

The Effect Of Combination Sago And Katuk Leaves on Reducing Blood Sugar Level In Patients Diabetes Mellitus at North Luwu, Indonesia

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Received: 15.09.2024

Revised: 16.10.2024

Accepted: 06.11.2024

ABSTRACT

Background. Diabetes is a chronic metabolic disease characterized by increased blood glucose or blood sugar levels. Treatment of diabetes patients can be done with non-pharmacological and pharmacological treatments. The combination of sago and katuk leaves has a pharmacological effect as an antidiabetic. Non-pharmacological treatment is a traditional treatment that is widely sought after by the Indonesian people because it is considered efficacious and relatively inexpensive. Sago plants are plants with a lower glycemic index than white rice so they can control blood sugar levels. Sago and katuk leaves are plants that have great potential to be developed in the North Luwu area. Although these two herbal plants are used separately, there has been no research that combines them as an alternative therapy for type 2 diabetes mellitus.

Aim: This study aims to determine the effect of giving a combination of sago and katuk leaves on blood sugar levels in patients with type 2 diabetes mellitus.

Method. This experimental study uses a quantitative research method with experimental research and a pretest-posttest with control group design. The location of this study is in the Masamba Health Center and Baebunta Health Center areas, North Luwu Regency. Sampling used purposive sampling technique, with a sample size of 60 respondents, 30 intervention groups and 30 control groups. Blood glucose levels were measured before and after 14 days of intervention. Data analysis used the Stata version 17 program which includes the T-Dependent, Wilcoxon and T-Independent tests.

Results. The findings showed a significant difference in blood sugar levels in patients with diabetes mellitus before treatment with an average of 153.7 mg/dL and after treatment 148.6 mg/dL ($p=0.000$), with an average of 25.84 mg/dL for the intervention group and 6.34 mg/dL for the control group.

Conclusion. There is an effect of giving a combination of sago and katuk leaves on blood sugar levels of patients with diabetes mellitus in the work areas of Masamba Health Center and Baebunta Health Center.

Keywords: diabetes mellitus, sago, katuk leaves

INTRODUCTION

Non-communicable diseases (NCDs) or commonly referred to as degenerative diseases are one of the public health problems due to high morbidity and mortality rates [1]. Non-communicable diseases (NCDs) kill 41 million people each year, equivalent to 74% of all deaths globally. The main types of NCDs are cardiovascular diseases (such as heart attacks and strokes), cancer, chronic respiratory diseases (such as chronic obstructive pulmonary disease and asthma) and diabetes mellitus [2].

Type 2 Diabetes (T2DM) is the most common type. Type 2 Diabetes Mellitus (T2DM) is a long-term or chronic disease characterized by high blood sugar (glucose) levels or above normal values due to insulin resistance or glucose that accumulates in the blood due to not being absorbed properly by body cells so that it can cause various disorders of body organs. This type of diabetes mellitus is most common and usually occurs in adults, although it can also occur in children and adolescents (Ministry of Health of the Republic of Indonesia, 2022). The 2019 Riskesdas stated that the prevalence data for diabetes mellitus based on a doctor's diagnosis at the age of ≥ 15 years was 2%. This figure shows an increase compared to the prevalence of diabetes mellitus in the 2013

Riskesdas results of 1.5%. However, the prevalence of diabetes mellitus according to blood sugar examination results increased from 6.9% in 2013 to 8.5% in 2018 [3]

Based on data from the South Sulawesi Provincial Health Office, diabetes sufferers The prevalence of diabetes diagnosed by a doctor or based on symptoms highest in Tana Toraja Regency (6.1%), Makassar City (5.3%), Luwu Regency (5.2%) and North Luwu Regency (4.0%)[4].

Masamba District as one of the areas with a high prevalence rate occupies the first position among the Districts in North Luwu Regency. Data from the North Luwu Regency Health Office shows that the prevalence of diabetes mellitus cases has almost reached the estimated target of around 86.43% of the 4,391 target sufferers, while the results of the screening carried out were 3,795 people in 2020. Masamba Health Center as a health center with the most cases of diabetes mellitus in North Luwu Regency and the second highest is Baebunta Health Center. Based on data from the P2 Field Report of the North Luwu Health Office in 2023, the highest number of DM sufferers was in Masamba Health Center at 635 people and Baebuta Health Center 484 people.

Medical treatment of diabetes patients is divided into two groups, namely non-pharmacological treatment and pharmacological treatment. Pharmacological treatment, namely using drug intervention. Drugs commonly used in the treatment of diabetes such as sulfonylurea, glinide, metformin, and thiazolidinedione. Non-pharmacological treatment, one of which is traditional treatment using herbal ingredients is also included in non-pharmacological treatment that can be done by people with diabetes mellitus. Traditional treatment is still in demand by the Indonesian people because it is considered efficacious and the price is relatively cheaper[5]

In this study, sago is used as a food substitute for diabetes mellitus sufferers as a non-pharmacological intervention that is economical, easily accessible and easy to make so that people can replicate it in their daily lives by considering the benefits of consuming sago. So researchers are interested in innovating sago which will be combined with katuk leaf powder which contains chlorophyll pigments as natural dyes and contains antioxidants to be consumed for a long period of time is better for body health. The combination of sago and katuk leaves makes people more interested because the appearance of sago is more attractive than without adding other ingredients, sago is white and some are gray. In these considerations, researchers are interested in innovating sago and katuk leaves to reduce blood sugar levels in diabetes mellitus sufferers and analyzing the effect of the combination of sago and katuk leaves on blood sugar levels in diabetes mellitus sufferers at the Masamba and Baebunta Health Centers, North Luwu Regency.

METHODOLOGY

The type of research conducted was Quasi Experiment with Non-Randomized Pretest-Posttest with Control Group Design, to determine the effect of the combination of sago and katuk leaves on blood sugar levels. Based on this formula, 30 samples were obtained for each research group consisting of 30 intervention groups (Masamba Health Center) and 30 control groups (Baebunta Health Center), so the total number of samples in this study was 60 respondents. Data were processed using Stata Version 14 program. The association between the T-Dependent, Wilcoxon and T-Independent tests.

Ethical Approval

This Study was approved by the Health Research Ethics Committee of Hasanuddin University with a recommendation for ethical approval number 2953/UN4.14.1/TP.01.02/2024 dated 8th October 2024.

RESULT

Table 1: Phytochemical test of Combination Sago and Katuk Leaves

No	Tested Materials	Compound Phytochemicals	Unit	Test Results
1	Sago	Flavonoid	µg/g	288
		Alkaloid	µg/g	793.59
		Tannin	µg/g	9.5
2	Leaf Kauk	Flavonoid	µg/g	66
		Alkaloid	µg/g	317
		Tannin	µg/g	5.2
3	Combination Sago and Katuk Leaves	Flavonoid	µg/g	517.9
		Alkaloid	µg/g	4305.76
		Tannin	µg/g	14.23

Table 1 shows that the combination of sago and katuk leaves contains active compounds. The combination of sago and katuk leaves contains Flavanoids of 517.9 µg/g, Alkaloids of 4305.76 µg/g, and Tannins of 14.23 µg/g.

Table 2: Frequency Distribution of General Characteristics of Respondents

Respondent Characteristics	Intervention		Control	
	n	%	n	%
Gender				
Male	8	26,67	9	30
Female	22	73,33	21	70
Age Group				
45-59 years	25	83,33	21	70,0
≥60 years	5	16,67	9	30,0
Education				
Not School	1	3,33	2	6,67
Elementary School	4	13,33	1	3,33
Junior High School	5	16,67	7	23,33
Senior High School	15	50	13	43,33
Associate Degree	3	10	1	3,33
Bachelor Degree	2	6,67	6	13,33
Occupation				
House Wife	15	50,0	11	36,67
Laborer	8	26,67	2	6,67
Civil Servant	2	6,67	4	13,33
Self-employed	5	16,67	13	43,33
Marriage Status				
Married	30	100	30	100
Single-handed	0	0	0	0
Total	30	100	30	100

Table 2 it can be seen that the respondents were female with a proportion of 22 (73.33%) in the intervention group and 21 (70%) in the control group because gender matching was carried out in both research groups. The age group of respondents in this study was mostly in the 45-59 years. the majority of respondents had a high school education

Table 3 :Frequency Distribution of Clinical Characteristics of Respondents

Respondents' Clinical Characteristics	Intervention		Control	
	n	%	n	%
Body Mass Index (BMI)				
Normal	21	70	11	36,67
Overweight	7	23,33	17	56,67
Obesity	2	6,67	2	6,67
Smoking Behavior				
Yes	6	20	8	26,67
No	24	80	22	73,33
Family History				
Yes	13	43,33	11	36,67
No	17	56,67	19	63,33
Durating of Suffering				
<1 year	9	30	7	23,33
1-3 years	19	63,33	20	66,67
>3 years	2	6,67	3	10
Physical Activity	n	%	n	%
Yes	16	53,33	18	60
No	14	46,67	12	40
Herbal Alternative				
Yes	14	43,44	11	36,67
No	17	56,67	19	63,33
Suoervisor of Taking Medication				
Children	15	50	19	63,33
Siblings	5	16,67	3	10

Husband/Wife	10	33,33	8	26,67
Total	30	100	30	100

Table 3 shows the BMI status of the respondents is mostly in the normal BMI category. The majority of family history of diabetes mellitus did not have a family history of diabete, had suffered from diabetes mellitus for 1-3 years, did physical activity, did not use herbal alternative and of drug-taking supervision was carried out by children.

Table 4: Differences in Carbohydrate Intake and Fiber Intake in the Intervention Group

Characteristics of Respondents' Food Intake		Intervention		Control	
		n	%	n	%
Carbohydrate Intake Before Intervention					
More		21	70,0	11	36,67
Enough		7	23,33	17	56,67
Fiber Intake Before Intervention					
Enough		18	60,0	23	76,67
Less		12	40,0	7	23,33
Carbohydrate Intake After Intervention					
More		18	60,0	11	35,67
Enough		12	40,0	19	63,33
Fiber Intake After Intervention					
More		27	90,0	21	70,0
Enough		3	10,0	9	30,0
Total		30	100	30	100

Table 4 shows The majority of respondents had higher carbohydrate before intervention and decrease after intervention likewise with fiber intake.

Table 5: Distribution of Compliance Level of Antidiabetic Drug Consumption of Prolanis Participants

Medication Compliance	Intervention		Control	
	n	%	n	%
High	21	70	20	66,67
Low	9	30	10	33,33
Total	30	100	30	100

Table 5 It is known that the level of compliance in taking antidiabetic drugs of respondents is mostly in the high category.

Table 6: Differences in Blood Sugar Levels Before and After in the intervention group

Variable	Pre Test		Post Test		ΔBS	pValue
	n (30)	Mean	n (30)	Mean		
Gender						
Male	8	150,6	8	127,6	23	0,865
Female	22	151,4	22	124	27	
Age						
45-59 year	25	150,12	25	124,96	25,16	0,289
>60 year	5	156,6	5	127,4	29,2	
Smoking Behavior						
Yes	6	146	6	126	20	0,714
No	24	152,29	24	125,2	27,09	
Family History						
Yes	13	154,46	13	125,07	29,39	0,770
No	17	148,7	17	125,58	23,12	
Physical Activity						

Yes	16	153	16	126,31	26,69	0,238
No	14	149	14	124,28	24,86	
Herbal Alternative						
Yes	13	147,82	13	125,38	22,44	0,985
No	17	155,6	17	125,35	30,25	

Table 6 shows the results of the t-test independent before and after the intervention in the intervention group basic on respondent characteristics at the Masamba and Baebunta health centers, North Luwu Regency, Indonesia.

Table 7: Differences in Blood Sugar Levels Before and After in the Control Group

Variable	Pre Test		Post Test		ΔGD	pValue
	n (30)	Mean	n (30)	Mean		
Gender						
Male	9	154	9	146,33	7,67	0,752
Female	21	153,57	21	147,8	5,77	
Age						
45-59 year	21	156,09	21	148	8,09	0,651
>60 year	9	148,11	9	145,88	2,23	
Smoking Behavior						
Yes	8	153,5	8	146,5	7	0,524
No	22	153,77	22	149,62	4,15	
Family History						
Yes	11	149,36	11	144,18	5,18	0,253
No	19	156,21	19	149,21	7	
Physical Activity						
Yes	18	157,38	18	152,22	5,16	0,420
No	12	148,16	12	140,08	8,08	
Herbal Alternative						
Yes	11	150,27	11	146,45	3,82	9,746
No	19	155,68	19	147,89	7,79	

Table 7 shows the results of the t-test independent before and after the intervention in the control group basic on respondent characteristics at the Masamba and Baebunta health centers, North Luwu Regency, Indonesia.

Table 8: Difference in Blood Sugar Levels Before and After Intervention

Blood Sugar Levels	Variable	Mean (mg/dL)	SD	The difference		PValue
				Mean	SD	
Intervention	Before	151,2	10,9	25,9	11,04	0,000
	After	125,3	4,6			
Control	Before	153,7	11,2	5,1	14,07	0,0008
	After	148,6	10,3			

Table 8 it can be seen that the mean value of blood sugar levels in the intervention group decreased before and after consuming the combination of sago and katuk leaves, namely the difference was 25.9 mg/dL with a p value of 0.0008 <0.05, which means there is a significant difference in blood sugar levels before and after consuming the combination of sago and katuk leaves. The mean value of blood sugar levels in the control group also decreased, namely the difference was 5.1 mg/dL with a p value of 0.00 <0.05, which means there was no significant difference in blood sugar levels before and after consuming antidiabetic drugs in the control group.

Table 9: Analysis of Mean and Difference of Blood Sugar Levels in Intervention and Control

Blood Sugar Levels	Variable	Mean (mg/dL)	SD	Differences		P value
				Mean	SD	

Pre-Post test (n=60)	Intervention	25,84	11,8	16,08	14,5	0,00*
	Control	6,34	9,52			

Table 9 it shows the average difference in the decrease in blood sugar levels in the intervention group of 25.84 mg/dL and the control group of 6.34 mg/dL and the results of the statistical test between the intervention and control obtained a p value of 0.00 <0.05, meaning that there was a significant difference between the intervention group and the control group.

DISCUSSION

Based on the results of the study, it shows that the combination of sago and katuk leaves contains flavonoids, alkaloids, and tannins, namely 0.51 mg, 4.30 mg, 0.01 mg per 140 grams or 4 sheets of sago and katuk leaves. This is in accordance with the research that has been conducted by Nurlila et al, namely the sago plant (*MetroxylonsaguRottb.*) is reported to contain alkaloid compounds, tannins are chemical compounds that have the potential to reduce blood sugar levels. The results of phytochemical screening of sago leaf ethanol extract showed that the ethanol extract of sago leaves positively contained several compounds, namely alkaloids, phenols, flavonoids, saponins, tannins and steroids [6]

Katuk leaves also contain flavonoids, alkaloids and tannins. This is done in phytochemical screening of katuk leaves to find out the chemical content group to prevent anti-inflammatory, natural antibiotics, and improve cell structure [7]. Compounds contained in sago such as alkaloids, saponins, and flavonoids are active compounds that can be used as wound healers [8]

Consuming sago and katuk leaves for 7 days has an effect on changes in blood sugar levels in diabetes mellitus patients. This is caused by flavonoid and alkaloid compounds that act as blood sugar lowering agents. In addition, alkaloid compounds in sago and katuk leaves are able to increase the activity of the glucose oxidase enzyme so that more glucose is absorbed by the body's cells [9]

Flavonoids act as secondary antioxidants in patients with type 2 DM. Patients with type 2 DM experience hyperglycemia which triggers oxidative stress. As a result, the body needs to consume nonenzymatic antioxidants obtained from food sources. Antioxidants that are consumed from outside function as secondary antioxidants. Secondary antioxidants work by cutting off free radical chain oxidation reactions and capturing free radicals [10].

Tannins can damage bacterial cell membranes and shrink bacterial cell walls or membranes, so they can interfere with bacterial cell permeability so that bacterial growth is inhibited or will die. In addition, tannins can also improve pathological oxidative stress in diabetic conditions and tannins also act as anti-free radicals and activate antioxidant enzymes that regenerate pancreatic cells [11]

Women are more likely to have DM than men due to hormonal and metabolic factors, that women experience monthly cycles and menopause which contribute to the distribution of increased body fat which is very easy to accumulate due to this process so that 59 women are more at risk of developing type 2 DM [12]

The characteristics of the age group in the two most dominant groups are the 45-59 year category. This is because the 45-59 year age group is included in the middle-aged pre-elderly. Pre-elderly is the right age to prepare for old age and identify pre-elderly as a group of people who are susceptible to physical and mental decline, so that the older the age, the lower the body's function and therefore the body is less effective in producing insulin, it can also be called a degenerative disease [13].

Diabetes mellitus in the pre-elderly (45-59 years) is a chronic disease characterized by high blood sugar levels in the urine due to impaired metabolism because the production and function of the insulin hormone do not work properly. This study is in line with Andika's research [14] that the level of education will determine a person's knowledge, including about health and this knowledge will raise awareness to implement healthy living behaviors. Low levels of education will affect and become an obstacle for diabetes patients in managing their disease, so that low levels of knowledge and education are one of the causes of high cases of disease, including diabetes mellitus.

The level of education is significantly related to most domains of quality of life. The level of education is an important factor in understanding self-management and care, glycemic control compliance and the perception of healthy living. Patients with high education will have a better understanding of diabetes and its effects on health. The level of education is significantly related to most domains of quality of life. Education level is an important factor in understanding self-management and care, glycemic control compliance and healthy living perception. Patients with higher education will have a better understanding of diabetes and its effects on health [15]

The type of work of the majority of respondents in this study were IRT (Housewives) both in the intervention group and the control group. This is in line with Eli's research [16] that people who do not work are 1.5 times

more at risk of developing diabetes mellitus than those who have jobs. The category that does not work does less activity so that metabolism or calorie burning does not run properly. Research conducted by Ida Leida stated that respondents who did not carry out self-care activities for their diabetes were respondents who were unemployed or housewives, numbering 18 people (29.0%), and had insufficient knowledge of self-care activities, numbering 25 people (61.0%)[17].

The marital status in this study, the majority of respondents had a married status. This is in line with Wahyuni's research [18] that based on the characteristics of marital status, it can be seen that respondents who have the highest quality of life values are respondents with married status as much as 56.16%, both men and women, individuals with married or cohabiting status have a higher quality of life. The influence of marital status is related to family support is the strongest indicator of having a positive impact on self-care in patients with diabetes mellitus.

Based on table 3, the BMI status of most respondents is in the Normal BMI category. This is in line with Irawan's research [19], namely based on sample data for BMI or nutritional status, most have a normal BMI (18.0 -25) as many as 49 people, this can happen because at the beginning of diabetes mellitus, body weight will increase but over time the muscles do not get enough glucose to grow and to make it energy, so that muscles and fat are broken down to meet energy needs. Based on this theory, there is a relationship between excess nutritional status and increased body fat. Fat in the body is related to the hormone insulin which affects fat metabolism. Excess fat can cause insulin resistance and eventually cause sugar intolerance problems [20].

The majority of respondents in this study did not smoke. This is because 75% of respondents were female. This study is in line with Harefa's research [21] that the absence of this relationship is because the research subjects were female more than male, which is 62.2% or 69 respondents. So that all female respondents do not smoke. Barraclough said that the number of male smokers is greater than the number of female smokers, in Indonesia more women do not smoke because of strong cultural disapproval regarding smoking behavior in women which is considered deviant behavior, while men smoking is considered a culture and is acceptable among Indonesian society. Smoking is one of the risk factors that is often found in several diseases, especially Type 2 Diabetes Mellitus. Smokers have a 5 times higher risk of developing Type 2 Diabetes Mellitus compared to non-smokers [22].

Family history of diabetes mellitus mostly does not have a family history of diabetes mellitus. This is in line with Iryani's research [23] namely interviews with 10 respondents where 7 out of 10 Diabetes Mellitus sufferers have a family history of Diabetes Mellitus sufferers, 6 out of 10 DM sufferers admit to rarely exercising then 6 out of 10 DM sufferers have not maintained a diet. The results of further analysis obtained a p-value in the results of the bivariate analysis of 0.006, this value is smaller than the specified probability value. The value of Odds Ratio (OR) = 6.417 (CI 95% = 1.833-22.458) which means that lack of physical activity can increase the risk of Diabetes Mellitus.

The majority of respondents have suffered from diabetes mellitus for 1-3 years. This is in line with research conducted by Fajriyah [24] that most respondents have a category of duration of Diabetes Mellitus for 1-2 years, as many as 45 people (31.5%) have moderate knowledge of treatment for Diabetes Mellitus. The results of the study Suryati [25] stated that many respondents who have suffered from Diabetes Mellitus for a long time are because they do not make enough efforts to prevent an increase in blood sugar, both pharmacologically and non-pharmacologically, such as motivating their lifestyle. Respondents who have only experienced DM <5 years are because they have just been diagnosed with DM.

The majority of respondents did physical activity in both the intervention and control groups. Physical activity is a series of body movement activities using energy. Physical activity is useful for controlling blood sugar. This is because when the body does activities, the sugar in the body will be burned and become energy so that the amount of insulin decreases. When someone does less physical activity, the food substances that enter the body will collect and accumulate into fat and sugar so that the risk of developing type 2 diabetes mellitus will increase [26].

Suggests that the pre-elderly group tends to have minimal physical activity. Based on local survey data, less than 30% of pre-elderly do light exercise regularly. In fact, sufficient physical activity can help control blood sugar levels and maintain physical fitness. Research shows that regular physical activity can reduce the risk of diabetes by up to 40% in high-risk individuals. Thus, counseling on the importance of physical activity needs to be increased, especially among pre-elderly [27].

The expected physical activity in patients is in accordance with the recommendations, namely that patients are already actively engaged in moderate to heavy physical activity according to the patient's abilities and conditions. In addition, recommendations for physical activities that can be carried out by diabetes mellitus patients related to physical activities related to work, physical activities related to transportation, physical activities related to domestic activities.

The majority of respondents did not use herbal medicine in either the intervention or control groups. Based on interviews conducted, respondents who did not use alternative herbal medicine preferred to focus on the treatment given by medical personnel in the form of drugs that were routinely taken every day. In line

with Nugraha's research [28] stated that respondents did not use herbal alternatives as much as (56%) herbal alternatives due to a lack of knowledge of 64 individuals and relying more on conventional medicine prescribed by doctors.

Herbal alternatives are recommended as treatments from natural plants and routine blood sugar checks. For example, boiled water from katuk leaves contains tannins and flavonoids that can lower blood glucose levels as a prevention and treatment of diabetes [29].

Based on the study, it was found that the majority of drug swallowing supervisor supervision/assistance in taking medication was carried out by children in the intervention group and the control group. The role of drug swallowing supervisor in the study was to help monitor and remind respondents to control food consumption for people with diabetes mellitus. This is in line with Riani's research [30] which states that there is a relationship between family support and patient medication adherence, the role of the family is very important in efforts to improve the health of family members and reduce the risk of diabetes. Therefore, the family plays an important role in determining the method of care, health and illness status of family members.

The use of sago flour in the process of making this dough is not only because sago flour can be easily obtained but is also considered more suitable and relatively better for diabetics, sago flour has a lower carbohydrate content than rice flour and sago flour also contains several nutritional contents that are relatively superior to rice flour or wheat flour. Sago flour contains a glycemic index (GI) which makes glucose levels not increase too quickly, in addition, immunity increases, reduces the risk of colon and lung cancer and reduces obesity and smoothes the digestive system [31].

There is antioxidant activity in the combination of sago and katuk leaves, namely flavonoid compounds, alvaloids and condensed tannins and shows free radical scavenging activity. Consuming it every day routinely can maintain health, especially for people with Diabetes Mellitus [32].

The highest difference in blood sugar levels was in the average intervention group compared to the control group, which means that consuming a combination of sago and katuk leaves had a greater rate of decrease in blood sugar levels than those who did not consume a combination of sago and katuk leaves. This is in line with Irmawati's [33] the majority of respondents after the application of the combination of sago and katuk leaves in the intervention group found that the majority of blood sugar levels decreased by 17 respondents (94.4%). The results of the study [34] showed that there was a difference in fasting blood sugar levels between day 0 and day 8 in the intervention group, there was a decrease in the mean value of fasting blood sugar levels after consuming sago for 7 days. The decrease in blood sugar levels in the intervention and control groups was found in the study [35] the average difference in blood sugar levels in the intervention group could be reduced by 25.15 mg / dl with SD 3.934 while in the control group blood sugar levels decreased by 0.62 mg / dl with SD 3.798.

CONCLUSION

There is a significant difference in blood sugar levels in patients with diabetes mellitus before and after giving a combination of sago and katuk leaves and consuming anti-diabetic drugs. There is a significant difference in blood sugar levels in patients with diabetes mellitus between the intervention group and the control group with an average decrease in blood sugar levels in the intervention of 25.84 and control of 6.34.

ACKNOWLEDGEMENTES

The researcher would like to thank my supervisor from the Faculty of Public Health, Hasanuddin University, The heat of Masamba and Baebunta Health Center and them family who have provided support during the research so that this research can be carried out well.

CONFLICT OF INTEREST

We have no competing interests.

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