

Apple Juice to Reduce Total Cholesterol Level in Women Over 40 Years Old

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ABSTRACT

Cholesterol is a fatty substance in the human body's cells. A person who has high cholesterol levels may develop coronary heart disease (CHD), which increases their risk of developing atherosclerosis. Due to pregnancy, hormonal, and menopausal reasons, women over the age of 40 are more likely to have elevated cholesterol levels than younger women. Apples' fiber content has been shown to reduce blood cholesterol levels. This study aimed to determine the effect of apple juice on cholesterol levels. A pretest-posttest group design with a pre-experimental methodology was used in this study. 38 women between the ages of 40 and 66 made up the sample of this study. Every morning for seven days, respondents received apple juice. The study was carried out in August 2020. According to this study, apple juice has a positive effect in lowering total cholesterol levels. Prior to receiving apple juice, the mean total cholesterol level was 226.68 17.230 mg/dL, while the mean cholesterol level after apple juice treatment was 184.39 13.771 mg/dL. Total cholesterol levels before and after receiving apple juice are known to differ by 42.29 mg/dL. The Paired T-Test analysis of the data revealed a value of $P = 0.000$ ($P < 0.05$), indicating that there was an effect of giving apple juice on lowering respondents' total cholesterol levels.

Keywords:
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INTRODUCTION

Cholesterol is a complex fat compound that aids in the building of cell walls in the body. Cell walls require cholesterol to create hormones and bile acids, which aid in fat digestion. When cholesterol levels are excessively high, there are a number of risks that might result. (Mahatidanar, 2015). Hypercholesterolemia is an elevated level of cholesterol in the blood. (Guyton & Hall, 2008). Women are more likely to have high cholesterol levels as they age, especially once they reach the age of 40. (Ujjani, 2015). Yani (2015) states that efforts to address hypercholesterolemia can be made by prevention, treatment, or pharmacological administration. Bile acid sequestrants, also known as resins, hydroxymethylglutaryl-coenzyme A reductase (statins), fibric acid derivatives, and nicotinic acid are all frequently prescribed medications. (Gotto, 2001).

Herbal extracts can be administered in addition to medications to lower cholesterol levels. Apples are one type of fruits that can reduce cholesterol levels. According to Wijoyo (2009), the pectin included in apples acts swiftly, thus when someone drinks apple juice, the fat-removal process begins right away. This fruit has a significant fiber and phytochemical content, especially phenolics and flavonoids.

According to data collected from residents in RT 06 RW 02, Pagejungan Village, Brebes Subdistrict, Brebes Regency, 38 women over 40 had a history of having high cholesterol (> 200 mg/dl). Direct interviews with residents who would later become respondents were used to gather the data. Based on this preliminary study, researchers wanted to find out how apple juice affected cholesterol levels in female respondents over 40 in Pagejungan Village.

The novelty of this study is consistent with the findings of Izzati's (2018) research, which found that giving apple juice can lower high cholesterol levels in the body. According to Lailiya's research from 2011, there was a correlation between giving apple juice to elderly

hypercholesterolemia patients and lowering cholesterol levels at PSTW Yogyakarta, with a significance value of $P=0.000$ ($P<0.005$). Rome Beauty apples can lower total cholesterol levels.

MATERIALS AND METHODS

A quantitative pre-experimental group design with a pretest-posttest design was used for this study. The study was carried out in August 2020 in Pagejungan Village, RT 06 RW 02, Brebes Subdistrict, Brebes Regency. Independent variables and dependent variables made up the study variables. The independent variable was giving apple juice whereas the dependent variable was total cholesterol levels. The population in this study were women over 40 years old in Pagejungan Village, RT 06 RW 02, Brebes Subdistrict, Brebes Regency. 38 women over the age of 40 with cholesterol levels greater than 200 mg/dL made up the sample of this study. Total sampling was used to collect samples.

The primary data used in this research were those from an examination of cholesterol levels in women over 40 in Pagejungan Village, Brebes Subdistrict, Brebes Regency. Shapiro-Wilk analysis was used to assess the normality of the data in this research. The normality test results for the pretest and posttest were $P = 0.059$ and $P = 0.057$, respectively, indicating that the data was normally distributed and that the Paired T-Test should be used to further analyze it.

RESULTS AND DISCUSSION

Age Frequency Distribution

According to the research findings, all respondents were between the ages of 40 and 66. In all, 16 respondents (42.1%) were between the ages of 46 and 55, followed by 15 respondents (39.5%) between the ages of 40 and 45, six respondents (15.8%) between the ages of 56 and 65, and one respondent (2.6%) over the age of 65 (Table 1). According to Ujjani's (2015) research, age is a risk factor for escalating total cholesterol levels. Total cholesterol levels also rise as we age as a result of decreasing estrogen production and

activity. Women over the age of 40 will lose 30 to 50% of their entire muscular mass. Low mobility accelerates the process by which body fat replaces muscular mass, which happens naturally as metabolism in the body slows down. (Herlina, 2010).

Gender Frequency Distribution

According to the findings of the study on the frequency distribution of the respondents' sexes, there were 38 respondents, and 100% of them were women and zero (0.0%) respondents were men (Table 2). Women are more likely to have high cholesterol for a variety of reasons, such as menopause, pregnancy, and hormonal variables. (Sihadi, 2005).

The findings of this study are consistent with those of Ujiani's (2015) research, which found that women are more likely than men to experience elevated total cholesterol levels. Males will have a large drop in cholesterol levels during adolescence

as a result of the effect of the hormone testosterone which has increased over time.

Body Weight Frequency Distribution

The findings of this study revealed that 38 of the respondents had excessive cholesterol levels and ranged in weight from 43 to 79 kg (Table 3). The majority of respondents when compared to other body weights were determined to be 5 individuals weighing 70 kg (or 13.2%). The respondent's bodyweight should be taken into consideration when determining the appropriate dose of apple juice to serve. According to Wira's (2006) research, the body and total cholesterol levels are related. Hypercholesterolemia is one of the metabolic illnesses that can result from the high calorie intake from food. Compared to someone with a normal weight, someone who is over is at danger of having higher cholesterol levels. (Thais, 2011).

Table 1. Age Frequency Distribution of Female Respondents aged over 40 Years old

Age	Frequency	%	Mean (years)	Median
40-45 years old	15	39.5		
46-55 years old	16	42.1		
56-65 years old	6	15.8	48.66 ± 6.767	47.00 ± 6.767
>65 years old	1	2.6		
Total	38	100.0		

Table 2. Frequency Distribution of Female Respondents aged over 40 Years old

Gender	Frequency	%	Mean	Median
Female	38	100.0		
Total	38	100.0	2.00±0.000	2.00±0.000

Table 3. Frequency Distribution of Body Weight of Female Respondents Over 40 Years Old

Weight (kg)	Frequency	%	Average (year old)	Median
41-50	7	18.5		
51-60	15	39.6	60.45 ± 9.258	59.00 ± 9.258
61-70	12	31.7		
71-80	4	10.6		
Total	38	100.0		

Frequency Distribution Test for Normality using Shapiro-Wilk Test.

It can be revealed from the research findings that total cholesterol levels were normally distributed because the results of the Shapiro-Wilk test on the results before giving apple juice were $P = 0.059$ ($P > 0.05$) and the results of the apple juice experiment were $P = 0.057$ ($P > 0.05$). The analysis was then continued with the Paired T-Test (Table 4).

Significance Analysis with Paired T-Test

The findings the study show that a Paired T-Test with a total of 38 respondents was used for the data normality test. In this study, the mean value of participants before giving apple juice was 226.68 mg/dL, while the median value was 224.50 mg/dL, the minimum value was 202 mg/dL, the maximum value was 265 mg/dL, and the standard deviation was 17.230 mg/dL. While the median value after receiving apple juice was 182.50 mg/dL, the minimum value was 163 mg/dL, and the maximum value was 225 mg/dL, with a standard deviation of 13.771 mg/dL, the mean value was 184.39 mg/dL. H_0 was rejected because the Paired T-Test results revealed a $p < 0.05$ (0.000), indicating that there was an impact of giving juice on reducing total cholesterol levels (Table 5).

Beef, fried chicken, mutton, tilapia fish, chicken eggs, duck eggs, and other processed foods like lard, butter, fried foods, coconut milk, chocolate bars, ice cream, and milk are some examples of high-fat foods. Nurrahmani (2012)

states that consuming meals high in saturated fat on a regular basis increases the chance of developing high cholesterol. Blood LDL cholesterol levels might rise as a result of saturated fat in the body. According to Dalimartha (2000), the community has reportedly employed a variety of medications to treat hypercholesterolemia. One of them is contemporary medicine, which makes use of pharmaceuticals produced in factories, such as the statin-class medication simvastatin. This modern medicine is harmful and has side effects that have been documented to impair the body's organs.

The aim of increasing physical activity is to achieve an energy balance. It can also lower the risk of metabolic syndrome and Coronary Heart Disease (CHD). Increased exercise can lower triglyceride and LDL levels while raising HDL (Yani, 2015). In this study, participants were advised to be fit and free from illness in order to engage in physical activity that would lower their body's overall cholesterol levels.

CONCLUSION

According to this study, it is concluded that apple juice has a positive effect in lowering total cholesterol levels. Prior to receiving apple juice, respondents had an average total cholesterol level of 226.68 mg/dl with a standard deviation of 17.230 mg/dl; this value decreased to 184.39 mg/dl with an SD of 13.771 mg/dl after receiving apple juice.

Table 4. Data Normality Test Using Shapiro-Wilk Test

Variables	Shapiro-Wilk	
	frequency	Sig
Pretest Result	38	0,059
Posttest Result	38	0,057

Table 5. Data Results Using Paired T-Test

	Mean	Median	SD	Min	Max	Nilai P
Before	226.68	224.50	17.230	202	265	0.000
After	184.39	182.50	13.771	163	225	

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