

The Correlation Between Intensity and Body Posture in Gadget Use and Eye Strain (Asthenopia) on Medical Record Students at Poltekkes Kemenkes Tasikmalaya

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Abstrak

Perangkat atau gadget merupakan salah satu contoh teknologi yang sedang berkembang dan membantu banyak pekerjaan di berbagai bidang, termasuk di rumah sakit. Salah satu profesi yang banyak menggunakan perangkat (laptop, komputer, dan ponsel) adalah rekam medis. Saat ini pencatatan rekam medis pasien di beberapa rumah sakit telah beralih menggunakan Rekam Medis Elektronik (RME) sehingga mengharuskan berada di depan laptop dalam waktu lama. Perkembangan sistem komputerisasi tidak selamanya memberikan dampak positif bagi penggunaannya, terdapat beberapa masalah kesehatan yang sering terjadi, salah satunya adalah kelelahan mata (asthenopia). Tujuan penelitian ini adalah untuk mengetahui hubungan antara intensitas dan postur tubuh terhadap kelelahan mata pada mahasiswa rekam medis di Politeknik Kesehatan Tasikmalaya. Desain penelitian dalam penelitian ini menggunakan cross-sectional. Responden penelitian adalah 57 mahasiswa Politeknik Tasikmalaya dan berpengalaman menggunakan komputer pribadi dan gadget. Analisis yang digunakan adalah univariat untuk memperoleh gambaran umum dan mendeskripsikan masing-masing variabel dengan penyajian data menggunakan tabulasi silang. Hasil penelitian menunjukkan adanya pengaruh yang signifikan antara intensitas penggunaan gawai terhadap kelelahan mata (astenofia) dengan nilai p : 0,035. Penting untuk menjaga postur tubuh yang baik dan mengatur intensitas penggunaan gawai agar kesehatan mata tetap terjaga.

Kata kunci: kelelahan mata; penggunaan gawai; intensitas; postur tubuh

Abstract

Devices or gadgets are an example of technology that is developing and helping many jobs in various fields, including in hospitals. One profession that uses a lot of devices (laptops, computers and cellphones) is medical records. Currently, recording patient medical records in several hospitals has switched to using Electronic Medical Records (RME) so that it requires being in front of a laptop for a long time. The development of computerized systems does not always have a positive impact on users, there are several health problems that often occur, one of which is eye fatigue (asthenopia). The aim of this research is to determine the correlation between intensity and body posture on eye fatigue in medical records students at the Tasikmalaya Health Polytechnic. The research design in this study uses a cross-sectional. The respondents were 57 students of Polytechnic Tasikmalaya and experience using personal computer and gadgets. The analysis used is univariate to obtain an overview and describe each variable by presenting the data using cross tabulation. The result showed a significant effect on intensity of using gadget on eye fatigue (astenopia) with a p -value : 0.035. It is important to maintain a good posture and manage the intensity of using gadget in order to maintain eye health.

Keywords: eye fatigue; gadget use; intensity; body posture

INTRODUCTION

The use of gadgets is a mandatory phenomenon which currently cannot be separated from developments over time. Technological advances require a shift in documenting medical history and patient administration in hospitals using computers, tablets, iPads and the like. Technological advances are currently developing very rapidly. This can have a positive impact and benefits for humans, where the work they do is made easier, more effective and efficient. Computers are an example of technology that is developing and helping many jobs in various fields, one of which is hospitals. Computers have a very important role in improving the quality of health services and providing convenience for users such as medical recorders in managing patient medical record data. Currently, recording patient medical records in several hospitals has switched to using Electronic Medical Records (RME).

Electronic Medical Records (RME) are records of a patient's lifetime medical record in electronic format regarding a person's health information written down by one or more health workers in an integrated manner at each meeting between health workers and clients. RME can be accessed by computer from a network with the main aim of providing or improving efficient and integrated health care and services (Gowrisankaran S, Nahar NK, 2012). Medical records are also closely related to individuals who operate and input data, in this case medical record officers and medical record students are an important part of the health information system. On average, they spend 6-8 hours in front of computers and laptops to support their work.

The development of computerized systems does not always have a positive impact on users, there are several health problems that often occur, one of which is eye fatigue. Asthenopia is a subjective sensation syndrome of visual discomfort that significantly interferes with attention and academic performance and limits work capacity (Gowrisankaran S, Nahar NK, 2012). This is characterized by several symptoms including blurred vision, tired eyes, watery eyes, eye strain, difficulty focusing and discomfort (Neugebauer A, 1992).

Asthenopia is often associated with the use of handheld digital devices, so the increased use of these devices in new generations has increased the prevalence of this condition (Shantakumari N, Eldeeb R, 2014). Therefore, it is important to identify the risk and protective factors associated with asthenopia. Eye fatigue arises due to the eye muscles being forced to work hard, especially when looking at written objects on the monitor closely and for long periods of time. Eye fatigue can cause irritation such as headaches, red eyelids and decreased visual acuity. This can reduce the quality of providing services in hospitals. As an institution that provides services 24 hours a day, it is important for a hospital to pay attention to the safety and health of both medical and non-medical workers.

According to the World Health Organization (WHO), the incidence of asthenopia in the world reaches around 75% to 90%. As many as 60 million people suffer from asthenopia in Indonesia and there is an increase of 1 million per year. Indonesia is ranked 5th in the world for using smartphones. Using a smartphone at close range can cause the eye's accommodation power to increase, resulting in a greater workload for the ciliary muscles. Long duration and improper positioning can also trigger eye

fatigue. It was recently estimated that >50% and 10% of smartphone users use the Internet for >30 minutes and >4 hours each day (Shantakumari N, Eldeeb R, 2014).

Factors that cause eye fatigue are age and length of work, where the older a person is, the more the eye lens loses its elasticity, which makes it more difficult for the eye muscles to accommodate. Using a computer for more than 4 hours can cause complaints of eye fatigue and a tendency to experience refractive errors in the eyes (Syah'ban R & Riski, n.d.). The distance of the monitor and the level of lighting on the computer is also one of the causes of eye fatigue for computer workers who work at close range. Previous research has found that asthenopia is associated with systemic symptoms, psychological conditions, and environmental factors (Ostrovsky A, Ribak J, 2012). However, the study did not collect detailed information regarding handheld device use. Several studies have been conducted on the prevalence of asthenopia in students. One study of 1,469 students from Xi'an conducted in 2012 reported a prevalence of 57%. Another study of 2,246 students from Beijing conducted in 2011 reported a prevalence of 58.9% (Ma L, Ahati A, Liu XT, Zou ZY, Li Y, 2011). So far, there has been no research that focuses on the correlation between the intensity of device use and body posture on the prevalence of asthenopia in Medical Records students. Therefore, we aimed to investigate this association in a large, population-based, cross-sectional study. Based on the background above, the author needs to conduct research about "Relation Between Intensity and Body Posture in Gadget Use and Eye Strain (Asthenopia) on Medical Record Students at Poltekkes Kemenkes Tasikmalaya".

METHOD

This research is a descriptive analytic study with a cross-sectional study design where data is only taken once to determine the correlation between intensity and position of device use among Tasikmalaya Health Polytechnic medical records students. The data collection technique used in this research was a questionnaire. Eye fatigue data was measured using the Visual Fatigue Index (VFI) questionnaire, data on intensity and position of device use was obtained from filling out the questionnaire via Google form. Instrument used in this research was questionnaire for respondents' details including collect all respondents who have filled out the VFI questionnaire, and re-examine the collected data. Check the completeness of the questionnaire and calculate the scores contained in all questionnaires.

Provide code to facilitate the process of analyzing data on a computer. The answer data from each respondent is given a code and score according to the criteria. Entering numerical coding data into SPSS computer for analysis with the program Statistics. Using IBM Statistics v25 software. Bivariate analysis was used to prove the hypothesis of the research, namely whether there is a correlation between intensity and position of device use and eye fatigue in Tasikmalaya Health Polytechnic Medical Records students. Data were analyzed using the Spearman rho test. To interpret the results, use the degree of significance α (P alpha) of 5% with the note that if $p < 0.05$ (p value < p alpha) then H_0 is rejected and

H1 is accepted (there is a correlation between the independent variable and the dependent variable), whereas if > 0.05 then H0 is accepted and H1 is rejected (there is no correlation between the independent variable and the dependent variable).

RESULTS

This research is a descriptive analytical study with a cross sectional study design which was conducted in October-December 2023. This research was conducted in the Poltekkes Kemenkes Tasikmalaya environment. The aim of this research is to determine the correlation between intensity and position of device use on complaints of eye fatigue in Poltekkes Kemenkes Tasikmalaya medical records students. Sampling in this study used the Slovin formula. The sample of respondents for this research were medical records students who met the inclusion criteria during the research period. The data in this study were obtained from filling out a questionnaire that had been created into a Google form which consisted of an explanation of the research to the respondent, then if the prospective respondent was willing to become a respondent they were required to fill out an informed consent form, and continued by filling in a questionnaire consisting of 22 questions regarding fatigue. eyes and 3 supporting questions. The research results were analyzed univariately and bivariately using the Spearman test, which is presented as follows:

Table 1 Distribution of respondent demographic data (n=57)

Respondents Characteristics	N	%
Age		
18-19 year	47	81,67
20-21 year	10	18,30
Total	60	100
Sex		
Men	7	15
Women	50	85
Total	57	100

The table above showed that the characteristics of the respondents with the largest number of respondents were women with a total of 51 respondents (85%) compared to men, namely 9 respondents (15%), and the age of the most respondents was in the 18-19 year range, namely 49 respondents (66.7%), compared to 11 respondents (19.3%) aged >21 years.

Table 2 Distribution of Duration of Smartphone Use among RMIK Study Program Students (n=57)

Duration	n	%
>3 hours	42	73,7
<3 hours	15	26,3
Total	57	100

The table 2 showed that the maximum duration of smartphone use for 1 day among RMIK study program students is >3 hours of use per day, namely 42 people (73.7%), compared to the duration of smartphone use.

Table 3 Distribution of Body Positions When Using Smartphones for RMIK Study Program Students (n=57)

Position	n	%
Sitting	29	50,9
Lying	28	49,1
Total	57	100

Table 3 showed that the body position used when using a smartphone is mostly in a sitting position, 29 people (50.9%), compared to the body position used when using a smartphone in a lying position, namely 28 people (49, 1%).

Table 4 Spearman Test for Intensity of Smartphone Use with Eyestrain (n=57)

Variable	n	r	P Value
Intensity of Smartphone Use with Eye Fatigue	57	0,280	0,035

Based on the results of statistical tests using Spearman Rank, the results obtained were ρ value=0.035 where ρ value $\rho < \alpha$ ($0.035 < 0.05$), then H_1 was accepted and H_0 was rejected, which means there is a correlation between the duration/intensity of smartphone use and the incident of astenopia whit the r value = 0.280.

Table 5 Spearman Posture Test Using Smartphones with Eye Fatigue (n=57)

Variable	N	r	p-value
Body Posture Smartphone Use with Eyestrain	57	0,012	0,930

Based on the results of statistical tests using Spearman Rank, the results obtained were ρ value=0.930 where $\rho > \alpha$ ($0.930 > 0.05$), then H_0 was accepted and H_1 was rejected, which means there is no correlation between the distance between smartphone use and the incidence of eye fatigue where the value of $r=0.012$.

DISCUSSION

Based on the results of research conducted on students at the RMIK Study Program, from the results of statistical tests on the duration of smartphone use with eye fatigue, the results obtained were ρ value=0.035 and $r=0.280$, which means there is a significant correlation between the duration of smartphone use and eye fatigue and the strength of the correlation is sufficient. and the direction of the correlation is positive, which means the correlation between the two variables is in the same direction, thus it can be interpreted that the higher the level of duration of smartphone use, the higher the incidence of eye fatigue. This is in line with research conducted by Ganie (2018) which stated that there was a correlation between the duration of smartphone use and complaints of eye fatigue among students at the Faculty of Medicine, University of Lampung.

Research conducted by Munif, A., Yuliana, & Wardana (2020) showed that there is a correlation between the duration of laptop use and complaints of eye fatigue. It does not rule out the possibility that eye fatigue is not only caused by smartphones but can also be caused by other electronic devices, this is because when the eyes interact with the smartphone screen or other electronic devices for a long time, the ciliary muscles of the eyes will be forced to work continuously to remain stable. focusing so that you experience muscle tension and cause eye fatigue.

Based on the results of research conducted on students in the RMIK study program, from the results of statistical tests on the position of smartphone use and eye fatigue, the result was ρ value=0.930, which means there is no correlation between the position of smartphone use and eye fatigue with a value of $r= -0.012$, which means the strength of the correlation is very weak means that the higher the level of smartphone use in a sitting position, the lower the incidence of eye fatigue. This is in line with research conducted by Hidayati RM, Bayhakki (2017) that said there was no correlation between the position of using gadgets and visual acuity. Based on research conducted by Yondhi (2022), there was a correlation between the position of using a smartphone and neck pain. This shows that the position of smartphone use has more influence on musculoskeletal disorders compared to disorders on eye health. Excessive use of gadgets in the wrong position will have a big impact on eye health. The position when carrying out activities using a device in a sitting position is considered better than a lying position. This is because when carrying out activities in a sitting position you can maintain the ideal distance between your eyes and the object being viewed. Apart from that, carrying out activities in a sitting position can provide good lighting because the light that illuminates comes from above, which is considered the best. Meanwhile, if you use a device in a lying position, it will cause your eyes to be unable to relax. This is caused by the muscles in the eye pulling the eyeball downwards to follow the location of the object

being viewed, thus causing the eye to accommodate more strongly. Eyes that are accommodated for a long time will experience a decrease in visual acuity more quickly. Therefore, a sitting position is recommended because it can reduce the risk of eye health problems.

CONCLUSION

It can be concluded that there is a significant correlation between the duration of smartphone use and eye fatigue in students in the RMIK study program and there is no significant correlation between the body position of smartphone use and eye fatigue in students in the RMIK study program. However, a sitting position is recommended because it is a better position for eye to accommodate without over accommodating, thus it can reduce the risk of eye health problems. Therefore, it is important to maintain a good posture and manage the intensity of using gadget in order to maintain eye health.

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