

# The Relationship Between Sedentary Lifestyle and Body Mass Index Among Junior High School Students at Jayapura Christian School

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## Abstract

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**Introduction:** As a result of today's technology advancements, many people, including youngsters, are spending more time watching television, playing video games, or using social media on computers or phones. Sedentary lifestyle refers to behaviors like these. Students' activities became passive as a result of studying online at home. As a result, the chance of acquiring more weight and eventually being obese increases. That is the basic issue addressed in the study. The majority of youngsters spend their time on video games, television, or social networking. One of the signs of a sedentary lifestyle is a lack of physical activity. In youngsters, a lack of physical activity might raise the chance of being overweight or obese.

**Objective:** The purpose of this study is to look into the link between a sedentary lifestyle and a high BMI among Jayapura Christian School JuniorHigh School students.

**Methods:** This is a cross-sectional study including Jayapura Christian School Junior High School students. Purposive sampling is a strategy for collecting data. The Adolescent Sedentary Activity Questionnaire (ASAQ) was used to collect data and determine Sedentary Lifestyle. In addition, BMI categories were utilized to determine whether someone was normal, overweight, or obese.

**Results:** The majority of the respondents have an overweight or obese BMI (n=35; 67.3 percent) and a normal BMI (n=17; 32.7 percent), as well as a heavy sedentary lifestyle (n=45; 86.5 percent) and a moderate or light (n=7; 13.5 percent) lifestyle. Using the chi-square statistical test, the results of the two variables analysis, sedentary lifestyle and body mass index category, yielded a p-value of 0.003 and an odds ratio of 17.37 (95 percent CI:2.262–440.1). When compared to students who have a mild or moderate sedentary lifestyle, students with a severe sedentary lifestyle have odds 17.37 times higher chance of having a BMI above normal.

**Conclusions:** There is a substantial link between a sedentary lifestyle and a BMI over the usual limit among Jayapura Christian School Junior High School students.

## Introduction

Sedentary lifestyle is one of many risk factors that can lead to an increase in body weight above what is considered

normal (obesity or overweight), which is a risk factor for cardiovascular illnesses. Low levels of physical activity, in addition to a sedentary lifestyle, are a risk factor for obesity, diabetes, hypertension, and other

diseases. Sedentary lifestyle is estimated to cause 2 million deaths worldwide, making it one of the top ten causes of mortality.<sup>1,2</sup>

The additional of today's technological advancement among society have made many individuals, including children, spending more times watching television, playing video games, or even use social media with the help of either computers or phones. Behaviors like these are called sedentary lifestyle.

As a result of today's technological advancements in society, many people, including youngsters, are spending more time watching television, playing video games, or even using social media on computers or phones. Sedentary behaviors are referred to as sedentary lifestyles<sup>3,4,5</sup>, which refers to any activity performed outside of bedtime that does not require a lot of energy. Sedentary lifestyles include activities done while studying online in a sitting or sleeping position, as well as passive activities done at home or elsewhere such as playing computer games, using social media, or watching television, which all increase the risk of gaining weight and eventually becoming obese.<sup>6,7</sup> The purpose of this study is to look into the link between a sedentary lifestyle and a high BMI among Jayapura Christian School Junior High School students.

## Material And Methods

This is a cross-sectional study of 52 students from Jayapura Christian School Junior High School. Between January and May 2021, data was gathered using the Adolescent Sedentary Activity Questionnaire (ASAQ) to determine the Sedentary Lifestyle Category and Body Mass Index categories to determine normal, overweight, and obese. Teenagers between the ages of 12 and 16 are the target demographic. Purposive sampling was used to collect samples for this study.

## Result

This study involved 52 students of Jayapura Christian Junior Highschool, consist of 48.1% male and 51.9% female with range age 12-16 years old. Table 1 has shown the Body mass index measurement has show most of the respondent are overweight and obese (n=35 or 67.3%) and normal (n=17 32.7%). The questionnaire result has show that most of the respondent have heavy sedentary life style (n=45; 86.5%) and moderate + light only 7 respondents or 13.5%.

Table 1. Characteristic of Respondents

Variabel	N	%
<b>Gender</b>		
Male	25	48.1
Female	27	51.9
<b>Age</b>		
12	6	11.5
13	9	17.3
14	6	11.5
15	8	15.4
16	23	44.3
<b>BMI</b>		
Normal	17	32.7
Overweight+Obese	35	67.3
<b>Sedentary Life Style</b>		
Heavy	45	86.5
Moderate+Light	7	13.5

Table 2. Type of Activity with Sedentary Lifestyle Category

Type of activity	Mild		Moderate		Severe	
	n	%	n	%	n	%
Watching TV/Video	19	36.5	15	28.9	18	34.6
Playing Games	32	61.5	12	23.1	8	15.4
Study	9	17.3	18	34.6	25	48.1
Doing Hobbies	3	5.8	10	19.2	39	75

On the basis of table 2. The most common type of activity that people engage in throughout a week is watching 44 people, hobbies (driving, reading, playing musical instruments, and using cell phones) 39 people, and studying up to 25 people.

Meanwhile, the most frequent moderate sedentary lifestyle activity was using a computer/laptop to play games, which involved up to 32 individuals, and watching TV/video, which involved 19 people.

Table 3. Association of Sedentary Lifestyle and Body Mass index

Sedentary Life style	Overweight+ Obese		Normal		P Value	OR 95% CI
	n	%	n	%		
Severe	34	75.6	11	24.4	0.00352	17.37
Mild+Moderate	1	14.3	6	85.7		2.26-440

\*Analysis by using chi-square analysis

According to the results of Table 3, data from 52 respondents indicate that 34 people (75.6 percent) have a severe sedentary lifestyle and are overweight or obese, while 11 people (24.4 percent) have a normal weight. Meanwhile, only 1 person (14.3 percent) with a mild or moderate sedentary lifestyle was overweight or obese, while 6 persons (85.7 percent) were normal weight. The Chi-square analysis revealed a p-value of 0.003, indicating a significant association between a sedentary lifestyle, body mass index, and the occurrence of weight gain over normal among Jayapura Christian School Junior High School students. According to the table above, the OR value is 17.37, indicating that students who follow a severe sedentary lifestyle have odds of 17.37-fold increased chance of being overweight or obese compared to students who follow a mild or moderate sedentary lifestyle.

## Discussion

According to the findings and discussion above, there is a significant association between sedentary lifestyle,

body mass index, and the occurrence of weight increase over normal among Junior High School students at Jayapura Christian School, with a p value of 0.003.

The results can be derived that the most common severe sedentary lifestyle activity performed during the week is worship (84.6 percent), as evidenced by the fact that they participated in two worship activities, namely public worship and youth worship, for a total of four to five hours each week.

Meanwhile, the most severe sedentary behavior performed on a weekly basis is playing games (15.3 percent) on a laptop or computer, as indicated in the interview that they prefer smartphones to laptops or desktops. Apart from the activities mentioned previously, other activities such as driving, reading, playing musical instruments, using a cellphone, and studying may result in weight gain above the normal level among Junior High School students at Jayapura Christian School due to the amount of time spent sitting or lying down while performing activities, resulting in a decrease in energy expenditure. This can result in the accumulation of body fat, which results in overweight and obesity. Previously, similar research was conducted in 2019 among primary school pupils in Makassar. The findings indicate a link between a sedentary lifestyle and obesity.

This research has certain limitations. Because this study used a cross-sectional design, the causal relationship between sedentary lifestyle and BMI is unclear, and there is a difficulty with temporality. Selection bias and measurement bias are limited when purposive sampling is used.

## Conclusions

Sedentary living behavior is strongly linked to being overweight or obese

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