SEDENTARY LIFESTYLE RELATIONSHIP WITH HYPERCHOLESTEROLEMIA IN *POSBINDU* PARTICIPANTS AT THE GRAHA PANDAWA YOGYAKARTA CITY HALL COMPLEX

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ABSTRACT

Hypercholesterolemia can increase the the risk of heart disease, stroke, poor blood circulation, and can trigger hypertension and diabetes mellitus. The research design is a quantitative study with a cross sectional approach using secondary data from all posbindu examinations. The research sample is posbindu participant data which is obtained in full according to the needs of variables studied. There is a relationship between consumption of fat and hypercholesterolemia with a P value of 0.002 (CI-1255-2647) with a value of RP 1.88, there is no relationship between fruits and vegetables consumption and hypercholesterolemia with a P value of 0.271 (CI 0.856-1.741) with a value of RP 1.221, there is a relationship between smooking and hypercholesterolemia with a P value of 0.0002 (CI=1.323-3192) with an RP value of 2.005 and there is no relationship between physical activity and hypercholesterolemia with a P value of 0.247 (CI:0.567-1.158) with an RP value of 0.810. It can be concluded that there is a significant relationship between fat consumption and smoking with hypercholesterolemia and there is no statistically significant relationship between fruit and vegetable consumption and physical activity with hypercholesterolemia.

Keywords : fat consumption, fruit & vegetable consumption, smoking, physical activity, hypercholesterolemia

INTRODUCTION

One of the health problems that is currently becoming a national and global concern is non-communicable diseases (NCDs). The increase in NCDs is closely related to the consumption of foods with high cholesterol levels (Prehanawan et al., 2022). High cholesterol is 56% of the main cause of CHD (Yuliantini et al., 2016). The prevalence of heart disease in Indonesia, according to doctor's diagnoses at all ages, is 1.5%, and DIY Province is in the top three highest percentages. One of the risk factors for coronary heart disease (CHD) is hypercholesterolemia (Shafira et al., 2020). Coronary heart disease occurs due to the narrowing or blockage of the coronary arteries due to the deposition of fat and cholesterol, so that blood flow to the heart becomes obstructed (Marlinda et al., 2020). Cholesterol is the cause of heart disease, stroke, peripheral artery disease, hypertension, and diabetes mellitus. Excessive levels of cholesterol in the blood will easily stick to the inner walls of blood vessels (Saputri & Novitasari, 2021).

Sedentary lifestyle refers to activities carried out outside sleep time, where physical activity is very minimal and results in a small number of calories burned, less than 1 metabolic equivalent. An inactive lifestyle has a serious impact on health. Poor blood ciculation and disturbed body metabolism can cause difficulty in breaking down fats and sugars, resulting in weight gain. Unhealthy eating habits (having high levels of saturated fat), lack of exercise or activity, excessive alcohol consumption, obesity, hypertension, high blood pressure, diabetes, hypothyroidism (an inactive thyroid gland), liver and kidney disease, and increasing age are some of the causes of high cholesterol. The sum of good cholesterol, bad cholesterol, and triglycerides found in a deciliter of blood is known as cholesterol. Cholesterol is said to be high if it is >240 mg/Dl; it is said to be somewhat high if it is 200–239 mg/DL; and it is said to be good if it is 200 mg/Dl. (Indonesian Ministry of Health, 2018) Hypercholesterolemia is a condition where cholesterol levels in the blood are ≥ 200 mg/dl (Fitri, 2019).

Behaviors like smoking are harmful to your health. The smoking habit damages blood vessel walls, and the nicotine in cigarette smoke stimulates the hormone adrenaline,

which changes fat metabolism. As a result, high HDL (high-density lipoprotein) cholesterol levels in the bloodstream decrease (Adeliana et al., 2016).

Cholesterol is a waxy, fat-like substance produced by the liver. Water cannot dissolve cholesterol, so cholesterol cannot move itself into the blood circulation in the body. Our bodies have two types of cholesterol: LDL (low-density lipoprotein) and HDL (high-density lipoprotein). Unhealthy lifestyles, such as consuming excessive fast food and not exercising, usually cause high cholesterol levels (Sholiha et al., 2021).

Cholesterol in the blood can be influenced by several factors, including genetic factors, gender, age, body mass index (BMI), physical activity, excessive coffee consumption, and smoking habits. The risk of increasing blood cholesterol levels is also influenced by diet. Increasing consumption of fruit and vegetables and reducing consumption of saturated fat can reduce cholesterol levels (Student et al., 2021). Smoking can increase total VLDL cholesterol, LDL, and triglyceride levels and decrease HDL levels (Student et al., 2021). People who adopt a diet that contains high levels of saturated fat are at risk of having high cholesterol levels (Kusuma et al., 2015).

Excessive fat consumption is the level of fat consumption of more than 67 grams per person per day. Consumption of vegetables and fruit can be considered insufficient if it is less than five portions a day. One serving of fruit can consist of half a large avocado, one star fruit, one sweet orange, ten duku fruits, and so on. One portion of vegetables, for example, five tablespoons of boiled spinach leaves, two tablespoons of boiled chayote, etc. A person who smokes or chews tobacco either every day or occasionally It is said that you are physically inactive if you do moderate or heavy physical activity for less than 150 minutes a week. Heavy physical activities include collecting water, climbing mountains, sprinting, chopping trees, hoeing, and so on. Moderate physical activity includes sweeping, mopping, cleaning furniture, walking, etc. (Indonesian Ministry of Health, 2017). Physical activity is known to affect blood cholesterol levels. Low-density lipoprotein (LDL) cholesterol

levels and high-density lipoprotein (HDL) cholesterol levels can be reduced through physical activity, which can consist of exercising for 30 minutes regularly, three to five days a week (Mutmainnah et al., 2023). Lifestyle or behavioral risks such as lack of physical activity and consumption of unhealthy food can trigger diseases related to cholesterol (Wijayanti et al., 2022).

Office employees have the habit of spending 6 hours every day behind a work desk and spending their rest time playing games, talking, watching TV, and playing social media; they are more silent at work. Employee health is very important for work productivity, but a lack of fitness and health can cause health problems, especially non-communicable diseases (Papertu Englardi & Cleodora, 2022). The Integrated Development Post (Posbindu) for Non-Communicable Diseases is an activity for early detection and monitoring of risk factors for major Non-Communicable Diseases which is carried out in an integrated, routine and periodic manner. Risk factors for non-communicable diseases (NCDs) include smoking, consumption of alcoholic beverages, unhealthy eating patterns, lack of physical activity, obesity, stress, hypertension, hyperglycemia, hypercholesterolemia and early follow-up on risk factors discovered through health counseling and immediate referral to a facility basic health services. Similar research was conducted by Shafira et al in 2019 who examined the relationship between fiber consumption and body mass index with hypercholesterolemia at an integrated development post (posbindu) for non-communicable diseases, Kulon Progo Regency, Yogyakarta(Shafira et al., 2020). The difference with this research is that apart from examining the relationship between fruit and vegetable consumption and hypercholesterolemia, researchers also examined the relationship between excessive fat consumption, smoking habits and physical activity on hypercholesterolemia. Apart from the differences in several variables studied, this research uses different populations and samples.

In connection with the importance of health for Yogyakarta City government employees to achieve work productivity, it is necessary to conduct research on the risk factors

for hypercholesterolemia in employees or office workers within the Yogyakarta City Government by analyzing data on risk factors for hypercholesterolemia obtained through *posbindu* activities for employees within the City Government Yogyakarta on November 14–17, 2022.

METHOD

Quantitative research is designed using a cross-sectional approach. The research was carried out by analyzing secondary data from the results of the *Posbindu* inspection on November 14–17, 2022. The *Posbindu* participants were employees who worked within the Yogyakarta City Government, both ASN and non-ASN. State Civil Apparatus or abbreviated as ASN Yogyakarta City Government is a profession as a civil servant and government employee with a work agreement who works for a Yogyakarta City government agency. Non-ASN employees of the Yogyakarta City Government are employees who are not civil servants and government employees with work agreements who work for government agencies in the City of Yogyakarta, including technical personnel, outsourcing personnel such as cleaning service officers, security guards and others. The research population consisted of 715 *Posbindu* participants from November 14–17, 2022. The health examination process for *Posbindu* participants involves health workers from the Yogyakarta City Health Service and community health centers, while the administration and recording process involves non-health workers. The author used secondary data from the *Posbindu* examination results obtained from the Yogyakarta City Health Service. This data was obtained after the *Posbindu* activities were completed. The data obtained is then analyzed according to research needs. The author is not directly involved in *Posbindu* activities.The sampling technique used a total sample with inclusion and exclusion criteria, and a total sample of 714 samples was obtained. The research sample consisted of data from *Posbindu* participants who had complete records of cholesterol examination results and risk factor data according to the variables studied in the research. *Posbindu* participants on November 14–17, 2022, filled in data, including a questionnaire containing cholesterol risk factors,

and carried out cholesterol checks with a digital cholesterol measuring device assisted by the *Posbindu* officer on duty. This research has received an ethical approval letter from the Research Ethics Committee of Ahmad Dahlan University with number 012307114 dated July 8, 2023.

RESULTS AND DISCUSSION

1. Characteristics of respondents participating in *Posbindu* on 14-17 November 2022 at Graha Pandawa, Yogyakarta City Hall Complex

Table.1 Characteristics of Respondents Based on Age and Gender Categories

No	Criteria	Amount	
		Frequency(f)	Percentage (%)
1	Age		
	Pre-elderly and ederly (<44 years)	201	28.2
	Adult Age (19-44 years)	513	71.8
	Total	714	100
2	Genders		
	Men	273	38.2
	Woman	441	61.8
	Total	714	100

Based on table 1 data, the majority of respondents were adults (19–44 years old), namely 513 (71.8%) respondents, and the majority of respondents were female, namely 441 (61.8%) respondents. 2. Risk factors for hypercholesterolemia in *Posbindu* participants at Grha Pandawa, Yogyakarta City Hall Complex, November 14–17, 2022

Table 2. Frequency distribution of respondents based on fat consumption, fruit and vegetable consumption, smoking habits, physical activity, and cholesterol levels

No	Criteria	Amount	
		Frequency (f)	(%)
1	Consume fat		
	Consume fat excessive fat consumption	140	19,6
	Do not consume excess fat	574	80,4
	Total	714	100
2	Consume fruit and vegetables		
	Less	308	43,1
	Just	408	56,9
	Total	714	100
3	Smoking habits		
	Smoking	66	9,2
	No Smoking	648	90,8
	Total	714	100
4	Physical Activity		
	Less	367	51,4

No	Criteria	Amount	
		Frequency (f)	(%)
	Simply	347	48,6
	Total	714	100
5	Cholesterol Levels		
	Hypercholesterolemia	104	14,6
	Normal	610	85,4
	Total	714	100

Based on Table 2, it shows that 574 (80.4%) respondents do not consume excess fat, 408 (56.9%) respondents consume enough fruit and vegetables, and 648 (90.8%) respondents do not have a smoking habit. 367 (51.4%) respondents did not do enough physical activity, and 610 (85.4%) respondents had normal cholesterol levels.

3. Relationship between fat consumption, fruit and vegetable consumption, smoking habits, and physical activity with hypercholesterolemia

Table 3: Bivariate analysis of variables: fat consumption, fruit and vegetable consumption, smoking habits, and physical activity with hypercholesterolemia.

No	Criteria	RP	CI	*P Value*
1	Fat consumption	1,822	1.255-2.647	0.002
2	Fruit and vegetable consumption	1.221	0.856-1.741	0.271
3	Smoking habit	2.055	1.323-3.192	0.002
4	Physical activity	0.810	0.567-1.158	0.247
	Jumlah			

Based on the results of statistical tests between the variables fat consumption and cholesterol, the RP value was 1.822, which means that the prevalence of hypercholesterolemia in respondents who consumed excess fat was 1.822 times greater than in respondents who did not consume excess fat. From statistical tests, the P value was 0.002 (CI 1.255–2.647), which means there is a significant relationship between fat consumption and hypercholesterolemia. Based on the results of statistical tests between the variables of fruit and vegetable consumption and hypercholesterolemia, it was found that the RP value was 1.221, which means that the prevalence of

hypercholesterolemia in respondents who did not consume enough fruit and vegetables was 1.221 times greater than in respondents who consumed enough fruit and vegetables. From statistical tests, the P value was 0.271 (CI: 0.856–1.741), which means there is no significant relationship between vegetable and fruit consumption and hypercholesterolemia.

Based on the results of statistical tests between the variables of smoking habits and cholesterol levels, the RP value was obtained at 2.055, which means that the prevalence of hypercholesterolemia in smoking respondents was 2.055 times greater than in non-smoking respondents. From statistical tests, the P value was 0.002 (1.323-3.192), which means there is a significant relationship between smoking habits and hypercholesterolemia. Based on the results of statistical tests between physical activity variables and cholesterol levels, the RP value was obtained at 0.810, which means that the prevalence of hypercholesterolemia in respondents who did not do enough physical activity was 0.810 times greater than in respondents who did enough physical activity. From statistical tests, the P value was 0.247 (0.567-1.158), which means there is no significant relationship between physical activity and hypercholesterolemia.

The results of this study support the research of Sufiati Bintanah and Muryati (2020), which states that there is a relationship between fat consumption and the incidence of hypercholesterolemia (p value = 0.016) with an OR of 5.96, which means that samples with high fat consumption have a tendency to suffer from hypercholesterolemia (Bintanah Muryati, 2010). This research is not in line with the results of research conducted by Wahidatul Laeni Sa'adah et al. (2018), which states that there is no relationship between cholesterol levels and fat consumption (Laeni et al., 2018). Research conducted by Laeni resulted in no relationship between fat consumption and cholesterol levels, most likely because the samples used were patients diagnosed with hypercholesterolemia who had previously received nutritional counseling

The results of this study are not in line with research conducted by

Emy Yuliantini et al. in 2015, which stated that the lower the fiber intake, the higher the ratio of total cholesterol/HDL levels (Yuliantini et al., 2016). This research is also not in line with research conducted by Nur Ifani et al (2020), which stated that fiber consumption is associated with hypercholesterolemia (p = 0.002) (Shafira et al., 2020). This research is in line with the results of research conducted by Novia Ardiyan Wahyu Pratiwi et al (2023), which concluded that there was no relationship between fiber intake, physical activity, and cholesterol levels in coronary heart patients at RSUD Dr. Moewardi Surakarta (Pratiwi et al., 2023). The absence of an explanation regarding the portion size of fiber food consumption in the questionnaire allows for bias in *posbindu* participants in filling out the questionnaire. The results of this study show that there is no relationship between the habit of consuming vegetables and fruit and hypercholesterolemia. This is possible because the questionnaire for the vegetable and fruit consumption category is not written clearly, so it is very likely that participants have misperceptions when filling out the questionnaire. In the questionnaire on the habit of consuming vegetables and fruit, no explanation was given regarding the minimum portion size of fruit and vegetables that must be consumed in a day.

This research supports research from Solivia Adeliana in 2020, which stated that smoking habits have an influence on total cholesterol levels. Cigarettes contain nicotine, can increase catecholamine secretion, and increase lipolysis, which can cause an increase in total cholesterol levels in the blood. To prevent an increase in total cholesterol levels in the blood, people can do things such as change their lifestyle and live a healthier lifestyle, such as not smoking (Khairunnisa, 2020).

This research is not in line with the research results of Suryaningsih Elisabeth Novinta Langgu (2019), who found that light physical activity had a significant correlation with hypercholesterolemia (Langgu, 2019). The results of this study are also not in line with the results of research by Dela Nastasia Yunita et al. (2022), which states that there is a significant relationship between physical activity and cholesterol

levels in the elderly at Posyandu Pisang in the working area of the Sobo Banyuwangi Health Center in 2022 (Yunita et al., 2022). This research supports research conducted by Selviana Anakonda et al. (2019), which stated that there was no relationship between sports activities and cholesterol levels in CHD patients at the Panembahan Senopati Bantul Heart Polyclinic (Anakonda et al., 2019). This research is also supported by the results of research by Sofiatun Ahnia et al. (2022), which states that there is no relationship between physical activity and cholesterol levels in pre-elderly and elderly people in the Losari Health Center working area (Ahnia, 2022). The absence of a detailed explanation of physical activity in the questionnaire allows for bias in *posbindu* participants in filling out the questionnaire. The results of this study show that there is no relationship between physical activity and hypercholesterolemia, this is possible because the questionnaire for the physical activity category is not written clearly, so it is very likely that participants have misperceptions when filling out the questionnaire. The questionnaire does not explain the minimum duration of physical activity that should be carried out.

The researcher's recommendation for the Yogyakarta City Health Service in implementing *Posbindu* is to provide a clear operational definition regarding the categories of fruit and vegetable consumption and physical activity in the next Posbindu participant questionnaire

CONCLUSION

In this study, it can be concluded that there is a significant relationship between fat consumption, smoking, and hypercholesterolemia in *Posbindu* participants at Grha Pandawa, Yogyakarta City Hall Complex, on November 14–17, 2022. And there is no statistically significant relationship between fruit and vegetable consumption and physical activity with hypercholesterolemia in *Posbindu* participants at Grha Pandawa, Yogyakarta City Hall Complex, November 14–17, 2022.

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