Journal of Public Health Sciences (JPHS)
Vol. 2, No. 01, pp. 32-41
journal.iistr.org/index.php/JPHS
DOI: 10.56741/jphs.v2i01.257

Factors Contributing to the Prevalence of Hypertension in Indonesia

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ARTICLE INFO

Article history
Received 19 January 2023
Revised 1 February 2023
Accepted 4 February 2023

ABSTRACT

The study on hypertension in the elderly population in Indonesia is significant because of the high prevalence of non-communicable diseases in the country. The increasing trend of hypertension in the elderly population is a cause for concern, with the prevalence reaching 34.1%. The research aimed to identify the modifiable factors that contribute to the incidence of hypertension in the elderly aged 60 years and above. The literature review was conducted using Google Scholar, and 7 eligible articles were obtained that supported the research. The results showed that smoking habits, physical activity, stress, salt consumption, coffee consumption, and diet have a relationship with the incidence of hypertension in the elderly. These findings highlight the importance of addressing the modifiable factors in reducing the incidence of hypertension in the elderly population in Indonesia. Effective interventions and lifestyle changes, such as reducing salt intake, improving diet, and increasing physical activity, can help reduce the burden of hypertension in the elderly population and improve their overall health.

Keywords
Hypertension
Eldery
Indonesia

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Introduction

The development of health in Indonesia is an effort to achieve a healthy living ability for every resident in order to achieve optimal health. Decreased illness rates, death rates, and increased Life Expectancy (LE) are indicators of the success of health development efforts. An

increase in life expectancy leads to an increase in the number of elderly people, which will have an impact and a change in the pattern of diseases in society from infectious diseases to degenerative diseases. One of the degenerative diseases is hypertension (Depkes RI, 2003). According to the World Health Organization (WHO) in 2015, about 1.13 billion people in the world suffer from hypertension, meaning 1 out of 3 people in the world are diagnosed with hypertension. The number of people suffering from hypertension continues to increase every year, and it is estimated that by 2025, there will be 1.5 billion people with hypertension, and it is estimated that each year, 10.44 million people will die from hypertension and its complications [1].

Hypertension, also known as high blood pressure, is a chronic disease caused by high and uncontrolled blood pressure. Therefore, the government has made policies that have made various efforts such as increasing access to primary health facilities (PHC), optimizing referral systems, and improving the quality of services. One effort to prevent hypertension complications, especially heart and blood vessel disease at PHC, is through integrated services (*Pelayanan Terpadu* or PANDU), such as empowering the community in early detection and monitoring of hypertension risk factors held in the community. Such as implementing a healthy lifestyle starting from the family, controlling hypertension risk factors with early detection and modification of lifestyle, and participating in and supporting efforts to prevent and control hypertension [2].

The prevalence of hypertension increases in line with changes in lifestyle such as smoking, physical activity, stress, consuming coffee and salt. Hypertension has become a public health problem and will become a bigger problem if not handled early. Hypertension control, even in developed countries, is not yet satisfactory [3]. Based on the results of the 2018 Riskesdas, the prevalence of hypertension in Indonesia increased compared to the 2013 Riskesdas with blood pressure measurements from 25.8% to 34.1% [4]. According to Ref. [5], hypertension is the first non-communicable disease with a total of 185,857 cases. The prevalence of hypertension based on the elderly population is 34.1%, which is an increase of 7.6% compared to 2013, which was 26.5%. This number certainly makes society more aware and attentive to lifestyle.

The study aims to examine the relationship between modifiable factors (smoking, physical activity, diet, stress, salt and coffee consumption) and the occurrence of hypertension in elderly people aged 60 years old in Indonesia. This is based on the theory that there are other factors that contribute to hypertension, such as uncontrollable and controllable factors. Previous research has found that 48.9% of the elderly are active smokers, 48.9% consume coffee regularly, 62.1% have moderate stress levels and 42.3% have high stress levels, and 14.4%

do not engage in physical activity while 17.8% do. The purpose of this study is to explain the relationship between these modifiable factors and the occurrence of hypertension in the elderly population in Indonesia.

Literature Review

Hypertension is a condition characterized by elevated systolic blood pressure over 140 mmHg and diastolic blood pressure over 90 mmHg in two measurements taken with a five-minute interval while in a resting state [6]. Systolic blood pressure indicates the phase where blood is pumped by the heart, while diastolic blood pressure indicates the phase where blood returns to the heart. In Indonesia, the definition of elderly is someone who is 60 years or older, both male and female [7]. The elderly stage is not a disease, but rather a stage in the life process characterized by a decrease in the body's ability to cope with environmental stress. Primary hypertension, also known as essential hypertension, is a common type of hypertension that occurs in 90-95% of adults and does not have a specific cause [8]. It can be controlled with proper therapy but cannot be cured. Genetic factors may play a role in the development of primary hypertension. Secondary hypertension is characterized by elevated blood pressure and is accompanied by a specific cause, such as renal artery narrowing, certain medications, and other factors [8]. Secondary hypertension can also be acute, indicating a change in heart pressure. In the elderly, isolated systolic hypertension can occur, characterized by an increase in systolic blood pressure and a decrease in diastolic blood pressure, due to changes in the structure of the main blood vessels becoming less elastic and stiff. The increase in blood pressure is due to the stiffening of arterial walls and decreased elasticity of the walls, leading to increased cardiac workload. Hypertension in the elderly is associated with an increased risk of cardiovascular disease, kidney disease, and other health complications. The management of hypertension in the elderly requires a combination of lifestyle changes, such as dietary modification and regular exercise, as well as medication management [9]. Efforts to prevent hypertension by means of prevention of health promotion, specific protection, early diagnosis and prompt treatment and rehabilitation [10]. Health promotion with health education. specific protection by consuming foods that contain potassium and low sodium levels. early diagnosis by checking blood pressure, disability limitation by preventing drop out of treatment and rehabilitation [11].

Method

A. Research Design

The research conducted is a descriptive literature review type of research, which is a library research that is a series of research related to the method of collecting library data or research whose research object is obtained through various library information (books,

scientific articles, newspapers, magazines, and documents). This research will contain an explanation of the topic, findings and other research materials obtained from reference materials to be used as the basis for research activities.

A. Stages and Research Techniques

1. Feasibility Criteria

   The feasibility criteria for scientific articles used are as follows:

   - The article is an original research conducted by the researcher being studied and published in Indonesian.
   - The article has a title and a goal related to the aspect being studied to investigate the relationship between the modifiable factors and the occurrence of hypertension in the elderly.
   - The articles used are a maximum of 5 years old, published between 2017-2021 and can be accessed in full text in pdf format.
   - The type of research used is descriptive analytical method with a cross-sectional approach.
   - The research location is on the occurrence of hypertension in the elderly in Indonesia.

2. Information Sources

   The information source used is from Google Scholar, in the form of research articles that are not literature reviews but primary research conducted by the researcher. The information source is found in the form of articles in valid and relevant journals.

3. Literature Selection

   Literature research is carried out in several stages:

   - Keywords used in article search: hypertension in the elderly.
   - The research then filters articles by reading the entire text.
   - The research groups articles that meet the feasibility criteria.

Result and Discussion

The journal search was conducted on the online database Google Scholar using the keywords "hypertension in the elderly" with a time frame of 2017-2021, and a total of 12,400 articles were found. The research then filtered the articles using the pre-determined inclusion criteria, and finally, 7 articles that met the criteria were obtained.

Risk factors are characteristics, signs or symptoms related to a disease that are present in individuals or groups of people who are statistically associated with an increased incidence of the disease and can trigger the possibility for someone to suffer from the disease. Similar to other non-communicable diseases, the risk factors of hypertension are divided into two

categories: those that cannot be changed and those that can be changed, such as smoking, physical activity, stress, salt intake, coffee consumption and dietary pattern [12]. Results of the analysis of 7 articles showed that among the factors that can be changed are smoking, physical activity, stress, salt intake, coffee consumption and dietary pattern. 5 articles showed the same variables, which were physical activity, smoking, stress and salt intake, while 2 other articles, in addition to these factors, added dietary pattern and coffee consumption variables. Based on the analysis, variables that showed a relationship with the occurrence of hypertension were physical activity, smoking, dietary pattern, coffee consumption, stress, and salt intake, while physical activity and smoking showed no relationship.

A. Smoking Habit

Smoking is a poisonous chemical substance such as nicotine and carbon monoxide that is inhaled through cigarettes and enters the bloodstream, damaging the arterial blood vessel endothelial layer. These substances cause the process of atherosclerosis and high blood pressure. Autopsy studies have shown a close connection between smoking and the process of atherosclerosis in all blood vessels. Smoking also increases heart rate, thus increasing the need for oxygen in the heart muscles. Smoking in hypertension patients will further increase the risk of damage to arterial blood vessels [13]. Based on the analysis of 7 articles, it was found that 3 articles showed a relationship between smoking and the incidence of hypertension. 1 article showed no relationship between smoking and the incidence of hypertension. Ref. [14] showed a relationship between smoking habits and the incidence of hypertension in the elderly. Similarly, Ref. [15] research stated that there was relationship between smoking habits and the incidence of hypertension. This result is in line with the theory that smoking contains three main ingredients that are harmful to health, namely tar, nicotine, and carbon monoxide. The risk to health includes lung cancer, heart attack, hypertension and impotence [16]. From all the explanations, smoking is related to the occurrence of hypertension. However, one study stated that smoking does not have a relationship with the occurrence of hypertension in the elderly. It is therefore hoped that the elderly will be more aware that smoking is a very important risk factor for hypertension.

B. Physical activity

Physical activity is movement performed by the muscles and supporting systems of the body. During physical activity, muscles require energy outside of metabolism to move, while the heart and lungs require additional energy to transport nutrients and oxygen throughout the body and to eliminate waste from the body [15]. Based on the analysis of 7 articles, it was found that 3 articles showed a relationship between physical activity and the occurrence of hypertension. One article showed no relationship between physical activity and the occurrence of hypertension. Ref. [18] showed that there is a relationship between physical activity and the

occurrence of hypertension. Similarly, Ref. [19] stated the same that there is a relationship between physical activity and the occurrence of hypertension. This research result is in line with the theory that physical activity or exercise is more commonly associated with the occurrence of hypertension. Less physical activity increases the risk of high blood pressure due to the increased risk of becoming obese. People who are inactive tend to have a faster heartbeat and their heart muscles have to work harder with each contraction, the harder and more often the heart has to pump, the greater the force that pushes the pressure [20]. From the research results above, physical activity has a relationship with the occurrence of hypertension in the elderly. As for those who stated that there is no relationship between physical activity and the occurrence of hypertension, the elderly need to increase and prioritize morning exercises once a week.

C. Stress

Stress is a non-specific condition experienced by sufferers due to emotional, physical, or environmental demands that exceed their ability and capacity to effectively cope with it. Stress is suspected to cause an increase in blood pressure through an intermittent activation of the sympathetic nervous system. Temporary personality disorders can occur in individuals facing stressful conditions, and if stress persists, it can lead to a sustained increase in blood pressure [21]. Based on a review of 7 articles, 2 articles showed a relationship between stress and the incidence of hypertension in the elderly. The study conducted by Ref. [22] stated that there is a significant relationship between stress and the incidence of hypertension. This result is in line with the study by Ref. [23] which stated that there is a significant relationship between the level of stress and the incidence of hypertension in the elderly. This result is in line with the theory that stress will trigger an increase in blood pressure through a mechanism that triggers an increase in adrenaline levels. Stress will stimulate the sympathetic nervous system causing an increase in blood pressure and heart rate. Stress will increase if the resistance of peripheral blood vessels and heart rate increase, thus stimulating the sympathetic nervous system. Thus, stress will react in the body including increased muscle tension, increased heart rate, and increased blood pressure. The reaction occurs when the body reacts quickly and is not used, which can trigger the onset of diseases including hypertension [24]. From the results of the above study, stress has a relationship with hypertension. Therefore, the elderly should fill their time with exercise, recreation, communication, and improving their spiritual aspect to reduce stress levels.

D. Salt consumption

The recommended kitchen salt intake (containing iodine) should not exceed 5 grams per day, which is equivalent to one teaspoon. An increased intake of sodium causes the body to

retain fluid, resulting in increased blood volume [25]. Based on the analysis of 7 articles, it was found that one article showed that there is a relationship between salt consumption and hypertension in the elderly. There is a significant relationship between salt consumption and hypertension [26]. This result is in line with the theory that salt consumption is a very important factor in the pathogenesis of hypertension. The effect of intake on the development of hypertension occurs through an increase in plasma volume, heart rate, and blood pressure. Salt refers to sodium, such as found in kitchen salt (NaCl), baking soda (NaHCO), baking powder, sodium benzoate, and monosodium glutamate (MSG). Under normal conditions, the amount of sodium excreted by the body through urine should be equal to the amount consumed, so it can be balanced. From the results of the above research, it can be seen that salt consumption is related to hypertension. Therefore, the elderly are advised to reduce their salt consumption and consume foods that are low in sodium.

E. Coffee consumption

The main ingredient in coffee is caffeine, which has an effect on blood pressure, especially hypertension, in an acute manner. This increase in blood pressure occurs through biological mechanisms, including caffeine increasing adenosine receptors, activating the parasympathetic system, and increasing cortisol production. This leads to vasoconstriction and an increase in peripheral resistance, which will cause blood pressure to rise [27]. Based on the analysis of 7 articles, it was found that one article showed a relationship between coffee consumption and hypertension in the elderly. Ref. [28] stated that there is a significant relationship between coffee consumption and hypertension. This result is in line with the theory that coffee affects blood pressure due to its polyphenols, potassium, and caffeine, which have an antagonist effect on adenosine receptors. Adenosine is a neuromodulator that affects the function of the central nervous system [29]. From the results of the above research, it can be seen that coffee consumption is related to the occurrence of hypertension in the elderly. Therefore, the elderly are advised to be more aware that excessive coffee consumption is a risk factor for hypertension.

F. Diet pattern

Diet pattern is an important factor in determining blood pressure. Adopting a diet pattern low in saturated fat, cholesterol, and total fat and rich in fruits, vegetables, and low-fat dairy products has been clinically proven to lower blood pressure [30]. Based on the results of a review of 7 articles, it was found that 1 article showed that there is a relationship between diet pattern and the incidence of hypertension in the elderly. Ref. [31] showed a significant relationship between diet pattern and the incidence of hypertension. This research result is in line with the theory that diet pattern is a way or behavior of an individual in choosing food ingredients to consume every day, including the type of food, the amount of food, and the

frequency of food with the purpose of maintaining health, nutritional status, and helping in the healing of diseases. There is a relationship between diet pattern and the incidence of hypertension. Therefore, the elderly should be able to manage their diet pattern well in order to maintain their health.

Conclusion

Based on a literature review, it can be concluded that the factors that can be changed and are related to the occurrence of hypertension are smoking, physical activity, stress, salt consumption, coffee consumption, and eating habits. On the other hand, the factors that can be changed and are not related to the occurrence of hypertension are physical activity and smoking. Hypertension, also known as high blood pressure, is a common health problem that can increase the risk of various health problems such as heart disease and stroke. There are various factors that can contribute to the development of hypertension, and some of these factors can be changed to reduce the risk of developing the condition. Smoking and stress are two of the factors that can be changed and are related to the occurrence of hypertension. Smoking can increase blood pressure and cause damage to the blood vessels, which can increase the risk of developing hypertension. Stress, on the other hand, can also increase blood pressure, and it is important to manage stress levels to reduce the risk of developing hypertension. Salt consumption is another factor that can contribute to the development of hypertension, and reducing the amount of salt in the diet can help to lower blood pressure. Additionally, coffee consumption can also affect blood pressure, and it is recommended to limit the amount of coffee consumed to reduce the risk of developing hypertension. Finally, eating habits are an important factor in the development of hypertension, and a diet that is low in saturated and total fat, and rich in fruits, vegetables, and low-fat dairy products has been shown to reduce blood pressure. A healthy diet that is balanced and contains all the necessary nutrients can help to maintain good health and reduce the risk of developing hypertension. In conclusion, there are various factors that can contribute to the development of hypertension, and some of these factors can be changed to reduce the risk of developing the condition. It is important to be aware of these factors and make lifestyle changes, such as quitting smoking, managing stress levels, reducing salt and coffee consumption, and adopting a healthy diet, to reduce the risk of developing hypertension.

Conflict of Interest

The authors declare that there is no conflict of interest.

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