



Wet Cupping Therapy to Reduce Total Cholesterol Levels in People with Diabetes

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ARTICLE INFORMATION

Received: October, 25, 2021

Revised: January, 31, 2022

Available online: February 2022

KEYWORDS

Cupping Therapy, Cholesterol, Diabetes Mellitus

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A B S T R A C T

Increased blood sugar levels in diabetes can cause escalated blood cholesterol levels, causing atherosclerosis. Managing high cholesterol levels in people with diabetes (PwD) can prevent complications. One non-pharmacological therapy for PwD with high cholesterol levels is cupping therapy. This paper aims to determine the effect of wet cupping therapy on lowering total cholesterol levels among people with diabetes in the work area of Mantang Public Health Center. This research was quasi-experiment with descriptive-analytical and one group pre-test and post-test design. It was conducted from April to June 2019 in 3 villages at Batukliang District. In addition, the population was people with diabetes having high cholesterol levels, totaling 350 patients. The sample in this study was 16 respondents using a simple random sampling technique. The independent variable was wet cupping therapy, while the dependent variable was total cholesterol levels. The instruments were a questionnaire and Easy Touch blood cholesterol test. In addition, data analysis was univariate and bivariate analysis using paired t-test. There were decreased total cholesterol levels before and after cupping therapy. Before cupping, the average total cholesterol level was 313.94, while after cupping was 206.31, with an average decrease in total cholesterol levels of 107.63. In addition, bivariate test results obtained $p = 0.000$ ($\alpha < 0,05$). Thus, there was a significant difference in total cholesterol levels before and after cupping therapy in people with diabetes. In conclusion, wet cupping therapy can reduce total cholesterol levels in people with diabetes having high cholesterol levels.

INTRODUCTION

Non-communicable diseases (NCDs) are public health problems in various countries. The increase in NCDs is often triggered by multiple aspects such as an unhealthy lifestyle. NCDs is a chronic disease and not transmittable from one person to another. One NCDs that is very life-threatening is diabetes (Kementerian Kesehatan RI, 2013). Diabetes is a disorder characterized by increased blood glucose levels. In 2021, Indonesia had around 19.46 million people with diabetes (PwD). These data make Indonesia the only one in Southeast Asia included in the top 10 countries with the most cases of people with diabetes (IDF, 2021).

Basic health research (2013) showed that West Nusa Tenggara (WNT) Province was in 18th place out of 33 provinces with high diabetes incidence in Indonesia. Diabetes incidence was 28,825 people, or about 1.3 of the total population in WNT. One of the regencies in WNT is Central Lombok. There was a 4.4% increased diabetes incidence from 2016 to 2017 in Central Lombok – from 2,943 in 2016 to 3,074 in 2017. In addition, in 2019, Central Lombok had grown cases of diabetes compared to 2018, which was 5,802 to 12,886 (Dinas Kesehatan Lombok Tengah, 2017).

Mantang Public Health Center (PHC) has increased diabetes prevalence, which continues to grow every year in the district of Central Lombok. In Mantang PHC, diabetes is the 3rd highest disease – 350 people

in 2017. A preliminary study revealed that the causes of this increase were lifestyle and unhealthy eating patterns in the community. As a result, many PwD had various complications, one of the complications was high cholesterol levels. In addition, other predisposing factors are age, gender, occupation, and education level (Smeltzer en Bare, 2015).

Diabetes lowers good cholesterol levels or high-density lipoprotein (HDL). In addition, it raises triglycerides and harmful cholesterol levels or low-density lipoprotein (LDL). Furthermore, diabetic dyslipidemia is a condition with Low HDL, high triglycerides, and LGL levels. It potentially increases heart disease and stroke risk. Individuals with diabetes experience an insulin deficiency. Insulin hormone has a role in entering blood sugar into cells in the body. Insulin deficiency impacts blood sugar cannot enter cells and accumulates in the blood. Furthermore, high blood sugar causes decreased HDL and increased LDL levels.

Insulin is an essential hormone for metabolizing sugar and cholesterol (fat) in the blood. It functions as glucose transportation from blood to the body's cells. However, releasing insulin hormone does not only cause blood sugar to be stored, but LDL levels also rise (Guyton en Hall, 2013). When the body has stored all glucose as needed, but there is still a lot of glucose circulating in the bloodstream, insulin will help convert that glucose into triglycerides in the body. As a result, there are increased triglycerides. Blood sugar, cholesterol, and triglycerides are interconnected. Therefore, PwD with high blood sugar levels should be more aware of this condition.

Various normolipidemic drugs is a pharmacological cholesterol treatment. It includes statin drugs, fibrates, resins, selective cholesterol absorption inhibitors, and nicotinic acid. The pharmacological treatment depends on the patient's considerations, including costs, demographic characteristics, and quality of life. Unfortunately, pharmacological cholesterol treatment is ineffective because almost 70% of individuals with cholesterol in Indonesia fail to achieve the cholesterol level target according to treatment guidelines. Besides that, the drug's price is relatively high. In addition, recurrence often occurs and causes side effects such as ulcers, muscle pain, and headaches. So, non-pharmacological therapy is crucial to reduce cholesterol levels, one of which is cupping therapy (Price en Wilson, 2014).

Wet cupping therapy is an activity of sucking blood with a tube-like device. The therapist then removes the cup and uses a small scalpel to make light, tiny cuts on the skin. Next, they do a second suction to draw out a small quantity of blood. Cupping therapy is a complementary and alternative therapy taught directly and recommended by the Prophet Muhammad. The negative pressure in cupping therapy generated from suctioning causes passive congestion of local tissue on the superficial surface and increases blood vessel dilation (Al-Bedah *et al.*, 2019). Moreover, cupping therapy has an anti-inflammatory effect; it decreases serum triglycerides, phospholipids, and LDL levels; it stimulates the

lipolysis process of fat tissue and regulates blood glucose levels to normal. Furthermore, cupping therapy disposes of excess cholesterol plaque in the blood to improve blood circulation (Al-Tabakha *et al.*, 2018). Prophet Muhammad SAW once said, "Healing can be obtained in 3 ways: drinking honey, cupping therapy, and hot iron. I do not encourage my people to use a hot iron" (HR. Bukhari-Muslim). Another hadith narrated by at-Tirmidzi states that Prophet Muhammad said, "I did not walk past a group of angels on Night Journey, but they all told me, "O Muhammad you must cup." Cupping therapy is easy to do without side effects compared to other treatments. This paper aims to determine the effect of wet cupping therapy on lowering total cholesterol levels among people with diabetes in the work area of Mantang PHC.

METHOD

This research was quasi-experiment with descriptive-analytical and one group pre-test and post-test design. It was conducted from April to June 2019 in 3 villages at Batukliang District. In addition, the population was people with diabetes having high total cholesterol levels, totaling 350 patients. The sample in this study was 16 respondents using a simple random sampling technique. The independent variable was wet cupping therapy, while the dependent variable was total cholesterol levels. The instruments were a questionnaire containing questions to respondents related to the characteristics of respondents (age, gender, body mass index, smoking status, alcohol consumption, and period of diabetes) and Easy Touch blood cholesterol test. Data analysis was univariate and bivariate analysis using paired t-test.

RESULTS

Table 1 contains the characteristics of respondents in this study. In addition, table 2 reveals total cholesterol levels before and after cupping therapy.

Table. 1 The Characteristics of Respondents

	Characteristics	Frequency	Percentage (%)
Age	35-45 Years old	6	37.5
	46-55 Years old	6	37.5
	56-65 Years old	4	25
Gender	Male	2	12.5
	Female	14	87.5
Body Mass Index	Underweight	0	0
	Healthy Weight	4	25
	Overweight	12	75
	Stage I Obesity	0	0
	Stage II Obesity	0	0

Period of diabetes	1-5 Years old	16	100
	> 5 Years old	0	0
Smoking Status	Smoke	2	12.5
	Never Smoked	14	87.5
	Total	16	100

Table 1 shows most respondents are 35-45 years old (37.5%) and 46-55 years old (37.5%). In addition, they are female (87.5%), overweight (75%), and never smoked (87.5%). Furthermore, their periods of diabetes are one to five years.

Table. 2 The Effect of Cupping Therapy on Reducing Total Cholesterol Levels in People with Diabetes in Mantang Public Health Center, Central Lombok

Total Cholesterol Levels	N	Mean	Sd	Min-max	Dif. mean	p
Pre-test	16	313.94	49.57	240-385	107.63	0.000
Post-test	16	206.31	40.19	149-283		

Table 2 indicates decreased total cholesterol levels before and after cupping therapy. Before cupping, the average total cholesterol level is 313.94, while after cupping is 206.31, with an average decrease in total cholesterol levels of 107.63. In addition, bivariate test results obtain $p = 0.000$ ($\alpha < 0,05$). Thus, there was a significant difference in total cholesterol levels before and after cupping therapy in people with diabetes.

DISCUSSION

In this study, six respondents had high total cholesterol levels, and ten people were very high before wet cupping therapy. The causes of high cholesterol levels are controllable factors (daily diet) and uncontrollable factors (the liver function to produce cholesterol). Cholesterol can also increase due to the expenditure of too little cholesterol into the colon through bile acids. In addition, genetic factors can affect excessive cholesterol production. Furthermore, fat intake had a significant effect on cholesterol levels ($p < 0.01$) (Sharaf, 2013).

Meanwhile, all respondents experienced decreased total cholesterol levels after wet cupping therapy. Cupping therapy can cleanse blood circulation and has autoregulatory effects. According to Zhou *et al.* (2012), the mechanism of cupping therapy on reducing cholesterol levels is through the opening of the skin barrier to increase the skin's excretory function. The mechanism also includes the release of lipids and hydrophobic substances. One of the hydrophobic substances is lipoprotein, and one of the main components in lipoprotein is cholesterol. In this paper, cholesterol excretion was caused by a thin incision on the skin and suctioning in wet cupping therapy so that total cholesterol levels could decrease.

Our findings revealed decreased total cholesterol levels before and after wet cupping therapy in PwD. It is in line with a study conducted by (Mahmoud HS, 2013). The study found that cupping could reduce

average cholesterol levels with a decrease of 30.78 mg/dl. An investigation conducted by Hasan, Alam en Irshad (2014) also showed a reduction of cholesterol levels by 37 mg/dl after cupping therapy. A similar study conducted in Syria stated that individuals with high cholesterol levels experienced decreased triglyceride levels in 75.5% of cases and had normal LDL levels in 93.75% (Sharaf, 2013).

Wet cupping therapy also can increase body health status. A previous study revealed that it significantly reduced FBS (fasting blood sugar), serum urea, and serum creatinine at one, three, and four months compared to the base value. In addition, serum uric acid and SBP (spontaneous bacterial peritonitis) significantly decreased in one and four months (Husain *et al.*, 2020). Thus, wet cupping therapy could be an effective complementary medicine in disease prevention. It allows small and thin wounds on the skin's surface.

Furthermore, suction has a function as an artificial excretion through the skin. This process is an analogy of the kidneys' excretion process. Excreted components through cupping therapy include waste products of body metabolism, free radicals, chemical and biological substances released into the interstitial fluid, and hydrophilic and hydrophobic substances (lipoproteins or cholesterol) (Mahmoud HS, 2013). In this study, wet cupping therapy could reduce total cholesterol levels in PwD through excreting hydrophobic fluids.

CONCLUSION

Wet cupping therapy can reduce total cholesterol levels in people with diabetes having high cholesterol levels. It could be nursing implementation for complementary treatment in people with diabetes with high cholesterol levels. In addition, future research should use a more significant number of samples and a control group.

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