The Link Between Dietary Habits and Body Mass Index in Relation to the Occurrence of Hypertension in The Jatiwarna Village Community Health Center

Santa Manurung[*], Imtihani Afiyah Najiyah, Paula Krisanty, Tri Endah Pangastuti, Wartonah, Nelly Yardes, Ace Sudrajat
Poltekkes Kemenkes Jakarta III, Indonesia
[*]*email: santamanurung@yahoo.com*

ABSTRACT

High blood pressure is a prevalent condition in the community and is a significant risk factor for heart disease. Hypertension is often called "the silent killer" because it is a highly perilous condition that can strike individuals without any detectable signs. There are various elements that can impact high blood pressure, such as dietary habits and obesity, which can be assessed by determining body mass index. To establish the correlation between dietary habits and BMI in relation to the prevalence of hypertension at the Jatiwarna Village Community Health Center. This investigation is a quantitative analysis with a cross-sectional methodology. The example utilized in this study consisted of 79 participants selected through the purposive sampling method. An examination of the connection between factors was conducted using chi square. The findings of the chi square analysis examination on the connection between diet and the occurrence of hypertension obtained p-value = 0,038 (<0,05) and an OR value = 3,117 and the correlation between body mass index and the occurrence of hypertension resulted in a p-value = 0.781 (greater than 0.05). There is a noteworthy connection between diet and the prevalence of hypertension and there is no substantial connection between body mass index and the prevalence of hypertension in adulthood.
Keywords: Incidence of Hypertension; Diet; Body Mass Index

ABSTRAK

Hipertensi merupakan salah satu kondisi medis yang sering terjadi di kalangan masyarakat dan merupakan factor utama yang meningkatkan risiko terkena penyakit kardiovaskular. Hipertensi dijuluki sebagai *The Silent Killer* karena termasuk penyakit yang sangat berbahaya dan dapat menyerang setiap orang tanpa ada gejala yang dirasakan. Terdapat beberapa factor yang dapat mempengaruhi hipertensi, diantaranya adalah pola makan dan obesitas yang dapat diukur

dengan perhitungan indeks massa tubuh. Tujuannya adalah mengidentifikasi korelasi antara pola makan, indeks massa tubuh, dan kejadian hipertensi di Puskesmas Kelurahan Jatiwarna. Study ini merupakan studi kuantitatif dengan pendekatan cross sectional. Contoh yang digunakan dalam studi ini berjumlah 79 partisipan dengan memanfaatkan metode pengambilan sampel yang spesifik. Analisis korelasi antar variable dilakukan dengan menggunakan chi square. Hasil pengujian analisis chi square untuk menentukan korelasi antara pola makan dan kejadian hipertensi menunjukkan nilai p-value = 0,038 (< 0,05) dan nilai OR = 3,117, sedangkan korelasi antara indeks massa tubuh dan kejadian hipertensi menunjukkan nilai p-value = 0,781 (> 0,05). Kesimpulan: Ada korelasi yang penting antara pola makan dan kejadian hipertensi, sementara tidak ada korelasi yang signifikan antara indeks massa tubuh dan kejadian hipertensi pada orang dewasa.

Kata Kunci: Kejadian Tekanan Darah Tinggi; Pola Pangan; IMT

INTRODUCTION

Hypertension is a condition in which the systolic blood pressure is equal to or greater than 140 mmHg and the diastolic blood pressure is equal to or greater than 90 mmHg. lead to serious health problems without showing any symptoms. It is important to monitor your blood pressure regularly to detect and manage hypertension early. Some of the significant risk factors for hypertension include a sedentary lifestyle, unhealthy diet, obesity, and smoking. Therefore, it is crucial to maintain a healthy lifestyle and seek medical advice to prevent or control high blood pressure. attack anyone without any symptoms (Kemenkes RI, 2022).

According to the WHO (2023), around 1.28 billion individuals between the ages of 30 and 79 worldwide are suffering from high blood pressure, and the majority of them reside in developing nations. The occurrence of high blood pressure worldwide is on the rise, and it is projected that by 2025, 29% of adults will be affected by high blood pressure.

According to Riskesdas (2018), the national incidence of high blood pressure is 34.1% among individuals over the age of 18. The occurrence of high blood pressure in West Java Province rose from 34.5% to 39.6% in 2018 (DinkesJabar,2021)This increase is associated with behavior and lifestyle. Risk factors for high blood pressure in individuals over 15 years old include inadequate intake of vegetables and fruits (95.5%), insufficient physical activity (35.5%), smoking (29.3%), central obesity (31%), and overall obesity (21.8%) (Dinkes Jabar, 2021)

In 2019 in Bekasi City, the population experiencing hypertension continued to increase every year, from19,507 people in 2016 to 28,407 people in 2017, then increasing to 87,371 people in 2018, and go up to 115,089 people in 2019. However, the number of people experiencing

hypertension fell to 72,189 people in 2020 (Dinkes, 2020). Data obtained from the Jatiwarna Village Community Health Center in January-April 2024 saw a total of 1,584 cases of visits from patients with hypertension.

Hypertension is a disease that is common in society and is the main risk factor for cardiovascular disease (Ekarini etal.,2020) Hypertension is a condition brought about by various elements, such as obesity, poor dietary habits, sedentary lifestyle, and elevated cholesterol levels. - High blood pressure - Anxiety - Various illnesses - Alcohol consumption - Coffee intake - Tobacco use (Dhianningtyas and Hendrati in Hendriati and Pragi, 2021).

The likelihood of developing high blood pressure may rise as a result of an unhealthy diet, including the consumption of high levels of salt and fatty foods, and a lack of fruits and vegetables (Harun, 2019). Setiawan's (2018) study on 110 participants at the Kebon Jeruk District Health Center in West Jakarta revealed a notable connection between blood pressure and dietary habits. The findings indicated that the majority of participants, 58 individuals (52.7%), had unhealthy eating patterns. Nonetheless, this is not consistent with the findings of Firdaus and Suryaningrat (2020), who suggest that there is no substantial correlation between diet and blood pressure.

Anthropometric assessment can determine if an individual is overweight or obese by assessing their nutritional status. One of the nutritional health parameters associated with blood pressure is Body Mass Index (BMI). There is a connection between blood pressure and body mass index, indicating that the higher an individual's BMI, the increased likelihood of developing hypertension. (Humayun et al. in Astuti et al.2016).

In a survey of 85 individuals at the Cardiac Clinic of Husada Utama Hospital in Surabaya, it was found that there was a notable correlation between body mass index and blood pressure in hypertensive patients. The results indicated that nearly half of the respondents (47.1%) had a body mass index falling into the mildly overweight category, which equated to 40 people. Nevertheless, this contradicts the findings of Setiawan (2018), which indicate that there is no substantial correlation between body mass index and blood pressure.

In light of the phenomenon described, researchers are interested in conducting a study to establish the correlation between diet and body mass index with the

prevalence of hypertension at the Jatiwarna Village Health Center.

METHOD

This study is quantitative research with descriptive analytical research using a cross sectional approach. The subjects in this research consisted of all individuals who visited the Jatiwarna Village Health Center for a medical examination. The example in this research comprised 79 participants. Sampling employed a non-probability sampling approach, by not giving each member of the population an equal opportunity to be selected as a sample with a purposeful sampling technique.

The study took place in March–May 2024 at the Jatiwarna Village Health Center. The variables under investigation in this research include dietary habits and BMI, with the occurrence of high blood pressure serving as the variable being measured. The tools used to collect data were demographic data questionnaires and eating pattern questionnaires with the Food Frequency Questionnaire (FFQ),

which were designed to provide an overview of respondents' food consumption frequency over the past month and had previously been tested for validity and reliability. The results showed that the

questionnaire was valid with a calculated r value = 0.381-0.801 and reliable with a Cronbach's alpha value = 0.953, which means that the questionnaire is suitable for use as a research instrument.

At the implementation stage, the research was preceded by identifying four ethical principles in research, namely respect for person dignity, respect for privacy and confidentiality, right to justice and inclusiveness, and balancing benefits and harm.

Data analysis employs univariate analysis to depict the traits of each variable and bivariate analysis, utilizing the chi square test, to examine the connection between the independent variables and respondents who met the inclusion criteria and then providing an explanation to the respondents regarding the objectives, benefits, and procedures for conducting the research. Respondents who agree will sign an agreement for informed consent. In this research, respondents are protected by paying attention to the dependent variable.

This study has been approved by the Health Research Ethics Committee of Polytechnic of Ministry of Health Jakarta III with letter number LB.02.02/F.XIX.21/4327/2024 dated April 5 2024.

RESULTS AND DISCUSSION
Univariate Analysis

Table 1. Distribution of Participants by Gender, Age, Educational Background, and Profession at the Jatiwarna Subdistrict Health Facility in 2024

Variable	Frequency(n)	Percentage(%)
Gender		
Man	29	36,7
Women	50	63,3
Age		
Young adults	15	19
Middle adults	56	70,9
Older adults	8	10,1
Education		
Basic education	40	50,6
Middle education	30	38
Higher education	9	11,4
Occupation		
Doesn't work	64	81
Work	15	19

According to the information presented in table 1, it is evident that the participants in this research were predominantly women, 50 individuals (63.3%), with the largest number falling into the middle adult bracket, 56 people (70.9%). The majority of participants had primary education, which accounted for 40 individuals (50.6%), and the majority of respondents were unemployed, totaling 64 people (81

Table 2. Distribution of Participants by Dietary Habits, Body Mass Index, and Prevalence of Hypertension at the Jatiwarna Subdistrict Health Center in 2024

Variable	Frequency(n)	Percentage(%)
Eating patterns		
Good	37	46,8
Bad	42	53,2
Body Mass Index		
Thin	12	15,2
Normal	22	27,8
Fat	45	57
The incidence of hypertension		
Not hypertension	26	32,9
Hypertension	53	67,1

According to the information in table 2, it is evident that most participants in this research exhibited bad dietary habits, accounting for 42 individuals (53.2%).

The participants' body mass index dropped into the fat BMI category, 45 individuals (57%) and most of the participants had high blood pressure (hypertension), 53 individuals (67.1%).

Table 4. Correlation of Body Mass Index with the Incident of Hypertension at the Jatiwarna Subdistrict Health Center in 2024

Variable	The Incident of Hypertension				Total		P-Value	OR Value (CI) 95%
	Not Hypertension		Not Hypertension					
	N	%	N	%	N	%		
Body Mass Index								
Thin	5	41,7	7	58,3	12	100	0,781	
Normal	7	31,8	15	62,8	22	100		
Fat	14	31,1	31	68,9	45	100		

According to the data in table 3, it is evident that most participants exhibit poor dietary habits and experience high blood pressure, with 33 individuals (78.6%). The findings from statistical analyses conducted with it revealed a notable relationship between diet and the occurrence of high blood pressure with a p-value of 0.038 (< 0.05). Examination of the correlation between diet and the prevalence of hypertension yielded a value of OR = 3.117, indicating that individuals with a healthy dietary regimen are 3.117 times less likely to suffer from hypertension than those with an unhealthy eating pattern.

The findings of this study align with the research carried out by Riswanda (2022) in the Kubu 1 Health Center Working Area, revealing a p-value of 0.030. This indicates a notable correlation between diet and the prevalence of hypertension. Other studies that align with this research include the investigation carried out by Mardianto et al (2021). In 2021, a study at TK II Pelamonia Hospital in Makassar revealed a substantial correlation between diet and the prevalence of hypertension, with a p-value of 0.000.

Similarly, a study carried out by Supiati (2022) at the Betung Community Health Center, Ogan Ilir Regency, demonstrated a correlation between dietary habits and the prevalence of high blood pressure, with a p-value of 0.000. In addition, a 9.333 OR value was achieved, indicating that individuals following a healthy diet had a 9.333 times higher likelihood of avoiding hypertension compared to those with a poor diet. However, the findings of this

investigation contradict the research carried out by Harun (2019) at the Gunungbitung Community Health Center, Cianjur Regency. In their study, they found a p-value of 0.516, indicating that there was no substantial correlation between diet and the prevalence of hypertension.

An imbalanced diet in terms of variety, quantity, and regularity of food, such as high-fat foods, inadequate consumption of vegetables and fruit, and high-sodium foods, can elevate the likelihood of hypertension (Harun, 2019). According to data analysis, most of the participants typically consume high-sodium foods. According to Setiawan (2023), high intake of salty foods can decrease the size of the blood vessels, leading to increased strain on the heart as it pumps blood through constricted passageways. This results in hypertension or elevated blood pressure.

Living a healthy lifestyle can help prevent and lower the chances of developing cardiovascular illness. Patients with high blood pressure are recommended to follow a well-rounded diet consisting of veggies, nuts, fresh produce, low-fat dairy, whole grains, fish, and healthy fats like olive oil. It's also suggested that they cut back on red meat and saturated fats. (PERHI, 2019).

Diet significantly impacts the prevalence of

high blood pressure. Inconsistent eating habits can be impacted by individuals' irregular routines, particularly excessive consumption of sodium. Someone with a poor diet is at greater risk of developing high blood pressure than those with a healthy diet. Thus, it is crucial to sustain a healthy diet by avoiding consumption of foods with high levels of sodium, fat, and cholesterol in order to regulate blood pressure.

According to the information in table 4, it is evident that most participants had a high BMI and 31 individuals (68.9%) were diagnosed with high blood pressure. The statistical analysis revealed that there was not a significant correlation between body mass index and the occurrence of hypertension, as indicated by a p-value of 0.781 (> 0.05).

The findings of this study align with the research carried out by Yulanda and Diani (2021) at the Barimba Kapuas Hilir Community Health Center, Kapuas Regency. They obtained a p-value of 0.874, indicating an absence of substantial correlation between body mass index and the occurrence of hypertension. Other studies that align with this research include the study conducted by Kolibu and Kalesaran (2019), which yielded a p-value of 0,05.

The data indicates that there is no correlation between BMI and the prevalence of high blood pressure in Tempok Selatan Village, Tompaso District.

Similarly with the study carried out by Ekarini and colleagues. (2020) stating that there is no noteworthy correlation between body mass index and hypertension with a p-value of 0.260. The findings of this investigation are different from the research carried out by Shiami (2023) at the Pratama Ardita Cilangkap Clinic, which revealed a p-value of 0.002, indicating a correlation between BMI and the prevalence of high blood pressure.

The greater an individual's BMI, the greater the likelihood of experiencing hypertension. This is due to the fact that an individual who is overweight or obese will require a greater amount of blood to transport oxygen to the body's tissues, causing an increase in the volume of blood circulating through the blood vessels. This leads to a higher cardiac output, ultimately resulting in elevated blood pressure or hypertension (Herdiani, 2019).

The lack of a connection between BMI and the occurrence of high blood pressure could be attributed to other factors that carry more weight in the prevalence of hypertension, such as a familial background of hypertension, age, sex, alcohol intake, stress, sedentary lifestyle, and smoking. Additionally, the discrepancy could also stem from the criteria used for inclusion, as the participants in this investigation were all individuals who visited the Jatiwarna Village Health Center for a health assessment, regardless of whether they had high blood pressure or not.

CONCLUSION

The features of the participants in this research were predominantly women with the majority falling into the middle-aged group. The majority of survey participants had elementary education and the majority of respondents were unemployed.

According to their eating habits, the majority of participants have inadequate dietary patterns. The findings from BMI calculations indicate that most participants belong to the obese BMI classification. In addition, with respect to the prevalence of high blood pressure, most participants in this research encountered hypertension.

The findings of statistical analyses indicate a meaningful correlation between diet and the prevalence of high blood pressure. This is due to the fact that the diet can act as a contributing factor for initiating hypertension or elevated blood pressure in

individuals with hypertension. In addition, there was no noteworthy correlation between body mass index and the occurrence of hypertension. This may be attributed to other factors that have a stronger impact on the prevalence of high blood pressure.

Based on the researcher's experience in this research process, there are several limitations experienced and can be several factors that can be considered more by future researchers in further refining their research, namely the number of questions in the questionnaire is quite large, so that respondents need quite a long time to fill out the questionnaire.

REFERENCES

Dhianningtyas, Y., Hendrati, L. (2006). Risiko Obesitas, Kebiasaan Merokok, dan Konsumsi Garam terhadap Kejadian Hipertensi pada Usia Produktif. *The Indonesian Journal o fPublic Health 2*.

Dinkes Jabar. (2021). Laporan Kinerja Instansi Pemerintah 2020. *Dinkes Jabar*,0-227.

Dinkes, Kota Bekasi. (2020). Profil Kesehatan Kota Bekasi Tahun 2020. Dinas Kesehatan Kota *Bekasi 5*, 248-253.

Ekarini, N. L. P., Wahyuni, J.D., Sulistyowati, D.(2020). Faktor-Faktor yang berhubungan dengan Hipertensi pada Usia Dewasa. *Jkep 5*, 61-73.

Firdaus, M., Suryaningrat, W.C. (2020). Hubungan Pola Makan dan Aktivitas Fisik terhadap Tekanan Darah pada Pasien Hipertensi diKapuas Hulu. Majalah Kesehatan 7, 110-117.

Harun, O.(2019). Hubungan Pola Makan dengan Kejadian Hipertensi pada Pasien Rawat Jalan. *Jurnal Kesehatan Budi Luhur:Jurnal Ilmu-Ilmu Kesehatan Masyarakat, Keperawatan, dan Kebidanan 12*, 164-171.

Hendriati, L., Pragi, W. (2021). Studi Korelasi Gaya Hidup terhadap Efektivitas Obat Antihipertensi pada Pasien di Salah Satu Puskesmas di Wilayah Surabaya Selatan. *Jurnal Farmasi Sains dan Terapan 8*, 41–53.

Herdiani, N. (2019). Hubungan IMT dengan Hipertensi pada Lansia diKelurahan Gayungan Surabaya. *Medical Technology and Public Health Journal 3*,

Humayun, A., Shah,A.S., Sultana, R. (2009). Relation of Hypertension with Body Mass Index and Age In Male and Female Population of Peshawar, Pakistan. *J Ayub Med Coll Abbottabad 21*, 63-65.

Kemenkes RI. (2022). Mengenal Penyakit

Hipertensi. URL https://upk.kemkes.go.id/new/mengen al-penyakit-hipertensi

Kemenkes RI.(2018).HasilRiset Kesehatan DasarTahun2018. *Kementrian Kesehatan RI 53*, 1689-1699.

Kolibu, F., Kalesaran, A. (2019). Faktor-Faktor yang berhubungan dengan terjadinya Hipertensi pada Masyarakat Desa Tempok Selatan Kecamatan Tompaso Kabupaten Minahasa. *Kesmas 7*, 25-30.

Mardianto, Darwis, Suhartatik. (2021). Hubungan Pola Makan dengan Kejadian Hipertensi.

Octarini, D.L., Meikawati, W., Purwanti, I.A. (2023). Hubungan Kebiasaan Konsumsi Makanan Tinggi Natrium dan Kalium dengan Tekanan Darah pada Usia Lanjut. *Prosiding Seminar Kesehatan Masyarakat 1*, 10-17.

PERHI (2019). Konsensus Penatalaksanaan Hipertensi 2019. *Indonesian Society Hipertensi Indonesia,*1-90.

Riswanda, I Ketut. (2022). *Hubungan Pola Makan dengan Kejadian Hipertensi pada Lansia di Wilayah Kerja Puskesmas Kubu 1*. Institut Teknologi dan Kesehatan Bali.

Sari, G. M., Kurniawan, V. E., Puspita, E.P., Amalia, S.D.(2023). Hubungan Indeks Massa dengan Tekanan Darah pada Penderita Hipertensi di Poli Jantung Rumah Sakit Husada Utama Surabaya. *Prima Wiyata Health VI*,47-63.

Setiawan, A. (2018). *Hubungan Pola Makan dan Indeks Masa Tubuh dengan Tekanan Darah pada Pasien Hipertensi di Puskesma sKecamatan Kebon Jeruk Tahun 2018.*

Shiami, H. N. (2023). *Hubungan Indeks Massa Tubuh dengan Kejadian Hipertensi pada Usia Dewasa di Klinik Pratama Ardita Cilangkap Jakarta Timur*.

Supiati. (2022.) *Hubungan Pola Makan dengan Kejadian Hipertensi pada Lansia di Puskesmas Betung Kabupaten Ogan Ilir.*

Wahyuningsih dan Astuti. (2016). Hubungan Tingkat Pendidikan dan Jenis Kelamin dengan Kejadian Hipertensi di Kelurahan Jagalan di Wilayah Kerja Puskesmas Pucangsawit Surakarta. *Jurnal Ilmu Keperawatan Indonesia1*, 112-121.

WHO. (2023). Hypertension. URL https://www.who.int/news-room/fact-sheets/detail/hypertension

Yulanda, B.,H.,Y.(2021).The Association between Body Mass Index and Hypertension at the Barimba Kapuas Hilir Health Center, Kapuas Regency in 2020. *Journal Kedokteran UKI XXXVII*,49-53.