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Supportive Educative Model Based on Theory of Planned Behavior to Adolescent Sedentary Life

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Abstract. Background: Sedentary lifestyle is characterized lifestyle by low physical activity. The material impact of a sedentary life are the incidence of overweight and obesity in adolescents, so it can reduce cardiometabolic risk factors, especially blood pressure, and myopia. Then, the psychological impact of a sedentary lifestyle is depression, anxiety, stress, and decreased cognitive function, which can correlate to the academic ability of adolescents at school.

Aim: aims of this study are to analyze a supportive educative model based on the theory of planned behavior to adolescent sedentary life.

Methods: This study design is pre-experimental using a one-group pretest-posttest design approach. The study population, with exclusion criteria such as incomplete participant information and clinical practice students, was conducted from June 2022 to July 2022 on 179 respondents. Adolescent and current college students. The instrument used in this study was an online survey using questions on demographic information and a questionnaire on sedentary activity in adolescents.

Results: All of the respondents are aged 18–21 years with the average being 19.61 years with the majority being female students. Most of the respondent's body mass index was in the normal category (18.5–24.9) with an average BMI of 21, and most of them did not have an online game application. Regarding the level of student activity at the time before the intervention was given, all respondents had a moderate activity level with an average of 83.74 4.53 while after the intervention was given the activity level of respondents was 135 people (75.4%) moderate activity and 44 people (24.6%) high activity level or average after the intervention was 68.754.94. There is a supportive educative effect based on a theory of planned behavior on sedentary life with a p-value of 0.000.

Conclusion: A supportive educational model based on the theory of planned behavior can influence the sedentary living. Findings support the importance of social support for physical activity in adolescent girls but suggest that the sources and types of social support for physical activity and sedentary behavior may differ. Further research is needed to examine the role of friends and family members in promoting physical activity and the causal relationship between physical activity within the family in reducing physical inactivity in early adolescent girls.

Keywords: Supportive educative · Adolescent · Sedentary life

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1 Introduction

A sedentary lifestyle is characterized by low physical activity. Forms of sedentary lifestyle such as sitting or lying down in everyday life both at school (working in front of the computer, reading, etc.), at home (watching TV, playing games, playing cellphones, etc.), on trips/transportation (buses, trains, motorbikes), but does not include sleep time [2, 32]. The physical impact of a sedentary lifestyle is the incidence of overweight and obesity in adolescents and an increase in adipocytes in adolescents [12]. Cardiometabolic risk factors, especially blood pressure, are also associated with a sedentary lifestyle [7]. Adolescents with a sedentary lifestyle also increase the prevalence of myopia compared to those with high activity levels [9]. The psychological impact of a sedentary lifestyle is depression, anxiety, and stress. In addition, it can also impact cognitive function, affecting adolescents' academic ability at school [11]. When adapting to new habits after the Covid-19 pandemic, people are forced to stay at home, have limited mobility, sit and lie down more often, and use devices for various purposes such as work and education, thus encouraging sedentary behavior [7, 9].

According to the World Health Organization (WHO), sedentary lifestyles in children and adolescents are linked to lack of healthy rest, poor academic performance and socialization, persistent unhealthy eating habits, drug use rates, and increased violence. A strategy for resolving the effects of today's society is physical activity, which is one of the protective factors for his NCD prevention and health promotion. WHO recommends that young people between the ages of 5 and 17 spend at least 60 minutes of moderate-to vigorous-intensity physical activity each day, at least 3 times per week [32].

The impact of a sedentary lifestyle is evident in the obesity prevalence (15.48%) in East Java's health profile in 2018, which is higher at 23.56% in East Java [2, 3]. Results of a preliminary survey of 10 students conducted on 16 December 2021 showed that 7 students were in the high sedentary lifestyle category, i.e., a sedentary lifestyle of 5 hours or more. Two students belonged to the moderate activity category and one student belonged to the low activity category. Observed effects were 10% obesity, 40% overweight, 50% above normal blood pressure, and 40% myopia. In the results of interviews with 10 teenagers, 4 teenagers behaved positively and 6 teenagers behaved negatively [11]. Positive behavior is shown by adolescents with statements that realize that a sedentary lifestyle will have an impact on their health so if they are reprimanded by their mothers, they often immediately obey. The difference in behavior can be seen from the statements of 6 other teenagers who stated that a sedentary lifestyle would not have an impact on their health and was often left alone if the mother did this habit and most of them never again received questions from their families about activities carried out after school while in boarding houses or dormitories [12]. The data shows that the sedentary lifestyle carried out by adolescents is mostly in the high activity category, specifically > 5 hours a day. The impact of a sedentary lifestyle has also occurred such as obesity, overweight, pre-hypertension, and myopia. Teenagers' habits of playing cell phones, playing electronic games, and watching TV are especially uncontrollable when they occur at home because most of them do not have written rules, unlike in dormitories which have written rules. The choice of place of residence is related to the level of adolescent sedentary lifestyle [11, 12].

Studies show that negative family role-playing behavior is indicated by the statement that mothers never workout and invite or tell their children to workout. Negative behavior is also evident in family screen-based behavior – as evidenced by mothers’ testimonies, shows that the behavior of the screen-based [12, 18]. She also admits that she has a sedentary lifestyle, but if she doesn’t comply, she is left alone because she is considered an adult and the mother feels that there is no visible health impact, even though some of the children examined are in the overweight category. The role of the mother in modeling the family was also absent, as she said she taught her children a healthy lifestyle as a teenager, this is rarely done [15, 18].

The theory of planned behavior is used as a supportive educative approach to finding out how strongly students will try a role, and how much effort to carry out that role so as to reduce adolescent sedentary lifestyle. Good behavior in carrying out activities can be formed if you already have the intention to do it. There are 3 main belief factors that influence intention, namely behavioral beliefs that become attitudes toward the behavior, normative beliefs that become subjective norms, and control beliefs that become perceived behavioral control. There are other variables that support this. Based on these problems, the application of a supportive educative nursing model needs to be done for behavioral problems such as a sedentary lifestyle [1–4].

2 Methods

This study used a pre-experimental research approach with a pre-test and post-test design for one group. The population in this study was adolescents, and the sample was current college students. The participant voluntarily participated in the survey by completing his online questionnaire administered via Google Forms. Data collection started from 20 June 2022 to 20 July 2022. The instrument used in this study was an online survey consisting of questions on demographic information and the use of adolescent sedentary questionnaires. A sedentary lifestyle can be calculated using the modified Adolescent Sedentary Activity Questionnaire (ASAQ). ASAQ has a reliability value of 0.57-0.86, has a good validity value and can identify three dimensions of sedentary behavior. They are type, duration, and frequency. The ASAQ identifies 11 sedentary lifestyles from Monday to Sunday. Then, the score results will be categorized into three categories, which are low activity (<2 hours a day), medium (2 till 5 hours a day), and high activity (below 5 hours a day) [16, 18]. The final study was carried out in 179 respondents using accidental sampling. Inclusion criteria included students in their adolescents and undergoing online learning Exclusion criteria included incomplete participant information and clinical practice students. Data analysis using Wilcoxon Signed Rank Test.

3 Results

From the Table 1, it can be shown that almost all of the respondents are aged 18-21 years with the average being 19.61 years with the majority being female students. Most of the respondents’ body mass index was in the normal category (18.5-24.9) with an average BMI of 21. Of the total respondents, most of them did not have an online game application.

Table 1. General Data on the Implementation of Supportive Educative Based on the Theory of Planned Behavior on the Sedentary Life of Adolescents

Characteristic	Frequency (f)	Percentage (%)
Age		
18–21 years old	170	95
22–25 years old	5	2.8
> 25 years old	4	2.2
Gender		
Male	16	8.9
Female	163	91.1
Body Mass Index		
Thin (<18,5)	51	28.5
Normal (18,5–24,9)	97	54.2
Fat (>25)	31	17.3
Online game ownership		
No	129	72.1
Yes	50	27.9
Pretest	83.74 -4.53	100
Moderate activity	179	
Posttest	68.75- 4.94	
Moderate activity	135	75.4
High activity	44	24.6

Regarding the level of student activity at the time before the intervention was given, all respondents had a moderate activity level with an average of 83.74 4.53 while after the intervention was given the activity level of respondents was 135 people (75.4%) moderate activity and 44 people (24.6%) high activity level or average after the intervention was 68.75 4.94.

This study uses data analysis with the Wilcoxon signed-rank test, which measures the data normality test when the data are not normally distributed. We analyze the impact of planned behavior theory-based support education on sedentary living.

From Table 1, it is found that the sedentary life before giving supportive education based on the theory with moderate activity with an average of 83.74 4.53. While the sedentary life after giving a supportive educative based on the health belief model with moderate activity with an average of 68.75 4.94. so that there is an effect of sedentary

life based on health belief model with sedentary life with p value = 0.000 and Z value = -11.631. Negative correlation indicates that the relationship is inversely proportional.

4 Discussion

The COVID-19 pandemic that has occurred since March 11, 2020, has spread to all parts of the world, including Indonesia. Not only detrimental from the health side but also the education side, namely the implementation of teaching and learning activities are hampered [15]. Since the Sars-CoV-2 virus spreads between people through respiratory droplets (droplets), teaching and learning activities conducted online to avoid the rapid spread of the virus. The pandemic that lasted for more than a year made changes in the student's lifestyle into a sedentary life [16]. The condition of students before online lectures was that there were sedentary lives, and their activities were lower than other students. Several conditions cause of sedentary life, students have activities carried out in front of the computer, such as writing, making designs, and others [18].

Second, students have a hobby of watching television and playing online games and social media for hours. Third, it is easier for students to order food with today's technological advances. They often spend their time using gadgets to play social media, online games, watch tv, and read books, and are lazy to exercise. The daily activities of students who previously carried out on campus every day to attend teaching and learning activities and student affairs no longer done [23]. All of these activities have to be done online. Students' physical activity has decreased with these lifestyle changes. Students are in front of laptops or gadgets to attend online lectures. They only sit and listen when they are in class, even after class, students still often spend their time in front of a laptop or gadget to play social media or online games [18, 23].

The first intervention that can be done on students is an intervention with an informal approach. Students have been given education about the impact of a prolonged sedentary life, namely obesity/overweight, metabolic syndrome, cardiometabolic, myopia, anxiety, stress, and decreased cognitive function [18, 24]. In addition, education about the benefits of physical activity in adolescence is also provided to motivate changes in daily activities [27]. This intervention aims to reduce the time of sedentary life that has occurred during the pandemic. Implementation of a supportive educative model can practically be done by nurses by paying attention to individual factors, family factors, environmental factors, and educational institution factors in making programs to increase activity in adolescents [29].

The purpose of the program is to increase behavioral beliefs that are manifested in attitudes toward the behavior of the family by providing education about the concept of a sedentary lifestyle, its physical and psychological causes, and its impacts on the development of integrated healthcare centers in youth family development activities [18]. Furthermore, increasing youth's intention to increase activity by implementing GERMAS (Healthy Community Movement) and CERDIK (regular health checks, getting rid of cigarette smoke, diligent physical activity, healthy diet with balanced calories, adequate rest, and managing stress). Implementation of sedentary lifestyle prevention efforts to support GERMAS or CERDIK can be done with behavioral change approach interventions such as familiarizing families who can be represented by mothers to be able

to give examples of how to watch TV, use cellphones, computers, and electronic games appropriately, familiarize families with limiting time spent on watching TV, using cell phones, computers, and electronic games, getting families to control the time teenagers spend watching TV, using cellphones, computers, and electronic games, and getting families used to tell and inviting teenagers to exercise together and getting families used to provide transportation that makes their activities easier physical like a bicycle [11, 23].

5 Conclusion

Student activity before the intervention was given to all respondents had moderate activity levels with an average of 83.74 ± 4.53 . Respondents' activity after intervention based on theory of planned behavior was mostly moderate activity (75.4%), and high activity level (24.6%). The mean after intervention was 68.75 ± 4.94 . A supportive educative has an effect based on the theory of planned behavior on sedentary life of students with a p-value = 0.000. This finding proves that providing interventions about supportive educative based on the theory of planned behavior about sedentary life with early prevention can reduce the impact of non- communicable diseases.

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