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# DETERMINANT FACTORS OF HYPERTENSION IN HOUSEWIVES IN CIAMIS REGENCY

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## *ABSTRACT*

***Background:*** *Hypertension, often referred to as high blood pressure, this ailment occurs when a person's blood pressure rises above the defined normal range. Although hypertension is commonly experienced by the elderly, it can also affect adults, including housewives. Several risk factors for hypertension among housewives include age, menopausal status, use of contraceptives, dietary patterns, nutritional status, physical activity, and others. The aim of this study is to analyze the determinant factors of hypertension among housewives.* ***Method:*** *The cross-sectional study approach was used in the research design. The location of Ciamis Regency was chosen because it has the highest cases of hypertension in West Java based on the Kemenkes in 2018. Proportionate stratified sampling was the method employed for sampling with a total of 81 subjects in this study. Chi-square test was employed as the bivariate analysis.* ***Result:*** *The results show that there is a relationship between the variables nutritional status BMI (p-value = 0.016), abdominal circumference (p-value = 0.014), fat intake (p-value = 0.000), sodium intake (p-value = 0.006), and physical activity (p-value = 0.040).* ***Conclusion:*** *The incidence of hypertension in housewives is correlated with BMI, nutritional status, belly circumference, fat and sodium intake, and physical activity.*

***Keywords:*** *Hypertension, housewife, lifestyle, nutritional status, nutrient intake.*

## BACKGROUND

Hypertension, commonly known as when arterial pressure beyond the clinically determined normal threshold, it is referred to as high blood pressure. According to Kemenkes RI (2021), a person is categorized as having hypertension if their blood pressure is at least 140 mmHg at the systolic and 90 mmHg at the diastolic levels. Indonesia is among the countries with a significant burden of hypertension cases. Based on data from the 2018 Basic Health Research (Riskesdas), the proportion of hypertension among individuals aged over 18 years was recorded at 34.11%. Among all provinces, West Java ranked second as the region with the highest incidence of hypertension, reaching 39.6%. At the district level, Ciamis Regency reported the highest prevalence in the province, with a rate of 49.62% [(1)].

Hypertension is generally more common among the elderly; however, it can also affect adults, including housewives. According to study by Boitchia et al. (2021)[(2)], which involved women aged 25 to 85 years, several factors contribute to the occurrence of hypertension in housewives. These factors include age, education, marital status, body mass index (BMI), family history of hypertension, raw salt intake, exposure to secondhand smoke, stress, and diabetes.

Housewives play a crucial role in providing food intake for their family members. A healthy eating pattern should be implemented for every family member, and this awareness must begin with the mother herself. Hypertension in mothers can pose a similar risk to other family members. If a mother provides an unhealthy diet to her family, the risk of hypertension may extend to them as well. Therefore, dietary patterns are one of the causes of hypertension among housewives, particularly excessive sodium and fat intake. As a result, the diameter of the arteries narrows, forcing the heart to work harder by pumping more forcefully to circulate blood through the constricted vessels. This condition leads to increased blood pressure, ultimately causing hypertension [(3)].

A study by Lisnawaty et al., (2022) [(4)],involving housewives aged over 18 years, showed a statistically significant relationship between dietary patterns, physical activity levels,

stress levels, and the incidence of hypertension. Nutritional status also contributes to the incidence of hypertension. Nutritional status can be assessed through Body Mass Index (BMI) and waist circumference measurements. According to, Benmohammed et al., 2011 (cited in Kurnianingsih et al, 2019), obesity contributes to elevated blood pressure, as the increased body mass physiologically requires a greater blood volume to optimally distribute nutrients and oxygen throughout the body's tissues. While waist circumference can cause central obesity. Fat accumulation in the abdominal cavity plays a major role in increasing blood pressure.

The impact of hypertension can lead to various serious health conditions such as kidney failure, heart disease, vision impairment, and stroke, which may result in paralysis. Therefore, preventive measures are recommended to reduce the risk of hypertension, including regular exercise and physical activity, avoiding smoking and alcohol consumption, reducing salt and cholesterol intake, and managing stress effectively [5].

Therefore, the researcher intends to further examine the topic "Determinant Factors of Hypertension in Housewives in Ciamis Regency" in an effort to lessen or avoid future instances of hypertension in housewives.

## METHOD

In a cross-sectional study design, this research employed a quantitative analytical observational technique. The research was conducted in Panumbangan Subdistrict, Ciamis Regency, West Java Province. Data collection took place from February 10 to 15, 2025.

The study population consisted of housewives aged between 19 and 59 years. The total population in Panumbangan Subdistrict, Ciamis Regency was 62,853 people (BPS Kabupaten Ciamis, 2024). The number of individuals with hypertension in the subdistrict was recorded at 18,832.The minimum required sample was 81 housewife respondents.

Proportionate stratified sampling was the method employed for sampling, in which every individual in the population had an equal chance of being selected as part of the research sample. The requirements for inclusion were: (1) Married women/housewives, (2) Able to communicate well, (3) Aged 19–59 years, (4) Not diagnosed with degenerative diseases, and (5) Unemployed.

Data collection was conducted through interviews and direct measurements, such as height, waist circumference, body weight, and blood pressure. The International Physical Activity Questionnaire (IPAQ) was utilized to gauge physical activity levels. Data analysis was performed using two methods: univariate analysis employing frequency distribution, and bivariate analysis utilizing the chi-square test.

## RESULT

The distribution of data for the respondent characteristics variables, which include age, family history, menopause status, contraceptive use, coffee consumption habits, smoking, and alcohol consumption, was obtained from the univariate analysis and is presented in Table 1.

Table 1. Distribution of Respondent Characteristics

| Respondent Characteristics | n | % |
|---|---|---|
| **Age** | | |
| >50 years | 21 | 25,9 |
| 30-50 years | 48 | 59,3 |
| <30 years | 12 | 14,8 |
| **Family History of Hypertension** | | |
| Yes | 8 | 9,9 |
| No | 73 | 90,1 |
| **Menopausal Status** | | |
| Menopausal | 24 | 29,6 |
| No Menopausal | 57 | 70,4 |
| **Contraceptive Use** | | |
| Yes | 43 | 53,1 |
| No | 38 | 46,9 |
| **Coffee Consumption Habit** | | |
| >2 cups/day | 2 | 2,5 |
| 1-2 cups/day | 21 | 25,9 |
| Doesn't Consume Coffee | 58 | 71,6 |

Most responders fall within the 30–50 year age group. The study results indicate that most respondents are categorized as premenopausal and use hormonal contraceptives. A history of hypertension in the family and coffee consumption habits were not prevalent among the majority of housewives. None of the respondents reported a habit of smoking or consuming alcohol.

Table 2. Distribution of Hypertension Incidence

| Hypertension | n | % |
|---|---|---|
| Hypertension | 38 | 46,9 |
| No Hypertension | 43 | 53,1 |
| Total | 81 | 100,0 |

Table 2 presents the data on hypertension incidence, showing that the majority of housewives fall into the non-hypertensive category, as they have normal blood pressure.

Table 3. Distribution of independent variable

| Independent Variable | n | % |
|---|---|---|
| **Body Mass Index (BMI)** | | |
| Obese (Severely Overweight) | 34 | 42 |
| Overweight (Mild Obesity) | 19 | 23,4 |
| Normal | 25 | 30,9 |
| Underweight (Mild) | 2 | 2,5 |
| Underweight (Severe) | 1 | 1,2 |
| *Mean ± SD* | 26,279±4,248 | |
| **Waist Circumference** | | |
| Central Obesity | 60 | 74,1 |
| No Central Obesity | 21 | 25,9 |
| *Mean ± SD* | 87,457±13,625 | |
| **Fat Intake** | | |
| Excessive Intake | 34 | 42 |
| Insufficient Intake | 47 | 58 |
| *Mean ± SD* | 53,176±18,603 | |
| **Sodium Intake** | | |
| Excessive Intake | 38 | 46,9 |
| Insufficient Intake | 43 | 53,4 |
| *Mean ± SD* | 1402,856±594,645 | |
| **Physical Activity** | | |
| Light | 25 | 30,9 |
| Moderate | 56 | 69,1 |
| *Mean ± SD* | 1168,179±592,528 | |

Based on table 3, the majority of housewives were classified as severely overweight according to their nutritional status. Nutritional status assessed by waist circumference indicated that most respondents fell into the category of central obesity. The 24-hour dietary recall method revealed that the majority of housewives had inadequate intake of fat and sodium. Most respondents engaged in moderate physical activity

Table 4. Relationship Between Respondent Characteristics and Hypertension Incidence

| Respondent Characteristics | Hypertension | | No Hypertension | | P-Value |
|---|---|---|---|---|---|
| | n | % | n | % | |
| **Age** | | | | | |
| >50 years | 13 | 16 | 8 | 9,9 | 0,226 |
| 30-50 years | 21 | 25,9 | 27 | 33,3 | |
| <30 years | 4 | 4,9 | 8 | 9,9 | |
| **Family History of Hypertension** | | | | | 0,574 |
| Yes | 3 | 3,7 | 5 | 6,2 | |
| No | 35 | 43,2 | 38 | 46,9 | |
| **Menopausal Status** | | | | | |
| Menopausal | 11 | 13,6 | 13 | 16 | 0,899 |
| No Menopausal | 27 | 33,3 | 30 | 37 | |
| **Contraceptive Use** | | | | | 0,601 |
| Yes | 19 | 23,5 | 24 | 29,5 | |
| No | 19 | 23,5 | 19 | 23,5 | |
| **Coffee Consumption Habit** | | | | | |
| >2 cups/day | 2 | 2,5 | 0 | 0,0 | 0,306 |
| 1-2 cups/day | 10 | 12,3 | 11 | 13,6 | |
| Doesn't Consume Coffee | 26 | 32,1 | 32 | 39,5 | |

*Output SPSS (chi square test signifikan P-value <0,05)*

The chi-square test was used to analyze the connection based on table 4 on the respondent characteristics indicates that none of the respondent characteristics variables are significantly associated with hypertension among housewives (p-value > 0.05).

Table 5. Relationship Between Independent and Hypertension Incidence Variables and Hypertension Incidence

| Independent Variable | Hypertension | | No Hypertension | | P-Value |
|---|---|---|---|---|---|
| | n | % | n | % | |
| **Body Mass Index (BMI)** | | | | | |
| Obese (Severely Overweight) | 23 | 28,4 | 11 | 13,6 | |
| Overweight (Mild Obesity) | 8 | 9,9 | 11 | 13,6 | **0,016** |
| Normal | 6 | 7,4 | 19 | 23,5 | |
| Underweight (Mild) | 1 | 1,2 | 1 | 1,2 | |
| Underweight (Severe) | 0 | 0,0 | 1 | 1,2 | |
| **Waist Circumference** | | | | | |
| Central Obesity | 33 | 40,7 | 27 | 33,3 | **0,014** |
| No Central Obesity | 5 | 6,2 | 16 | 19,8 | |
| **Fat Intake** | | | | | |
| Excessive Intake | 30 | 37 | 4 | 4,9 | **0,000** |
| Insufficient Intake | 8 | 9,9 | 39 | 48,1 | |
| **Sodium Intake** | | | | | |
| Excessive Intake | 24 | 29,6 | 14 | 17,3 | **0,006** |
| Insufficient Intake | 14 | 17,3 | 29 | 35,8 | |
| **Physical Activity** | | | | | |
| Light | 16 | 19,7 | 9 | 11,1 | **0,040** |
| Moderate | 22 | 27,2 | 34 | 42,0 | |

*Output SPSS (chi square test signifikan P-value <0,05)*

Based on table 5, the results show that there is a significant relationship between BMI nutritional status, waist circumference, fat intake, sodium intake, and physical activity (p-value < 0.05). However, no significant association was found between fiber intake, stress levels, and hypertension incidence.

## DISCUSSION

### The Relationship Between Body Mass Index (BMI) and Hypertension Incidence

Referring to the measurement results, the majority of housewives are categorized as having an overweight nutritional status, with 42% of the total respondents falling into this group. This is impacted by housewives' eating habits, which include overindulging in meals heavy in calories, fats, and sweets. This might happen because food is easily accessible or because they eat small portions of food frequently. Additionally, most respondents are in the adult or middle-aged group, where metabolic rate tends to decrease, making it easier for unused calories to be stored as body fat. These factors collectively play a significant role in the high BMI among housewives.

It was found that the incidence of hypertension among housewives is significantly correlated with nutritional status, as determined by Body Mass Index (BMI), with a p-value of 0.016 (<0.05). According to the findings, blood pressure can rise when a person's BMI falls into the overweight or obese range. Consequently, compared to housewives with normal body weight, those with a high BMI are more prone to acquire hypertension. As a housewife's body mass increases, the amount of blood required to circulate oxygen and nutrients to the muscles and other body tissues also rises. As a result, cardiac output increases, which exerts greater pressure on the arterial walls, leading to increased blood pressure [6]. These findings are consistent with the study by Sudaryanto et al (2019) [7], which revealed a noteworthy effect between BMI and hypertension in women aged >18 years in Sragen. Another study by Kristina et al (2015) [8], found a connection between the prevalence of hypertension and nutritional condition in women aged 15-49 years. However, a different finding was reported by Mulyasari et al (2023) [9], no relationship was found between BMI and hypertension in women aged 19-54 years.

### The Relationship Between Waist Circumference and Hypertension Incidence

This study shows that 74.1% of housewife respondents have central obesity, identified through waist circumference measurements using a measuring tape. Housewives are classified as having central obesity if they have a waist circumference ≥ 80 cm. According to the analysis's findings, there is a substantial correlation between waist circumference and the prevalence of hypertension in Panumbangan District, Ciamis Regency (p-value 0.014). Therefore, the larger the waist circumference, the higher the likelihood of developing hypertension.

In individuals with central obesity, several mechanisms can lead to hypertension. Fat accumulation in the abdominal cavity plays a major role in increasing blood pressure. This is

due to a decrease in adiponectin levels, which functions as an anti-atherogenic agent, in individuals with large waist circumference (increased intra-abdominal fat). Blood pressure can increase in response to the reduction of this specific protein (Olinto et al., 2004). Uneven fat distribution in the abdomen can also raise blood triglyceride levels, which in turn influences variations in blood pressure [10].

This study aligns with the findings by Al Haqiqi et al (2021) which revealed a noteworthy correlation between waist circumference and hypertension degree in women in Malang Raya. Another study by Herinasari et al (2022) [11], with a p-value of 0.024, indicates that blood pressure and waist circumference are significantly correlated in women aged 35-54 years. However, a study by Sari et al (2016) [12], conducted on women aged 18-44 years showed a correlation between variables related to waist circumference and systolic blood pressure. However, abdominal circumference and diastolic blood pressure did not correlate, as the p-value indicated insignificance between these two variables.

**The Relationship Between Fat Intake and Hypertension Incidence**

Based on a study using the 24-hour recall method, 42% of housewife respondents consumed fat intake above their needs. According to interviews using the SQ-FFQ method, the main sources of saturated fat consumed by housewives in this study included coconut oil, fried foods, and animal products such as chicken with skin and fried eggs. The results from the 24-hour recall method showed a significant relationship between fat intake and hypertension in housewives (p-value < 0.05).

Fat intake, as measured by the 24-hour recall method, is significantly associated with the incidence of hypertension in housewives in Panumbangan District, Ciamis Regency. Excessive fat consumption can increase levels of low-density lipoprotein (LDL) cholesterol. Cholesterol that adheres to vascular walls can lead to plaque formation, It consequently impairs blood vessel flexibility and blocks blood flow. As a result, blood pressure and volume increase [13]. Excessive intake of saturated fatty acids can lead to dyslipidemia, which is one of the risk factors for atherosclerosis. Atherosclerosis itself can potentially cause hypertension, as blood vessels in this condition not only increase resistance in their walls but also narrow in size. This causes an increase in heart rate and blood flow volume, which then contributes to increased blood pressure and the occurrence of hypertension [14].

This is consistent with the study by Pratiwi et al (2024)[15] and Lidiyawati & Kartini (2014) [16], showed that, unlike respondents consuming a healthy amount of fatty acids, women aged 46-60 who consumed excessive saturated fats had a 5.76 times higher risk of developing hypertension. However, a study by Az-Zahra (2017) [17], found no relationship between saturated fat intake and blood pressure in women aged 15-45 years.

**The Relationship Between Sodium Intake and Hypertension Incidence**

The findings of this study indicate that sodium intake among housewives, based on the 24-hour recall method, shows that only 46.9% of respondents have excessive sodium intake. A p-value of 0.002 obtained from the chi-square test suggests a significant relationship. Excessive sodium intake is caused by the tendency of society to prefer savory and salty foods, which leads to uncontrolled use of table salt (NaCl) and flavor enhancers (monosodium glutamate/MSG) in food preparation. According to the questionnaire data, the most commonly consumed foods with high sodium content among housewives include instant noodles, packaged foods, eggs, soy sauce/sauces, meatballs, seblak, and salted fish. Furthermore, the cooking habits that tend to use excessive salt also condition the taste buds to tolerate stronger salty flavors, raising the threshold for saltiness [18].

Excessive sodium intake can affect plasma volume, cardiac output, and blood pressure, contributing to hypertension. Excess sodium in the body causes the movement of fluids from inside cells to areas with higher electrolyte concentrations, which increases plasma blood volume. This causes the heart to pump harder and blood pressure to rise. Additionally, high sodium intake causes the diameter of arteries to narrow, making it more difficult for the heart to pump blood through smaller channels (Lestari, 2010). This study aligns with Pratiwi et al (2024) [15], which shows a correlation between sodium intake and blood pressure in women aged ≥45 years. Another study by Lestari (2010)[18] revealed a significant correlation between

sodium intake and hypertension incidence in women aged 30-40 years.

In contrast, a study by Lidiyawati & Kartini (2014) [16], showed no significant relationship between sodium intake and hypertension in women aged over 46 years. The possible cause for this difference could be individual responses to sodium intake, influenced by each person's sensitivity levels. Furthermore, consumption of other minerals, such potassium, can also affect how sodium affects blood pressure.

**The Relationship Between Physical Activity and Hypertension Incidence**

The physical activities performed by the respondents included walking, cleaning the house, cooking, washing clothes, taking care of children, carrying heavy and light loads. According to the study, 69.1% of participants engaged in moderate physical activity, and the remainder participants engaged in light physical activity. The high percentage of respondents with moderate physical activity is due to the fact that the physical activities performed by housewives are not only determined by the type of work they do but are also influenced by time factors. If the duration of the work is long and performed regularly, the workload, which may appear "light," can become classified as moderate activity. The chi-squared test in bivariate analysis revealed a p-value of 0.028 ($p < 0.05$). As a result, there is a substantial correlation between the incidence of hypertension and physical activity, supporting the rejection of the null hypothesis (Ho).

This implies that increasing the amount of time spent exercising may lower the chance of hypertension. Physical activity is effective in maintaining stable blood pressure, especially involving simple daily activities. Individuals who regularly engage in physical activity tend to experience heart enlargement compared to sedentary individuals. With an increase in heart size, the number of capillaries also increases, which helps support circulation efficiency and prevents blood pressure from rising (Sinaga et al., 2022). Regular physical activity can also lower body weight, as well as both systolic and diastolic blood pressure overall [4]. The findings of this study align with those of Sinaga et al. (2022)[19] who discovered a connection between housewives' hypertension and physical activity in Bongas Village, West Bandung Regency. However, various findings were presented in the study by Fakhriadi & Fadillah (2024), which found no relationship between physical activity and hypertension in women aged 15-45 years [20].

Based on this study, some housewives with moderate physical activity also experienced hypertension. This is because such activities can be intermittent and unstructured, meaning their physiological effect on lowering blood pressure may be less significant compared to regular aerobic exercises like brisk walking, cycling, or swimming (Widiyono et al., 2022) . Moreover, physical activity without proper nutrition intake can lead to an energy imbalance, which contributes to weight gain and increases the risk of hypertension [21].

The novelty of this study lies in mapping the risk factors for hypertension among housewives in Panumbangan Subdistrict, which has distinct socio-cultural characteristics compared to other regions. The analysis was conducted by simultaneously considering several main risk factors, including nutritional status, waist circumference, dietary patterns, and physical activity, thereby providing a more comprehensive picture of the associated risks.

## CONCLUCION

Contribute to hypertension in housewives aged 19-59 years in Panumbangan Subdistrict, Ciamis Regency in 2025, it was found that 46.9% of the 81 housewife respondents in Panumbangan Subdistrict, Ciamis Regency had hypertension. It was discovered that the prevalence of hypertension among housewives was significantly correlated with the variables of nutritional status (BMI), waist circumference, lipid intake, sodium intake, and physical activity ($p$-value $< 0.05$).

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