

# EXAMINATION OF CHOLESTEROL LEVELS AND EDUCATION ON HYPERTENSION RISK CONTROL IN ELDERLY IN TANJUNG ANOM VILLAGE, DELI SERDANG DISTRICT YEAR 2022

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## ABSTRAK

Hipertensi adalah tekanan darah tinggi sistolik diatas 140 mmHg dan distolik 90 mmHg atau lebih secara normalnya 120/80 mmHg. Dapat menyebabkan Komplikasinya pada otak berupa stroke, kerusakan jaringan otak dan serangan iskemik. perdarahan retina, gangguan penglihatan dan kebutaan juga dapat terjadi serangan jantung dan arterosklerosis arteri. ketika dinding dalam arteri rusak, timbunan lemak akan kolesterol lama kelamaan dinding akan menjadi berparuk dan kolesterol menumpuk disana sehingga terjadi penyempitan pembuluh darah arteri. Munculnya aneurisme: adanya pengelembungn pada arti akibat dari pembuluh darah yang tidak elastic lagi, sering terjadi pada arteri otak atau aorta bagian bawah. jika terjadi kebocoran atau pecah sangat fatal akibatnya: sakit kepala yang sangat hebat bahkan kematian pada jantung, kegagalan nafas dan bahkan kehilangan nyawa. Tujuan perlu dilakukan program untuk pencegahan resiko hipertensi pada lansia yang dapat meningkatkan kesadaran masyarakat akan penting kontrol pemeriksaan kolesterol secara teratur dan dapat meningkatkan pengetahuan untuk menurunkan prevalensi hipertensi. Dengan adanya pengabdian masyarakat ini dapat memberikan umur harapan hidup pada lansia sebanyak 250 orang dan dapat meningkatkan kesehatan masyarakat. Pelaksanaan kegiatan berlangsung lancar dan kondusif, peserta lansia sangat antusias dalam kegiatan pengabdian masyarakat ini sangat bermanfaat dalam mencegah penyakit hipertensi pada lansia.

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## 1. INTRODUCTION

Hypertension is a chronic disease in which blood pressure increases above normal blood pressure. The seventh report of the joint national committee on prevention, detection, evaluation and treatment of high blood pressure (JNC, VII) states that a person is said to be hypertensive if the systolic blood pressure >140 mmHg or more and diastolic blood pressure >90 mm Hg or more. Blood pressure is the pressure exerted by the blood on the blood vessels. Blood pressure is influenced by blood volume and elasticity of blood vessels. An increase in blood pressure is caused by an increase in blood volume or the elasticity of blood vessels.

conversely, a decrease in blood pressure will lower blood pressure (Tirtasari&Kodim, 2019). Hypertension is if the complex system that regulates blood pressure does not work properly, then arterial blood pressure will increase. An increase in blood pressure in the arteries that continues and persists is called hypertension, which means high blood pressure in the arteries. High blood pressure is considered high if the systolic pressure is 140 mmHg or more continuously, the diastolic pressure is 90 mmHg or more continuously both, but in general blood pressure is defined as normal blood pressure for adults ( $\geq 18$  years) is 120/80 mmHg. (Rahmanda& Prajayanti, 2020).

Classification of Hypertension 1), Essential/primary hypertension. The cause is unclear and accounts for most of  $\pm 90\%$  of all hypertension incidents. Essential hypertension is a multifactorial disease that arises mainly due to the interaction between certain risk factors. Primary hypertension cannot be cured but can be controlled (Nur Khasanah 2017). Hypertension is a modern lifestyle, because in a modern lifestyle situations are full of pressure and stress. Under stressful conditions, adrenaline and cortisol are released into the bloodstream, causing an increase in blood pressure. A busy lifestyle also makes people exercise less and try to deal with stress by smoking, drinking alcohol or coffee so they are at risk of developing hypertension. The second is wrong eating patterns and the third is excess body weight. 2) Secondary Hypertension Hypertension whose cause is known, is often associated with several diseases such as kidney, coronary heart, diabetes, narrowing of the aortic blood vessels, central nervous system disorders. The number of events reaches  $\pm 10\%$  (Rahmanda& Prajayanti, 2020).

Untreated hypertension will affect all organ systems and shorten life expectancy by 10-20 years. In addition, a decrease in blood pressure can prevent dimensions and cognitive decline in old age. Cognitive decline is characterized by forgetting new things, but still being able to carry out daily activities. Organ damage that occurs is related to the degree of severity of hypertension. The main organ changes that occur due to hypertension can be seen below.(Jasmine, & Maulida, 2022).

Heart failure is caused by not being strong enough to pump blood back to the heart as a result of fluid accumulating in the lungs, legs and other tissues resulting in edema due to shortness of breath. Complications in the form *myocardial infarction, angina pectoris*. Kidney. Kidney failure can occur due to progressive damage due to pressure on the capillaries - capillaries of the kidneys, glomerulus. With damage to the glomerulus, protein will come out in the urine, so that the plasma colloid osmotic pressure is reduced, causing the edema found in chronic hypertension. (Oktaviani & Prastia 2022)

Complications in the brain include stroke, damage to brain tissue and ischemic attacks. Strokes can result from high-pressure hemorrhage in the brain or from an embolus that detaches from a non-cerebral vessel that is exposed to high pressure. Stroke can occur in chronic hypertension when the arteries that supply the brain experience hypertrophy and thicken, so that blood flow to the areas that are supplied with blood is reduced. Arteries that experience brain, atherosclerosis, can weaken and increase the formation of aneurysms. Complications in the eye include retinal bleeding, visual disturbances and blindness. Atherosclerosis: hypertension can accelerate the accumulation of fat in and under the lining of the arteries. When the inner wall of the artery is damaged, fat deposits will stick together over time, the wall will become scarred and fat accumulates there, causing narrowing of the arteries.(Oktaviani & Prastia 2022),

Aneurysm: there is dilation in the sense of the result of blood vessels that are no longer elastic, often occurs in the arteries of the brain or the lower aorta. if there is a leak or rupture, the consequences are very fatal: a very severe headache (Oktaviani & Prastia 2022).

## 2. METHOD

Service activities are divided into three stages, namely the preparation stage, the implementation stage and the evaluation stage.

### a. Preparation phase

The preparatory phase began with field observations in Tanjung Anom Village, Deli Serdang Regency. Then we held discussions regarding plans to check cholesterol levels and educate on hypertension risk control in the elderly in Tanjung Anom Village, Deli Serdang Regency to minimize the incidence of hypertension in Tanjung Anom Village, especially because there were many participants. The elderly consist of various educational backgrounds, ethnicities and religions. Then we arrange a schedule and carry out cholesterol level checks and education on hypertension risk control in the elderly to be given to participants. The activity is planned for the second week of November 12 2022, in the meeting room of the Tanjung Anom Village Hall, Deli Serdang Regency.

### b. Level of implementation

The activity was carried out on November 12, 2022 carrying out cholesterol level checks and education on hypertension risk control in the elderly in Tanjung Anom Village, Deli Serdang Regency. before checking cholesterol levels Education on hypertension risk control in the elderly, we held a quiz as well as briefing on elderly gymnastic exercises and identified the extent of participants' understanding from the start. Then in the next session we held education by presenting material about the concept of hypertension risk, its negative impact, preventive measures and how to deal with predisposing factors that aggravate the causes of hypertension risk. After the presentation of the material, we held a cholesterol and health examination session and asked questions regarding the material. While at the end of the session we held a quiz again around the material to measure participants' understanding before and after the implementation of the



**Figure 1.** Examination of Cholesterol Levels in the Elderly in Tanjung Anom Village, Deli Serdang Regency in 2022

**Figure 2** Education on Hypertension Risk Control in the Elderly in Tanjung Anom Village Deli Serdang Regency  
Year 2022



**Figure 3.** Examination of Cholesterol Levels in the Elderly in Tanjung Anom Village, Deli Serdang Regency in 2022

**Figure 4.** Examination of Cholesterol Levels in the Elderly in Tanjung Anom Village, Deli Serdang Regency in 2022

### 3. RESULTS AND DISCUSSION

This Community Service activity carries the theme "checking cholesterol levels and education on hypertension risk control for the elderly in Tanjung Anom Village, Deli Serdang Regency in 2022. Starting with cholesterol checks and education on hypertension risk control, they have never received complete information about the causes of hypertension and hypertension control. . Then proceed with the presentation of material on the concept of hypertension, its negative impact, preventive measures and ways to overcome the risk of increased cholesterol and high hypertension which will have an impact on death. Then we continued the health check and activities together with a question and answer session for 15 minutes. Before ending the activity, a quiz was held again. Based on the quiz held at the end of the session for elderly participants, the results showed that there was an increase in knowledge about controlling the risk of hypertension in the elderly and its prevention after education. The elderly are able to answer the questions asked by the educational facilitator correctly.(Jasmine, & Maulida, 2022).

Hypertension or high blood pressure is a condition of increasing high blood pressure in the blood vessels which can cause further disease in our bodies. Hypertension is a non-communicable disease that can cause blood pressure to increase where systolic and diastolic are above normal limits. The signs of hypertension are dizziness, difficulty sleeping, shortness of breath, dizzy eyes, and others. (Leren& Puspa, 2022).

. Secondary hypertension is hypertension caused by a previous disease which can be caused by age/elderly. The diseases that trigger secondary hypertension include diseases of the kidneys, the adrenal glands (the glands that sit on top of the kidneys), the goiter (thyroid), effects of drugs, and due to blood vessel disorders, as well as in pregnancy (pre-eclampsia). While primary hypertension or also called essential hypertension is still not known the cause.(Leren& Puspa, 2022).

There are two risk factors that trigger hypertension, namely: a). uncontrollable factors. 1) Heredity About 70-80% of patients with essential hypertension have a family history of hypertension. If a history of hypertension is found in both parents, the suspicion of essential hypertension is greater. 2) Gender Hypertension affects men more easily than women. This is probably because men have many factors driving the occurrence of hypertension such as stress, fatigue, and uncontrolled eating. As for women, the increased risk occurs after menopause (around 45 years). 3) Age in general, hypertension attacks men over the age of

31 years, while women occurs after the age of 45 years (menopause). b. Factors that can be controlled 1) Obesity based on investigations, obesity is a characteristic of the hypertensive population. It has also been proven that this factor has a close relationship with the occurrence of hypertension in the future. Although the relationship between obesity and essential hypertension cannot be explained yet, investigations have shown that the pumping power of the heart and circulating blood volume in obese people with hypertension are higher than those with hypertension with normal weight. 2) Consumption of excess salt has restraining properties

water. Excessive salt consumption by itself will increase blood pressure. It is better to avoid using excessive salt or salted foods. That means stopping the use of salt altogether in food. However, the use of salt should be limited as needed. 3) Lack of exercise Isotonic sports, such as cycling, jogging, and regular aerobics can improve blood circulation so that it can lower blood pressure. People who are less active in sports generally tend to be overweight. Exercise can also reduce or prevent obesity as well as reduce salt intake into the body. Salt will come out of the body with sweat. 4) Smoking and hypertensive alcohol consumption are also stimulated by the presence of nicotine in cigarettes that a person inhales. Research results show that nicotine can increase blood clotting in blood vessels. In addition, nicotine can also cause calcification of the walls of blood vessels.

Cholesterol is a fat that is found in the bloodstream or is in body cells, which is actually needed for the formation of cell walls and as a raw material for several hormones, but if cholesterol levels in the blood are excessive, it will cause coronary heart disease and stroke. Most of the 80% of cholesterol in the body is produced naturally in the liver. Meanwhile, a small portion of about 20% of cholesterol comes from food consumed such as products derived from animals, such as meat, eggs and milk. Total cholesterol includes LDL cholesterol, HDL, and triglycerides (Husein et al, 2020). Total cholesterol levels are divided into three, namely normal <200 mg/dl, high threshold >200-239 mg/dl, and high >240 mg/dl If the cholesterol level is high, it can increase the risk of CHD, stroke, and poor blood circulation. Examination of total cholesterol in the blood is useful for detecting this risk (Ministry of Health, 2018). According to Rizal Fadli (2020) cholesterol is important for protecting every cell in the human body. Without cholesterol, the cell membranes in the body can easily break down. Cholesterol is also needed for the manufacture of steroid-based hormones, especially sex hormones, such as testosterone and progesterone.(Aidha, & Tarigan, 2019).

Cholesterol risk factors (Ministry of Health, 2018). Mentioned several risk factors for diseases caused by cholesterol, namely: a). Age and gender at the age of children until puberty usually cholesterol levels increase drastically to a certain level but will return to normal levels. Children who have abnormal cholesterol levels are usually because the child is obese. At the age of puberty / teenage boys usually have higher cholesterol levels than women. This is because the female hormone estrogen plays a role in keeping HDL levels high. However, after experiencing menopause, women will lose the hormone estrogen and cause HDL levels to fall and then LDL to increase. At the age of adulthood, cholesterol levels in the body will increase again, this is due to eating patterns and disturbances in the balance of the metabolic system. b) Genetic factors play an important role in determining blood cholesterol levels. If the family has a history of hypercholesterolemia, there is a possibility that other family members also have a risk of hypercholesterolemia as well, so that the risk of developing CHD will also be high. therefore to prevent hypercholesterolemia it is better to maintain a healthy lifestyle. c) Dietary saturated fat is the main cause of increased cholesterol in the blood, especially LDL. Therefore a healthy diet and reduce consumption of foods that contain saturated fat. If this type of food is continuously consumed in the long term, cholesterol levels in the body will increase.

Therefore balanced with foods rich in fiber to help block the absorption of saturated fat in the intestine. d) Bad lifestyle such as rarely moving or rarely exercising can increase the risk of high cholesterol. The habit of smoking and consuming alcohol is also a lifestyle that

should be avoided because it can increase cholesterol in the blood. e) The habit of smoking is no longer a taboo subject for Indonesian society. Many Indonesian people have the habit of smoking, even though smoking is one of the beginnings of the emergence of several dangerous diseases. Cigarettes are one of the things that can affect cholesterol levels in the blood. Cigarettes can reduce levels of good cholesterol *High Density Lipoprotein* (HDL) and causes the accumulation of fat in the walls of the arteries of the heart. The increase in total cholesterol levels can be affected by the duration and number of cigarettes consumed each day, the chemicals contained in cigarettes can increase LDL levels and reduce HDL levels (Minarti, 2014). The nicotine content in cigarettes can increase total cholesterol levels because nicotine causes increased secretion of catecholamines thereby increasing lipolysis. (Aidha, & Tarigan, 2019).

#### 4. CONCLUSION

Patients with hypertension if left unchecked will increase cholesterol which will be at risk of heart arteries throughout the body and will even attack other diseases that arise later. Some diseases that arise due to hypertension in the elderly, 1) Coronary heart disease 2). Heart failure 3). Brain blood vessel damage, stroke and death. 4). Kidney failure cannot function as it should. because benign nephrosclerosis occurs in hypertension that lasts a long time resulting in the deposition of the plasma fraction in the blood vessels due to the aging process. Malignant nephrosclerosis is an increase in diastolic pressure above 130 mmHg caused by impaired kidney function

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