Available online at: http://journal.unj.ac.id/unj/index.php/gjik
Gladi: Jurnal Ilmu Keolahragaan 15 (04) 2024, 493-499
Permalink/DOI: https://doi.org/10.21009/GJIK.154.06

THE CORRELATION OF AGE AND VISCERAL FAT WITH TOTAL CHOLESTEROL

Yuliasih[1], Fatah Nurdin[2], Albert Wolter Aridan Tangkudung[3], Chandra[4]

[1-4]Sports Science Study Program, State University of Jakarta, Jl. Pemuda No.10 Rawamangun Jakarta, Indonesia
Corresponding Author. E-mail: yuliasih@unj.ac.id

(Submission Track: Received: 28-11-2024, Final Revision: 29-12-2024, Available Online: 31-12-2024)

Abstract: This study aims to determine the correlation between age, and visceral fat with total cholesterol. Because even though someone may have a healthy body weight, high visceral fat can be a risk factor for health problems. This research is a type of analytical research with a cross-sectional approach.Planning The data collection technique was by asking for age, measuring visceral fat with mi fit (mi body scale), and measuring total cholesterol with a cholesterol meter. For the population of RPTRA visitors in East Jakarta, the sampling technique with accidental sampling is based on chance. The result of this study is that age (X_1) to total cholesterol (Y) correlates to 0.290. While visceral fat (X_2) to total cholesterol (Y) correlates to 0.432, there is a moderate correlation between visceral fat and total cholesterol. So the conclusion is that age does not affect total cholesterol or visceral fat. Some of the factors that affect the increase in cholesterol are diet and activity.

Keywords: age, visceral fat, total cholesterol

INTRODUCTION

Improving people's welfare, especially in urban areas, makes awareness of eating nutritious food even better. But sometimes this makes food consumption excessive, as well as technological advances that make physical activity decrease, triggering an increase in overweight which is popularly known as obesity. *The World Health Organization* (WHO) states that obesity is one of the 10 conditions at risk worldwide and one of the 5 conditions at risk in developing countries. Worldwide, more than 1 billion adults are overweight. It is likely that in the future obesity epidemics will hit countries smaller than the population of Western countries, but have a higher visceral fat composition, which is one of the important factors in the rise of cardiovascular diseases in Asia. Meanwhile, in Indonesia it is estimated that more than 17.5% are overweight and 4.7% are obese (Budiono, 2007) .

It's important to remember that overall weight isn't the only indicator of health. Although a person may have a healthy weight, high visceral fat, can be a risk factor for health disorders. Visceral fat, commonly called abdominal fat, is a type of fat found in the abdominal cavity, especially around internal organs such as the liver, pancreas, and intestines. The buildup of visceral fat can lead to serious diseases. So, managing and reducing visceral fat levels is an important step to maintain a healthy body.

Visceral fat makes the belly stand out or makes the body shape resemble that of an apple. This type of fat is very harmful to the body because it produces chemicals and hormones that can be toxic to the body. Visceral fat produces substances that are more toxic than subcutaneous fat, making it more harmful. Even in thin people, having visceral fat carries various health risks.

Unhealthy diet, lack of sleep, lack of physical activity, genetics, age, stress and hormones are factors that affect the accumulation of visceral fat. Fat is stored when you consume too many calories and do too little physical activity. Some people tend to store fat around their abdomen rather than in the hips because of their genes. In women, increasing age can change where the body stores fat. Especially after menopause, women's muscle mass decreases and their fat increases. As women age, they tend to develop more visceral fat in the abdomen, even if they

don't gain weight. In men, age and genetics also play a role in developing visceral fat. Drinking alcohol can also cause more belly fat in men. As we age, there tends to be an increase in visceral fat because the body's metabolism can slow down.

It should be noted that normal cholesterol levels in the body are 40-60 mg/dL for good cholesterol (HDL) and less than 100 mg/dL for bad cholesterol (LDL). Everyone needs to keep bad cholesterol within the normal threshold or no more than 100-129 mg/dL. Increased cholesterol levels are influenced by various factors, including consuming fatty and sweet foods. Fatty foods can increase cholesterol levels if consumed in excess. Excess saturated fat or bad fat in the body can cause narrowing of blood vessels and if left unchecked, it can cause health problems, one of which is coronary heart disease.

The next factor is increasing age. The cause of high cholesterol is not always from food but also due to aging. People over the age of 45 years are at greater risk of developing high cholesterol. This happens because the body's function and metabolism decline with age. An unhealthy lifestyle and genetic factors are also factors that trigger high cholesterol.

A certain amount of fat is needed by our body as a source of energy, supports brain function, helps absorb vitamins, supports hormone production and cell growth. However, if the amount of fat is excessive, especially in the abdominal cavity, it will be harmful to our body. Many do not know visceral fat or visceral fat.

Visceral fat, commonly called abdominal fat, is a type of fat found in the abdominal cavity, especially around internal organs such as the liver, pancreas, and intestines. Visceral fat buildup can lead to serious diseases. (Sari Purnama Hidayat, 2023) Visceral fat is fat stored in the adipose tissue of the abdominal part of the body (the area of the abdominal cavity), often referred to as organ fat or intra-abdominal fat. The accumulated visceral fat attaches to the vital organs within the abdominal cavity. Fat stored in adipose tissue (a collection of adipocyte cells or tissues that function to store fat) usually takes the form of triglycerides. The accumulation of high amounts of visceral fat causes central obesity and the occurrence of metabolic syndrome

which is a risk of degenerative diseases (Wahyuni et al., n.d.).

In contrast to *subcutaneous fat* which is located under the skin and can be easily found around the arms, legs and abdomen which is easily felt. Visceral fat is located in the abdominal cavity and is directly attached or envelops vital organs such as the liver, stomach and intestines and it is not uncommon to find arteries that can cause blockages in blood vessels.

An unhealthy diet such as frequently consuming fatty and high-sugar foods without regular exercise can increase the accumulation of visceral fat in the body. In addition, continuous stress is also one of the factors that cause the accumulation of visceral fat. Total cholesterol levels in the blood greatly affect the formation of plaque on the walls of blood vessels. Cholesterol levels that exceed the normal limit will trigger the atherosclerosis process. Atherosclerosis is a clinical manifestation of Coronary Heart Disease (Yoeantafara & Martini, 2017).

High cholesterol levels in the blood are a serious problem because they are one of the risk factors for various non-communicable diseases such as heart, stroke, and diabetes mellitus. Based on the studies that have been carried out, the risk of atherosclerosis, which is the cause of CHD, will increase if the total cholesterol level in the blood exceeds the normal limit (Annies, 2015).

Excess cholesterol levels in the blood will easily stick to the inner wall of blood vessels. Excess LDL through the oxidation process will form a clot which if the clot gets bigger it will form a lump that will result in narrowing of the blood vessels. This process is usually called atherosclerosis (Annies, 2015).

Fiber consumption can help lower the absorption of fats and cholesterol in the blood. Several studies have shown that a fiber diet by consuming foods high in peas, including kidney beans, can reduce cholesterol levels in the blood by up to 10% in people with hypercholesterolemia. In addition, water-soluble fiber fermented in the colon will produce short-chain fatty acids that can deplete liver cholesterol synthesis (Khomsan A., 2007).

METHOD

This research is a type of analytical research with a cross-sectional approach. This study was conducted on 29 visitors to RPTRA in East Jakarta within 3 weeks with a

sampling technique with *an accidental sampling* technique, which is a sample determination technique based on chance so that researchers can take samples from anyone they meet without prior (Sugiyono, 2017). Planning The data collection technique was by asking for age, measuring visceral fat with mi fit (mi body scale), and measuring total cholesterol with a cholesterol meter. Then after the data is collected, the data is processed using the JASP application.

RESULT AND DISCUSSION

From the data that has been obtained, it can be seen that the description of the data from the measurement results presented by looking at the minimum value, maximum value, average and standard deviation of each variable as follows:

Table 1. Description of Research Results Data

Size	Value		
	Age	**Visceral fat**	**Total cholesterol**
Lowest Rate	21	1	31
Highest Scores	61	16	215
Average	42,55	7,14	131,59
Standard Deviation	10,35	4,05	48,17

Source: Data Processing Results

In Table 1 above, the average of age can be seen which is 42.55; the lowest score is 21, the highest score is 61 and the standard deviation is 10.35. The visceral fat variable had the highest value of 16 and the lowest value of 1, an average of 7.14, and a standard deviation of 4.05. Total cholesterol had the highest value of 215, the lowest value of 31, an average of 131.59, and a standard deviation of 48.17. To see the relationship between age and visceral fat with total cholesterol, see Table 2 below:

Table 2. Correlation between Exercise Activity (X1) and Cholesterol (Y) and Diet (X2) and Cholesterol (Y)

	Person's r	P

Age – Visceral Fat	-0,176	0,362
Age – Total Cholesterol	-0,203	0,290
Visceral fat – Total cholesterol	0,152	0,432

Source: Data Processing Results

Based on the table above, it can be seen that the p-value in the age variable is 0.290 or >0.05 so that the correlation between age and total cholesterol has a very weak relationship. This means that age does not affect total cholesterol levels.

Meanwhile, the p-value for the visceral fat variable was 0.432 or >0.05 so that the correlation between visceral fat and total cholesterol had a moderate relationship. This means that visceral fat contributes to increasing total cholesterol levels.

Based on research from (Lusiana et al., 2019) They found that there is no relationship between age and total cholesterol. As we get older, we need exercise and exercise to prevent non-communicable diseases due to body functions that will also decrease. There needs to be an effort to prevent or promote behavioral changes in healthy lifestyles to improve the quality of life as a continuous effort to control degenerative diseases.

Another study conducted by Yang said that there was no significant relationship between age and total cholesterol (Adhiyani, 2013).

In contrast to the two studies conducted above which are in line with the results of this study. There is another opinion from the research conducted by those who say that there is a relationship between age and cholesterol levels of people in Bandar Lampung City, either in the old, adult or adolescent age category (Saputri & Novitasari, 2021).

ACKNOWLEDGMENTS (if any)

The researcher would like to thank the Rector of the State University of Jakarta, the Dean of the Faculty of Sports Sciences, and all those involved in this research so that this research was completed properly and on time.

REFERENCES

Adhiyani, C. (2013). Hubungan usia dan konsumsi makanan berlemak dengan kolesterol total pada lansia Kelurahan Serengan Surakarta. *Jurnal Farmasi (Journal of Pharmacy)*, *2*(1), 12.

Annies. (2015). *Kolesterol dan Penyakit Jantung Koroner* . Ar-Ruzz Media.

Budiono, B. (2007). Sindroma Metabolik dan Penyakit kardiovaskuler. *Fakultas Kedokteran Universitas Hasanudin. Penerbit UNHAS Pers.* .

Khomsan A. (2007). *Sehat dengan Makanan Berkhasiat* . PT Kompas Media Nusantara.

Lusiana, N., Widayanti, L. P., Mustika, I., & Andiarna, F. (2019). Korelasi usia dengan indeks massa tubuh, tekanan darah sistol-diastol, kadar glukosa, kolesterol, dan asam urat. *Journal of Health Science and Prevention*, *3*(2), 101–108.

Saputri, D. A., & Novitasari, A. (2021). Hubungan Usia dengan kadar kolesterol masyarakat di kota bandar lampung. *BIOEDUKASI: Jurnal Pendidikan Biologi*, *12*(2), 238–243.