http://ejournal.seaninstitute.or.id/index.php/healt
Jurnal eduhealth, Volume 13, No 02, 2022
E-ISSN., P-ISSN. 2087-3271

# Identification Of Cholestrol Level Testing HDL And LDL In Hypertension Patients At Santa Elisabeth Medan Hospital

**Cornelius Manik[1], Putri Hartanti Hulu[2], Rica Vera Br Tarigan[3]**
[1,2,3] STIKes Santa Elisabeh Medan

ARTICLE INFO

Keywords :
HDL cholesterol, LDL cholesterol, hypertension.

ABSTRACT

Number of people with hypertension continues to increase every year, there will be 1.5 billion people affected by hypertension, and every year 9, 4 million people died due to hypertension and its complications. The supporting examination for hypertension is an examination of the total levels of HDL and LDL cholesterol. This study aims to identify the examination of HDL and LDL cholesterol levels in patients with hypertension at Santa Elisabeth Hospital Medan 2022. This study used a descriptive analytic design. The population was obtained from medical record data, namely all inpatients and outpatients suffering from hypertension at Santa Elisabeth Hospital Medan for the last 3 months from January to March 2022 as many as 278 people with a total sample of 73 using purposive sampling technique. The examination was carried out using an automated chemistry analyzer Siemens dimension EXL 200. The results showed that more hypertensive respondents had abnormal HDL levels as many as 38 respondents (52.1%) and more than 69 respondents (94.5) had normal LDL levels. %). So from these results it was concluded that there was an abnormal increase in HDL levels and a decrease in LDL levels in patients with hypertension

**: Email**
corneliusmanik@yahoo.com
Putryhulu15@gmail.com
rica_vera@yahoo.co.id



## 1. INTRODUCTION

Hypertension is one of the non-communicable diseases which is the number one cause of death in the world. Hypertension is an increase in blood pressure or the force of pressing blood on the walls of the cavity where the blood is (Binugraheni et al. 2016) . One of the risk factors for hypertension is cholesterol. There are two types of cholesterol that are important in causing an increase in hypertension, namely HDL cholesterol and LDL cholesterol (Saputri, 2019). According to the World Health Organization (WHO), a high prevalence of hypertension is found in developing countries such as Indonesia, compared to developed countries. The prevalence rate is estimated to continue to increase from year to year, worldwide around 972 million people or 26.4% of the world's population suffer from hypertension and will increase to 29.2% in 2025 (Rafsanjani et al., 2019) . 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 it is estimated that every year 9.4 million people die from hypertension and its complications. In Indonesia, hypertension occurs in the age group of 31-44 years (31.6%), age 45-54 (45.3%), age 55-64 years (55.2%), while the prevalence of hypertension in West Sumatra is 22, 6% (Saputri, 2020). The results of a preliminary survey conducted by researchers on hypertensive patients at Santa Elisabeth Hospital revealed that 10 patients were hospitalized in January 2022 and 9 patients in February 2022. In outpatient hypertension patients in January 2022 as many as 130 patients and in February 2022 as many as 129 patients.

To find out the cause of hypertension, it can be done by laboratory examinations supporting cholesterol examinations such as by examining LDL cholesterol levels, HDL cholesterol to identify an increased risk of hypertension. Examination of HDL and LDL cholesterol levels using an automated chemistry analyzer Siemens dimension EXL 200 is an automated chemistry analyzer equipped with a sequential multiple analysis system that is used to diagnose in vitro analyte fluids in the human body. The ideal test run performance average on this tool is 500-600 samples/hour.

Based on the description of the background, the researchers are interested in conducting research with the aim of identifying the examination of HDL and LDL cholesterol levels in patients with hypertension at Elisabeth Hospital Medan in 2022. Researchers hope that this research can be used as research data information in developing knowledge about Identification of HDL Cholesterol Levels and LDL in Patients with Hypertension at Santa Elisabeth Hospital Medan in 2022.

## 2. METHOD

This research is a descriptive study using a population of 278 people who are hypertensive patients who check HDL and LDL cholesterol levels at St. Hospital. Elisabeth Medan in 2022. While the samples used were 73 samples of hypertension patients who examined HDL and LDL cholesterol levels at St. Elisabeth Medan in 2022. Samples were taken using a purposive sampling technique using several inclusion and exclusion criteria. Data collection in this study was obtained from primary data and secondary data. Primary data were obtained through examination of HDL and LDL cholesterol levels obtained from the laboratory. While the secondary data in the form of name, age, gender, and history of disease in patients with hypertension at Santa Elisabeth Hospital Medan. The collected data is then analyzed quantitatively and analyzed using computerized methods. This research has obtained permission and prior approval from the ethics committee of STIKes Santa Elisabeth Medan with No: 028/KEPK-SE/PE-DT/IV/2022.

## 3. RESULTS AND DISCUSSION

Based on the results of the study, it is known that of the 73 samples, the most are male, as many as 38 people (52.1%). When viewed based on demographic data, it is known that from 73 patients showed that the majority aged 47-52 years were 19 people (26.0%), followed by age 53-58 years 18 people (24.7%), then aged 59-64 years 17 people (23.3%), age 41-46 6 people (8.2%), age 65-70 years 6 people (8.2%) and fewer respondents aged 77-82 years 2 people (2.7 %). The following table shows the distribution of respondents based on the results of HDL cholesterol examinations at Santa Elisabeth Hospital Medan 2022:

Table 1. Frequency distribution of results of pre and post hemodialysis creatinine levels

| Cholesterol Level | Frequency (f) | Percent (%) |
|---|---|---|
| HDL Cholesterol Levels | | |
| Normal > 60 mg/dL | 35 | 47.9 |
| Abnormal < 60mg/ dL | 38 | 52.1 |
| LDL Cholesterol Level | | |
| Normal > 130 mg/ dL | 69 | 9.5 |
| Abnormal > 160 mg/ dL | 4 | 5.5 |

Table 1 shows that of the 73 respondents, the majority of the examination results were abnormal <60 mg/dL 38 people (52.1%) and the minority with normal HDL examination > 60 mg/dL were 35 people (47.9%). So the number of HDL levels in patients with hypertension is the most, namely respondents with abnormal HDL numbers and the least are respondents with normal HDL numbers. In addition, in terms of LDL cholesterol levels from 73 respondents, the majority of the results of the examination were normal LDL < 130 mg/dL 64 people (94.5%) and the minority with abnormal LDL examination > 160 mg/dL as many as 4 people (5.5%). So the number of LDL in patients with hypertension is the most respondents with normal LDL levels and the least is respondents with high LDL levels. The following are statistics based on HDL and LDL levels of hypertensive patients at Santa Elisabeth Hospital Medan in 2022:

Table 2. Statistics based on HDL and LDL levels

| Category | N | mean | median | Minimum | Maximum |
|---|---|---|---|---|---|
| HDL | 73 | 41.32 | 40.00 | 20 | 65 |
| LDL | 73 | 133.40 | 135.00 | 83 | 184 |

Based on the data in table 2, it is known that 73 respondents who checked HDL levels with an average value of 41.32, a mean value of 40.00, a minimum value of 20 and a maximum value of 65. the average score is 133.40, the middle score is 135.00, the minimum score is 83 and the maximum score is 184.

Cholesterol is a structural component of cell membranes and plasma lipoproteins, and is also the starting material for the formation of bile acids and steroid hormones. There are 2 types of cholesterol tests, namely LowDensity Lipoprotein (LDL) cholesterol, High Density Lippoprotein (HDL) cholesterol. High cholesterol levels in the blood will lead to buildup in blood vessels (plaque). 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 (hypertension) (Saputri, 2019). LDL and HDL cholesterol levels were measured using a Siemens Dimension EXL 200 tool which is an automated chemistry analyzer equipped with a sequential multiple analysis system that is used to diagnose in vitro analyte fluids in the human body.

The results of the study showed that abnormal HDL levels <60 mg/dL were 38 patients (52.1%) and normal examination results for HDL levels > 60 mg/dL were 35 patients (47.9%). The results of the examination of normal LDL levels <130 mg/dL were 69 patients (94.5%)) and abnormal levels > 160 mg/dL were 4 patients (5.5%). From the results of the study, it was found that the number of HDL levels in hypertension respondents was the most, namely abnormal results and on the results of examination of LDL levels, the results of the examination were within normal limits.

HDL and LDL cholesterol levels in this study are called abnormal because there are several factors including diet, patients who apply a bad diet that contains high levels of saturated fat such as meat, butter, cheese, and cream can cause an increase in cholesterol levels in the blood. body. Other causes such as lack of physical activity (exercise) can increase cholesterol levels that accumulate in the body. Smoking habits can also increase can cause blood cells to clump and 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) blood vessels and brain blood vessels (Erawati, 2018).

According to Charles (2016) cholesterol levels in the blood are influenced by several factors, namely heredity, age and gender. Other risk factors that can cause HDL and LDL cholesterol include smoking, consumption of salt and saturated fat, use of cooking oil, consumption of alcoholic beverages, obesity, lack of physical activity, stress, and use of estrogen.

The results of the examination of HDL and LDL cholesterol levels in this study obtained abnormal and normal results because the patients in this study previously lived a healthy lifestyle such as adjusting their diet and diligently exercising so that HDL and LDL levels in the patient's body were still controlled. Everyone who has low HDL cholesterol levels will be at risk of developing hypertension compared to people who have normal HDL levels, resulting in an increase in HDL cholesterol levels in hypertensive patients (Rafsanjani et al., 2019). Examination of elevated LDL cholesterol levels in the body will experience a buildup and blockage of arteries through the formation of atroma which causes decreased arterial flexibility and causes arterial pressure to increase or is called high blood pressure (Lestari, 2019). According to research by Nofia et al (2019), high cholesterol levels can increase the occurrence of high blood pressure caused by cholesterol deposits in the blood, resulting in thickening of artery walls caused by cholesterol plaque. The buildup and thickening of the walls of blood vessels due to a buildup of cholesterol that causes blood vessels to not expand elastically. As a result, it is difficult for the heart to pump blood, causing an increase in blood pressure.

## 4. CONCLUSION

Based on the description of the results and discussion, it can be concluded that the examination of abnormal HDL levels but LDL levels within normal limits is caused by unhealthy lifestyles such as consuming fast food, smoking and not exercising. Suggestions that researchers can give to patients are

that patients should always regulate their diet, exercise regularly, reduce alcohol consumption and smoking for men. Consult a doctor for patients who have abnormal cholesterol levels to get better medical treatment. Suggestions for further research is to add other variables in this study to determine the benefits of examining HDL and LDL cholesterol levels in patients with hypertension.

## 5. REFERENCES

[1] Binugraheni, R., Primadevi, S., Nugroho, R. B., Kresnadipayana, D., & Budianto, G. I. (2016). Pemeriksaan Kimia Darah (Glukosa Darah, Kolesterol Dan Asam Urat) Menggunakan Metode Stick Test Dan Metode Spektrofotometri Dari Sampel Darah Masyarakat Rw 22 Kelurahan Nusukan Kecamatan Banjarsari Kota Surakarta. Jurnal Gunabangsa, 3(2)(82), 1–23.

[2] Charles, A. (2016). Pemeriksaan Kadar Kolesterol dan Tekanan Darah Pada Masyarakat Kota Jambi Sebagai Skrining Awal Penyakit Jantung Koroner. Jurnal Pengabdian Pada Masyarakat Universitas Jambi, 18–20.

[3] Erawati, E. (2018). Hubungan Tekanan Darah Dengan Kadar Kolesterol Ldl(Low Density Lipoprotein) Pada Penderita Penyakit Jantung Koronerdi Rsup.Dr.M.Djamil Padang. JURNAL KESEHATAN PERINTIS (Perintis's Health Journal), 5(2), 129–132. https://doi.org/10.33653/jkp.v5i2.146

[4] Lestari, T. W. (2019). Hubungan Kadar Kolesterol dengan Tekanan Darah pada Pra Lansia Hipertensi di Posyandu Lansia Dusun Jetis Bantul Yogyakarta. Skripsi. STIKES 'Aisyiyah Yogyakarta.

[5] Nofia, V. R., Yanti, E., & Andra, H. (2019). Hubungan Kadar Kolesterol Dengan Tekanan Darah Pada Pasien Hipertensi Di Puskesmas Rawang Kota Sungai Penuh. Jurnal Kesehatan Saintika Meditory, 2, 115–124.

[6] Rafsanjani, M. S., Asriati, A., Kholidha, A. N., & Alifariki, L. O. (2019). Hubungan Kadar High Density Lipoprotein (HDL) Dengan Kejadian Hipertensi. Jurnal Profesi Medika : Jurnal Kedokteran Dan Kesehatan, 13(2), 74–81. https://doi.org/10.33533/jpm.v13i2.1274

[7] Saputri, R. A. (2019). Gambaran Profil Lipid Pada Pasien Hipertensi Di RSUD Lubuk Sikaping Tahun 2019. Skripsi. Sekolah Tinggi Ilmu Kesehatan Perintis Padang.