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Overview of the lipid profile of hypertension patients at the installation of the Siti Rahmah RSI Padang outpatient clinic in 2021

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ABSTRACT

Hypertension is a health problem that occurs in both developed and developing countries. The risk factors for hypertension are divided into 2, namely modifiable and non-modifiable factors. Modifiable factors are obesity, stress, smoking, drinking alcohol, excessive salt consumption, and dyslipidemia. Factors that cannot be modified are genetics, age, and gender. Dyslipidemia is a condition of abnormal levels of lipid profiles in the blood, namely an increase in total cholesterol, triglycerides, LDL cholesterol (Low Density Lipoprotein) and or a decrease in HDL cholesterol (High Density Lipoprotein). This study aims to see a description of the lipid profile of hypertension patients at the outpatient installation of Siti Rahmah Hospital, Padang in 2021. This study uses a descriptive method with a cross-sectional data collection approach. Based on the research conducted, it was found that most hypertension patients had no complications, as many as 195 people (81.93%), Most hypertension patients had normal LDL (Low Density Lipoprotein) and HDL (High Density Lipoprotein) cholesterol levels as much as 81.09%. and 47.06%, most of the hypertensive patients had high triglyceride and total cholesterol levels as much as 79.83% and 69.33% respectively. Based on the results of the study, it can be concluded that the lipid profile that affects the occurrence of hypertension is triglyceride levels and total cholesterol levels.

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INTRODUCTION

Hypertension is a health problem that occurs in both developed and developing countries. Data from the World Health Organization (WHO) for 2018 stated that around 1.13 billion people in the world

are affected by hypertension. The number of people with hypertension continues to increase every year, it is estimated that by 2025 there will be 1.5 billion people affected by hypertension and 10.44 million people will die from hypertension and its complications (Ministry of Health 2019). Research results from the Ministry of Health of the Republic of Indonesia in 2013 stated that the percentage of hypertension cases had increased by 1.90%. Most cases of hypertension in Indonesia are in the age group of 18 years and over and the total percentage is 25.80% (Research and Development 2013). The prevalence of hypertension in Indonesia according to the 2018 Riskesdas data is 34.11%, while in West Sumatra it is around 25.16%, and in Padang City it is 21.7% (Research and Development 2018).

The risk factors for hypertension are divided into 2, namely modifiable and non-modifiable factors. Modifiable factors are obesity, stress, smoking, drinking alcohol, excessive salt consumption, and dyslipidemia. Factors that cannot be modified are genetics, age, and gender (Yonata, Satria, and Pratama 2020) (Otsuka et al. 2015). Hypertension causes various complications, namely stroke, death of heart muscle tissue and failure of kidney function (Aidha and Tarigan 2019).

Dyslipidemia is a condition in which the lipid profile levels in the blood are abnormal, namely an increase in total cholesterol, triglycerides, LDL cholesterol (Low Density Lipoprotein) and/or decrease in HDL (High Density Lipoprotein) cholesterol (Peristiwan and Agus 2013). The risk factors that affect the lipid profile are divided into 2, namely, internal and external risk factors. Internal risk factors are age, gender, and history of dyslipidemia. The most important external risk factor is food and drink intake. Excessive energy input from carbohydrates can increase triglycerides (Utami, Sofia, and Murbawani 2017).

Increased levels of lipid profiles in the blood have a relationship with atherosclerosis. At the age of 40-50 years, total cholesterol levels in the blood reach 260 mg/dl, it can increase atherosclerosis 3-5 times. In epidemiological, laboratory and clinical studies conducted by the Framing Heart Study (FH) and the Multiple Risk Factor Intervention Trial (MRFIT), stated that lipid metabolism disorders are a determining factor for the formation of atherosclerosis, and the distribution of lipid metabolism disorders will affect the occurrence of hypertension (Feryadi, Sulastri , and Kadri 2014). Based on research by Rahmat Feryadi, et al in 2014 entitled Relationship of Lipid Profile Levels with Hypertension Incidence in Minangkabau Ethnic Communities in Padang City in 2012 it was found that there was a significant relationship between total cholesterol and triglyceride levels and the incidence of hypertension (Feryadi, Sulastri, and Kadri 2014). In a 2018 study by Alemu Gabrie, et al, entitled Evaluation of lipid profiles and hematological parameters in hypertensive patients: Laboratory-based cross-sectional study, it was found that the average levels of serum triglycerides, total cholesterol, and low-density lipoprotein were significantly higher than respective cut-off values in hypertensive patients (Gebrie et al. 2018).

Research on Hypertension Patients has been carried out by many previous researchers (Aditya, N.R., & Mustofa, 2023; Norkhalifa, N.H., Muttaqien, F., & Asnawati, 2021; Lemauk, 2022; Ali, I.H., Hiola, T.T., & Tumulo , 2021). Based on the background of the problem and previous studies, the authors are interested in studying the Lipid Profile Profile of Hypertension Patients at the Outpatient Polyclinic Installation of RSI Siti Rahmah Padang in 2021. This study aims to explain the Overview of Lipid Profiles of Hypertension Patients at the Outpatient Polyclinic Installation of RSI Siti Rahmah in 2018 2021.

RESEARCH METHOD

This research covers the fields of Internal Medicine and Clinical Pathology. This research was conducted at RSI Siti Rahmah Padang from February to October 2022. This type of research is a descriptive study with a cross sectional data collection approach. The population of this study were hypertensive patients who were treated as outpatients at RSI Siti Rahmah Padang in 2021. The research samples used in this study were all hypertensive patients who were treated as outpatients at RSI Siti Rahmah Padang in 2021 (total sampling) who met the exclusion criteria, namely 238 people . The exclusion criteria for this study were patients aged <18 years and incomplete medical record

data, namely the absence of the patient's name, patient's age, gender, complications, and lipid profile, namely HDL, LDL, triglyceride and total cholesterol. The method of data collection in this research is that this study uses secondary data, namely data obtained from the patient's medical record (RM).

Data processing was carried out using the editing method to check the completeness and clarity of the data. Coding giving code to each sample obtained. Entry, entering data into Microsoft Excel. Cleaning, re-checking to ensure that the data obtained is clean from errors. Research data analysis is data obtained from the medical records of RSI Siti Rahmah Padang and processed using Microsoft Excel from the data that has been obtained. Then calculate the Lipid Profile of Hypertension patients at RSI Siti Rahmah Padang. Data is presented in tables and narratives.

RESULTS AND DISCUSSIONS

Research result

Based on the research conducted, an overview of the lipid profile of hypertensive patients was obtained at the Outpatient Installation of RSI Siti Rahmah Padang in 2021 as in the following table:

Patient Characteristics Based on Age, Gender and Complications

Table 1. Characteristics of hypertension patients based on age

Age	F	%
15 - 25	0	0.00
25 - 44	40	16.81
45-60	97	40.76
61-75	98	41.18
76 - 90	3	1.26
Amount	238	100.00

Source: Data Processing Results, 2022

Based on Table 1, it was found that the highest age range who suffered from hypertension was 61-75 years as many as 98 people (41.18%).

Table 2. Characteristics of hypertension patients based on gender

Gender	F	%
Man	111	46.64
Woman	127	53.36
Amount	238	100.00

Source: Data Processing Results, 2022

Based on Table 2, it was found that 127 women (53.36%) had the most sex with hypertension.

Table 3. Frequency distribution of hypertension patients based on complications

Complications	F	%
There is	43	18.07
There is no	195	81.93
Amount	238	100.00

Source: Data Processing Results, 2022

Based on Table 3, it was found that the majority of hypertensive patients did not have complications, namely 195 people (81.93%).

Table 4. Frequency distribution of hypertension patients with complications

Complications	F	%
Diabetes mellitus	20	46.51
Coronary heart disease	8	18.60
Gout	7	16.28
Strokes	8	18.60
Amount	43	100.00

Source: Data Processing Results, 2022

Based on Table 4, it was found that the most complications of hypertension patients were diabetes mellitus as many as 20 people (46.51%).

Frequency Distribution of Hypertension Patients Based on HDL Levels

Table 5. Frequency distribution of hypertension patients based on HDL levels

HDL(mg/dL)	F	%
<30 (Low)	35	14.71
30-70 (Normal)	193	81.09
>70 (High)	10	4.20
Amount	238	100.00

Source: Data Processing Results, 2022

Based on Table 5, it was found that the majority of hypertensive patients had normal HDL levels, namely 193 people (81.09%).

Frequency Distribution of Hypertensive Patients Based on LDL Levels

Table 6. Frequency distribution of hypertensive patients based on LDL levels

LDL	F	%
<130 (Normal)	112	47.06
130-159 (Normal limit value)	82	34.45
≥160 (High risk)	44	18.49
Amount	238	100.00

Source: Data Processing Results, 2022

Based on Table 6, it was found that almost half of the hypertensive patients had normal LDL levels, namely 112 people (47.06%).

Distribution of Hypertension Patients Based on Triglyceride Levels

Table 7. Frequency distribution of hypertension patients based on triglyceride levels

Triglycerides	F	%
Low	0	0.00
Normal	48	20.16
Tall	190	79.83
Amount	238	100.00

Source: Data Processing Results, 2022

Based on Table 7, it was found that the majority of hypertensive patients had high triglyceride levels, namely 190 people (79.83%).

Frequency Distribution of Hypertension Patients Based on Total Cholesterol Levels

Table 8. Frequency distribution of hypertensive patients total cholesterol levels

Total cholesterol	F	%
<200 (Optimal)	48	20.17
200-240 (Border line)	25	10.50
>240 (High)	165	69.33
Amount	238	100.00

Source: Data Processing Results, 2022

Based on Table 8, it was found that almost half of the hypertensive patients had high total cholesterol levels, namely 165 people (69.33%).

Discussion

Characteristics of Hypertension Patients Based on Age and Gender

Based on the results of the study, it was found that the highest age range who suffered from hypertension was 61-75 years as many as 98 people (41.18%). The results of this study support previous research conducted at the Tk.II Putri Hijau Hospital Polyclinic showing that the age range who suffers from hypertension is 60-69 years as many as 28 people (66.7%) (Pangaribuan and Nurleli 2020). Another study conducted at the Siti Rahmah Islamic Hospital in 2017 showed that the largest age range who suffered from hypertension was 56-65 years as many as 31 people (31.0%) (Syafrianti, Adelin, and Malik 2019). Another study conducted in Ilir Timur II District, Palembang, showed that the largest age range who suffered from hypertension was 64-70 years, with 15 people (79.8%) (Ali 2021). Elderly is a factor in the occurrence of hypertension, because there is a decrease in the elasticity of peripheral blood vessels which will increase peripheral vascular resistance which will eventually lead to hypertension. And atheromatous changes due to the aging process cause endothelial dysfunction which ultimately results in an increase in blood pressure (Ali 2021).

Based on the results of the study, it was found that the most sex who suffered from hypertension were women, as many as 127 people (53.36%). The results of this study support previous research conducted at Tugurejo General Hospital which showed that the sex most suffering from hypertension was women, as many as 25 people (56.82%) (Timur, Andayani, and Aribawa 2012). Another study conducted at the Siti Rahmah Islamic Hospital in 2017 showed that the sex with the most hypertension was women, 61 people (61.0%) (Syafrianti, Adelin, and Malik 2019). Another study conducted in the Work Area of the Rawang Health Center showed that 17 women (56.7%) suffered from hypertension the most (Kurniawati 2020).

The sex most found to suffer from hypertension is women. This can be caused by hormonal changes in women, namely the hormones estrogen and androgen. In menopausal women there is a decrease in estrogen levels in the blood which can cause hypertension. Estrogen is no longer produced when women have entered menopause, so there is no longer a protective effect from hypertension in women who have entered menopause. Changes in androgen levels also affect blood pressure, because androgen levels affect sodium reabsorption in the kidney nephrons and stimulate the renin-angiotensin system, thereby influencing high blood pressure (Rahayu 2012).

Based on the results of the study, it was found that the majority of hypertensive patients did not have complications, namely 195 people (81.93%). The results of this study support previous research conducted at the Sanglah Central General Hospital showing that some hypertensive patients did not have complications, namely 52.3% (Sugiarta and Satriyasa 2014). Another study conducted at Vita Insani Hospital found that the majority of hypertensive patients did not have complications, namely 76.9% (E, Hiswani, and Jemadi 2011). Another study conducted at the Posyandu in Grogol Village obtained the results that most patients did not have disease

complications, namely 44 people (75.9%) (Suciana, Agustina, and Zakiatul 2020). Another study conducted in the working area of the Kwandang Health Center and Tolinggula Health Center obtained results that at most did not have disease complications, namely 103 people (62.8%) (Arda and Hafid 2022). But different results were revealed in a study conducted at the Kediri Baptist Hospital that some people had complications, namely 18 people (62%) (Prasetyorini and Prawesti 2012).

In this study it was found that the majority of hypertensive patients did not have complications because hypertension occurred before the target organ damage occurred which caused various complications. This is probably because hypertension is a predisposing factor to the emergence of various complications of the disease if hypertension is not treated immediately (Research and Development 2013). Hypertension can be primary or urgent (without complications of target organ damage) or secondary (already marked target organ damage). Predominantly hypertension without complications is probably caused because hypertension can cause symptoms without being preceded by target organ damage (Sugiarta and Satriyasa 2014).

The risk of disease complications in hypertension can be reduced by maintaining a diet or diet for hypertension. In addition, the risk of complications can also be reduced by regularly taking hypertension drugs (Suciana, Agustina, and Zakiatul 2020).

Based on the results of the study, it was found that the most complications of hypertension patients were diabetes mellitus as many as 20 people (46.51%). The results of this study support previous research conducted at Dr.H. Abdul Moeloek showed that some hypertensive patients had complications from diabetes mellitus, namely as many as 80 people (64.0%) (Karmila Sari, Agata, and Adistiana 2021). Another study conducted in the working area of the Bandarharjo Health Center in Semarang City showed that as many as 18 people (22.6%) had diabetes mellitus (Fatmasari 2021).

Hypertension is the main risk factor for diabetes mellitus. The relationship with diabetes mellitus is very complex, hypertension can make cells insensitive to insulin (insulin resistance). Insulin resistance is a condition where a person has enough insulin to break down glucose, but it doesn't work as it should. The insulin that is present is not used to break down glucose, which causes the level of glucose in the blood to rise, resulting in diabetes. In addition, insulin plays a role in increasing glucose uptake in many cells and in this way also regulates carbohydrate metabolism, so that if there is insulin resistance by cells, then blood sugar levels can also be disturbed (Saragih, 2018).

Hypertension is also complicated by uric acid. Hypertension is a disorder of the circulatory system that can cause an increase in blood pressure above normal. In hypertensive patients, there is a blockage of uric acid crystals in the blood vessels causing the kidneys to change their function to lower blood pressure resulting in an increase in uric acid levels in the blood (Febrianti n.d.). Coronary heart disease is a complication of hypertension. In hypertensive patients there will be blood pumping from the left ventricle if the systemic blood pressure increases, thus increasing the workload of the heart (Monica, Adiputro, and Marisa 2019).

Hypertension or high blood pressure is a strong risk factor for stroke. High blood pressure, often causes rupture of major blood vessels in the brain, which is followed by death in large parts of the brain. If blood pressure increases high enough for months or years, it will cause hyalinization of the muscle lining of the cerebral vessels (Pusparani 2009).

Frequency Distribution of Hypertension Patients Based on HDL Levels

Based on the results of the study, it was found that the majority of hypertensive patients had normal HDL levels, namely 193 people (81.09%). These results support previous research conducted in 4 sub-districts in the city of Padang showing no significant relationship between HDL and hypertension, namely p = 0.003 (Feryadi, Sulastri, and Kadri 2014). Another study conducted at Budi Asih Hospital showed that there was no significant relationship between HDL levels and

hypertension, namely p = 0.572 (Sari 2018). Another study conducted at the K.Hakkiyah Family Doctor Clinic obtained normal HDL levels in 22 people (59.5%) (Mandala, Esfandiari, 2020).

Lipid profile characteristics in hypertensive patients were found to be normal at HDL levels. Judging from the age and sex of the patients, most of them are female. Women experience hormonal changes, especially estrogen which affects HDL levels. Estrogen stimulates the production of nitric oxide which has a role in vasodilation of blood vessels, so it can lower blood pressure (Syafrianti, Adelin, and Malik 2019). Sufficient and regular physical activity such as exercise can have an effect on insulin sensitivity and affect HDL levels (Mamat 2010).

Frequency Distribution of Hypertensive Patients Based on LDL Levels

Based on the results of the study, it was found that almost half of the hypertensive patients had normal LDL levels, namely 112 people (47.06%). These results support previous research conducted in 4 sub-districts in Padang City which showed no significant relationship between LDL and hypertension, namely p = 0.09 (Feryadi, Sulastri, and Kadri 2014). Another study conducted at UKI General Hospital obtained normal results of 57.4% and found no significant relationship between LDL levels in the blood and the incidence of hypertension (Siagian 2017). Another study conducted at Budi Asih Hospital showed that there was no significant relationship between LDL levels and hypertension, namely p = 0.832 (Sari 2018).

Lipid profile characteristics in hypertensive patients were found to be normal in LDL levels. If it is related to the consumption patterns of people in West Sumatra, even though the food consumed is rich in saturated fats originating from animals, the seasonings consumed daily have a very high anti-oxidant content. Such as turmeric, ginger, galangal, lime leaves, red chilies, garlic, and some spices that are rarely used, such as cinnamon, pepper, and nutmeg. Some of the spices mentioned earlier are sources of vitamins C, A, E, and flavonoids. These substances, especially flavonoids, have atheroprotective properties through the mechanism of increasing the ability of platelets to release NO and inhibiting thrombus formation. This increase in NO will cause vasodilation of blood vessels which will lower blood pressure (Liputo NI 2008).

Frequency Distribution of Hypertension Patients Based on Triglyceride Levels

Based on the results of the study, it was found that the majority of hypertensive patients had high triglyceride levels, namely 190 people (79.83%). These results support previous research conducted at Lubuk Attitude Hospital, which resulted in high triglyceride levels in 24 people (80%) (Saputri 2019). Another study conducted in 4 sub-districts in the city of Padang obtained the results of a significant relationship between triglycerides and hypertension, namely p = 0.04 (Feryadi, Sulastri, and Kadri 2014). The characteristics of the lipid profile in hypertensive patients that were found were an increase in triglyceride levels. (Events and Agus 2013).

In addition, obesity is one of the factors for increased triglycerides, that in obese patients dyslipidemia occurs which is characterized by hypertriglycerides and decreased HDL. The decrease in HDL is caused by a decrease in insulin which can cause an increase in free fat flow thereby increasing triglyceride levels and reducing HDL levels (Mamat 2010).

Frequency Distribution of Hypertension Patients Based on Total Cholesterol Levels

Based on the results of the study, it was found that the majority of hypertensive patients had high total cholesterol levels, namely 165 people (69.33%). These results support previous research conducted in 4 sub-districts in the city of Padang showing a significant relationship between LDL and hypertension, namely p = 0.02 (Feryadi, Sulastri, and Kadri 2014). Another study conducted at Lubuk Attitudeing General Hospital obtained results of high total cholesterol levels in 25 people (83.33%) (Saputri 2019).

The characteristics of the lipid profile found in hypertensive patients are high total cholesterol levels. An increase in total cholesterol levels in the blood will result in plaque buildup in

the blood vessels. This buildup will narrow the blood vessels so that the heart will work harder to pump blood to flow throughout the body, the faster the heart beats, the higher the blood pressure (Saputri 2019).

CONCLUSION

Based on the results of research on the description of the lipid profile of hypertensive patients at the outpatient installation of RSI Siti Rahmah Padang in 2021, it can be concluded that Most of the hypertensive patients are aged 61-75 years, female sex and have no complications, Most hypertensive patients have normal HDL and LDL levels, and Most hypertensive patients have high levels of triglycerides and total cholesterol .

Based on the conclusions that the authors have explained above, the authors can draw the following conclusions Health workers are expected to be able to provide education about controlling blood pressure and lipid profile in hypertensive patients and their families so as to prevent complications from the disease, The health office is expected to supervise the First Level Health Facilities (FKTP) in making referrals, because hypertension is included in 155 diseases that can be treated at the puskesmas, and For future researchers to further expand the scope of research, especially in the number of sample research locations, as well as compare the lipid profile levels of hypertensive patients at the first visit and after receiving therapy.

The limitation of this study is that this study only describes an overview of hypertensive patients at RSI Siti Rahmah Padang in 2021. So that in the future research on the factors that influence patients experiencing hypertension at RSI Siti Rahmah Padang can be carried out.

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