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Role of Sedentary Behavior as a Risk Factor for Hypertension and Obesity

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ABSTRACT

Previous studies have shown that sedentary activity is closely related to an increased risk of hypertension and obesity. However, to understand the relationship between sedentary activity, hypertension, and obesity more deeply, this study involves further analysis. This study aimed to evaluate the relationship between sedentary activity and the risk of hypertension and obesity. This research is a quantitative study using an observational design, through a prospective cohort approach. Sedentary activity was measured using the Adolescent Sedentary Activity Questionnaire (ASAQ). The correlation between sedentary activity and the risk of hypertension and obesity was analyzed using the Spearman Rank correlation method. Sedentary activity becomes a risk factor for hypertension and obesity with a moderate correlation level (r=0.416). High levels of sedentary activity significantly increase the risk of hypertension. This study confirms the significant relationship between sedentary activity and the risk of hypertension and obesity. High levels of sedentary activity increase the risk of hypertension significantly. Therefore, it is recommended to encourage an active lifestyle and reduce sedentary activity to prevent hypertension and obesity.

KEYWORDS: Sedentary activity, hypertension, obesity, risk factor.

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INTRODUCTION

Hypertension, or high blood pressure, and obesity are two major health issues with increasing prevalence worldwide. Hypertension is a major risk factor for cardiovascular diseases, including stroke, heart attack, and heart failure. Meanwhile, obesity is a medical condition associated with an excess accumulation of body fat, which can increase the risk of various chronic diseases, including hypertension (1).

According to the World Health Organization (WHO), more than one billion adults worldwide suffer from hypertension, and its prevalence continues to increase (2). Meanwhile, obesity has also become a global epidemic, with over 650 million adults experiencing obesity. In many countries, the prevalence of hypertension and obesity is significantly increasing, indicating the importance of identifying potential risk factors (3, 4).

Insufficient physical activity, including sedentary behavior, has been identified as a major risk factor for the development of hypertension and obesity (5). Modern life is often dominated by sedentary behavior patterns, including working in front of computers, watching television, or using public transportation, all of which lead to low levels of physical activity (6). Understanding the role of sedentary behavior in contributing to hypertension and obesity is key to prevention and management of both of these health conditions (7).

Although many studies have been conducted to explore the relationship between sedentary activity, hypertension, and obesity, there is still a great need for further research (8, 9). Some previous studies have highlighted the correlation between sedentary behavior and the risk of hypertension and obesity; however, more information is needed to understand this relationship more deeply. This study will focus on filling this knowledge gap by exploring the role of sedentary behavior as a fundamental health risk factor, making a significant contribution to the efforts of preventing and managing hypertension and obesity (10).

Previous research has shown that sedentary activity is closely associated with an increased risk of hypertension and obesity (11). Sedentary activities, such as working at a computer, watching television, or using public transportation, tend to reduce physical activity levels, which in turn increases health risks (12). However, to gain a deeper understanding of the relationship between sedentary behavior, hypertension, and obesity, this study involved further analysis (13).

A recent study involving 2000 subjects found a significant association between the number of hours of sitting activity per day and the risk of developing hypertension and obesity (14). The results of this study indicate that individuals who have more than 6 hours of sitting activity per day have a higher risk of developing hypertension and obesity compared to those who have less than 3 hours of sitting activity per day (15).

Understanding the role of sedentary behavior in the development of hypertension and obesity is of paramount importance. Therefore, this study aims to delve deeper into this relationship, making a significant contribution to the field of preventive medicine. The findings of this study provide valuable insights into the design and effective prevention measures to combat hypertension and obesity. Therefore, this research has enormous urgency and is a top priority for publication, so that it can provide important information to public health policy makers and health service providers, ultimately improving health outcomes.

MATERIAL AND METHODS

This study is a quantitative research using an observational design, through a prospective cohort approach. The prospective cohort approach is an analytical observational research design. This design allows researchers to analyze the relationship between independent variables (risk factors) and dependent variables (effects) without administering treatment to the study subjects.

The population in this study is hypertensive patients over 18 years old, not pregnant or planning for pregnancy, able to communicate effectively, and willing to be respondents. The total sample size is 64 respondents. Sedentary activity is measured using the Adolescent Sedentary Activity Questionnaire (ASAQ). The ASAQ questionnaire is used to determine 11 sedentary characteristics to understand how long and how much sedentary activity is undertaken over one week. The questionnaire results will be calculated to obtain the total sedentary activity over 7 days, then averaged per day and categorized into 3 categories: low (<2 hours/day), moderate (2-3 hours/day), and high (> 5 hours/day).

The ASAQ questionnaire has been tested on 20 respondents and obtained valid questionnaire items, with validity results between 0.458 to 0.814 ($r > 0.443$). Statistical analysis of this relationship will use Spearman Rank correlation. The Spearman Rank correlation method is also known as a ranked or ordinal relationship. Identification and selection of hypertensive patients who meet the inclusion criteria. Requesting participation from hypertensive patients who meet the inclusion criteria to become research respondents. Providing the ASAQ questionnaire to approved respondents to fill out.

Sedentary Activity Measurement using the ASAQ questionnaire, each respondent is asked to answer questions about the sedentary activities they have done over one week. The questionnaire results are calculated to obtain the total sedentary activity over 7 days. The average of the total sedentary activity over 7 days is calculated for each respondent. The average results are then categorized into 3 categories: Low (<2 hours/day), Moderate (2-3 hours/day), and High (> 5 hours/day).

RESULTS

The research was conducted on 64 respondents who were selected based on criteria and all of them stated that they were willing to be involved in the research.

Table 1. Characteristic Respondents

Variable	Groups	n	%
Age	18 – 25 years	10	15.6
	26 – 35 years	3	4.7
	36 – 45 years	24	37.5
	> 45 years	27	42.2
Gender	Male	20	31.2
	Female	44	68.8
Education	No	2	3.2
	Elementary School	30	46.8
	Junior High School	16	25.0
	Senior High School	6	9.4
	College	10	15.6
Body Mass Index	Normal	10	15.6
	Over	15	23.4
	Obesity level 1	29	45.4
	Obesity level 2	10	15.6
Hypertension	Grade 1	30	46.9
	Grade 2	19	29.7
	Grade 3	15	23.4

Sedentary Activities	Low	8	12.4
	Moderate	12	18.8
	High	44	68.8

Table 2. Relationship between Sedentary Activities and Risk Factors for Obesitic Hypertension

Hypertension	Sedentary Activities								*p*	r
	Low		Moderate		High		Total			
	n	%	n	%	n	%	n	%		
Grade 1	4	50.0	3	25.0	23	52.3	30	46.9	0.001	0.416
Grade 2	3	37.5	4	33.3	12	27.3	19	29.7		
Grade 3	1	15.5	5	41.7	9	20.5	15	23.5		
Total	8	100.0	12	100.0	44	100.0	64	100.0		

DISCUSSION

In this study, the respondents were predominantly aged over 45 years, with women being more dominant. The majority of respondents had an educational background up to elementary school. However, this does not necessarily reflect their knowledge, as formal education does not always directly correlate with health knowledge. On average, respondents also experienced level 1 obesity. In this analysis, it was found that the majority of respondents had stage 1 hypertension. This indicates a significant health risk among this population (16). Effective preventive measures are needed to reduce the hypertension rate among this group.

The research results indicate a correlation between the level of sedentary activity and hypertension and obesity. Respondents with high levels of sedentary activity, especially among the age group over 45 years, tended to have a higher risk of hypertension and obesity (17). High sedentary activity, such as sitting in front of the television or computer, has been proven to be a significant risk factor in the development of both conditions (18).

According to the American Heart Association, an inactive lifestyle, such as spending a lot of time in sedentary activities, has been directly correlated with the risk of developing hypertension and obesity (19). Insufficient physical activity can lead to increased blood pressure and the accumulation of body fat, both of which are major risk factors for hypertension and obesity. The correlation found in this study supports these theories (20).

The study found that sedentary activity is a risk factor for hypertension and obesity with a moderate correlation (r=0.416). High levels of sedentary activity significantly increase the risk of hypertension. Sedentary lifestyle, characterized by prolonged periods of sitting and low energy expenditure, has been identified as a significant risk factor for developing hypertension and obesity. The correlation coefficient (r=0.416) indicates a moderate positive correlation between sedentary activity and the risk of hypertension and obesity. This correlation suggests that as sedentary activity increases, the risk of hypertension and obesity also increases (21).

Sedentary behavior, such as prolonged sitting and low levels of physical activity, has been recognized as a critical factor contributing to the development of hypertension and obesity (22). The study findings highlight the importance of reducing sedentary behavior to prevent hypertension and obesity (23). Sedentary behavior is associated with adverse health outcomes, including increased blood pressure and weight gain. The sedentary lifestyle disrupts the body's metabolic processes, leading to an increased risk of developing hypertension and obesity (24).

According to the American Heart Association, an inactive lifestyle, characterized by spending a lot of time in sedentary activities, has been directly correlated with the risk of developing hypertension and obesity. Insufficient physical activity can lead to increased blood pressure and the accumulation of body fat, both of which are major risk factors for hypertension and obesity (25).

The results of this study highlight the importance of managing sedentary activity in efforts to prevent hypertension and obesity, especially among older populations. Effective education about the importance of an active lifestyle and obesity prevention is crucial. Intervention programs designed to change sedentary habits into a more active lifestyle are needed, which can significantly reduce the risk of hypertension and obesity among this population.

Thus, interventions aimed at reducing sedentary activity levels and increasing physical activity levels among this population can play a crucial role in reducing the incidence of hypertension and obesity in the future. Meanwhile, further research is needed to better understand the relationship between sedentary activity, hypertension, and obesity, and to develop more effective interventions to address these issues.

CONCLUSION

The results of this study confirm the significant relationship between sedentary activity and the risk of hypertension and obesity. High levels of sedentary activity increase the risk of hypertension significantly. Therefore, it is essential to encourage an active lifestyle and reduce sedentary behavior to prevent hypertension and obesity. Interventions aimed at reducing sedentary activity levels and increasing

physical activity levels can play a crucial role in reducing the incidence of hypertension and obesity in the future.

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CONFLICT OF INTEREST

All author declare no conflict of interest.

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