

THE INFLUENCE OF DIET AND PHYSICAL ACTIVITY ON THE INCIDENCE OF HYPERTENSION IN ADULTS AND THE ELDERLY

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ABSTRACT

Hypertension is a serious condition and is included in non-communicable diseases, also known as chronic diseases, a type of disease that does not spread from one person to another. Aspects that influence the phenomenon of hypertension include diet and physical activity. This research uses the literature review method, there are 15 literatures used with a span of the last 5 years, namely from 2020 to 2025. The literature sources in this study were obtained through data searches using the Google Scholar platform as the main database. This research was conducted from April to May 2025. Almost all studies showed an association between physical activity and the incidence of hypertension. Meanwhile, there were 2 studies that stated there was no association between physical activity and the incidence of hypertension. Then, referring to the aspect of food consumption patterns reviewed through various literature sources, there are seven articles that reveal the relationship between eating habits and an increased risk of hypertension. Therefore, it can be concluded that a healthy diet and regular physical activity have a significant impact on the health of the body, especially if these two things are not carried out in an appropriate and balanced manner.

Keywords: *hypertension, diet, physical activity, literature review.*

INTRODUCTION

Hypertension is a serious condition and is included in non-communicable diseases, also known as chronic diseases, which are a type of disease that cannot be transmitted from one individual to another (Karyatin et al., 2024). Hypertensive disease is one of the main causes of considerable discomfort, also known as high blood pressure. It refers to a disturbance in the blood vessels that causes the flow of oxygen and nutrients to the body tissues that need them to be blocked. Hypertension, also known as high blood pressure, is a condition where both systolic and diastolic pressures exceed normal limits. Systolic pressure is the highest pressure that occurs when the heart contracts and pumps blood out through the arteries. Meanwhile, diastolic pressure occurs when the heart is in a state of relaxation and fills with blood again (Utami et al., 2020).

According to WHO data, in 2019 there were about 972 million people worldwide, or about 26.4% of the total population, who had high blood pressure. This number has increased in 2022, it is estimated that as many as 1.13 billion people in the world have been identified as

suffering from hypertension, which is equivalent to about 1 in 3 people in the global population having this condition (WHO in Berta Afriani et al., 2023). By 2025, this non-communicable disease is predicted to reach 1.56 billion. In Indonesia, the prevalence of hypertension has reached 34.1% in 2018. Hypertension if not treated properly, this condition can develop into one of the risk factors for the onset of several diseases such as heart failure, myocardial infarction, stroke, dementia, blindness, and kidney failure (Nurvita, 2021).

Aspects that influence the phenomenon of hypertension include food consumption habits and body activity levels. Dietary factors can be interpreted as actions that impact the nutritional status of individuals. This happens because the amount and quality of food consumed every day can affect nutritional adequacy, which in turn has an impact on personal health and society at large (B et al., 2021). Physical activity is any form of body movement that occurs due to the work of skeletal muscles and causes an increase in the application of power and energy. This action includes a variety of activities carried out at home, work, and various other activities carried

out to fill daily leisure time (Cristanto et al., 2021).

Another aspect of the cause of hypertension is unhealthy behavior or habits such as smoking, not eating foods and drinks with balanced nutrition, low consumption of fruits and vegetables, drinking a lot of alcohol and low physical activity (Hanifah Septiasary et al., 2024). The modern lifestyle that is now lived by many people tends to create an interest in everything that is instant. The impact is that many become less physically active (exercise) and more often consume fast food which usually has high sodium levels. Although having nutritious eating habits and implementing a positive lifestyle does not completely guarantee freedom from disease, with more attention to food consumption habits and physical activities carried out every day, the risk of developing diseases can be minimized such as hypertension etc. (Kadir, 2019).

This study aims to evaluate the impact of eating habits and physical activity on hypertension cases in the general public, especially adults and the elderly. People should start implementing a healthy lifestyle including maintaining the intake of food patterns consumed daily, which

contains carbohydrates, protein, fat, vitamins and minerals, such as vegetables, fruit, meat, fish, eggs, and milk. As well as consuming water that is good for the health of the body and not forgetting to implement a healthy lifestyle (exercise) regularly. Consuming enough water is also recommended to support the health of the body because water helps improve blood circulation so that the flow of oxygen to the brain remains optimal.

RESEARCH METHOD

In this research, a literature study approach is used, in which researchers explore a variety of information sourced from a number of scientific journal articles. The purpose of this method is to identify relevant theories and ideas, which are then analyzed and formulated into a conclusion that is in line with the focus and objectives of the research conducted. This literature review has gone through an ethical review with ethical number 10.082.C/KEPK-FKMUMJ/V/2025. The data base used in this literature search is through online google scholar. The keywords used in searching this literature include hypertension, diet, physical activity, non-communicable diseases, adults and the

elderly. The range of years used in this literature is from 2020 - 2025. The preparation of this research was carried out in the time span between April and May 2025. The literature review in this research was conducted to obtain relevant findings related to the relationship or influence of

diet and physical activity on the incidence of hypertension in the community, especially adults and the elderly. Some of the literature sources reviewed in this study have been summarized and presented briefly in **Table 1** below.

Table 1. List Of Literature Used in The Study

No	Nama peneliti	title	Publication and year	conclusion
1.	Ni Putu Puspayani – NI Made Ayu Sukma Widyandari – I Made Rai Mahardika	the relationship between lifestyle and diet with the incidence of hypertension in the tabanan community in the working area of the kediri i health center	Jurnal Inovasi Riset Ilmu Kesehatan Vol. 4 No. 1 Januari 2025	Based on the results of data processing, it can be determined that the significant value between the effects of lifestyle on the incidence of hypertension is 0.001 ($p \leq 0.05$). Lifestyle and diet variables have a significant relationship with the incidence of hypertension, and lifestyle variables have a significant effect on the incidence of hypertension at a p value of 0.036..
2.	Natasya Dhaniang – Donna Novina Kahanjak – Silvani Permatasari	the relationship between physical activity and the incidence of hypertension	Jurnal Riset Mahasiswa, Volume 1, Juli (2): 80-87, 2023	From a total of twenty-four journals reviewed, 18 journals (86%) showed an association between physical activity and the incidence of hypertension, while 3 journals (14%) did not find such an association. A number of factors that may influence this relationship include diet, age, nutritional status, family history of hypertension, smoking

				habits, and frequency of health checks. Individuals who have low levels of physical activity tend to have a greater risk of developing hypertension than those who are more physically active..
3.	Muhammad Firdaus – Windu CHN Suryaningrat	the relationship between diet and physical activity on blood pressure in hypertensive patients in kapuas hulu	majalah kesehatan volume 7, nomor 2, juni 2020	The results of this study indicated a significant relationship between physical activity and blood pressure in patients with hypertension ($p = 0.027$). The mean (SD) MET value in patients with controlled hypertension was 5660.0 (4229.4) minutes per week, while in patients with uncontrolled hypertension it was 5077.8 (8952.4) minutes per week. Meanwhile, there was no significant relationship between diet and blood pressure in the group of hypertensive patients ($p = 1.000$).
4.	Mega Silvia Hajingo – Theo Mautang – Nancy Bawiling	the relationship between physical activity and the incidence of hypertension in young adults in lolak village, lolak sub-district, bolaang mongondow district	JIKMA (Jurnal Ilmiah Kesehatan Manado) Vol. 3 No. 2 (2024) 22 – 05 -	Based on the results of the analysis using the Chi Square test, a P-value of 0.015 was obtained which is below the significance limit of 0.05. Thus, it can be concluded that there is a significant relationship between physical activity and the incidence of hypertension in young adults..

5.	Ns. Karyatin, M.Kep1	the relationship between physical activity and the degree of hypertension in the elderly	Jurnal Kesehatan STIKes Sumber Waras Volume 6 Nomor 2 Tahun 2024 EISSN 3032-4262	The results of the analysis showed that the proportion of patients with grade II hypertension was 52.9%, higher than those with grade I hypertension which reached 47.1%. A total of 52.9% of respondents had a level of physical activity that was classified as sufficient. There was a statistically significant relationship between physical activity and the severity of hypertension (P value = 0.017). The conclusion of this study states that individuals with hypertension who have low levels of physical activity have a 2.31 times greater risk of developing grade II hypertension than those who undergo light physical activity. This condition may also be influenced by other factors such as high levels of physical stress, lack of rest, or an unhealthy lifestyle..
6.	Linta Meyla Putri – Marline Marke Mamesah – Iswati – Caturia Sasti Sulistiyana	Risk Factors for Hypertension in Adults & Elderly in Tambaksari Surabaya	Jurnal of Health Management Research Vol 2 No. 1 Februari 2023 2	The results showed that most of the respondents at high risk of hypertension were female (60%) and came from the pre-elderly age group (46%). The low level of physical activity in respondents is known to increase the risk of hypertension. This finding was reinforced by the results of statistical analysis which showed a significant relationship between physical activity and the risk

				of hypertension (p-value = 0.031). Respondents with low physical activity had a 1.582 times greater chance of developing hypertension compared to those who routinely performed physical activity in the moderate category.
7.	Frilla Adhany Marsya – Arie Wahyudi – Dianita Ekawati – Dian Eka Anggreny	analysis of the determinants of hypertensive disease in adults aged 30-50 years	Volume 10, Nomor 1, Februari 2025	The results showed that based on bivariate analysis with the chi-square test, there was a significant relationship between several variables with the incidence of hypertension. The knowledge variable showed a P-Value of 0.000 (OR = 7.375), attitude with a P-Value of 0.000 (OR = 7.222), smoking habits P-Value 0.003 (OR = 3.194), fast food consumption P-Value 0.000 (OR = 4.446), sodium intake P-Value 0.010 (OR = 2.818), physical activity P-Value 0.000 (OR = 11.407), and history of disease P-Value 0.004 (OR = 3.19). From these results it can be concluded that there is a significant relationship between knowledge, attitudes, smoking habits, fast food consumption, sodium consumption, physical activity, and medical history with the incidence of hypertension in adults aged 30 to 50 years. Furthermore, the results of multivariate analysis showed that the knowledge variable was the most dominant

				factor affecting hypertension in the Kampus Health Center working area, with a P value = 0.000 and OR = 16.538 (CI 3.935-69.506).
8.	Ninie Lely Pratiwi ¹ , Tety Rahmawati ¹ , Tri Juni Angkasawati ¹ , Suharmiat ¹ , Lestari Handayani ¹ , Agung Dwi Laksono ¹	Diet and physical activity associated with hypertension in Indonesia	Indian Journal of Forensic Medicine & Toxicology, July-September 2021, Vol. 15, No. 3	Based on the results of the study, it was found that the greater the percentage of the population who engage in sufficient physical activity, the lower the prevalence rate of hypertension. Conversely, an increase in the prevalence of hypertension was found along with a high percentage of the population who smoked daily and did not regularly consume fruits and vegetables. In addition, the prevalence of hypertension also increased in the population with a high proportion of salty food consumption at least once a day, as well as in the obese adult age group (≥ 18 years). High rates of central obesity in the population aged 15 years and above also correlate with increased prevalence of hypertension.

9.	Ellyza Rahmawati – Dian Hudiyawati	the relationship of knowledge and diet to the incidence of hypertension	Volume 15 Nomor S4, Desember 2023 e- ISSN 2549-8118; p-ISSN 2085- 1049	Based on the analysis in Table 3 as well as the results of the Spearman Rank correlation test, it was found that diet has a significant relationship with the incidence of hypertension. The results showed a significant negative correlation with a p value = 0.001 and a correlation coefficient of $r = 0.665$. The p value being less than the significance limit of 0.05 indicates that the null hypothesis (H_0) can be rejected. Thus, it can be concluded that there is a significant relationship between diet and blood pressure in respondents who undergo blood pressure checks at the Kartasura Health Center.
10.	Rista Ayu Lestari – Ade Saputra Nasution – Tika Noor Prastia	The Relationship between Physical Activity, Smoking Habits and Diet with the Incidence of Hypertension in the Elderly in Cibogor Village 202	Jurnal Mahasiswa Kesehatan Masyarakat, Vol. 6, No. 3, Juni 2023: 273-280	The results indicated a significant association between physical activity and the incidence of hypertension in the elderly, with a p-value of 0.000. Meanwhile, no significant relationship was found between smoking and hypertension in the elderly group (p-value = 0.409). In addition, there is a significant relationship between diet and the incidence of hypertension in the elderly, indicated by a p- value of 0.004 and an odds ratio (OR) value of 6.9. Thus, it can be concluded that physical activity and

				diet are associated with hypertension, while smoking habit does not show a significant effect.
11.	Erwin Wiksuarini – Beti Haerani – Maulin Halimatunnisa – Amalia Mastuty – Muhammad Amrullah	The relationship between physical activity and changes in blood pressure in elderly people with hypertension in the posbindu working area of babakan asem village, Tangerang district.	Jurnal Kesehatan Qamarul Huda Vol. 11, No.2, Desember 2023, hlm. 445-451	The results showed that the majority of elderly people did light physical activity, with 16 respondents (45.7%) experiencing moderate levels of hypertension, namely 23 respondents (65.7%). Based on the Spearman rank test, a significance value of $p = 0.003$ was obtained, which is smaller than $\alpha (0.05)$, so the null hypothesis (H_0) is rejected. Thus, it can be concluded that there is a relationship between physical activity and changes in blood pressure in the elderly with hypertension in the Posbindu working area of Babakan Asem Village, Tangerang Regency..
12.	Khilda Nafila – Aida Rusmariana	The relationship between lifestyle and the incidence of hypertension in young adults	Seminar Nasional Kesehatan, vol 1 2021 Page 1580	The results of the literature review analysis showed that of the five articles reviewed, four articles concluded that smoking was not associated with the incidence of hypertension, while one article showed an association with a p value <0.05 . In addition, four other articles also found no association between physical

				activity and the incidence of hypertension. For the coffee consumption variable, three articles found an association with the incidence of hypertension, while one other article showed that there was no association, with a ρ value > 0.05 . Overall, smoking and physical activity were not found to be associated with hypertension, while coffee consumption had an association with the incidence of hypertension.
13.	Desta Ayu Pratama – Lili Indrawati – Zarffiel Tapal – Abraham Simatupang	Relationship between Body Mass Index, Physical Activity and Dietary Intake with Hypertension in the Elderly	Jurnal Untuk Masyarakat Sehat (JUKMAS) Vol. 8, No. 2 Oktober 2024	The results of the analysis indicated an association between age (p-value = 0.013), education (p-value = 0.186), physical activity (p-value = 0.001), and body mass index (p-value = 0.001) against respondents. The factor that most influences the incidence of hypertension in the elderly is physical activity, with an odds ratio (OR) value of 6.017.
14.	Laura Cleven1 Janina Krell - Roesch - Claudio R. Nigg - Alexander Woll1	Associations between physical activity and the incidence of obesity, coronary heart disease, diabetes, and hypertension in adults: a systematic review of longitudinal studies published after 2012	Cleven et al. BMC Public Health (2020) 20:726	Overall, studies showed an association between physical activity (PA) and reduced risk of obesity, coronary heart disease (CHD) and diabetes, although no association was found with hypertension. Higher physical activity was associated with a reduced risk of these diseases in 20 studies (77%). On the other hand, four studies (15%) showed that low levels of

				physical activity increased the risk of disease occurrence, while two studies (8%) found no association between physical activity and disease incidence.
15.	Hamzah B – Hairil Akbar – Ake Royke Calvin Langingi – St. Rahmawati Hamzah	analysis of the relationship between diet and the incidence of hypertension in the elderly	Journal health and Science ; Gorontalo journal health & Science Community Volume 5 ; Nomor 1 April Tahun 2021	The results showed that 61.3% of respondents had hypertension, 67.7% of respondents had a poor diet, and 32.3% had a good diet. Based on statistical tests, it was found that there was a relationship between diet and the incidence of hypertension with a p value = 0.014, which is smaller than 0.05. Thus, it can be concluded that there is a relationship between diet and the incidence of hypertension in the working area of the Molibagu Health Center, South Bolaang Mongondow Regency.

RESULTS

Most of the studies indicated an association between physical activity level and prevalence of hypertension. Meanwhile, two studies reported that there was no association between physical activity and the occurrence of hypertension. Then, when looking at dietary factors, from the above literature, there are 7 articles that show that there is an association between

eating habits and the appearance of hypertension.

From the data obtained from the literature review, there are several other external factors that can affect the relationship between physical activity levels and the occurrence of hypertension. These factors include stress levels, alcohol consumption, smoking, poor diet, insufficient nutritional status, family

history of hypertension, age, and compliance with regular health checks. (Dhaniang et al., 2023). In research (Nafila & Rusmariansa, 2021) states that people who have low levels of physical activity tend to have a greater chance of developing hypertension, while those who do sufficient physical activity actually have a lower risk. This is because sufficient activity can help maintain body balance so that it is not easy to experience an increase in blood pressure. Conversely, individuals who rarely move or do physical activity tend to have a high heart rate, forcing the heart to work harder with each contraction. The more often and stronger the heart pumps blood flow, the greater the pressure exerted on arterial vessels.

DISCUSSION

According to another theoretical view, physical activity has an important influence in maintaining blood pressure stability. A person with a low level of physical activity tends to experience an increase in heart rate frequency. This condition causes the heart to react harder when pumping blood, which in turn increases pressure on the lining of the arteries and causes an increase in peripheral

resistance, a factor that contributes to rising blood pressure or hypertension. In addition, lack of movement can also lead to overweight or obese conditions which also increase the experience of hypertension. Therefore, the more active a person is towards physical activity, the less likely to experience hypertension (Hajingo et al., 2024).

Physical activity provides a variety of positive health benefits for the body, especially the elderly. Besides contributing to the improvement of physiological parameters of the cardiovascular system, exercise can also improve symptoms related to heart disease, such as heart failure, and help control blood pressure. In addition, physical activity can reduce the risk of developing coronary artery disease, improve lipid profile, and increase sensitivity to insulin. Physical exercise also reduces the activity of the sympathetic nervous system, which helps regulate blood pressure and heart rate very effectively. The main foundation of physical activity for the elderly includes aerobic exercise as the main choice, which is ideally complemented by exercises to improve balance, muscle strength, and flexibility (Wiksuarini et al., 2023).

In this study there is a relationship between physical activity and the incidence of blood pressure in adults and the elderly. This research shows similarities with (Putri et al., 2023), (Pratiwi et al., 2021), (Ayu Lestari et al., 2023) and (Wiksuarini et al., 2023) which show that there is an association between the level of physical activity and the incidence of hypertension. This research is also in line with (Pratama et al., 2024) that lack of physical activity is known to have a strong relationship with an increased risk of high blood pressure, including in the elderly. (Friedenreich 2020 in Pratama et al., 2024) Inactive lifestyles are associated with a high likelihood of developing hypertension in the elderly population. Compared to the elderly who regularly do physical activity. However, the results are not the same as research (Nafila & Rusmariana, 2021) and (Cleven et al., 2020) which reveal that physical activity has no relationship with the occurrence of hypertension.

The table analysis above indicates a significant relationship between eating habits and blood pressure levels. Food that is categorized as healthy is food that has a balanced nutritional content for the body. Nutritious food is food that is able to meet

human nutritional needs, because it contains important substances such as carbohydrates, proteins, fats, vitamins and minerals needed to maintain the body's metabolism. Even though the food tastes good, luxurious, or appetizing, it does not necessarily mean that the food is classified as healthy, because it may have the potential to cause various diseases (Andriyani, 2019). Unhealthy eating habits, such as eating foods high in salt content, can cause blood pressure. Excessive salt intake into the body can cause swelling of the organs (Rahmawati & Hudiyawati, 2023).

Maintaining a diet is one of the many natural ways to treat hypertension without causing significant side effects. This approach is considered safer when compared to the use of drugs that can cause long-term dependence. Some aspects that can affect food selection in people with high blood pressure are quite complex, including the type and amount of food. The type of food recommended is rice, vegetables, side dishes, fruit and milk. This diet is generally applied to patients with edema, ascites and hypertensive crisis conditions (Ayu Lestari et al., 2023).

Diet is a habit of consuming food that is adjusted to daily nutritional needs.

However, many people nowadays adopt an unhealthy diet, for example by eating foods with unstable nutritional content. Generally, unhealthy foods contain few essential nutrients and are low in fiber, even though these substances are needed for body growth. This change in diet contributes to the increasing cases of non-communicable diseases in Indonesia, such as hypertension. Poor eating habits can also lead to being overweight, and ultimately risk increasing blood pressure (Inovasi et al., 2024).

The above analysis states that there is a relationship between diet and the incidence of hypertension, especially for adults and the elderly. This study is commensurate with (Ayu Lestari et al., 2023) and (Adult et al., 2025) which prove the relationship between diet and the occurrence of high blood pressure. However, the results are different from the research from (Patient et al., 2020) that there is no statistically significant relationship between diet and blood pressure in hypertensive patients, possibly due to the characteristics of the study participants, such as the majority having a body mass index that exceeds normal and a low level of education, which can affect

their ability to remember the food that has been consumed. In addition, the unavailability of detailed data on the types and portions of food consumed by the community is suspected to be one of the causes of the study results.

CONCLUSION

From the observations and research above, it can be concluded that hypertension is a condition that is included in the category of non-communicable diseases and includes chronic diseases, which are diseases that last a long time and can cause serious complications. This disease is caused by several factors including unhealthy eating habits, lack of physical activity, smoking habits, low consumption of fruits and vegetables and drinking a lot of alcohol. The majority of studies explain that people with low levels of physical activity and poor eating habits such as consuming foods with high amounts of salt tend to be more likely to develop hypertension, both adults and the elderly. A good lifestyle, including maintaining a balanced diet, consuming balanced nutrients, avoiding smoking, adequate physical activity are important steps to avoid hypertension.

Although having nutritious eating habits accompanied by the implementation of a good lifestyle and sufficient physical activity does not completely guarantee freedom from disease, with more attention to diet and daily physical activity, the risk of developing diseases can be minimized, such as hypertension. As for some who stated that there was no association between the incidence of hypertension and physical activity and diet, it was due to the characteristics of the study participants, such as the majority of the community having a body mass index that exceeded normal and a low level of education, which could affect their ability to remember the food they had consumed. In addition, the unavailability of detailed data on the types and portions of food consumed by the community is suspected to be one of the causes of the study results.

Global data shows that the incidence of hypertension continues to increase over time. If no action is taken properly, it will become a risk factor for the onset of several diseases such as heart failure, myocardial infarction, stroke, dementia, blindness, and kidney failure. Thus, efforts to prevent hypertension must be done properly, including changing lifestyles, community

education and regular health checks. it can be concluded that a good diet and regular physical activity can affect health for the body if not done properly and correctly.

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