Examination of Cholesterol Levels in the Community of Panyileukan District, Bandung City

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Abstract: Hypercholesterolemia is a term when total cholesterol, LDL, and triglyceride levels increase, while HDL decreases. The causes of high cholesterol today are poor diet, suboptimal physical activity, excessive caffeine consumption, and uncontrolled body weight. The purpose of this community service is to increase public knowledge about hypercholesterolemia, including its causes, symptoms, and treatment. In addition, cholesterol examinations were also carried out on 25 residents using the POCT method.

1. INTRODUCTION

The incidence of high cholesterol cases in West Java was reported at 32.8%. This prevalence increases with age. According to the Ministry of Health report, high cholesterol experienced by the 15-34 age group was 39.4%, the 35-59 age group was 52.9%, and the age group over 60 was 58.7%. This could be because as age increases, body function and metabolism decrease, in addition to other causes being reduced physical activity. Also according to gender, women experience more high cholesterol than men, namely 54.3% for women and 48% for men (Félix-Redondo et al., 2013; Kemenkes RI, 2017).

Increased cholesterol levels in the blood are also called hypercholesterolemia. The term hypercholesterolemia is said to someone who experiences increased levels of total cholesterol, LDL, and triglycerides and a decrease in HDL. This condition can occur due to genetic factors, irregular eating patterns, stress, a sedentary lifestyle, medication, and disorders of nephrotic syndrome and hypothyroidism (Huff et al., 2023).

Cholesterol screening is recommended for men and women over 35 years old, have diabetes, smokers, have a history of heart disease, obesity, and hypertension. Symptoms that commonly occur when cholesterol levels increase are fatigue, pain in the legs, tingling, pain in the nape and left chest, and xanthoma. Cholesterol screening can be done using POCT, this tool is easy to carry anywhere and easy to use (Ibrahim et al., 2023; Kiechle, 2021).

2. METHOD

A. Implementation of Activities

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B. Activity Steps

This activity begins with studying the conditions and situations of residents in Panyileukan District, Bandung City by distributing questionnaires covering questions about eating patterns and physical activity. The location chosen for this community service was based on a literature study of cholesterol incidence in Panyileukan District, Bandung City. The examination in this activity was carried out using a POCT device.
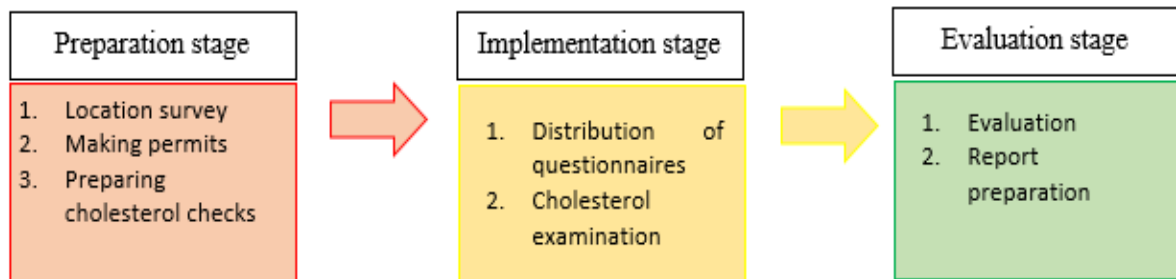

Figure 1. Stages of Community Service Activities

3. RESULTS

This community service activity is entitled Examination of Cholesterol Levels for Community in Panyileukan District, Bandung City which was carried out on Saturday, August 12, 2023 at 08.00-10.00. This activity began with the community filling out a questionnaire regarding their diet and daily activities which was then continued with a cholesterol level examination using the POCT method. Based on the questionnaire that had been filled out previously, several residents were at risk of experiencing increased cholesterol, this happened due to uncontrolled eating patterns, such as frequent consumption of fried foods, excess weight, less than optimal physical activity, and excessive coffee consumption.

Characteristics by Gender

Table 1. Number of Respondents by Gender

Gender	Amount	Percentage (%)
Man	13	52
Woman	12	48
Amount	**25**	**100%**

Based on Table 1. The number of residents who underwent cholesterol checks was 25 people, with 13 men (52%) and 12 women (48%).

Cholesterol Examination Results Based on Gender

Table 2. Cholesterol Examination Results Based on Gender

Gender	Check up result	Amount	Percentage (%)
Man	Good	9	69
	Slightly High	4	31
	High	-	-
	Amount	**13**	**100**
Woman	Good	4	33
	Slightly High	6	50
	High	2	17
	Amount	**12**	**100**

Table 2 shows the results of cholesterol examination with good results in men amounting to 9 people (69%) and slightly high as many as 4 people (31%), while examination in women with good results was shown as many as 4 people (33%), slightly high 6 people (50%), and high as many as 2 people (17%). The normal value of cholesterol according to the Ministry of Health is said to be good if the level is less than 200 mg/dL, slightly high if the level is in the range of 200-239 mg/dL, and high if the level is more than 240 mg/dL (Kemenkes RI, 2018).

Figure 2. Cholesterol examination in the community of Panyileukan District, Bandung City

4. DISCUSSION

This activity cholesterol examination activity was carried out in Panyileukan District, Bandung City based on the increasing condition of the community who are likely to experience hypercholesterolemia in productive age and the elderly. Based on the contents of the questionnaire that was previously given, it was found that the increase in cholesterol levels in this area was caused by various things, namely irregular eating patterns, excess body weight, less than optimal physical activity, and excessive coffee consumption.

High consumption of fried foods can cause the nutritional content in them to change so that food will lose water and absorb fat. So frying food will cause the loss of saturated fat and increase trans fat so that there is a higher risk of being overweight and increasing cholesterol levels. Lack of daily activity can cause increased cholesterol levels in the blood, this happens because the body is unable to produce HDL cholesterol and cannot balance bad cholesterol from blood vessels. Excessive coffee consumption can suppress the production of substances that can break down cholesterol, so that it can cause an increase in total cholesterol and LDL (Flores et al., 2021; Lim et al., 2020; Perrone et al., 2021).

Cholesterol is a component of the cell membrane structure that functions as a precursor for the synthesis of vitamin D, steroid hormones such as cortisol, aldosterone, and adrenal androgens, as well as testosterone, estrogen, and progesterone hormones. In addition, cholesterol is also a component of bile salts for the absorption of fat-soluble vitamins A, D, E, and K (Craig et al., 2023) (Huff et al., 2023). There are five types of lipoproteins in the body, namely chylomicrons, Very Low Density Lipoprotein (VLDL), Intermediate Density Lipoprotein (IDL), Low Density Lipoprotein (LDL), and High Density Lipoprotein (HDL). Each of these lipoprotein classes transports cholesterol and triglycerides to their respective parts. In general, the lipid profile consists of total cholesterol, HDL, LDL, and triglyceride (Lee & Siddiqui, 2023).

High cholesterol levels in the body can cause plaque buildup in the blood vessels, known as atherosclerosis. Blood vessels that are clogged with plaque will cause the blood vessels to not work efficiently, thus becoming a risk factor for heart attacks and coronary heart disease. Symptoms of increased cholesterol levels in the body can be characterized by chest pain on the left side, dizziness, lower leg pain, fatigue, and tingling (Bhatnagar et al., 2008; Ibrahim et al., 2023).

To lower cholesterol levels, various methods can be used, such as exercising regularly so that body weight is maintained, consuming foods low in saturated fat, avoiding tobacco products, not consuming excessive caffeine, and controlling blood pressure and blood

glucose. Currently, there are various types of drugs that can be used as cholesterol-lowering drugs, namely statins, ezetimibe, bile acid sequestrants. There are also natural ingredients or fruits that according to various studies can lower cholesterol levels such as avocados, tomatoes, apples, watermelons, limes, garlic, ginger, and turmeric (Agabiti Rosei & Salvetti, 2016; Feingold, 2024; Nofriandi et al., 2022; Okobi et al., 2023).

5. CONCLUSION

Community Service Activities in Panyileukan District, Bandung City were attended by 25 people with cholesterol results in men 9 people with good cholesterol levels (69%) and 4 people (31%) with slightly high information while in women good cholesterol levels were 4 people (33%), slightly high 6 people (50%), and high 2 people (17%). This service helps the community with information on the causes, symptoms, and treatment of cholesterol. It is hoped that this activity can continue to provide information on the importance of maintaining health.

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