakarta: Balitbang Kemenkes RI.
- Rudhiati, F., Apriany, D., & Hardianti, N. (2015). Hubungan Durasi Bermain Video Game Dengan Ketajaman Penglihatan Anak Usia Sekolah. *Jurnal Skolastik Keperawatan*, 1(2), 12–17. <https://doi.org/10.35974/jsk.v1i2.83>
- Wandini, R., Novikasari, L., & Kurnia, M. (2020). Hubungan Penggunaan Gadget Terhadap Kesehatan Mata Anak Di Sekolah Dasar Al Azhar I Bandar Lampung. *Malahayati Nursing Journal*, 2(4), 810-819.
- Wahyu Hermawan Wicaksono, W. (2020). Hubungan Penggunaan Gadget dengan Gangguan Kesehatan Mata pada Anak di Sekolah Dasar Negeri Cangkol 03 Mojolaban Sukoharjo (Doctoral dissertation, Universitas Kusuma Husada Surakarta).
- Wandini, R., Novikasari, L., & Kurnia, M. (2020). Hubungan Penggunaan Gadget Terhadap Kesehatan Mata Anak Di Sekolah Dasar Al Azhar I Bandar Lampung. *Malahayati Nursing Journal*, 2(4), 810–819. <https://doi.org/10.33024/manuju.v2i4.3049>