

# Relation Between the Use of Gadget and the Visual Acuity in School Age Children in MI Tsamrotul Ulum Bungah Gresik

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## Abstract

Technology is developing rapidly according to its era. One form of technology that is circulating is a gadget. The use of gadgets wrong and frequency the use of excessive gadget, of position that does not right and intensity of the lighting not good, would have an impact on decreasing visual acuity. The purpose of the study was to analyze the relationship gadget use and decreased visual acuity in school age children. A method of the research approach by cross-sectional with the methods simple random sampling. The sample is 102 students. Data analysis with rank spearman test. The results of this study showed that most of the respondents who frequently used gadgets as many as 26 (60,5%) experienced a decrease in visual acuity. And respondents who rarely use gadgets only 10(23,2%) experienced a decrease in visual acuity. The results of statistical tests indicate sig (2-tailed)  $0,000 < 0,05$  which means that there is a significant relationship between gadget use and visual acuity. Conclusion the results of statistical test show that there is a relationship gadget use and visual acuity in school age children.

**Keyword :** Gadgets, sharpness of vision

## Introduction

One of the main aspect of human life is sense of sight, especially in the educational world. Eye, which is a sense of sight, is a main information channel in life. So that, if we don't do early detection in school age children, it can influence in children capability of understanding a teaching material which are given and can decrease children intelligence. Even the use of it for survival people is very important, but the health of sense of sight is always neglected, so that the incident of sense of sight disease is not resolved well and it can make a new healthy problem in sense of sight or refraction disorder (Depkes RI, 2009).

Individual skill in seeing objects at exact certain distances depends on the capability of eyes accommodation. It calls the acuity of the sense of sight (Visus). While the accommodation is the contraction of the ciliary muscles that can dilate the lens of a person's eyes. This problems related to whether or not a person's sense of sight is sharp, is a common problem where there is an interference with a person's visualization of an object. The sharpness of one's eye senses that are often experienced are light refraction disorders (ex nearsightedness, farsightedness, astigmatism), media abnormalities in refraction (ex cataracts), and nerve problems (ex glaucoma, neuritis) (Nithasari, 2014).

According to the 2013 Riskesda results, there were 4.6% of people using eye aids aged over 6 years with visual acuity problems, decreasing by 0.9%. The proportion of someone who uses eye aids at the age of 6 years and over in East Java is 4.8%.

Currently, most children's daily activities are close to gadgets. So that, children experience problems with blurred vision, decreased field of vision, and other eye problems (Kamilia and Rohmah, 2014).

Technology develops very fast every year, for example the existence of sophisticated technology such as gadgets. Gadgets are used by all ages, not only adults, children now often interact with gadgets. Children often use gadgets to play games, send e-mail messages, chat, and watch videos. If the eyes look at the gadget screen continuously, it can cause the eyes become minus, tired eyes, blurred when looking, so that headaches can appear when you are engrossed in using gadgets and don't rest. In addition to the eyes rarely blinking, this also causes dry eyes (Hendrawan, 2014).

Gadgets have the usefulness provided to users, the positive influence that are given from gadget is that they can easily get the latest information by accessing the internet and other applications. The negative impact for gadget users is the problems with the sense of sight due to exposure to gadget screens (Widea, 2015).

Therefore, preventive efforts can be implemented to reduce the negative impact of gadgets by maintaining students' activities in using gadgets. The role of both parents is the main thing in controlling the use of gadgets in students, considering that children spend more time with their parents at home than at school. Socializing with teachers at school not to use excessive gadgets on their students.

Based on the description above, the problem can be formulated whether there is a relationship between the use of gadgets and visual acuity in Islamic Elementary School of Tsamrotul Ulum, Bungah Gresik. The aim of the study is to analyze the relationship between the use of gadgets and the visual acuity of school-age children at the Islamic Elementary School of Tsamrotul Ulum, Bungah Gresik. The results of the study are expected to provide insight into knowledge to prevent decreased visual acuity due to gadgets, especially in school-age children and can be a source of information and additional knowledge in the development of eye care.

### Materials and Research Methods

The research design used a quantitative descriptive study with a cross-sectional approach. The population of this study were all students in grades 4, 5 and 6 of Islamic Elementary School of Tsamrotul Ulum, Bungah Gresik. The number of samples that was taken was 102 students using simple random sampling technique. The independent variable (independent variable) in this study was the use of gadgets and the dependent variable (dependent variable) was visual acuity in school-age children. Collecting data in this study by conducting interviews with students and observing visual acuity using the Snellen Cart. Furthermore, data processing with editing, coding, scoring, and tabulation. Followed by data analysis, namely descriptive univariate analysis using frequency distribution and bivariate analysis with statistical tests using Spearman's rank test.

### Research Result

#### General Data

Table 1. Frequency Distribution of Students by Age

No	Age	Frequency	Percentage
1	9	12	12%
2	10	29	28%
3	11	52	51%
4	12	9	9%
Total		102	100%

Primary source, 2021

Based on table 1, it shows that the most numerous group of students is in the 11-year age group, namely 52 students (51%).

Table 2. Frequency Distribution of Students by Gender.

No	Gender	Frekuensi	Persentase
1	Male	57	56%
2	Female	45	44%
Total		102	100%

Primary source, 2021

Based on table 2, it shows that the most numerous student groups were in the male group, namely 57 students (56%).

**Custom Data**

Table 3. Frequency distribution of students using gadgets for Islamic Elementary School of Tsamrotul Ulum, Bungah Gresik students

No	Using Gadget	Frequency	Persentase
1	Never	7	7%
2	Seldom	57	56%
3	Rarely	30	29%
4	Always	8	8%
Total		102	100%

Primary data sources, 2021

Based on table 3, it shows that students with the most use of gadgets are students who rarely use gadgets as many as 57 students (57%)

Table 4 Frequency distribution of students with visual acuity in Islamic Elementary School of Tsamrotul Ulum, Bungah Gresik students

No	The Visual Acuity	Frequency	Percentage
1	Normal	59	58%
2	Almost Normal	43	42%
3	Low	0	0%
Total		102	100%

Sumber primer, 2021

Based on table 4, it shows that some students have normal visual acuity as many as 59 students (58%).

Based on Table 6, it shows that cross-tabulation of the relationship between gadget use and visual acuity in students of Islamic Elementary School of Tsamrotul Ulum, Bungah Gresik

KP	Using Gadget				Total					
	always	rarely	seldom	never						
$\Sigma$	%	$\Sigma$	%	$\Sigma$	%	$\Sigma$	%			
N	1	1,7	4	6,78	47	79,66	7	11,86	59	100
HN	7	16,3	26	60,5	10	23,2	0	0	43	100
R	0	0	0	0	0	0	0	0	0	0
Ttl	8	8	30	29	57	56	7	7	102	100

Result of Rank spearman sig (2-tailed) 0,000

Primary Source, 2021

Based on table 6, it shows that there is a difference in visual acuity between students who use gadgets and those who do not use gadgets, where normal visual acuity using gadgets is always 1 (1.7%).

Visual acuity is almost normal when using gadgets, it is always 7 (16.3%) and low visual acuity when using gadgets is always 0 (0%).

The results of the Spearman Rank statistical test showed a sig (2-tailed) value of  $0.000 < 0.005$ , it means that there was a significant relationship between gadget use and visual acuity in school-age children at Islamic Elementary School of Tsamrotul Ulum, Bungah Gresik.

## **Discussion**

The use of gadgets in school-age children at Islamic Elementary School of Tsamrotul Ulum, Bungah Gresik.

Based on the frequency distribution data, 57 students (57%) use gadgets the most. They think that gadgets are an important part at this time, not only used as a means of learning, but also as a media of entertainment to play online games with their friends.

The use of gadgets is a very important requirement for today's life which requires high activity. The facilities that contained in the gadget are not only limited to the functions that normally found on mobile phones, but gadgets can be used as business tools, storing various important archives and documents, music / video / entertainment facilities, online games and documentation facilities.

Gadgets are media that have practical functions, specifically used as modern communication tools. Gadgets make it easier for human communication activities. So that the gadget will really help human activities in all ways.

Meanwhile, according to researchers, giving gadgets to school-age children can cause students to experience dependence on gadgets which has an impact on several problems, such as behavioral problems and health problems, especially eye health. Where children who are addicted to gadgets will always stare at the gadget monitor screen, so that it has an impact on their vision system.

### **Visual acuity in school-aged children at MI Tsamrotul ulum**

Based on the results of the visual acuity examination conducted, 43 students (42%) experienced a decrease in visual acuity. They cannot read the snellen cart letters on the small letters at a certain distance that can be read by people who have normal vision and they will feel dizzy and dizzy if forced to read the letters.

One of the impacts of gadgets on health is eye disorders, due to radiation exposure arising from the screen. Long-term exposure to the light seen by the eyes can cause eye fatigue and over time the eyes will blur (Estanda, 2014).

Visual acuity is an indicator of eye health in which a person's eyes are able to see an object/surface within a normal distance of about 5-6 meters. A decrease in eye sharpness occurs due to interference with the refraction of light entering the eye so that the image is not properly refracted at the macula lutea (ametropia). On the other hand, ametropia is a state where parallel or far rays are refracted or focused by the right optical system in the macula lutea area without the eye doing accommodation (Ilyas, 2014).

Meanwhile, according to researchers, school children are allowed to use gadgets. The important thing is that they know how to use gadgets properly so they don't experience eye problems and cause a decrease in visual acuity. Incorrect use of gadgets, such as excessive use of gadgets, incorrect positioning and bad lighting intensity, will have an impact on decreasing visual acuity. Decreased visual acuity in children will result in difficulties for children to carry out their daily activities. The more decreased visual acuity in children, the higher the risk of complications of blindness and retinal abrasion (Tiharjo, 2008).

### **The Relationship between Gadget Use and Visual Acuity in School-Age Children at MI Tsamrotul Ulum Bungah Gresik**

The results of the bivariate analysis of the Spearman rank test obtained a sig (2-tailed) value of  $0.000 < 0.05$ , which means that there is a significant relationship between the variable use of gadgets and visual acuity. This is in accordance with the results of Rahmawaty's research (2018), which shows a relationship between the use of gadgets and visual acuity.

Based on table 6, it shows that there is a relationship between the use of gadgets and visual acuity where students who use gadgets frequently with almost normal acuity checks are 26 (60.5%) and students who always use gadgets with almost normal acuity checks are 7 (16.3%) and students who used gadgets rarely with almost normal acuity checks were 10 (23.2%). While students who use gadgets rarely with normal vision are 47 (79.66%) and students who use gadgets often with normal visual acuity checks are 4 (6.78%) and those who use gadgets always with normal acuity checks are 1 (1, 7%), students who do not use gadgets with normal vision are 7 (16.3%).

The ease of seeing an object is influenced by a good level of lighting, because the higher the level of lighting, the easier it is for someone to see a work object. Illumination is a source that illuminates objects in the workplace. In addition, adequate lighting gives the impression of a better view and a refreshing environment (Budiono, et al. 2013).

The problem of reduced visual acuity is caused by eye activity that is too heavy because you see at close range as often as possible. The accommodation reflex will arise if the eyes see blurry when looking closely (Ilyas, in Widea 2015).

According to researchers, after children are given an explanation about the impact of excessive use of gadgets, children will change their mindset to use gadgets only if needed. Even though most of the respondents have a negative perception of the use of gadgets with visual acuity, in fact the respondents still use gadgets not according to their needs, but still use gadgets all the time. Parents' affection for their children does not have to be by giving everything their children ask for, including when their children ask to be given gadgets that are not really important for school-age children.

The development of the industrial era 4.0 made various changes in people's activities. One of them is the daily use of gadgets that are currently a necessity. Wise use will certainly have a good and beneficial impact. On the other hand, parents let their children use gadgets without supervision (Zuhro, 2020).

## Conclusions And Suggestions

### Conclusion

1. Most school-age children at MI Tsamrotul Ulum use gadgets in the rare category;
2. Most of the visual acuity of school-age children at MI Tsamrotul Ulum is normal;
3. There is a relationship between the use of gadgets and visual acuity in school-age children at MI Tsamrotul Ulum.

### Suggestion

1. For respondents

From the results of this study, even though respondents use gadgets, respondents must know what are the impacts caused by excessive use of gadgets, the wrong position of using gadgets and lack of lighting intensity.

2. For educational institutions

From the results of this study, it is hoped that educational institutions will provide explanations to their students to use gadgets properly and correctly.

3. For further researchers

The results of this study are expected to be a reference for conducting further research that is more complete on the impact of using gadgets in society or in the educational environment.

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