

## The Influence Of Heart Diet On Cholesterol Levels And Blood Pressure In Patients At Malahayati Islam Hospital Year 2023

Yusridawati

Program Studi Ilmu Keperawatan Fakultas Ilmu Kesehatan, Universitas Haji Sumatera Utara, Medan, Indonesia

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Email :  
[Yusridawati5@gmail.com](mailto:Yusridawati5@gmail.com)

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### ABSTRACT

Coronary heart disease is a heart disorder due to a lack of oxygen supply to the heart muscles caused by narrowing or blockages/plaques in the coronary arteries, or coronary artery atherosclerosis. One of the components that make up this plaque is cholesterol crystals. Data from the Malahayati Islamic Hospital, heart disease is the highest rate, a survey was conducted there were patients who did not eat food from the hospital and they ate food from home. Research Purpose: Knowing the Effect of Heart Diet on Cholesterol Levels and Blood Pressure in Patients at Malahayati Hospital This type of research is a quasi-experimental design with one group pre post test. The population in this study were all heart patients who were treated at the Malahayati Islamic Hospital in Medan. Sampling technique was accidental sampling. The sample size was 10 patients. The data were taken using observation sheets for blood pressure and cholesterol, which were analyzed by paired t-test. The results of the study showed that the majority of blood pressure and cholesterol in heart patients before being given a high heart diet and after being normal. 0.38, SD difference = 1.333 and p value = 0.003. The value of  $p < 0.05$  means that  $H_0$  is rejected and  $H_a$  is accepted, which means that there is a significant difference between the level of cholesterol and blood pressure before and after giving the heart diet to the patient. The conclusion of the study is that there is an effect of giving a heart diet on cholesterol levels and blood pressure in patients at Malahayati Hospital. It is hoped that nurses will inform patients to eat and maintain heart diet foods.

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### 1. INTRODUCTION

Based on WHO statistical data in 2015, hypertension is one of the main triggers for the growing incidence of cardiovascular disease. Hypertension is ranked third as the leading cause of death for all ages with a case fatality rate (CFR) of 6.8%. The highest incidence of hypertension is found in developed countries with high incomes and followed by several cases which are also found in developing countries. Based on gender, the distribution of people with hypertension in the world who are over 18 years old is 24% for men and 20.5% for women. In Southeast Asia, the distribution of people with hypertension by sex is 25.3% male and 24.2% female. 4 The prevalence of hypertension in adults in Indonesia reaches 25.8%, the highest in the Bangka Belitung region, which is 30.9%; South Kalimantan, amounting to 30.8%; East Kalimantan, amounting to 29.6%; West Java, amounting to 29.4%; and North Sumatra, amounting to 24.7% [1].

Coronary heart disease is a disorder of heart function due to lack of oxygen supply to the heart muscles. This condition is caused by narrowing or blockage/plaque in the coronary arteries, otherwise known as coronary artery atherosclerosis. One of the components that make up this plaque is cholesterol crystals. Therefore, one of the risks of atherosclerosis is high blood cholesterol levels [2].

Blood cholesterol levels can be affected by intake, as long as the consumption of cholesterol sources is balanced with the body's needs, our bodies will remain healthy. But if the intake of cholesterol sources is more than the requirement, the blood cholesterol in our body increases. Excess cholesterol in the blood can form deposits in the arteries which cause narrowing and clotting which is called atherosclerosis [3]. Increased levels of cholesterol, triglycerides, LDL (Low Density Lipoprotein) and

VLDL (Very Low Density Lipoprotein), and low levels of HDL (High Density Lipoprotein) are risk factors for heart disease [4]

One of the diseases that is a risk factor for hypertension is high total cholesterol levels. Hypertension has a relationship with total cholesterol lipid abnormalities, where the presence of dyslipidemia increases the risk of developing hypertension so that the risk of cardiovascular morbidity and mortality increases. An increase in CHD (Coronary Heart Disease) and hypertension occurs epidemiologically in serum total cholesterol which exceeds 193.2 mg/dl [4].

Blood pressure is the force (push) of blood against the arteries as it is pumped out of the heart throughout the body. The peak pressure occurs when the ventricles contract and is called the systolic pressure. Meanwhile, diastolic pressure is the lowest pressure that occurs when the heart is resting (Palmer, 2007). The blood pressure reference value that is considered the most optimal is for <120 mmHg systolic value and 80 mmHg for diastolic value. While blood pressure values that are considered hypertension are more than 140 mmHg for systolic values and more than 90 mmHg for diastolic values [5]

A high-fiber diet is one of the solutions to reduce the risk of coronary heart disease by reducing blood cholesterol levels. Foods high in fiber, especially water-soluble fiber, are known to lower cholesterol levels in the blood circulation. Pectin is a fiber that can dissolve in water. Pectin can bind bile acids and inhibit their reabsorption so that blood cholesterol levels will decrease over time.

## 2. METHOD

This study uses a quasi-experimental research method (Quasi Experiment), while the one group pre and posttest research design is a type of design that only uses one group of subjects, before the trial is carried out in a group without a control group, an assessment or measurement is carried out in the group the. The population in this study were all heart patients treated at the Malahayati Islamic Hospital in Medan. So the population in this study was 47 patients with data from January to March 2023. The sampling technique was Ascidental Sampling. The data analysis technique used is univariate analysis and bivariate analysis

## 3. RESULTS AND DISCUSSION

### Univariate analysis

#### Demographic Data

The results showed that the distribution of the age frequency of students in SMA Negeri 2 Bayang can be described as follows:

Table.1 Frequency Distribution of Demographic Data at the Malahayati Islamic Hospital in Medan in 2023

No	Demographic Data	Frekuensi	Presentase (%)
1	Age		
	30-40 years	2	20.0
	40-50 years	1	10.0
	>50 years	7	70.0
	<b>Amount</b>	10	100
2	<b>Gender</b>		
	Man	6	60.0
	Woman	4	40.0
	<b>Amount</b>	10	100

Based on table 1, it can be explained that out of 10 respondents, the majority were > 50 years old, 7 people (70.0) were male, 6 people (60.0%).

### Distribution of Cholesterol Frequency and Blood Pressure before and after Giving a Cardiac Diet at the Malahayati Islamic Hospital in Medan

Table 2 Frequency Distribution of Blood Pressure Before and After Giving a Cardiac Diet at the Malahayati Islamic Hospital in Medan

No	Kolesterol Dan Tekanan Darah	Before		After	
		F	%	f	%
1	Normal	2	20	2	20
2	prehipertensi	3	30	7	70
3	Hipertensi	5	50	1	10
4	Stage 2 Hipertensi	0	0	0	0
Jumlah		10	100	10	100

Based on table 2, it shows that before giving a heart diet to cholesterol and blood pressure at the Malahayati Islamic Hospital in Medan, the majority were high, as many as 5 people (50.0%) and after being given a heart diet, cholesterol levels and blood pressure were in the normal category, as many as 7 people (70.0). %

### Frequency Distribution of Cholesterol and Blood Pressure before and after Giving a Cardiac Diet at the Malahayati Islamic Hospital in Medan

Table 3 Distribution of Cholesterol Frequency Before and After Giving a Cardiac Diet at the Malahayati Islamic Hospital in Medan

No	Cholesterol And Blood Pressure	Before		After	
		F	%	f	%
1	Low	2	20	2	20
2	Normal	3	30	7	70
3	Tall	5	50	1	10
Amount		10	100	10	100

Based on table 3, it shows that before giving a heart diet to cholesterol at the Malahayati Islamic Hospital in Medan, the majority were high, as many as 5 people (50.0%) and after being given a heart diet, cholesterol levels and blood pressure were in the normal category, as many as 7 people (70.0%)

### The Effect of Heart Diet on Blood Pressure at the Malahayati Islamic Hospital in Medan

The Effect of Heart Diet on Blood Pressure at the Malahayati Islamic Hospital in Medan can be seen in table 4:

Table 4. The Effect of Heart Diet on Blood Pressure at the Malahayati Islamic Hospital in Medan

	Mean	Selisih Mean	Standar Deviasi	T	Df	P
Pre	1.48					
Post	1.86	0,38	1.333	3,28	19	0.003

The results of the analysis using the paired t-test showed that blood pressure before and after giving the diet obtained  $t(df) = 3.28 (19)$ , M difference = 0.38, SD difference = 1.333 and p value = 0.003. The p value  $< 0.05$ , it can be concluded that  $H_0$  is rejected and  $H_a$  is accepted, which means there is a significant difference between blood pressure before and after the administration of a heart diet at the Malahayati Islamic Hospital in Medan

### The Effect of Heart Diet on Cholesterol at the Malahayati Islamic Hospital in Medan

The Effect of Heart Diet on Cholesterol and Blood Pressure at the Malahayati Islamic Hospital in Medan can be seen in the following table:

Table 5. The Effect of Heart Diet on Cholesterol at the Malahayati Islamic Hospital in Medan

	Mean	Selisih Mean	Standar Deviasi	T	Df	P
Pre	1.48	0,38	1.333	3,28	19	0.003
Post	1.86					

The results of the analysis using the paired t-test showed that cholesterol before and after the diet was obtained  $t(df) = 3.28 (19)$ , M difference = 0.38, SD difference = 1.333 and p value = 0.003. The p value  $< 0.05$ , it can be concluded that  $H_0$  is rejected and  $H_a$  is accepted, which means that there is a significant difference in cholesterol levels before and after the administration of the heart diet at the Malahayati Islamic Hospital in Medan

### Discussion

#### Giving the heart diet before and after

The majority of research results were obtained before being given a heart diet high blood pressure, while after that blood pressure has decreased due to giving a heart diet by limiting food sources of fat and cholesterol, such as changing food menus that use eggs with egg whites, using skinless meat, etc. However, in processing some menus still use oil, butter, margarine and coconut milk which are sources of fat. This is according to research by Safitri (2017) Provision of a heart diet at Panembahan Senopati Hospital has limited food sources of fat and cholesterol such as changing the food menu using eggs with egg whites, using skinless meat, etc. However, in processing some menus still use oil, butter, margarine and coconut milk which are sources of fat and blood pressure has decreased.

The goal of a heart disease diet in general: provide enough food (not too much) without burdening the heart, losing weight if you are too fat, preventing or eliminating salt or water accumulation. (Almatsier, 20014).

Inpatient nutrition services are nutrition services that start from the process of nutritional assessment, nutrition diagnosis, nutrition interventions including planning, food provision, counseling/education, and nutrition counseling, as well as nutrition monitoring and evaluation. The aim is to provide nutritional services to inpatients in order to obtain food intake that is appropriate to their health conditions in an effort to accelerate the healing process, maintain and improve nutritional status. (PMK No. 78, 2013).

#### Cholesterol before and after cardiac diet

From the results of the study, it was found that the majority of cholesterol before that is high and after being given a diet the heart has decreased. The heart diet is a diet that can help minimize the impact of the food we eat on heart health. The main goal is to reduce sodium and fat intake. If you consume too much sodium, there is a risk of increasing cholesterol which can trigger hypertension, aka high blood pressure.

Poor lifestyles such as consumption of unhealthy foods such as fast food (junk food), lack of physical activity and exercise for mothers and the elderly have an impact on health conditions. One of these impacts is high levels of cholesterol (hypercholesterolemia) in the body, which can trigger various health problems, such as obesity, hypertension, heart problems (coronary heart disease), insulin resistance, type 2 diabetes mellitus to stroke (Ogden et al. , 2010).

Controlling food portions, consuming more vegetables and fruit, limiting saturated fat consumption, low-fat protein sources and reducing salt use will reduce cholesterol levels. 66%), Enough 5 people (16.67%), Less 23 people (76.67%). From the results of this study it was concluded that the knowledge of patients in the heart polyclinic at Arifin Achmad Hospital, Riau Province, about the Cardiac Diet is still lacking.

### **The Effect of Heart Diet on Blood Pressure and Cholesterol at the Malahayati Islamic Hospital in Medan**

The results of the analysis using the paired t-test showed cholesterol levels and blood pressure before and after giving the heart diet obtained  $t(df) = 3.28 (19)$ ,  $M \text{ difference} = 0.38$ ,  $SD \text{ difference} = 1.333$  and  $p \text{ value} = 0.003$ . The  $p \text{ value} < 0.05$ , it can be concluded that  $H_0$  is rejected and  $H_a$  is accepted, which means there is a significant difference in the effect of cardiac diet on cholesterol and blood pressure at the Malahayati Islamic Hospital in Medan.

Giving a heart diet is adjusted to the condition of the respondent who is still in the transition stage from the acute phase or as a transfer from the heart diet I. Besides that, most respondents also have high blood pressure and difficulty chewing so they are given low salt and soft food forms. While the heart diet III is given in the form of soft or regular food. Cardiac diet III is given as a transfer from cardiac diet II or to heart patients with conditions that are not too severe

As many as 6 respondents were male and most of the respondents were in the age group above 50 years. A man's risk of developing heart disease exceeds that of a woman after the teenage years until about age fifty. In this age range, men are 2-3 times more likely to suffer from heart disease than women (Soeharto, 2014)

According to Hasdianah (2014), there are several factors that cause high cholesterol in the blood, namely: Age and Gender, Increased cholesterol within certain limits is a natural thing that occurs in the aging process. Cholesterol levels increase with age in both men and women. In men, high cholesterol levels are seen between the ages of 45-54 years. Whereas in women, cholesterol levels are highest at the age of 55-64 years. This is the tendency of the incidence of heart disease is different between men and women. The incidence of coronary heart disease in women is usually 10 years slower than men. Diet, People who are most at risk of having high cholesterol levels are people who adopt a diet that contains high levels of saturated fat. Saturated fat (found in meat, butter, cheese, and cream.) raises LDL cholesterol levels in the blood. Weight gain. Weight gain can increase triglyceride levels and reduce HDL (good cholesterol) levels. Lack of physical activity, lack of movement can increase LDL cholesterol levels. Smoking habits, smoking will increase the tendency for blood cells to clot and tend to stick to the lining of blood vessels. This will increase the risk of forming a blood clot (thrombus) which causes blockage of the heart (coronary) arteries and blood vessels of the brain.

The result of high LDL cholesterol in the blood causes atherosclerosis. Atherosclerosis causes blood flow in the heart to be disrupted, causing the heart to need a force to push blood through blood vessels that experience stronger atherosclerosis, causing blood pressure, the higher the cholesterol level in the blood, the higher the risk of atherosclerosis (Corwin, 2019).

In this study, the results obtained were in accordance with the theory stated by Suharti, (2014), Hypertension can occur due to chronic atherosclerosis. Atherosclerosis is hardening of the arteries characterized by the accumulation of fatty deposits. Atherosclerosis begins with damage to the endothelial cells in the arteries in the presence of excess free radicals (oxidative stress) which will react with LDL (Low Density Lipoprotein) to form oxidized LDL. Oxidized LDL then migrates with monocyte cells to the subendothelial. Monocytes turn into macrophages and then phagocytize oxidized LDL to form foam cells, resulting in accumulation of foam cells in the walls of blood vessels, then macrophages cause proliferation of smooth muscle cells in blood vessels and result in plaque formation which causes blood vessels to narrow. The arteries that frequently occur atherosclerosis are branched or curved arteries, which are characteristic for the coronary, aortic, and cerebellar arteries. coronary arteries of the heart that experience atherosclerosis can cause blood flow to be disrupted, causing symptoms of chest pain (angina pectoris), which is a characteristic symptom of coronary heart disease [5]

In systolic blood pressure, most of them before being given a heart diet were in the high blood pressure category. After being given a heart diet, the majority of patients' blood pressure decreased.

Systolic blood pressure will increase continuously until the age of 70-80 years, while diastolic blood pressure increases until the age of 50-60 years and then tends to settle down or slightly decrease [6]

Most of the patients' blood pressure decreased due to various factors such as consumption of drugs, sodium intake which began to decrease due to restrictions recommended in counseling, and increased intake of potassium, calcium and magnesium. In addition, the patient's physical activity is



also slightly increased so that it can help lower blood pressure. Other factors such as stress levels also affect blood pressure. Blood pressure can be very high when stress comes, but this is only temporary. Stress can also trigger someone to behave badly which can increase the risk of hypertension [7]

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#### 4. CONCLUSION

Based on the results of the research on the effect of giving a heart diet to cholesterol and blood pressure at the Malahayati Islamic Hospital in Medan, cholesterol results were obtained in respondents at the Malahayati Islamic Hospital in Medan before being given a heart diet was high cholesterol and after giving the diet the majority of the heart became normal. Blood pressure at the Malahayati Islamic Hospital in Medan before being given a heart diet, high blood pressure and after giving the diet, the majority of the heart became normal and the effect of giving a heart diet on cholesterol and blood pressure at the Malahayati Islamic Hospital in Medan, with the results of cholesterol and high blood pressure, a p value of 0.003

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