Description of Blood Glucose Levels in Hypertension Patients using the *Point Of Care Test Method* In Cilame Village

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Abstract

Description of Blood Glucose Levels in Hypertension Patients using the POCT (*Point Of Care Test) Method* In Cilame Village. Non-communicable diseases (NCDs) are diseases that are not infectious and can infectious to a person through contact whatever, for example, pressure blood tall. Hypertension is defined as experiencing increased pressure blood systolic as big as 140 mmHg or more and pressure blood diastolic as big as 90 mmHg or more. Pressure blood long-term (chronic) can cause resistance to insulin. When You suffer insulin resistance, glucose piles up in in blood instead absorbed by cells, Which can cause diabetes. Sugar blood is monosaccharides, carbohydrates main Which work as a source of energy in the body. The objective study is To know the status rate of sugar blood in patients with hypertension with the use method POCT. Type study This is descriptive And *cross-sectional*. Method POCT will used as a method of taking samples. Amount respondents was as many as 30 people. Results survey based on characteristics show that respondents suffered hypertension on age mature most (20-59 years): 20 people, Women: 22 people, And history short hypertension (1-5 years): 22 people. Sugar blood normal And pressure blood high. Conclusion: From the results control sugar blood at 3 0 respondents, 18 people have a rate sugar blood and 12 people have a rate sugar blood normal.

Keywords: Glucose, hypertension, NCDs, POCT, blood

1. Introduction

According to the World Health Organization (WHO) in 2020, non-communicable diseases (NCDs) are defined as chronic diseases that are not passed from person to person. They typically result from a combination of genetic, physiological, environmental, and behavioral factors. NCDs, which include cardiovascular diseases, cancers, chronic respiratory diseases, and diabetes, are characterized by their long duration and generally slow progression. These diseases are the leading cause of death globally, accounting for over 70% of all deaths in 2020, with the majority occurring in low- and middle-income countries. Managing and preventing NCDs involves addressing key risk factors such as unhealthy diets, physical inactivity, tobacco use, and harmful alcohol consumption.

Hypertension as a chronic medical condition characterized by persistently elevated blood pressure in the arteries. This condition is a significant risk factor for cardiovascular diseases, including heart attack, stroke, and heart failure. Hypertension is often referred to as the "silent killer" because it may not present noticeable symptoms for many years, yet it causes significant damage to the cardiovascular system. The management of hypertension typically involves lifestyle modifications such as diet and exercise, alongside pharmacological treatments to lower blood pressure and reduce the risk of complications (Jacob et al., 2020)

Hypertension is a condition where a person's blood pressure increases above normal so that it can result in increased morbidity (mobility) and death (mortality). Currently, high blood pressure is still a major health problem that must be overcome. According to the World Health Organization (WHO), 22% of the world's population suffers from high blood pressure, and 36% of them are in Southeast Asia. Hypertension is also one of the causes of death, accounting for 23.7 of the 1.7 million total deaths in Indonesia in 2016 (Faridah et al., 2022). High blood pressure is also called the "silent killer" because it develops without clear signs or symptoms. Hypertension is defined as an increase in systolic blood pressure ≥140 mmHg and diastolic blood pressure ≥ 90 mmHg (Whelton et al., 2018).

Based on the results of Basic Research (Riskesdas) in 2018, hypertension is ranked as the third most common disease in Indonesia after stroke and tuberculosis. The prevalence of hypertension is higher in women (36.85%) than men (31.34%). The prevalence of hypertension based on blood pressure measurements in the 18-year-old population is 34.1%, with the highest prevalence in South Kalimantan at 44.1 % and the lowest in Papua was 22.2%. The incidence of hypertension based on age group was 31.6% in the 31-44 year age group, 45.3% in the 45-54 year age group, and 55.2% in the 45-54 year age group. 55-64 years old. The prevalence of hypertension in Indonesia is 31.7%, meaning that one in three people aged over 18 years suffers from hypertension (Muchtar et al., 2022).

Ristia Rahman's research in 2023 at the Harapan Baru Community Health Center showed that 25 people had high blood glucose levels 31 normal people out of 56 respondents. Another research by Putu Dita Pratiwi in 2021 at Community Health Center II Mendoyo showed that 13.3% of hypertension sufferers had blood glucose levels in the non-diabetes mellitus category, 80% were in the uncertain category of diabetes mellitus and 6.7% were in the diabetes mellitus category.

Several studies evaluate the accuracy of checking glucose levels in blood with a glucometer, examination This is quite good with a sensitivity of 70% And specificity of 90%. A study done by (Lindholm et al., 2018) states that the results /of measurement of blood glucose levels using the tool POCT method average that is 109.10 mg/dl, whereas on the photometer, namely 114.45 mg/dl results inspection glucose blood use tool method POCT And photometer follow their difference Which significant. Based on the above, the researcher is interested In doing a study to examine the level picture blood glucose in patients with hypertension using the POCT method (Point *Of Care test).* (Liu et al., 2017).

2. Methods

This research is descriptive with an approach Cross Sectionals, with a survey, observation, and data collection directly in One time (Creswell et al., 2017). Retrieval sample blood capillary was done in Cilame Village and samples were examined in place with the use method POCT (Point Of Care test). POCT is a diagnostic method performed at the point of patient care, allowing for rapid diagnosis and immediate treatment. This is becoming increasingly important in the context of epidemiology and population studies (Luppa et al., 2016). The time study started on the month of April 2024 until June 2024. Population in study This is all over patient hypertension. Sam m mop is part of the amount and characteristics possessed by the population. This type of research is analytical research with a cross-sectional design. The research sample was the community in Cilame Village, who had a history of hypertension.

The determination of the sample size uses quantitative data processing techniques to

ensure an accurate representation of the larger population (Taherdoost et al., 2016). The sample for this study was the total population of people suffering from hypertension. For blood glucose tests with POCT, the number of samples required is usually very small. Generally, only a few microliters of blood (about 0.5 to 1 microliter) are needed. This sampling method can involve a finger prick (Fingerstick) which is the most commonly used method for collecting blood samples in POCT. Using a lancet, a small needle is used to prick the fingertip and collect a few drops of blood (Luppa et al., 2016). Determining the number of samples of 30 using the Incidental Sampling Technique (sampling by chance). Incidental sampling is a technique for determining samples based on chance, that is, anyone who coincidentally/incidentally meets the researcher can be used as a sample if seen as a random person. found it suitable as a data source (Etikan et al., 2016).

The population and sample of this study include a population of hypertensive sufferers in research conducted using experimental research methods collecting data. The sample consisted of 30 hypertension sufferers selected by purposive sampling in Cilame Village (Palinkas et al., 2015). Hypertension research data was obtained from 30 people, obtained from hypertension samples and questionnaires to find out. Variables used in research This is a single variable, namely Kadar Glucose Blood on Patient Hypertension (ADA et al., 2015). This research uses primary data, where primary data is data obtained directly by checking blood glucose in Cilame Village.Data analysis is in tabular form and explained descriptively by knowing the blood sugar levels of hypertension sufferers.

To analyze data in tabular form and descriptively explain blood sugar values in respondents with hypertension), you can use descriptive statistics and percentage calculations. Following are the steps and formulas that can be used:

Data Analysis Steps:
- Data Collection: Collect data on blood sample examination results
- Data analysis using SPSS version 2016
- Creation of Tables: Organize the data into a table that makes it easy to see the comparison between the two blood volume groups.

3. Results and Discussion

Study This was done on 30person respondents with hypertension Which was done in Cilame Village. Analysis used in the study This analysis is univariate,To know the distribution frequency And percentage Rate Glucose Blood on sufferer Hypertension in Cilame Year Village 2024 is presented in tabular form and with narration as follows (Bruce et al., 2018)
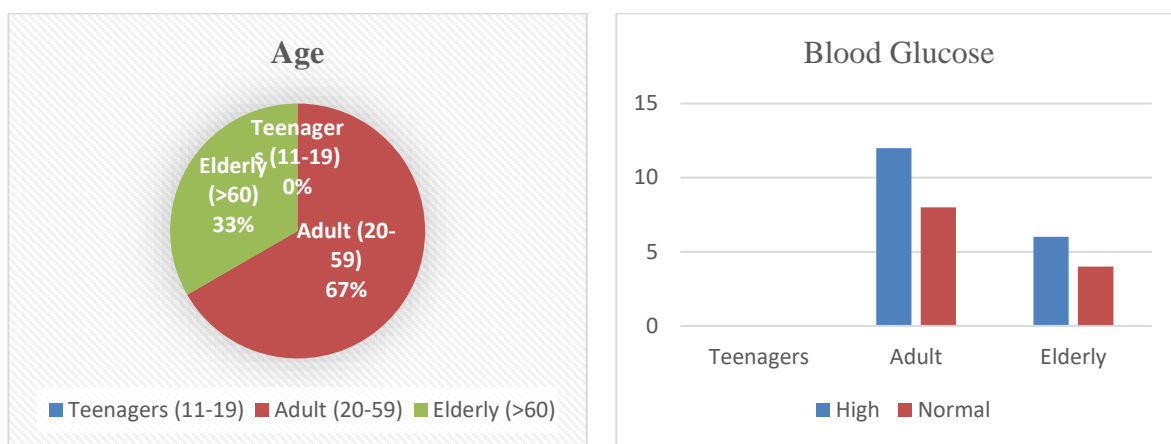
Figure 1. Blood glucose levels of hypertension respondents based on age in cilame village

Figure 1 shows that many individuals with hypertension aged 20 to 59 years have either normal or high blood sugar levels. In the adult age category (20-59 years), 60% have high blood sugar levels and 40% have normal levels. In the elderly category (60 years and older), the proportions of individuals with high and normal blood sugar levels are 60% and 40%, respectively. As age increases, arteries become wider and stiffer, reducing blood volume and causing blood sugar levels to rise due to decreased tissue ability to absorb glucose. Research indicates that hypertension is more common in the at-risk age group (65.3%) compared to the non-risk age group (25.8%). This occurs due to changes in blood vessels and decreased elasticity of vessel walls after the age of 40.

Table 1. Blood glucose levels of hypertension respondents based on age in cilame village

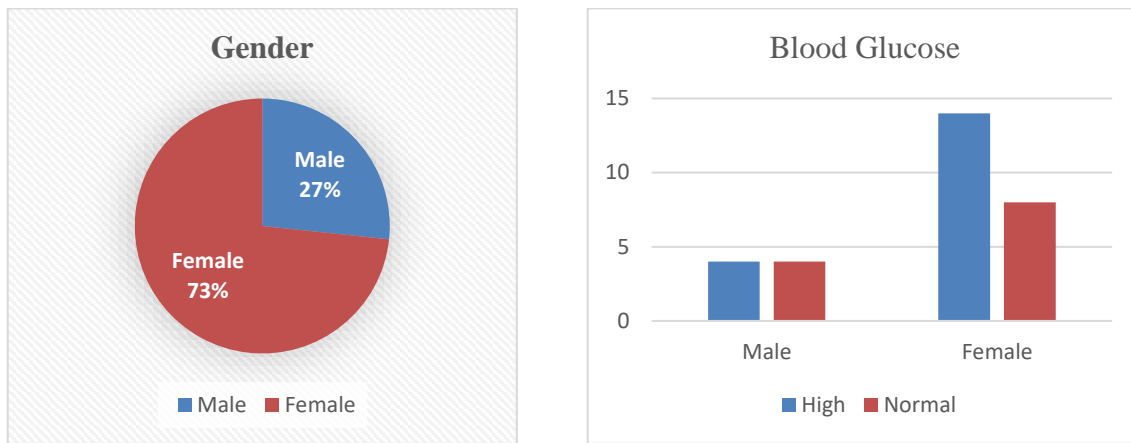|	Blood Glucose (mg/dl)				Quantity
	High		Normal		
Age	>140		70-140		
	N	%	n	%	
Teenagers (11-19)	0	0	0	0	0
Adult (20-59)	12	60	8	40	20
Elderly (> 59)	6	60	4	40	10
Total					30

Figure 2. Blood glucose levels of hypertension respondents based on gender in cilame village

Figure 2 shows that the majority of respondents with hypertension are female. Of these, 64% of women have high blood sugar levels, while 36% have normal blood sugar levels. In contrast, among men, 50% have high blood sugar levels and 50% have normal blood sugar levels. The study results indicate that hypertension is more common in women than in men. However, the larger proportion of female respondents means that no significant relationship between gender and hypertension was found. Previous studies have also noted that hypertension occurs more frequently in women, particularly after menopause, due to the decrease in estrogen which protects blood vessels. Nevertheless, no single theory clearly explains the cause of primary hypertension, and factors other than gender may also influence the development of hypertension.

Table 2. Blood glucose levels of hypertension respondents based on gender in cilame village

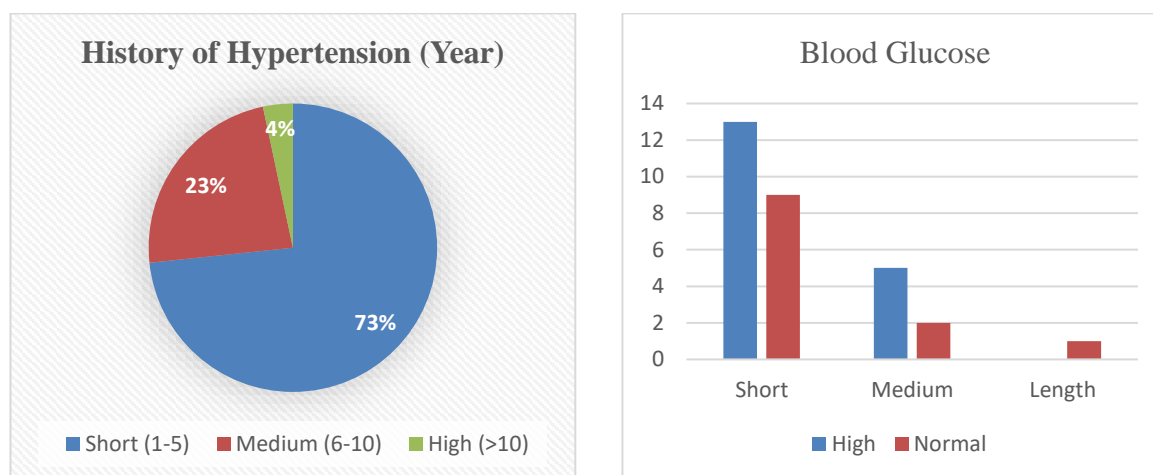|	Blood Glucose (mg/dl)				
	High		Normal		
Gender	>140		70-140		
	N	%	n	%	
Male	4	50	4	50	8
Female	50	64	8	36	22
Total					30

Figure 3. Blood glucose levels of hypertensive respondents based on hypertension history in cilame village

Figure 3 shows that most respondents with hypertension have a history of hypertension for 1 to 5 years (short-term) and have either normal or high blood sugar levels. The duration is divided into three categories: short-term (1-5 years), medium-term (6-10 years), and long-term (>10 years).

- In the short-term category, 59% of respondents have high blood sugar levels, while 41% have normal levels.
- In the medium-term category, 71% have high blood sugar levels, and 29% have normal levels.
- In the long-term category, all patients (100%) have normal blood sugar levels.

The study shows that almost all respondents in Cilame Village suffer from mild hypertension, with a longer duration of hypertension indicating a tendency for less adherence to treatment. Medication adherence is crucial to prevent disease complications and tends to decrease with the duration of hypertension. This study also supports findings that patients with a history of hypertension for more than 7 years are more likely to be non-compliant with treatment, with most long-term patients experiencing abnormal blood sugar levels.

Table 3. Blood glucose levels of hypertensive respondents based on hypertension history in cilame village.

	Blood Glucose (mg/dl)				
	High		Normal		Total
History of Hypertension (Year)	>140		70-140		
	N	%	n	%	%
Low	13	59	9	41	22
Medium	5	71	2	29	7
High	0	0	1	100	1
Total					30

Blood Glucose Profile of Hypertensive Respondents in Cilame Village in 2024
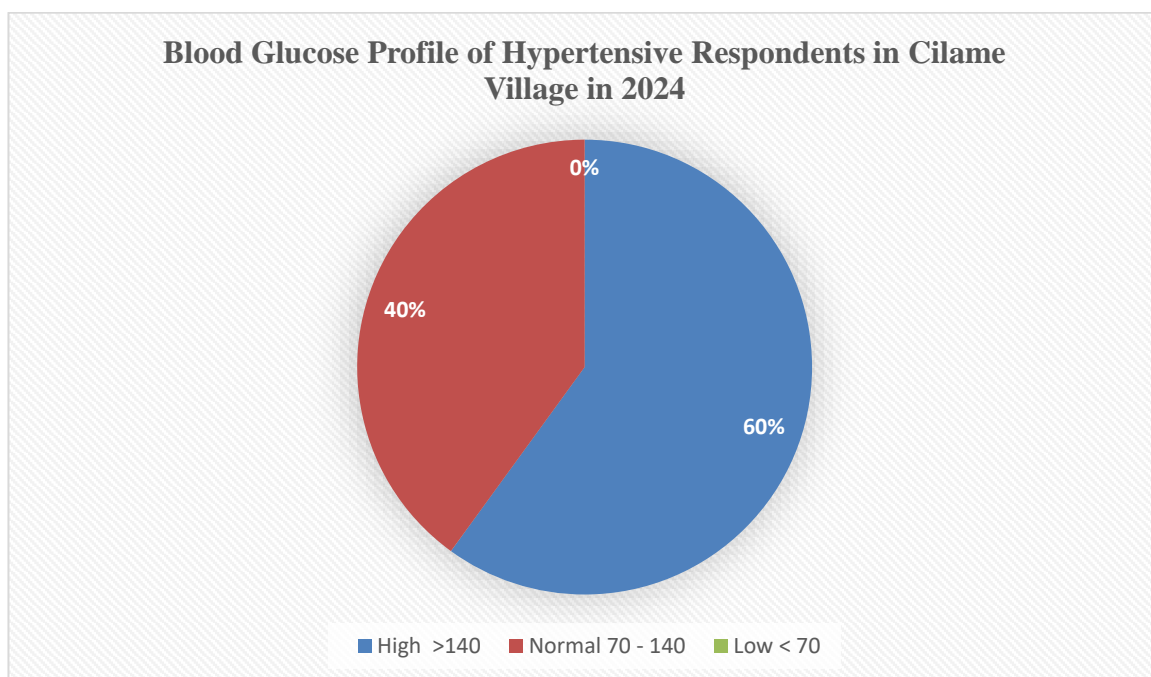
- High >140
- Normal 70 - 140
- Low < 70

Figure 4. Blood glucose profile of hypertensive respondents in cilame village in 2024.

Figure 4 showed the 30 respondents with hypertension, 40% have normal blood sugar levels (normoglycemic) and 60% have hyperglycemia. The highest blood sugar level found is 479 mg/dL, while the lowest is 88 mg/dL. These differences may be due to factors such as age, gender, duration of hypertension, medication use, and poor blood pressure control. Although patients in Cilame Village regularly take antihypertensive medications, some respondents still have high blood sugar levels. Adherence to hypertension treatment impacts blood sugar levels. This study is consistent with research by Ida Ayu Putu Pratiwi, which found that 76.7% of patients have normal blood sugar levels. High blood pressure may be associated with insulin resistance, which increases blood sugar levels and can lead to diabetes.

Table 4. Blood glucose profile of hypertensive respondents in cilame village in 2024.

No	Results (mg/dl)	Frequency (N)	Persentase (%)
1	High	18	60
2	Normal	12	40
3	Low	0	0
Total		30	100

Conclusions

Based on the results of research that has been done about the Description Rate Glucose Blood On SuffererHypertension Using the POCT Method (*Point Of Care test*) in Cilame Village, so can conclude characteristics of respondents' hypertension based on age, namely the adult range (20-59 years) as many as 20 people, types the female gender is 22 person And history hypertension short (1-5 year) that is as much 22 person. Description rate glucose blood hypertensive respondents showed results normal and high, with blood glucose levels as high as 18 people and 12 people normal.

Conflicts of Interest

The authors declare that there are no conflicts of interest.

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