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Increasing Public Knowledge About Sedentary Activities Through Counseling at SMPIT Zain Al-Muttaqin, Palembang, Indonesia

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ABSTRACT

Background: Sedentary activities are activities that require very low energy expenditure, such as sitting or lying down while watching television, playing electronic games, and reading which can have negative health effects. This study aimed to describe the comparison of participants' knowledge before and after counseling about sedentary activities. **Methods:** An experimental study with one group pre-test and post-test design was conducted on 22 students of SMPIT Zain Al-Muttaqin Palembang. Data were analyzed using the Wilcoxon test. **Results:** There were 63.6% of participants' knowledge was in the poor category before counseling, and after counseling, the participant's knowledge increased by 59.1% in the good category. From the Wilcoxon test analysis, the result is the value of Sig. (2-tailed) of $0.000 < 0.05$. **Conclusion:** Student knowledge is increased about activities sedentary after counseling, and there is a significant difference in the results of sedentary lifestyle counseling based on data pre-test and post-test ($P < 0,05$).

1. Introduction

Sedentary activities have a serious impact on health. Sedentary activities can be one of the causes of death and disability in the world.^{1,2} Diseases that can be caused by sedentary activities include diabetes, cancer, cardiovascular disease, obesity, and hypertension.^{2,3} Sedentary lifestyle is a behavior that occurs when sitting or lying down that requires very low energy expenditure, such as sitting or lying down while watching television, playing game electronics, and reading. The rapid development of technology can cause changes in traditional lifestyles to become sedentary lifestyles.² According to data from the WHO, in 2018 there were 34.03% of the adult population over

18 years experienced physical activity insufficiency, with the percentage of women as much as 43.89% and men as much as 24.7%.⁴ Indonesian Basic health research in 2018 reported the percentage of the Indonesian population aged over 10 years who experience physical activity insufficiency is 33.5%.⁵ The group with the highest percentage of physical activity insufficiency is the age group 15-19 years, which is 49.6%. Students are in the occupational category for physical activity insufficiency, which is 59.1%.⁴

Physical activity insufficiency can increase the risk of obesity.^{6,7} Obesity can be caused by several factors, including eating patterns that tend to consume fewer

vegetables and fruits, consuming fried foods more often, sweet foods and drinks, and fast food containing processed products. These things are often found in teenagers today. In addition to eating patterns with the development of communication technology, physical activity is greatly reduced because teenagers spend more time playing electronic media than moving. Insufficiency of physical activity is one of the risk factors for diabetes mellitus, which can cause insulin resistance of DM type 2.⁸ People with physical activity insufficiency have a poorer glucose profile than active people. The mechanism of physical activity can cause insulin resistance, increased glucose tolerance, decreased overall body adipose fat, reduced central fat, and changes in muscle tissue.⁶ As a result, sugar levels in the body will increase.

Students spend most of their time at school, which is 6-8 hours per day in a sitting position.⁷ Even during their break time, they spend more time chatting in a sitting position. Based on interviews conducted with three students, they said that almost all of their activities after school were done sitting or lying down. The function of hemoglobin in the human body and regular physical activity are two important things that are interrelated. The relationship between physical activity carried out by a person and haemoglobin levels is that when a person does physical activity such as exercising, there is an increase in high metabolic activity, so the acid produced (hydrogen ions, lactic acid) also increases, resulting in a decrease in pH. Low pH reduces the attraction between oxygen and haemoglobin. This causes haemoglobin to release more oxygen, thereby increasing oxygen delivery to the muscles.^{8,9} From the explanation above, it can be concluded that sedentary activity can be a risk factor for anemia.

The low level of public knowledge about sedentary activities will be very influential in the future. Counseling on sedentary activities in the community begins with the delivery of educational materials using the lecture method, question and answer, and discussion on sedentary activities, then proceeds with a physical examination and several additional

examinations. There are many impacts that can be caused by sedentary activities. A person with physical activity insufficiency is one of the 15 most risk factors that cause death in the world. According to the WHO, they have a 20% to 30% higher risk of death than people who are physically active. The following are the risks of diseases that can be suffered by people with physical activity insufficiency, such as obesity, diabetes mellitus, hypercholesterolemia, hypertension, osteoporosis, and coronary heart disease.⁹ The Department of Public Health and Community Medicine, Faculty of Medicine, Universitas Sriwijaya, as a GERMAS cadre, can serve the community with education or counseling methods to increase public knowledge about sedentary activities. This study aimed to determine the effectiveness of counseling by the Department of Public Health and Community Medicine team, Faculty of Medicine, Universitas Sriwijaya, in increasing public knowledge about sedentary activities at SMPIT Zain Al Muttaqin Palembang Indonesia.

2. Methods

This research is an experimental study with one group pre-test and post-test design conducted on 21 students at SMPIT Zain Al Muttaqin Palembang in August 2022 by lecturers and students of the clinical clerkship Department of Public Health and Community Medicine, Faculty of Medicine, Universitas Sriwijaya in an effort to implement one of the pillars in the tridharma of higher education that is community service. The delivery of educational materials was carried out using the presentation method and continued with a physical examination and additional examinations in the form of measurements of weight, height, blood sugar levels, and hemoglobin. The material provided is in the form of a brief explanation of sedentary activities, the adverse effects of sedentary activities, and ways to overcome sedentary living habits. This was followed by a discussion that focused on preventing sedentary activities by changing lifestyles, starting with diet regulation, limiting the use of gadgets, and exercising.

In the monitoring and evaluation process, the indicator of the success of the service program is seen from the response of the participants when the service team delivers the material. The presentation team gave various feedback so that participants could actively ask and answer questions. In addition, participants were given a pre-test and post-test questionnaires to find out the comparison of participants' knowledge before and after being given counseling on sedentary activities. Data analysis was carried out using SPSS software version 25. Univariate analysis is performed to determine the frequency distribution of data for each test variable. Bivariate analysis was conducted to determine the difference in the average knowledge score of research subjects before and after the intervention, with $p < 0.05$.

3. Results

The characteristics of respondents in this study were gender, body mass index, blood sugar levels, and haemoglobin levels. Characteristics of research subjects can be seen in Figures 1,2,3 and 4. Frequency distribution based on gender found that the female as much as 64% more than the male as much as 36% (Figure 1). Frequency distribution based on body mass index found that most participants with normoweight BMI (body mass index) were 52% and obesity 33% (Figure 2). Frequency distribution based on random blood sugar when it was found that most participants with normal random blood sugar were 100% (Figure 3). Frequency distribution based on haemoglobin found that haemoglobin in normal/non-anemic participants was 90% (Figure 4).

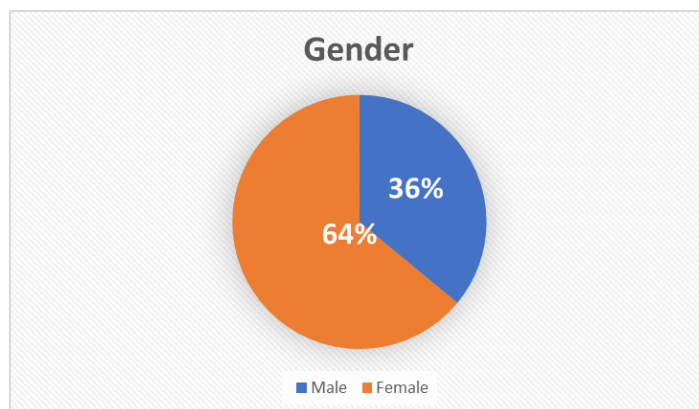


Figure 1. Frequency distribution based on gender.

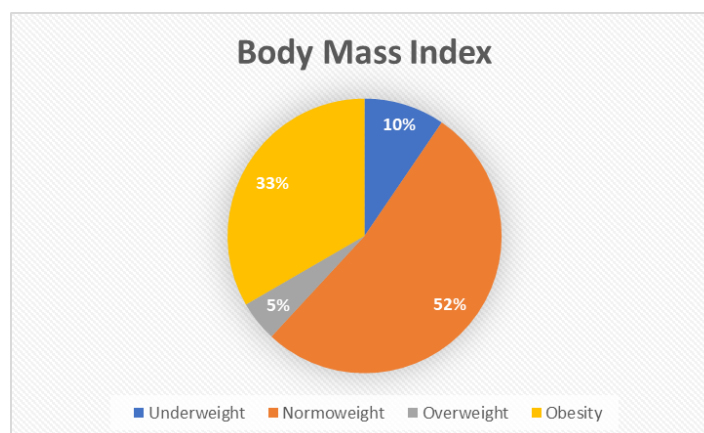


Figure 2. Frequency distribution based on body mass index.

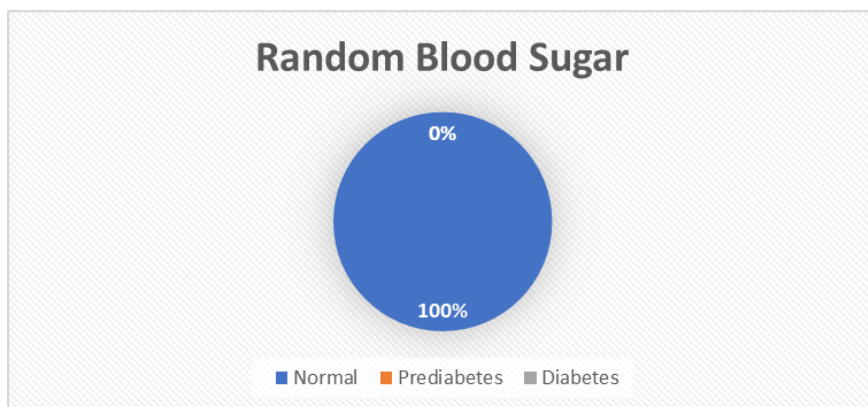


Figure 3. Frequency distribution based on random blood sugar.

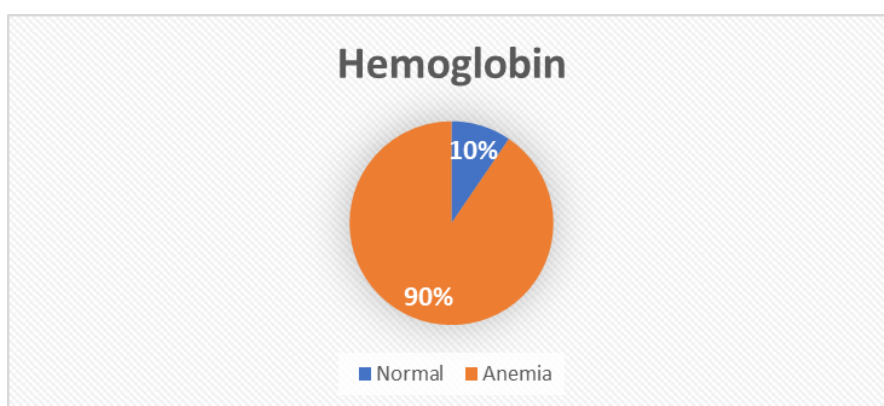


Figure 4. Frequency distribution based on haemoglobin.

Based on the frequency distribution table of participants' knowledge before counseling that is, 63.6% of participant's knowledge is in the poor category, 36.4% is in the pretty good category, and after counseling, the participant's knowledge increased by 59.1% in the good category (Table 1). Based on the SPSS analysis, the normality test obtained Sig. 0.015 and 0.000 < 0.05, which means that it is not normally distributed (Table 2). Then the

test is continued with the Wilcoxon Test to assess the differences in participants' knowledge before and after counseling. Based on the Wilcoxon test, the value of Sig. (2-tailed) of 0.000 < 0.05 (Table 3 & 4), it can be concluded that there is a significant difference in the results of sedentary lifestyle counseling based on data pre-test and post-test.

Table 1. Frequency distribution based on participant's knowledge before and after counseling.

Knowledge	Total (n)	Percentage (%)
Pre knowledge		
Poor	14	63.6
Pretty good	8	36.4
Good	0	0
Post knowledge		
Poor	1	4.5
Pretty good	8	36.4
Good	13	59.1

Table 2. Normality tests knowledge before and after counseling.

	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pre	.224	22	.006	.885	22	.015
Post	.240	22	.730	.730	22	.000

Table 3. Differences in participants' knowledge before and after counseling.

Ranks				
N			Mean rank	Total of ranks
Post-Pre	Negative ranks	0a	.00	.00
	Positif Ranks	19b	10.00	190.00
	Ties	3c		
	Total	22		

a.Post < Pre; b.Post> Pre; c. Post=Pre.

Table 4. Differences in participants' knowledge before and after counseling.

Test statistics	
Post-Pre	
Z	-3.852b
Asymp. Sig. (2-tailed)	.000

a. Wilcoxon signed ranks test; b. Based on negative ranks.

4. Discussion

Based on the data from the gender frequency distribution, it was found that the female was 64% more than the male, as much as 36%. In this study, the frequency of females was more than males. This is in accordance with research conducted by Jardim et al., which was conducted on adolescents. Sedentary behaviour was more often found in female adolescents compared to male adolescents. But teenage boys spend more time playing video games. Teenagers aged 12-17 years are advised to reduce screen time, which is less than 2 hours per day.^{10,11}

Based on body mass index frequency distribution data, it was found that the most participants with normoweight BMI were 52% and obesity 33%. Obesity can be caused by several factors, including eating patterns that consume fewer vegetables and fruits, more often consuming fried foods, sweet foods and drinks, and fast food containing processed products.

These things are often found in teenagers today. In addition to eating patterns with the development of communication technology, physical activity is greatly reduced because teenagers spend more time playing electronic media than moving.^{8,12}

Based on the data on the frequency distribution of random blood sugar, it was found that most participants with normal random blood sugar were 100%. A sedentary lifestyle can increase blood sugar levels because it only takes a little energy for the individual to do activities while sitting or lying down. A sedentary lifestyle is the behaviour of a person whose activities are mostly carried out in a sitting or lying position so that it does not require significant energy to do <1.5 metabolic energy turnovers/METs.^{13,14} Sitting for a long time has a negative effect on lipoprotein lipase enzyme activity (LPL).¹⁵ LPL activity is highly dependent on physical activity and muscle contraction activity. When muscle

contraction decreases, it can inhibit the process of converting sugar in the muscles into energy, thereby affecting the decrease in blood sugar levels. This causes a decrease in the effectiveness of insulin and poor use of glucose and fat in the cells.¹⁶ Insufficiency of physical activity causes insulin disorders. It can cause hyperglycaemia.

Based on the haemoglobin frequency distribution data, it was found that the haemoglobin in the participants was normal/not anaemic, as much as 90%. The importance of the function of haemoglobin in the human body and the importance of a person doing the regular physical activity are two interrelated things. The relationship between physical activity carried out by a person and haemoglobin levels is that when a person does physical activity such as exercising, there is an increase in high metabolic activity, so the acid produced (hydrogen ions, lactic acid) also increases, resulting in a decrease in pH. Low pH reduces the attraction between oxygen and haemoglobin. This causes haemoglobin to release more oxygen, thereby increasing oxygen delivery to the muscles.¹⁴ From the explanation above, it can be concluded that sedentary activity can be a risk factor for anaemia.

Participants' knowledge was assessed using a questionnaire. According to Arikunto (2006), knowledge is divided into 3 categories, good category (if the subject can answer correctly 76% - 100% of all questions, pretty good (if the subject is able to answer correctly 56% - 75% of all questions), and poor category (if the subject is able to answer correctly 40% - 55% of all questions).¹⁴ Based on the frequency distribution table of participants' knowledge before counseling, 63.6% of participants' knowledge is in the poor category, 36.4% is in the pretty good category, and after counseling, the participant's knowledge increased by 59.1% in the good category. Based on the Wilcoxon test, the value of Sig. (2-tailed) of $0.000 < 0.05$, it can be concluded that there is a significant difference in the results of sedentary lifestyle counseling based on data pre-test and post-test. This shows good enthusiasm between the resource persons

and activity participants, as evidenced by the increase in the participants' post-test scores.

Similar community service activities are in the form of sedentary lifestyle counseling in the Medan district by involving mothers who have children with school activities from home. As a result, participants were quite enthusiastic about participating in the event, and participants acknowledged and realized that a sedentary lifestyle was being followed by all family members due to the pandemic. The results of the evaluation were able to show that participants were able to provide examples of physical activities that parents and children can do at home.^{15,16} This is what we are trying to achieve in the implementation of our community service program. Providing health counseling in an effort to increase knowledge can be done by using health promotion aids with visual, audio, and audio-visual aids.^{16,17} Audio-visual provides a very large contribution to changing people's behaviour, especially in the aspect of information and persuasion. This tool provides a stimulus for hearing and vision so that the results obtained are maximized. In this activity, the presentation of the material, followed by discussion, proved to be effective in increasing public knowledge of sedentary activities. Evaluation of the participants was carried out with a post-test regarding all the material presented by the resource persons. Participants also asked about many things after counseling it, which showed that the existence of this community service activity could increase the insight of the participants.

5. Conclusion

There is an increase in public knowledge related to sedentary activities through counseling to students at SMPIT Zain Al Muttaqin, Palembang, Indonesia.

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