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Research Article

Health Education on Nutrition Management Reduces Blood Sugar Levels in Diabetes Mellitus Clients

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Abstract:
This study aimed to Analyze the influence and health support for the nutritional management of blood sugar levels in diabetes mellitus clients in the working area of the Gribig Community Health Center, Kudus Regency. The research design uses a quasi-experiment with a Pretest and a Post-test with a control group design. This research was conducted from June to July 2024 in the working area of the Gribig Community Health Center, Kudus Regency. Using purposive sampling techniques, the total sample was 26 respondents for each intervention and control group. The inclusion criteria for clients with diabetes mellitus are having a current blood sugar level of ≥150 mg/dL. The intervention was to provide health education on nutrition management for 45 minutes using a nutrition management workbook and monitor nutritional patterns for 7 days. The instrument uses an Autocheck CE – 0197 brand glucometer, observation sheet, and nutrition management book. Data analysis uses paired sample tests and independent tests. Research results showed there is a statistically significant effect of nutritional management health education on blood sugar levels in diabetes mellitus clients in the working area of the Gribig Community Health Center, Kudus Regency, with p-value 0,028 (p<0,05). So, it can be concluded that health education on nutritional management can control blood sugar levels in clients with diabetes mellitus. This educational model and media can be applied and become an innovative health program in health service facilities in nutrition management in the community.

Keywords: Blood Sugar Levels, Diabetes Mellitus, Health Education, Nutrition Management

1. INTRODUCTION

Public health is at risk due to diabetes mellitus (DM), a chronic illness. This happens as a result of the rising rates of DM-related morbidity and mortality that affect people of all ages and social classes. DM disease is a burden for people with Diabetes, families who care for them, culture, and even the country—the decline in productivity and diabetes quality of life caused by DM. Caring families are required to put aside personal needs because they have to care for those with Diabetes. The community participates in preventing and treating DM in the community. The state has to allocate significant costs to treat DM and its complications. Based on Ministry of Health records (2017), the proportion of deaths caused by diabetes mellitus in Indonesia is recorded at 6%. Diabetes mellitus re, a *noncommunicable disease*, is a noncommunicable disease often suffered by people today (Sagita et al., 2020).

According to the International Diabetes Federation (IDF), there are at least 463 million diabetics worldwide between the ages of 20 and 79. The prevalence of diabetes is predicted to rise to 111.2 million individuals between the ages of 65 and 79 as the population ages. By 2030, this number will rise to 578 million, and by 2045, it will reach 700 million. Based on IDF projections, the only country in the Southeast Asia region included in the ten list of the highest number of people with Diabetes in 2019 is Indonesia, which is in seventh place, with a total of 10.7 million. This means that Indonesia significantly contributes to diabetes cases in Southeast Asia (Cahyaningrum, 2023). Diabetes mellitus is ranked the fourth cause of death in Indonesia. Diabetes mellitus cases occur more frequently in those aged 55-64 years, with a prevalence of 4.8% in 2013 and 6.29% in 2018. In the last decade, the prevalence of Diabetes mellitus has increased by 1.49% (Ministry of Health of the Republic of Indonesia, 2013; Republic of Indonesia Ministry of Health, 2018).

According to the Central Java Health Service in 2022, Diabetes ranks second as the most common

noncommunicable disease after hypertension. Due to the fact that instances are still occurring and growing, diabetes mellitus remains a major health issue worldwide, especially in Indonesia. According to the Central Java Health Service's data profile, 618,546 people in the Central Java Province are expected to have diabetes mellitus in 2021, and 623,973 in 2022. In 2021, Kudus district had 23,495 people with diabetes mellitus, ranking eighth in terms of the number of cases. With 1,217 people suffering from diabetes mellitus, the Gribig Community Health Center ranks fourth among the most significant victims. Six of the ten respondents had blood sugar levels greater than 220 mg/dL, and four of the men had blood sugar levels greater than 240 mg/dL, according to preliminary data collected from clients with diabetes mellitus (DM).

Rapid cultural and social change, the growing number of older persons, urbanization, changes in food habits, a lack of physical activity, and other behaviors that point to unhealthy lifestyles and behavioral changes are some of the causes contributing to the rising number of people with diabetes mellitus (Christa et al., 2021). Effective self-management is essential for those with diabetes mellitus. Education, medical dietary therapy, exercise, insulin therapy, and pharmaceutical intervention are the five pillars of diabetes control. From this pillar of control, clients have more difficulty adhering to a diet than other diabetes management because it means changing their lifestyle. Diabetic clients must emphasize the importance of eating regularly in terms of eating schedule, type, and amount of food. Meal regulation and controlling blood sugar levels can be done through health education, namely nutrition education in the form of counseling and nutrition education.

DM that is not treated correctly can result in various complications, both acute and chronic complications. Acute complications that sufferers can suffer include hypoglycemia and diabetic coma, while chronic complications include retinopathy, nephropathy, and diabetic neuropathy. According to the findings of interviews conducted with the Gribig Community Health Center's noncommunicable disease program coordinator, the center has implemented a number of interventions thus far, including weekly diabetes exercises and regular monthly screening for individuals with diabetes. Only a small percentage of the population or those with diabetes mellitus engaged, nevertheless, due to a lack of interest on the side of the latter group. Health education on nutritional management will be the intervention that is implemented.

Based on research conducted by Yustina (2021) with a research sample of 31 and where the research was conducted at the UPTD Diabetes Center, Ternate City, the results showed that there were significant differences in diet settings before and after being given self-management training, especially eating patterns. Eating patterns are food intake that provides various amounts, schedules, and types of food that a person gets. Improper eating patterns, as recommended by 3J (Schedule, Amount, and Type), can result in increased blood sugar levels. The diet pattern for Diabetes mellitus sufferers aims to help sufferers improve eating habits so they can control blood glucose levels within normal limits due to hyperglycemia (increased blood sugar levels). Therefore, the management of diet therapy for Diabetes mellitus plays a vital role in efforts to normalize blood sugar levels in Diabetes mellitus and prevent various complications arising from the disease.

Research conducted by Pangaribuan et.al. (2023) with a sample of 44 respondents was conducted at the Murni Teguh Hospital in Medan. After education on diet compliance, most respondents already knew and adhered to a healthy diet that health workers had recommended to reduce or normalize blood sugar levels. Nutrition management for DM clients aims to improve healthy eating patterns, varied food, and adequate portions, so that they can maintain body weight, control blood sugar, blood pressure, and fat levels, as well as prevent diabetes complications, meet nutritional needs by paying attention to personal and cultural needs, access to food, desire or resistance to change, maintaining food preferences without judgment, and providing practical tools for healthy eating patterns.

Compared to earlier studies, this one selected a different population and study site. The 3875 participants in this study were all patients with Type II Diabetes Mellitus who were treated on the seventh floor of the Murni Teguh Medan Hospital. In contrast, the prior research location was at the hospital, and my population consisted of all clients with diabetes mellitus in the Kudus Regency's Gribig Health Center's operating region. While I am working at the Gribig Community Health Center in Kudus Regency, Murni Teguh Medan.

The findings of this study serve as a foundation for identifying suitable independent nursing interventions to control blood sugar levels in individuals with diabetes mellitus and can demonstrate that nurses are a profession as professional as other medical specialists, including public health specialists. In this instance, the nurse's role is to educate patients of all ages with diabetes mellitus, which is presently a noncommunicable disease that poses a health risk in Indonesia. The

researchers' job is to look at how health education affects the nutritional control of blood sugar levels in patients with diabetes mellitus. The purpose of this study is to examine how dietary management health education affects blood sugar levels in patients with diabetes mellitus.

2. MATERIAL AND METHOD

A quasi-experimental pre- and post-test with a control group was employed in the study design. Blood sugar levels are the dependent variable, and nutritional management is the independent variable. From June to July 2024, this study was carried out in the Gribig Health Center's operational space in Kudus Regency. customers with diabetes mellitus in the Gribig Health Center's Kudus Regency working area made up the study's population, and there were 26 customers in each intervention and control group. Purposive sampling was used in the sampling process, and the exclusion criteria were clients who stopped participating or did not adhere to the researchers' suggested seven days of nutritional management. The inclusion criteria were clients with diabetes mellitus who worked at the Gribig Community Health Center in Kudus Regency and had blood sugar levels of at least 150 mg/dL, as well as clients with diabetes mellitus who took herbal remedies or prescription medications (metformin).

The research instrument uses new tools Autocheck type CE0197 with multiparameter test equipment specifications, can be used to check blood sugar, uric acid, and cholesterol, uses AAA batteries, and in the box contains an Autocheck tool, ten sugar strips, ten uric acid strips and five cholesterol strips, lancing device and lancet, and blood sugar level observation sheet. Researchers provided intervention in the form of health education on nutritional management for 7 days consisting of 1 day of providing material for 45 minutes and 7 days of monitoring respondents' nutritional patterns. Researchers used a nutritional management workbook for diabetes mellitus clients as a medium to support the intervention. Data analysis uses paired sample tests and independent tests. This research has been declared to have passed ethical review from the Health Research Ethics Commission (KEPK) Muhammadiyah University of Kudus with Number 32/Z-7/KEPK/UMKU/VI/2024 on June 24, 2024.

3. RESULT AND DISCUSSION

Table 1. Characteristics of Respondents Based on Age (n=52)

Group	*Mean*	SD	*Min - Max*	*95% CI*
Intervention	58,08	6,705	45 – 67	55,37-60,79
Control	58,15	5,801	43 – 66	55,81-60,50

Source: Primary Data 2024

Based on Table 1, it can be seen that the average age of respondents in the intervention group was 58.08 years. The standard deviation was 6.705 with a minimum age of 45 years and a maximum of 67 years, while in the control group, the average age of respondents was 58.15, and the standard deviation amounted to 5,801 with a minimum age of 43 years and a minimum of 66 years. The average age of Diabetes mellitus respondents in the intervention group and the majority of the control group was in the pre-elderly group. This is due to previous research conducted by Yustina (2021) showing that most Diabetes mellitus clients are pre-elderly to late elderly aged 55-59. As the population ages, the prevalence of diabetes increases at ages 54-65 years (Christa et al., 2021).

This is supported by research conducted by Pangaribuan (2023) that someone over 45 years of age experiences a decrease in insulin production so they are susceptible to Diabetes mellitus because the ability of the body's organs decreases, one of which is the organ. Pancreas. Increasing age will affect the physical and decreased function of the body's organs, impacting the consumption and absorption of nutrients. This shows nutritional problems in old age. Most people have problems with overnutrition and overweight/obesity which trigger the emergence of degenerative diseases including diabetes mellitus (Hanum & Bukhari, 2022).

Table 2. Characteristics Respondents Based on Gender, Occupation, Education, and Income (n=52)

Respondent Characteristics	Intervention		Control	
	f	(%)	f	(%)
Gender				
Man	6	23,1	6	23,1
Woman	20	76,9	20	76,9
Work				
Housewife	13	50	12	46,2

Laborer	4	15,4	6	23,1
Self-employed	7	26,9	5	19,2
Farmer	2	7,7	3	11,5
Education				
Finished elementary school	12	46,2	10	38,5
Finished middle school	7	26,9	12	46,2
Finished high school	7	26,9	4	15,4
Income				
Have no income	13	50	12	46,2
< 2.516.888,00*	9	34,6	8	30,8
≥ 2.516.888,00*	4	15,4	6	23,1
Total	**26**	**100**	**26**	**100**

*) Kudus Regency Regional Minimum Wage 2024

According to Table 2, the findings indicate that nearly all of the intervention and control groups were female: 20 individuals (76.9%), half of whom were housewives; 13 individuals (50%) in the intervention group and 12 individuals (46.2%) in the control group; nearly half of the educational backgrounds in the intervention and control groups had completed elementary school, with 12 individuals (46.2%) and 12 individuals (46.2%) having completed junior high school, with half of them in the intervention group. While nearly half of the control group—12 individuals, or 46.2%—had no income, 13 individuals, or 50%, did not.

This research states that more women experience diabetes mellitus. The majority of Diabetes mellitus clients gender shows that in the intervention group and control group, most of them were female. This research is in line with research conducted by Pangaribuan (2023) that women suffer from Diabetes mellitus more than men, 54.5%. Changes in estrogen and hormones progesterone will occur when women menopause, this causes uncontrolled increases and decreases in blood sugar levels (Pangaribuan et.al., 2023). This research is supported by research conducted by Yustina (2021), which shows that the most significant gender of respondents is female at 64.5%. Research conducted by Oktaviana (2021) stated that most of the respondents were women. Women experiencing menopause cause the insulin hormone to become insensitive.

Most of the jobs held by respondents in this study were homemakers. In the intervention group and also in the group, almost half also worked as housewives. The results of this research are in line with research conducted by Oktaviana (2021) which showed that as many as 42.4% of respondents worked as housewives. Research conducted by Naba (2021) explains that the lack of physical activity carried out by homemakers compared to people who do activities outside the home means that food intake cannot be converted into energy and carbohydrates accumulate, which has an impact on obesity, making it easier for Diabetes to occur. According to Mumtahinnah (2015), a housewife is a woman who is married and does not work, spending most of her time taking care of the household.

Regarding educational level characteristics, most respondents had completed elementary school in the intervention group. This research is in line with research conducted by Naba (2021) which shows that the highest level of education has an educational background of completing elementary school at 46.5%. Education is related to a person's knowledge in seeking treatment in managing Diabetes, seeking a quality life, and avoiding microvascular complications and macrovascular (Naba et al., 2021). The majority of education in the control group, almost half, had an educational background of completing junior high school. Previous research conducted by Widyasari (2017) showed that the highest education level of respondents was junior high school graduates at 78%. Education level influences someone's cognitive level. The level of education referred to is the respondent's final education obtained through a school or institution, which influences the ability to process the information received. A high level of education is also associated with the ease of capturing and understanding the information obtained, including information about diabetes mellitus (Salamung, 2020).

This research is in line with that conducted by Naba (2021), who stated that education is needed for a person to make it easier to receive information and implement the information received, especially in receiving health information messages to manage Diabetes so that individuals can avoid the danger of complications. Education is closely related to the knowledge possessed by clients. Clients tend not to know the early symptoms of Diabetes. Basic knowledge about Diabetes, such as symptoms, preventive measures, and treatment, needs to be provided to clients. Therefore, health promotion for individuals and groups needs to be carried out and adapted to the client's educational background to help diabetes clients make decisions regarding diabetes care independently.

The majority of income in the intervention group, half of whom had no income, and almost half of the control group had no income. This is in line with research conducted by Musdalifah (2019), which found that most respondents had incomes below the UMK of 50.5%. The socioeconomic level is usually associated with the level of knowledge and education, whereas higher levels of education usually have more knowledge, especially about health. Therefore, they have an awareness of maintaining their health, especially in terms of preventing diabetes mellitus. People with high incomes can meet their nutritional needs and continue to check or control blood sugar levels (Musdalifah & Nugroho, 2020). Astute (2018) explains that the level of income is very influential in aspects of life, especially in determining choices in making decisions or determining lifestyle, the higher a person's income, the easier it is to choose the treatment to be carried out so that both those with low income and high income can choose lifestyle trends.

Table 3. Current Blood Sugar Levels in the Intervention and Control Groups (n=52)

Current Blood Sugar Rate	Intervention			Control		
	Mean	SD	95% CI	Mean	SD	95% CI
Before	266,54	107,01	223,21-309,76	256,96	70,818	228,36-285,57
After	197,42	64,49	171,37-223,47	163,54	40,895	147,02-180,02

Table 3 shows that the average blood sugar level of Diabetes mellitus clients in the intervention group before treatment was 266.54 mg/dL, the standard deviation was 107.013, and the average blood sugar level after treatment was 197.42 mg/dL: dL, and the standard deviation 64.499. The average blood sugar level of Diabetes mellitus clients in the control group before was 256.96 mg/dL, and the standard deviation was 70.818. The average blood sugar level in the control group was 163.54 mg/dL, and the standard deviation was 40.895.

This study showed that the average blood sugar levels before treatment in diabetes mellitus clients in both the intervention and control groups were more than the average values. The results of this study are in line with research conducted by Syokumawena (2024), showing that diabetes mellitus clients have blood sugar levels that are pretty high and even uncontrolled, with an average blood sugar level of 268 mg/dL. This research is supported by Sudirman & Modjo (2021) showing that blood sugar levels before treatment in diabetes mellitus clients exceeded normal limits with an average of 350.40 mg/dL.

Hyperglycemia is when blood glucose levels increase beyond normal limits and become a disease called diabetes mellitus. Hyperglycemia is a condition where blood glucose levels in the body increase beyond normal limits. Blood glucose instability is a condition where blood glucose rises or falls beyond normal limits and can cause hyperglycemia or hypoglycemia. Acute symptoms in Diabetes clients are characterized by thirst (polydipsia), hunger (polyphagia), frequent urination (polyuria), especially at night, and increased appetite but drastic weight loss and fatigue (Syokumawena et al., 2024). Hyperglycemia is when blood glucose levels increase above 200 mg/dl and is an early symptom of diabetes mellitus (DM). Hyperglycemia is caused by a lack of insulin in the body. Blood glucose levels depend on the ability of insulin production and secretion by pancreatic β cells. Insulin is a hormone that plays a vital role in regulating blood glucose balance in blood circulation. Thus, an imbalance between glucose transport into cells and insulin production by the pancreas causes diabetes mellitus (Plasma et al., 2018).

In the results of this study, the mean blood sugar levels of clients after both the intervention group and the control group were higher than the normal limit but had decreased compared to blood sugar levels before the intervention. The results of this study are in line with research conducted by Pangaribuan (2023), which showed that blood sugar levels after intervention in diabetes mellitus clients in both the intervention and control groups decreased compared to blood sugar levels before the intervention was given. This research is supported by Yusnita (2021), showing a decrease in blood sugar levels after intervention for diabetes mellitus clients in both the intervention group and the control group, with blood sugar levels approaching normal and decreasing. Glucose flowing in the blood is the body cells' primary energy source. Blood sugar concentration, or serum glucose level, is tightly regulated in the body; glucose that flows through the blood is the main source of energy for body cells. To regulate this, the body has a regulatory mechanism (Pangaibuan et.al., 2023).

If the mechanism for regulating blood sugar levels does not work properly or there is damage to the

body's organs, it will disrupt the glucose metabolism process. Therefore, it is necessary to check blood glucose levels to see whether the glucose levels exceed normal limits. Reducing blood sugar levels to normal limits can be done by influencing factors, including routine medication, diet, and regular eating patterns (Pangaribuan et.al., 2023). Blood glucose is the level of glucose in the blood whose concentration is tightly regulated by the body. The decrease in respondents' average blood glucose level could be influenced by controlling the respondents' eating patterns. Diet or food intake is the most important factor in increasing or decreasing blood glucose levels.

Table 4. Differences in Blood Sugar Levels Before and After Intervention in the Intervention and Control Groups

Current Blood Sugar Rate	Mean ± SD	
	Intervention (n=26)	Group (n=26)
Before	266,54 ± 107,013	256,96 ± 70,818
After	197,42 ± 64,499	163,54 ± 40,895
Difference	33,88 ± 42,514	23,604 ± 29,923
p-value	0,000	0,000

Based on Table 4, it is explained that there is a statistically significant difference in blood sugar levels before and after the intervention, both in the intervention group with a value of p=0.000 (p<0.05) and in the control group with a value of p=0.000 (p<0.05). The results of this study show a difference in nutritional management education on blood sugar levels before and after the intervention in the intervention group, with a value of p = 0.000 (p<0.05). This study's results align with research conducted by Setyoadi (2018), in which there was a decrease in blood sugar levels after treatment was given to respondents, with p = 0.007. The results of this research are supported by research conducted by Heri (2018) that a decrease in the average blood glucose levels of respondents who were given intervention could have an effect, one of which is controlling the respondents' eating patterns. Diet or food intake is the most critical factor in increasing or decreasing blood glucose levels. The client's blood sugar levels decrease by providing education on nutritional management and eating patterns. Blood glucose levels are also influenced by several factors, such as the accuracy and compliance of respondents in implementing diet and eating habits after being given nutrition education (Setyoadi et al., 2018).

This study's results show a difference in the control group before and after with a value of p = 0.000 (p <0.05). This research is supported by Andi (2021), where there is a difference in blood sugar levels with a p-value = 0.00. People with Diabetes must carry out various arrangements related to eating and controlling blood glucose to control their metabolism correctly. Yustina (2021) states that the key to diabetes mellitus management is keeping blood glucose levels as close to normal as possible. The diet of diabetes mellitus clients aims to help them improve eating habits so they can control blood glucose levels within normal limits due to hyperglycemia (Yustina & Tuharea, 2021).

Table 5. Effect of Health Education on Nutrition Management on Current Blood Sugar Levels in DM Clients

Group	Mean	SD	*p-value*
Intervention	197,42	64,499	0,028
Control	163,54	40,895	
Difference	33,88	23,604	

With a value of p=0.028 (p<0.05), Table 5 demonstrates a substantial impact of nutritional management and health education on blood sugar levels in DM patients. The findings of this study are corroborated by prior research, which indicates that clients with diabetes mellitus can alter their lifestyle and behavior by receiving gradual, structured education and guidance in self-management. These clients can then carry out independent interventions, such as diet planning. Health education can improve a person's cognitive abilities, skills, and attitudes in self-care for DM clients (Sudirman & Modjo, 2021). Health education is a planned effort to spread influence on the health of other people, whether individuals, groups, or communities, so that target behavior can be by what is expected by the provider of education and health promotion with the expected result of education or health promotion being improved behavior so that targets of health education maintain health. There are two methods of health

education, namely individual (individual) and group methods with educational media, namely booklets, leaflets, flyers, flip charts, and even electronic media.

Education about nutritional management affects blood sugar levels in Diabetes Mellitus clients because clients can regulate the food they consume. Yustina (2021) explains differences in eating patterns before and after being given self-training management, especially significant eating patterns. Eating patterns are food intake that provides various amounts, schedules, and types of food that a person gets. Improper eating patterns, as recommended by 3J (Schedule, Amount, and Type), can result in increased blood sugar levels (Angga, 2022). The diet pattern for diabetes mellitus clients aims to help them improve eating habits so they can control blood glucose levels within normal limits due to hyperglycemia (increased blood sugar levels). Therefore, the management of diet therapy for Diabetes mellitus plays a vital role in efforts to normalize blood sugar levels in Diabetes mellitus and prevent various complications arising from the disease (Angga, 2022).

Abnormal blood glucose levels due to disruption of carbohydrate metabolism. Therefore, there are essential factors in controlling blood sugar levels, namely the fiber content in food, the digestive process, how to cook food, meal times, the influence of glucose intolerance, and whether the food is concentrated or not. Diet is an integral part of managing DM, apart from exercise and anti-drug Diabetes, as well as education. Choosing foods (carbohydrates) that do not drastically increase blood sugar levels is one effort to maintain blood sugar levels at an average level. Recognition of carbohydrates based on their effect on blood sugar levels and insulin response can be used as a reference in determining the right amount and type of food source of carbohydrates to improve and maintain health (Angga, 2022).

The principles of eating management for DM clients are almost the same as the eating recommendations for the general public, namely, balanced food according to the calorie needs of each individual. The principles of eating management for Diabetes clients include recommendations for eating balanced nutrition; food is not prohibited but only limited to daily needs; the menu given is the same as the family menu, and it is essential to remember that the use of sugar as a spice in cooking is not prohibited. However, the use of salt needs to be reduced. The term used for diabetes clients' eating arrangements is 3J, namely: the proper meal schedule, the right amount of food, and the correct type of food ingredients (Angga, 2022).

The precise food schedule in question is that setting meal times at certain times helps train the stomach or stomach of Diabetic clients to be "hungry" at the specified meal times. The right amount of food means choosing the right type of food ingredients so that Diabetes clients can get used to consuming a variety of foods and have good eating habits. The right amount of food means that Diabetes clients must also pay attention to the portion of each type of food consumed because blood sugar levels will increase drastically after consuming certain foods due to the tendency of the food consumed (Angga, 2022).

The limitations in carrying out this research are that researchers cannot directly observe eating patterns throughout the intervention period so that it can influence the results of the health education method itself, and researchers cannot control confounding variables that can influence blood sugar levels in diabetes mellitus clients. Researchers only focus on nutritional management health education interventions as a form of therapy for nonpharmacologists to lower blood sugar levels.

4. CONCLUSION

Health education on nutritional management affects blood sugar levels in diabetes mellitus clients. Hopefully, this research can be disseminated widely as a reference for education regarding Health Education on Nutritional Management of Blood Sugar Levels in Diabetes Mellitus clients. They will continue to carry out nutritional management as taught as an independent intervention to lower blood sugar levels and take blood sugar-lowering medication. It is hoped that the Gribig Health Center, Kudus Regency, can apply nutritional management and create an innovative health education about nutritional management as a way to reduce blood sugar levels. Hopefully, this research can be added to the literature and published to become a reference source for further research and be useful for future nursing science development. It is hoped that future researchers can carry out further studies using variables that have yet to be revealed so that further research results will be more complete and accurate.

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