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RESEARCH

# RISK FACTORS FOR HYPERTENSION AMONG PRE-ELDERLY ADULTS (AGED 45–59 YEARS) AT POSBINDU PTM POST 2, BOHAR VILLAGE, TAMAN DISTRICT, SIDOARJO REGENCY

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**ABSTRACT**

Hypertension remains one of the leading non-communicable diseases and continues to pose a major public health concern due to its association with an increased risk of cardiovascular disease, stroke, kidney failure, and other chronic complications. Individuals in the pre-elderly age group begin to experience physiological changes that increase their susceptibility to hypertension. This study aimed to describe the risk factors associated with hypertension among pre-elderly adults aged 45–59 years at Posbindu PTM Pos 2, Bohar Village, Taman District, Sidoarjo Regency.This study employed a descriptive cross-sectional design. The study population consisted of 30 pre-elderly adults aged 45–59 years who had been diagnosed with hypertension. A total sampling technique was applied, in which all eligible participants were included in the study. Data were collected using a respondent characteristics questionnaire, Body Mass Index (BMI) measurements, the Global Physical Activity Questionnaire (GPAQ), and the Perceived Stress Scale (PSS). The data were analyzed using univariate analysis and are presented as frequency distributions and percentages. The findings revealed that most respondents were female (73.3%), with the largest proportion aged 51–55 years (43.3%). Regarding hypertension risk factors, the majority of respondents were classified as overweight or obese (60.0%), were non-smokers (73.3%), had poor dietary habits related to high-salt food consumption (83.3%) and high-fat food consumption (73.3%), engaged in moderate levels of physical activity (70.0%), and experienced moderate levels of stress (76.7%). In conclusion, the most prevalent risk factors for hypertension among pre-elderly adults were excess body weight, unhealthy dietary habits characterized by high salt and fat intake, and moderate stress levels. Promotive and preventive strategies, including health education, dietary modification, increased physical activity, and regular monitoring of hypertension risk factors, are essential to reduce the risk of hypertension-related complications among pre-elderly adults.

**Keywords:**Hypertension; Risk Factors; Pre-Elderly Adults; Body Mass Index; Physical Activity; Stress.

## INTRODUCTION

Hypertension remains one of the major public health concerns and is classified as a non-communicable disease (NCD). It is a leading contributor to increased morbidity and mortality associated with cardiovascular diseases, including stroke, coronary heart disease, heart failure, and chronic kidney disease. Hypertension is commonly referred to as a silent killer because most individuals are unaware of their condition until serious complications develop. Therefore, early detection and effective management of modifiable risk factors are essential strategies for preventing and controlling hypertension (Salshabilla et al., 2024).

The prevalence of hypertension has shown a steady increase worldwide over recent decades. The World Health Organization (WHO) reported that the number of people living with hypertension has nearly doubled over the past three decades. In Indonesia, the 2018 Basic Health Research (Riskesdas) reported that the prevalence of hypertension among adults aged 18 years and older reached 34.1%, making hypertension one of the country's major public health priorities (Kementerian Kesehatan RI, 2018). At the regional level, hypertension is also among the most frequently reported diseases in healthcare facilities across East Java Province and Sidoarjo Regency (Profil Dinas Kesehatan Kabupaten Sidoarjo, 2024). These findings highlight the importance of implementing sustainable promotive, preventive, curative, and rehabilitative strategies to effectively control hypertension

Pre-elderly adults, defined as individuals aged 45–59 years, represent a transitional stage before entering older adulthood. During this period, several physiological changes occur, including reduced

arterial elasticity, metabolic alterations, and a gradual decline in organ function, all of which may increase the risk of developing hypertension (Mujiadi & Rachmah, 2022). In addition to aging, hypertension is influenced by several modifiable risk factors, including overweight or obesity, smoking, excessive consumption of salty and fatty foods, physical inactivity, and psychological stress. Identifying these risk factors at an early stage is essential for developing effective hypertension prevention programs targeting the pre-elderly population (Wijayanti et al., 2025)

A preliminary observation conducted at Posbindu PTM Post 2, Bohar Village, Taman District, Sidoarjo Regency, revealed that several pre-elderly individuals had blood pressure levels above the normal range but did not undergo regular blood pressure monitoring. Furthermore, many participants reported unhealthy dietary habits characterized by high salt and fat intake, insufficient physical activity, and moderate to high levels of daily stress. These findings indicate the need to identify hypertension risk factors as a basis for developing community-based promotive and preventive interventions through the Posbindu PTM program.

Based on the above background, this study aimed to describe the risk factors for hypertension among pre-elderly adults aged 45–59 years at Posbindu PTM Post 2, Bohar Village, Taman District, Sidoarjo Regency. The findings are expected to provide scientific evidence for healthcare professionals in designing hypertension prevention and control programs, as well as to increase public awareness of the importance of managing hypertension risk factors beginning in the pre-elderly stage

## METHOD

This study employed a descriptive research design with a cross-sectional approach to describe the risk factors associated with hypertension among pre-elderly adults. A descriptive design was selected because the study was intended to provide an overview of the respondents' risk factor characteristics rather than to examine the relationships or causal effects among variables. Data were collected simultaneously at a single point in time, consistent with the cross-sectional approach.

The study was conducted at Posbindu PTM Post 2, Bohar Village, Taman District, Sidoarjo Regency, in March 2026. The study population consisted of all pre-elderly adults aged 45–59 years who had been diagnosed with hypertension and were registered as participants at Posbindu PTM Post 2, Bohar Village, totaling 30 respondents. A total sampling technique was employed, in which all eligible members of the population were included as study participants.

The study variables comprised hypertension risk factors, including Body Mass Index (BMI), smoking habits, salty food consumption, fatty food consumption, physical activity, and stress levels. In addition, respondents' characteristics collected in this study included age, sex, and family history of hypertension.

Data were collected using a respondent characteristics questionnaire and standardized research instruments. Nutritional status was assessed by measuring body weight and height to calculate Body Mass Index (BMI) according to the World Health Organization (WHO) classification. Physical activity was measured using the Global Physical Activity Questionnaire (GPAQ) and categorized as low, moderate, or high based on the Metabolic Equivalent of Task (MET) values. Stress levels were assessed using the Perceived Stress Scale (PSS) and classified into low, moderate, and high stress categories. Information regarding smoking habits and the consumption of salty and fatty foods was obtained through a questionnaire developed based on established hypertension risk factor indicators.

The collected data underwent editing, coding, scoring, and tabulation before being analyzed using univariate statistical analysis. The results were presented as frequency distributions and percentages to describe the characteristics of each study variable and to provide an overview of hypertension risk factors among pre-elderly adults at Posbindu PTM Post 2, Bohar Village, Taman District, Sidoarjo Regency.

## RESULTS

**1.**

| NO | Characteristics | Frequency (n) | Percentage (%) |
|---|---|---|---|
| 1. | Gender | | |
| | a. Male | 22 | 73,3% |
| | b. Female | 8 | 26,7% |
| 2. | Age ( Years ) | | |
| | a. 45 - 50 | 6 | 20% |
| | b. 51 - 55 | 13 | 43,3% |
| | c. 56 - 59 | 11 | 36,7% |
| 3. | Family History of Hypertension | | |
| | a. Yes | 30 | 100% |
| Total | | 30 | 100% |

**Table 1** Frequency Distribution of Respondents' Characteristics by Gender, Age, and Family History, March 2026 (N = 30)

Table 1 shows that the majority of respondents were female (22 respondents; 73.3%). Most

respondents were aged 51–55 years (13 respondents; 43.3%). All respondents reported having a family history of hypertension.

2. Body Mass Index

**Table 2.** Frequency Distribution of Body Mass Index among Pre-Elderly Respondents with Hypertension (n = 30)

| BMI | Frequency (n) | Percentage (%) |
|---|---|---|
| Underweight | 1 | 3,3% |
| Normal | 11 | 36,7% |
| Overweight | 10 | 33,3% |
| Obese | 8 | 26,7% |
| Total | 30 | 100% |

Most respondents were classified as overweight or obese (18 respondents; 60.0%), while 11 respondents (36.7%) had a normal BMI and 1 respondent (3.3%) was underweight.

3. Smoking Habits

**Table 3.** Frequency Distribution of Smoking Habits among Pre-Elderly Respondents with Hypertension (n = 30)

| Smoking Habit | Frequency (n) | Percentage (%) |
|---|---|---|
| Smoker | 8 | 26,7% |
| Non-Smoker | 22 | 73,3% |
| Total | 30 | 100% |

The majority of respondents were non-smokers (22 respondents; 73.3%), whereas 8 respondents (26.7%) reported smoking.

4. Salty Food Consumption

**Table 4.** Frequency Distribution of Salty Food Consumption (n = 30)

| Category | Frequency (n) | Percentage (%) |
|---|---|---|
| Fair | 5 | 16,7% |
| Poor | 25 | 83,3% |
| Total | 30 | 100% |

Most respondents had poor salty food consumption habits (25 respondents; 83.3%), while 5 respondents (16.7%) were categorized as having fair dietary habits.

5. Fatty Food Consumption

**Table 5.** Frequency Distribution of Fatty Food Consumption (n = 30)

| Category | Frequency (n) | Percentage (%) |
|---|---|---|
| Kurang Baik | 8 | 26,7% |
| Buruk | 22 | 73,3% |
| Total | 30 | 100% |

The majority of respondents demonstrated poor fatty food consumption habits (22 respondents; 73.3%), while 8 respondents (26.7%) were categorized as having fair dietary habits.

6. Physical Activity

**Table 6.** Frequency Distribution of Physical Activity among Pre-Elderly Respondents with Hypertension (n = 30)

| Category | Frequency (n) | Percentage (%) |
|---|---|---|
| Light | 8 | 26,7% |
| Moderate | 21 | 70% |
| Vigorous | 1 | 3,3% |
| Total | 30 | 100% |

Most respondents engaged in moderate physical activity (21 respondents; 70.0%), while 8 respondents (26.7%) performed light physical activity and 1 respondent (3.3%) engaged in vigorous physical activity.

7. Stress Level

**Table 7.** Frequency Distribution of Stress Levels among Pre-Elderly Respondents with Hypertension (n = 30)

| Category | Frequency (n) | Percentage (%) |
|---|---|---|
| Mild | 5 | 16,7% |
| Moderate | 23 | 76,7% |
| Severe | 2 | 6,7% |
| Total | 30 | 100% |

Most respondents experienced a moderate level of stress (23 respondents; 76.7%), followed by mild stress (5 respondents; 16.7%) and severe stress (2 respondents; 6.6%).

**DISCUSSION**

The findings of this study revealed that 60.0% of the respondents were classified as overweight or obese based on their Body Mass Index (BMI). This finding indicates that excess body weight remains common among pre-elderly adults. Overweight and obesity are recognized as important risk factors for hypertension because increased adipose tissue contributes to elevated peripheral vascular resistance, increased cardiac output, and activation of both the sympathetic nervous system and the renin–angiotensin–aldosterone system, all of which lead to increased blood pressure (Abidin La Syam, 2024). These findings are consistent with those, who found that most older adults with hypertension had a BMI of ≥23 kg/m². Therefore, maintaining an ideal body weight through healthy dietary habits and regular physical activity is essential for reducing the risk of hypertension (Faiha et al., 2025).

Regarding smoking habits, the majority of respondents (73.3%) were non-smokers, while 26.7% reported smoking. Although the proportion of smokers was relatively low, smoking remains an important modifiable risk factor for hypertension. Nicotine exposure induces vasoconstriction, whereas carbon monoxide contributes to endothelial damage, thereby increasing the risk of cardiovascular disease (Abidin La Syam, 2024). These findings highlight the

importance of continuous health education and smoking cessation programs as integral components of hypertension prevention strategies.

This study also found that 83.3% of the respondents had poor dietary habits related to the consumption of salty foods. Excessive sodium intake promotes fluid retention, leading to increased blood volume and elevated blood pressure (Ekaningrum, 2021). These results are consistent with the findings of Nurhasanah et al. (2025), who reported that high-salt food consumption remains common in the community because salty foods are generally perceived as more palatable . Therefore, public education on limiting salt intake in accordance with the recommendation of the Indonesian Ministry of Health Regulation No. 41 of 2014, which advises a maximum sodium intake of 2,000 mg per day (equivalent to one teaspoon of salt), should be continuously promoted (Kemenkes, 2014).

With respect to dietary fat intake, 73.3% of the respondents demonstrated poor consumption habits. This finding suggests that high-fat foods remain a regular part of the daily diet among pre-elderly adults. Excessive fat intake can increase blood cholesterol levels and accelerate the development of atherosclerosis, resulting in reduced arterial elasticity and elevated blood pressure (Kemenkes, 2014). These findings are supported by Aulia et al. (2023), who identified excessive fat intake as one of the most common risk factors among individuals with hypertension. Consequently, continuous nutrition education promoting healthy food choices is necessary to reduce the risk of hypertension and other cardiovascular diseases (Aulia et al., 2023).

The study further demonstrated that the majority of respondents (70.0%) engaged in moderate levels of physical activity. This finding indicates that most pre-elderly adults remain physically active in carrying out their daily activities. Regular physical activity provides substantial cardiovascular benefits by improving endothelial function, maintaining healthy body weight, and lowering blood pressure (Ardiyanto & Mustafa, 2021). Similar findings were reported by Wijayanti et al. (2025), who found that most pre-elderly individuals performed moderate physical activity. Nevertheless, efforts to encourage regular physical activity should continue to ensure that these health benefits are maintained and further improved.

Another important finding of this study is that 76.7% of respondents experienced moderate stress levels. This result indicates that psychological stress remains a common condition among pre-elderly adults. Chronic stress stimulates cortisol secretion and sympathetic nervous system activity, both of which contribute to elevated blood pressure (Abidin La Syam, 2024). These findings are in agreement with those, who reported that stress is an important factor associated with an increased risk of hypertension among older adults. Therefore, stress management interventions, including family support, mental health education, and community-based social activities, should be strengthened as part of hypertension prevention programs (Noviasuci ulan, Saputra Rangga, 2025).

Overall, this study identified overweight and obesity, excessive consumption of salty and fatty foods, moderate physical activity, and moderate stress levels as the most prevalent hypertension risk factors among pre-elderly adults. Most of these factors are modifiable, indicating that comprehensive promotive and preventive interventions should be implemented continuously. Strengthening the role of Posbindu PTM in health education, early detection, routine risk factor monitoring, and community empowerment is expected to reduce the incidence of hypertension and prevent its complications among the pre-elderly population.

## CONCLUSION AND SUGGESTION

### Conclusion

Based on the findings of this study on the risk factors for hypertension among pre-elderly individuals aged 45–59 years at Posbindu PTM Pos 2, Bohar Village, Taman District, Sidoarjo Regency, it can be concluded that the respondents were predominantly female, with the largest proportion belonging to the 51–55-year age group. In addition, all respondents had a family history of hypertension, which is considered a non-modifiable risk factor.

Regarding modifiable risk factors, the majority of respondents had a Body Mass Index (BMI) classified as overweight or obese, demonstrated poor dietary habits characterized by high salt and fat consumption, engaged in moderate levels of physical activity, and experienced moderate levels of stress. Conversely, most respondents did not have a smoking habit.

The findings indicate that excess body weight, unhealthy dietary patterns characterized by high salt and fat intake, and moderate stress remain the predominant risk factors among pre-elderly individuals with hypertension. Therefore, interventions aimed at controlling modifiable risk factors should be prioritized to strengthen hypertension prevention and management strategies in the pre-elderly population.

### Recommendations

Based on the findings of this study, pre-elderly individuals are encouraged to consistently adopt a healthy lifestyle as an effort to prevent and control hypertension. Such efforts include maintaining an ideal body weight, limiting the consumption of foods high in salt and fat, engaging in regular physical

activity according to individual capabilities, managing stress effectively, and undergoing routine blood pressure monitoring. Implementing these healthy lifestyle practices is expected to help control blood pressure and reduce the risk of hypertension-related complications.

Healthcare professionals, particularly those involved in the Integrated Non-Communicable Disease (NCD) Post (*Posbindu PTM*), are expected to strengthen promotive and preventive interventions by providing health education on hypertension risk factors, offering lifestyle modification counseling, and conducting regular blood pressure monitoring. Furthermore, the continuous implementation of *Posbindu PTM* programs should be maintained to enhance the knowledge, awareness, and participation of pre-elderly individuals in controlling hypertension risk factors.

The findings of this study are also expected to serve as a reference for educational institutions in supporting the development of nursing science, particularly in the fields of community and gerontological nursing. In addition to being used as educational material, the results of this study may provide a foundation for future research focusing on hypertension prevention and control among the pre-elderly population.

Future researchers are encouraged to involve a larger sample size and employ an analytical study design to examine the relationships between body mass index, dietary habits related to high salt and fat intake, physical activity, stress levels, smoking habits, and the incidence of hypertension among pre-elderly individuals. Such studies are expected to generate stronger scientific evidence to support the development of programs and policies aimed at preventing and controlling hypertension in the community.

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