THE RELATIONSHIP BETWEEN SCREEN TIME AND NUTRITIONAL STATUS IN STUDENTS OF THE FACULTY OF MEDICINE, MUSLIM UNIVERSITY OF INDONESIA CLASS OF 2021

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Abstract

Screen time refers to the duration a person spends looking at electronic device screens, such as cell phones, computers, tablets, or televisions. High screen time can influence various aspects of life, including energy intake, physical activity, and nutritional status. This study aims to explore the relationship between screen time and nutritional status among students of the Faculty of Medicine, Muslim University of Indonesia (UMI) class of 2021. Using an observational cross-sectional design, the study involved students as respondents. Results indicated that 51% of students had sufficient screen time, while 49% had normal nutritional status. Data analysis using the chi-square test yielded a p-value of 0.118, suggesting no significant relationship between screen time and nutritional status ($p > 0.05$). Although screen time is often linked to lifestyle changes, such as reduced physical activity or unhealthy eating, this study concludes that it does not directly impact nutritional status in this population. The findings may serve as a foundation for future research that considers additional factors influencing nutritional status.

Keywords: Screen Time, Nutrition Status, College Students

Introduction

Almost all jobs require gadgets to facilitate their work. Gadgets are needed for everyone, including students. Today's student learning media are mostly electronic devices such as smartphones, tablets, and laptops. Apart from being used as learning media, gadgets are also used as access to entertainment media. Screen time is the daily duration of time spent staring at a screen (1). Today's lifestyle tends to rely on technological sophistication. The use of electronic devices has grown rapidly with the average amount of screen time reaching 3 to 4 hours per day. Even children aged 8-18 years in the United States, the duration of screen time spent reaches an average of 7.5 hours per day. Long screen time duration is also found in some groups who have the necessity to continue staring at the screen of their electronic devices. Students use electronic devices such as laptops to do college assignments and seek entertainment by watching movies. The cellphone is used to play games and is used as a tool to find information (1,2). A university student is someone who moves from adolescence to adulthood with an age of 19 to 28 years. At this age, nutritional factors greatly affect physical endurance and work productivity. Nutrition does not only affect this. With a good and balanced nutritional intake, it can improve and support one's intellectuality and intelligence. High screen time

can affect many things, one of which is the pattern of energy intake. By using gadgets to access entertainment media such as watching movies, it can increase food intake such as snacks, fatty foods, and fast food. Coupled with doing screen time activities, it can cause a person's inability to detect satiety signals so that energy intake is constantly carried out. Therefore, there is a lot of improvement in nutritional status in adulthood (2,3).

Nutritional status is a health status obtained from the balance between nutrient intake and nutrient requirements needed by the body. Nutritional status can be measured using anthropometric data, such as by using body mass index (BMI), upper arm circumference (LLA), and waist-to-hip ratio (RLPP). BMI is one of the simple ways that can be used to determine nutritional status but can only be used in healthy adults (3). One of the factors that can affect the nutritional status of university students is *screen time* (4). Excessive screen *time* can lead to changes in diet, such as the consumption of fast food that is high in calories but low in nutrients (5). In addition, prolonged screen time can also reduce physical activity (6) and sleep quality (7) which in turn can have an impact on students' nutritional status. Exposure to electronic devices can delay the release of the hormone melatonin. The hormone melatonin as a hormone that regulates sleep rhythms is delayed in release, resulting in changes in a person's sleep patterns. Changes in sleep patterns can also affect nutritional status. Where with low sleep duration can cause hormonal changes that contribute to weight gain. The hormonal changes in question are an increase in the hormones ghrelin and leptin which results in increased hunger and appetite. This increase in appetite is a risk factor for the occurrence of overweight to obesity (8). Prolonged screen time can lead to low physical activity. Most people stare at the screen in a sitting or lying position, thus reducing the physical activity of the individual. Excessive screen time can affect a person's nutritional status because it can be a risk factor for overweight or obesity. It is caused by screen time that can affect the balance between energy intake and energy expenditure. Screen time can increase energy intake and decrease activity resulting in a decrease in energy expenditure. This imbalance can affect the nutritional status of a person (9).

Method

This research is an observational study with a cross-sectional approach conducted at the Faculty of Medicine, Universitas Muslim Indonesia (UMI) in 2024, with a population of 2021 students. The study sample of 155 respondents was determined using the Isaac and Michael table with an error rate of 5% and the *Simple Random Sampling* technique. Data were collected through the *Questionnaire for Screen Time of Adolescents (QueST)* questionnaire, which assesses *screen time* duration based on five main activities, namely study, work/internship, watching videos, playing games, and using social media. Respondents completed the questionnaire for one week, and the results were analyzed to determine the *screen time* category. Nutritional status was measured using Body Mass Index (BMI), with categories of undernutrition, normal, overnutrition, obesity I, and obesity II. Data were analyzed using SPSS, with univariate analysis to describe the frequency distribution of variables and bivariate analysis using the Chi-Square test (α=0.05) to test the relationship between *screen time* and nutritional status. Respondents who met the inclusion criteria were 2021 students who did not take drugs that affected their nutritional status and were willing to become respondents, while exclusion criteria included incomplete questionnaire filling, absence, or serious illness.

Results and Discussion

Based on research that has been conducted on students of the Faculty of Medicine, Universitas Muslim Indonesia class of 2021, the results obtained from respondents through filling out questionnaires in the form of primary data which are then processed and analyzed using the SPSS program. The data obtained is then presented in the form of a frequency table with the following results:

Univariate Analysis
Characteristics of Respondents Based on Gender

Table 1 shows the distribution of data from respondents based on gender, where the most gender is female, namely 116 people (74.8%), then male gender as many as 39 people (25.2%).

Table 1. Characteristics of Respondents by Gender

Gender	Frequency	Percentage (%)
Male	39	25,2
Female	116	74,8
Total	**155**	**100,0**

Source: Primary Data, 2024

Screen Time
Table 2. Distribution of respondents based on screen time

Screen Time	Frequency	Percentage (%)
More (>735 minutes/day)	76	49,0
Enough (≤ 735 minutes/day)	79	51,0
Total	**155**	**100,0**

Source: Primary Data, 2024

The frequency distribution of respondents based on *screen time* is categorized into two, namely more and enough. Based on table 2, the number of respondents who have sufficient *screen time* is 79 people (51%), more than the number of respondents who have more *screen time* only 76 people (49%). *Screen time* is said to be more if staring at the screen for > 735 minutes / day or 12 hours 25 minutes / day.

According to research, the duration of student *screen time* is 8-12 hours per day. Another study also stated that the duration of adult *screen time* is an average of 12.5 hours per day. Increased *screen time* in students often occurs, considering that almost all student activities involve electronic media. Students get internet access through electronic media. With these media tools, it can make it easier for students to do various things. In addition to meeting academic needs, the use of electronic media technology in students is also used in interacting with friends, accessing various kinds of entertainment, and exploring information media. The results of other studies also found that the majority of students' *screen time* duration was more than 9.07 hours per day which they categorized as *high screen time*. High *screen time* is obtained as a result of the use of electronic media such as gadgets that are used as a medium in communicating and filling spare time surfing on social media, laptops that are usually used to watch and do college assignments, not forgetting the use of computers that are often used to play *games* .(10–12)

Screen time is defined as the amount of time spent staring at an electronic screen, such as a *gadget*, television, or computer. *Screen time* in college students needs to be considered because almost all activities carried out by students are presented in electronic media, including doing college assignments, interacting with others, or just looking for entertainment. There is a connection between these activities that causes students to be exposed to *screen time for* a long time. Generally, *screen time* activities are carried out in a sitting or lying position. As a result, the body expends less energy due to

lack of physical activity. This is in line with research that someone who is using electronic media can cause their physical activity to decrease. Physical activity itself is any movement performed by the body that can increase energy expenditure and burning.

According to research the lifestyle of students who are one of the contributing factors to the incidence of obesity is spending more time staring at electronic media screens. Energy intake increases along with doing activities *screen time* which causes an imbalance in energy intake and expenditure which will ultimately affect nutritional status if not immediately resolved (3,8,13).

Nutrition Status

Table 3. Distribution of Respondents Based on Nutritional Status

Nutrition Status	Frequency	Percentage (%)
Less	13	8,4
Normal	76	49,0
More	29	18,7
Obese 1	24	15,5
Obes 2	13	8,4
Total	**155**	**100,0**

Source: Primary Data, 2024

Table 3 above shows the frequency distribution of respondents based on nutritional status, where the majority of respondents have normal nutritional status, namely 76 people (49%), 13 people (8.4%) with undernutrition, 29 people (28.7%) with overnutrition, 24 people (15.5%) are obese 1, and as many as 13 people (8.4%) who are obese 2 in medical faculty students at Universitas Muslim Indonesia class of 2021. Nutritional status is said to be normal if the BMI (Body Mass Index) is in the range of 18.5-22.9 kg / m ^{2}.

The results of this study are in line with research which states that the majority of students' nutritional status is normal. Another study also reported that most health students have normal nutritional status (13,14).

In this era, accessing information about nutrition is easy to do. This may have an impact on students' knowledge of balanced nutrition. According to WHO, food intake and physical activity are related and influence each other. According to Almatsier, (2002), physical activity is a movement performed by the limbs. During physical activity, the muscles used certainly require energy to facilitate nutrients and oxygen throughout the body which is then excreted through body waste. Little physical activity causes excess energy in the body to be stored in the form of fat which contributes to overweight. People who do little physical activity tend to become obese. Therefore, in preventing the incidence of overweight and obesity in students, it needs to be balanced with appropriate, safe, and effective physical activity in an effort to maintain weight (13).

Food intake can directly affect nutritional status. This is in accordance with research which states that each intake of fat, energy, and protein can significantly affect nutritional status. (khofifa). There is research that states that the majority of students have a habit of consuming *fast food* and less in consuming vegetables and fruit. Fast food is a dish that has a high calorie content and is low in vitamins, fiber, and minerals so that if consumed continuously there can be excess calories that contribute to problems in nutritional status. Another study discussed the low intake of vegetables and fruits in college students, 65.2% of whom gained weight. Fruits and vegetables have low energy content and high fiber, so they can prevent excess energy which can later improve nutritional status to normal (3).

The nutritional status of each individual can describe physical activity, nutritional intake, and the body's ability to absorb and process these nutrients so as to realize an ideal body weight. Nutritional status can be measured based on the BMI of each person. Based on Epidemiology, nutritional problems

have an interrelation between *host*, *agent*, and *environment* factors. Normal nutritional status can be achieved if there is a balance between the host, agent, and environment. Normal nutritional status is also supported by optimal nutritional intake. Optimal nutrition is not only a marker of individual health, but also plays a crucial role in the development of quality human resources. Inadequate nutritional intake is one of the main factors causing nutritional problems in a person (15,16).

Normal nutritional status reflects a condition in which there is a balance between the energy intake received and the energy expended by the individual in accordance with the needs of the body. Balanced nutrition holds four principles, namely food diversity, a clean lifestyle, an active lifestyle and exercise, and monitoring of ideal body weight. The role of normal nutritional status is very important, especially for university students because it is related to a longer life expectancy. The benefits of nutritional balance can not only be seen in terms of physical health, but also involves mental health and its implications on longer life expectancy (12,15).

Nutritional imbalances can put individuals at risk of certain diseases and affect their work productivity. Various factors can affect the nutritional status of a person, one of which is sedentary activities in the form of excessive use of electronic media which causes low physical activity. There are observational studies that report that prolonged sitting, especially while watching television, is associated with an increased risk of obesity which can lead to a variety of diseases such as cardiovascular disease and type two diabetes mellitus. However, these associations do not necessarily persist based on age, gender, or health outcomes (17,18).

Bivariate Analysis
***Screen Time* with Nutritional Status**

		Malnutrition Status	Normal	Over Nutrition Status	Obese 1	Obes 2	Total	P-value
Screen Time	>735 minutes/day	9	32	12	16	7	76	
	≤ 735 minutes/day	4	44	17	8	6	79	0,118

Source: Primary Data, 2024

The Chi-Square test results in the table above show the results of the effect of *screen time* on nutritional status. Based on the results of the *statistical output* calculations in the table, it is found that there is no relationship between *screen time* and nutritional status. This can be assessed based on the P value of 0.118 (p>0.05) which means that there is no significant relationship between *screen time* and nutritional status. The results of the *Chi-Square* test that correlates *screen time* with nutritional status, shows a P *value of* 0.118 greater than 0.05. So, it can be concluded that statistically there is no significant relationship (p>0.05) between the duration of *screen time* and the nutritional status of students.

The results of this study have a relationship with the research not find a significant relationship between *screen time* exposure and nutritional status. The results of this study are also in line with the research namely the absence of a relationship between the level of *screen time* and nutritional status, characterized by *p value* = 0.164 which means the p value> 0.05. The findings of this study are consistent with other studies which show that there is no relationship between *screen time* and nutritional status (p=0.141). Various other uncontrollable factors can affect the nutritional status of each individual, such as genetic factors, diet, stress levels, and other factors that contribute to a person's nutritional condition (12,16).

The results also show that there is no correlation between screen time and nutritional status. Screen time is not a factor that directly affects a person's nutritional status. This disconnect may be influenced by several factors that are difficult to control, such as the irregularity of dietary intake

patterns and the level of physical activity of individuals. In addition, respondents' inability to accurately recall or report screen time duration also contributed to the results of the study analysis. These factors are thought to be the main cause of not finding an association between screen time and nutritional status (19).

In contrast to the high *screen time* exposure correlates with increased intake and decreased energy output which will affect nutritional status. Excessive *screen time* is included in sedentary activities characterized by low physical activity causing little energy output. Moreover, exposure to advertisements from a person's *gadget* screen that displays a variety of foods and drinks that cause a feeling of wanting to consume these foods or drinks, can ultimately lead to increased energy intake which will have an impact on nutritional status (20).

Research shows that high screentime can lead to decreased physical activity, disturbed sleep patterns, and unhealthy eating behaviors (21,22). This can ultimately affect one's nutritional status (21–23). Furthermore, excessive screentime can also directly impact quality of life through its negative effects on mental health, concentration, and productivity (21). Individuals with high screentime tend to have lower quality of life (21). However, the relationship between screentime, nutritional status, and quality of life is not always linear. Several other factors such as nutrition knowledge, parenting, and socio-economic conditions can also affect nutritional status and quality of life (24–27).

This study has been carried out in accordance with the procedure, but there are limitations that can affect the results of the study. Measurement of BMI and *screen time of* respondents carried out in the same period in a *cross-sectional* manner may be one of the factors contributing to the results obtained, namely that there is no relationship between screen time and nutritional status in medical faculty students at Universitas Muslim Indonesia, Class of 2021.

Conclusion

Based on the results of the research that has been carried out, it can be concluded that the majority of students of the Faculty of Medicine, Universitas Muslim Indonesia (UMI) class of 2021 have a standard normal nutritional status, with a value of 49% of the total respondents. In addition, the majority of students have a screen time duration that is included in the moderate category, with an average time of using electronic devices of ≤735 minutes per day or equivalent to ≤12 hours 25 minutes per day. Based on the results of data analysis using the Chi-Square statistical test, a p value of 0.118 (p>0.05) was obtained, which indicates that there is no significant relationship between screen time duration and nutritional status in students of the Faculty of Medicine UMI class of 2021. Thus, this study concludes that screen time duration has no direct influence on nutritional status in this group of students.

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