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Relationships between Sedentary Lifestyle and Body Mass Index in Students in Pandemic COVID-19

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ABSTRACT

Background: Students during the Covid-19 pandemic were very close to a sedentary lifestyle because of online learning patterns. This results in an increase in body mass index (BMI) due to lack of physical activity and energy burnt. The aim of this research was to find out the relationship between sedentary lifestyle and body mass index of female students during the Covid-19 pandemic.
Subjects dan Method: The research method uses a quantitative analytic observational design, with a cross sectional approach. The population in this study were 110 students of the Midwifery Study Program, Faculty of Medicine, Sebelas Maret University. Sampling using the Slovin formula as many as 85 respondents with a confidence level of 95%. The research dependent variable is the body mass index of female students during the Covid-19 pandemic and the independent variable is sedentary lifestyle. The data collection method is to use the BMI questionnaire and the Adolescent Sedentary Activity Questionnaire (ASAQ). Data analysis used Somer's test.
Results: The results showed that 61.2% of students were included in the less sedentary lifestyle classification, while 56.5% of students had a normal body mass index. The results of bivariate analysis with Somer's correlation test obtained a p-value of 0.045 and a gamma coefficient value of 0.38.
Conclusion: The conclusion is that there is a relationship between sedentary lifestyle and body mass index in undergraduate students of Applied Midwifery, Faculty of Medicine, Sebelas Maret University, Surakarta. The correlation strength is moderate. It is hoped that individuals and communities can motivate themselves to carry out physical activities such as regular sports and educational institutions can facilitate learning methods that can involve physical activity in both online and offline learning.

Keywords: nutrition status, sedentary lifestyle, student

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BACKGROUND

Nutrition is a problem in both developing and developed countries. The Body Mass Index (BMI) in the 2016 World Health Organization (WHO) report stated that at the age of more than 18 years, 39% were included in excess nutrition and obesity by 13% (WHO, 2021). Nationally, based on the results of

Basic Health Research (Riskesdas) in 2018, the prevalence of nutritional problems (thin, overweight and obesity) reached 44.7%, of which obesity reached 21.8% (Riskesdas National Report, 2018). Overweight and obesity are caused by an imbalance in the number of calories in and out daily due to increased fat and sugar, less physical activity and sedentary lifestyle due to work patterns and changes in transportation and increasing urbanization (WHO, 2021). During the Covid-19 pandemic, with the policy to stay at home to prevent the spread of the Covid-19 virus, decreased physical activity increased and sedentary lifestyle worsened the situation so that body weight increased to obesity (Unicef Indonesia, 2022).

Students, especially university students, have a very close development with a sedentary lifestyle. Many college students lead a sedentary lifestyle compared to their age (Castro et al., 2020). Sedentary lifestyle is a lifestyle or habit of a person with a lack of activity level with behavior that only shows sitting, leaning and lying down for a long and steady period of time. This starts from the time you wake up until it's time to go back to sleep so that this lifestyle can cause discomfort which ultimately results in harm to your body (Tremblay et al., 2017). Sedentary lifestyle can cause 10 to 16% diabetes, 22% ischemic heart disease, up to 2 million deaths worldwide and sedentary lifestyle can increase the number of Non-Communicable Diseases (PTM) (Muflihah and Wardhani, 2021). The sedentary lifestyle potrait shown by students at a private tertiary institution in Jakarta is quite high, reaching 50.2% or almost half of the students (Sofiany and Setyawati, 2021).

Students at the Faculty of Medicine or Health have the potential to experience a sedentary lifestyle because they spend most of their time studying at home during the Covid 19 pandemic. But on the other hand, midwifery study program students also receive learning material about basic nutrition and nutrition in midwifery. Based on this background, the researcher is interested in conducting a study entitled the relationship between sedentary lifestyle and the nutritional status of students of Applied Bachelor of Midwifery Study Program FK UNS to find out the description of the nutritional status of midwifery students as an effort to prepare them as healthy individuals during the preconception period.

SUBJECTS AND METHOD

1. Study Design

The research method is quantitative with an analytic observational design and a cross sectional study approach. This research was conducted at the Midwifery Study Program, Faculty of Medicine, Sebelas Maret University in 2022.

2. Population and Sample

The population in this study were all female students of the Bachelor of Applied Midwifery Faculty of Medicine, Sebelas Maret University, Surakarta in 2022 using the Slovin formula, 85 samples were obtained.

3. Study Variables

The independent variable was nutritional status and the dependent variable in this study was sedentary lifestyle.

4. Operational Definition of Variables

Nutritional Status: is an overview of nutritional status by comparing body weight and height BMI (body mass index). The formula used was BMI= BB (kg)/ TB2 (m). Using the formula, thin categories with BMI <18.5, normal 18.5 - 25, and fat> 25 (P2PTM RI Ministry of Health, 2019).

Sedentary lifestyle: is a lifestyle which there is minimal or even no physical activity in a person. The distribution of high sedentary lifestyle categories if obtained 4-6 hours or more/day, moderate 2-4 hours/day and low <2 hours/ day.

5. Study Instruments

The research tool was a questionnaire used the ASAQ (Adolescent Sedentary Activity Questionnaire). Questionnaire was given every day for 7 consecutive days to get daily average data. The measurement of nutritional status was used BMI.

6. Data Analysis

Data were processed with Epi Info version. Data analysis used Somers'd correlation CI 95% and looked at the strength of the correlation using gamma values.

7. Research Ethics

This research received an ethical certificate from the Ethics Committee of the General Hospital dr. Moewardi Surakarta with number 967/VI/HREC/2022.

RESULTS

1. Sample Characteristics

Research shows that most of the respondents' BMI are included in the normal category, namely 56.5% and 15.3% of respondents are included in the obese category. In the sedentary lifestyle category, most of the respondents are included in the low category (61.2%). However, 2.4% of respondents were included in the high sedentary lifestyle category.

Table 1. Distribution of sample characteristics (N=85)

Characteristic	Category	Frequency	Percentage (%)
BMI	Underweight	24	28.2
	Normal	48	56.5
	Overweight	13	15.3
Sedentary Lifestyle	Low	52	61.2
	Medium	31	36.4
	High	2	2.4

2. Relationship between sedentary lifestyle and BMI

The results obtained from processing statistical test data using the Somer's correlation test are presented in Table 2. This research shows that there is a relationship between sedentary lifestyle and body mass index for female students of Bachelor of Applied Midwifery, Faculty of Medicine, Sebelas Meret University, Surakarta, with a p= 0.045, while based on the gamma value, the two variables have a moderate correlation strength with a value of 0.38 PAC in the two years preceding the study.

Table 2. Correlation Results of Somer's Correlation Test

Sedentary lifestyle	BMI						p
	Underweight		Normal		Overweight		
	n	%	n	%	n	%	
Low	17	32.7	29	55.8	6	11.5	
Medium	7	22.6	19	61.3	5	16.1	0.045
High	0	0	0	0	2	100	

DISCUSSION

This study shows that the Body Mass Index of female students of the Midwifery Study Program in the Applied Bachelor Program, Faculty of Medicine, Sebelas Maret University, Surakarta in 2022 is mostly included in the normal category, which is equal to 56.5%. The results of this study are in line with several previous studies by Sofiatun, (2017) and Triandaru (2019) which concluded that most of the respondents who were in the early adult age group (students) were in the normal nutritional status category. In addition, in a study with a larger

sample, it was concluded that the age group <40 years was mostly in the category of normal nutritional status because metabolic processes and physical activity were still optimals in that age range (Kantachuvessiri et al., 2005). Based on the researcher's analysis, the implementation of online learning as a result of the Imposition of Restrictions on Community Activities (PPKM) policy during the Covid 19 pandemic had not been able to stimulate an increase in BMI (Body Mass Index) in research respondents because most of the respondents were still in the early adult category with good body metabolism system.

The results of the bivariate analysis showed that there was a relationship between sedentary lifestyle and the respondent's BMI. In theory, weight gain is influenced by sedentary behavior (Leech et al., 2014). Body weight will increase with increasing time you have without being used for activity. Substantial weight gain due to lack of movement so that excessive fat accumulation occurs in the body so that energy is not expended by the body (Mandriyarini et al., 2017). An increase in BMI (body mass index) can also occur due to an increase in the duration of sitting (Eriksen et al., 2015). However, a high level of physical activity will not always protect against weight gain if it is offset by a high sedentary lifestyle (Leitzmann et al., 2018).

This study showed a positive correlation, where the higher the level of sedentary lifestyle will increase the likelihood of an increase in BMI. The results in Table 2 illustrate that none of respondents with thin and moderate BMI have high levels of sedentary lifestyle habits. However, of the 85 research respondents, there were 2 respondents who had a fat BMI and both were included in the high sedentary lifestyle category.

The sedentary lifestyle described in the ASAQ questionnaire is watching television (TV), using a computer for pleasure and doing homework (PR), doing homework without using a computer, reading for pleasure (doing hobbies, sitting and relaxing, and listening to music). Meanwhile, sedentary lifestyle related to the learning process during the Covid-19 pandemic includes doing daily school assignments and participating in routine learning which can start from 07.30 to 15.00 WIB.

Based on the results of the research above, it is necessary to have specific actions/ changes towards sedentary lifestyle in someone, especially those who have a history of obesity in the family. This is because high sedentary lifestyle can trigger increased levels of pericardial fat and will be responsible for increasing risk factors for heart disease so that it will interfere with health in the future. The results of this study are expected to be used as a reference for educational institutions to develop learning systems that can involve physical activity when learning online or offline. Furthermore, the community and students are expected to motivate themselves to carry out regular physical activity in order to maintain optimals Body Mass Index thereby reducing the risk of Non-Communicable Diseases.

AUTHOR CONTRIBUTION

Noviyati Rahardjo Putri as the main researcher who chose the topic, conducted research data collection searches, and conducted data analysis research. Iffah Indri Kusmawati and Niken Bayu Argaheni conducted data analysis and wrote the manuscript for publication. Angesti Nugraheni and Ika Sumiyarsi Sukamto conducted a research document review.

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CONFLICT OF INTEREST

There are no conflicts of interest

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