

## Community Empowerment to Reduce Blood Glucose Levels of Diabetes Mellitus Clients Through The Provision of Guava Leaves (*Psidium Guajava*) Decoction in Tuladenggi Sub-District, Dungingi District

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### Abstract

Diabetes Mellitus is a chronic metabolic condition caused by insufficient insulin produced by the pancreas or the body's inability to effectively utilize insulin. Diabetes has become more common in low- and middle-income countries during the previous decade. In 2018, Gorontalo Province ranked eighth in Indonesia for the highest prevalence of Diabetes Mellitus. According to the findings of the 2018 Basic Health Research (Riskesmas), the prevalence of non-communicable diseases (NCDs) in Gorontalo Province has increased compared to Riskesmas 2013. Based on data from Gorontalo Province Department of Health, cancer prevalence increased from 1.4 percent in 2013 to 1.8 percent in 2018. The prevalence of stroke increased from 7 percent to 10.9 percent, and the prevalence of chronic kidney disease increased from 2 percent to 3.8 percent. Next, diabetes mellitus increased from 6.9% to 8.5 percent, whereas hypertension increased from 31% to 34.1 percent. Gorontalo are placed in the top 10 nationally in Indonesia due to of the increasing frequency of non-communicable diseases. Hence, the Government established an Integrated Development Post (Posbindu) for non-communicable diseases. The purpose of community service is to determine the effect of giving decoction from guava leaves (*psidium guajava*) on blood glucose levels in diabetes mellitus clients in Dungingi sub-district, Gorontalo City. The results of a community service project carried out from August 10 to September 1, 2021, with 100 participants, revealed that 62 people saw a significant decline after a one-week intervention. On the other hand, for those who do not experience any effect, may be due to irregular and non-routine consumption of guava leaves decoction.

**Keywords:** Diabetes Mellitus, Guava Leaves, Blood Glucose Level

### INTRODUCTION

*Diabetes mellitus* is a disease in which the pancreas' function is disrupted, and it is unable to create insulin in accordance with the body's metabolic needs, causing blood sugar levels to increase and exceed the normal threshold (Khotimah, 2014). According to the World Health Organization (WHO), Indonesia has the fourth highest number of people with diabetes mellitus in the world, with an estimated 4 million people suffering from the disease in 2000. This number is predicted to continue to increase. In 2010, it was predicted to be 5 million, and by 2030, it is estimated that around 21.3 million Indonesians suffer from diabetes mellitus (Simanjuntak, 2018)

Based on the 2018 basic health research data, the prevalence of diabetes mellitus for all ages is still high at 1.5%, while Gorontalo has the highest prevalence of 1.7 with the 8th position among Indonesia's 33 provinces. Basic Health Research data in 2018, Gorontalo Province, the prevalence of diabetes mellitus at all ages is 1.7%. Meanwhile, Gorontalo City has the highest prevalence of 2.87 percent, compared to 1.88 percent in Gorontalo Regency, 1.73 percent in North Gorontalo Regency, 1.33 percent in Bone Bolango Regency, and 0.73 percent in Boalemo Regency.

*Diabetes mellitus* can be managed with drug and non-drug therapy. Chemical medications that reduce blood sugar levels are referred to as drug therapy. Drug therapy can be in the form of oral hypoglycemic drugs or insulin. Non-drug therapy includes gaining a better understanding of diabetes, exercising regularly, eating a healthy diet, and taking medicinal herbs.

Inhibiting the absorption of blood sugar thus the amount in the body does not exceed normal limits is the way medicinal herbs work. Medicinal plants that work as medical herbs include avocado, beans, corn, guava, *Leucaena glauca*, *Leucaena leucocephala*, mahogany, and bay leaves. The fruit and leaves of the guava plant can be used to treat diabetes (Bumi Medika Team, 2017). Tannins and calcium are the content contained in guava leaves. Guava leaves are herbs that can assist to normalize the function of the pancreatic gland with pharmacological effects on the blood circulation system in helping to normalize the function of the pancreas in overcoming *diabetes mellitus*. (Maharani, 2013).

Guava comes in two varieties such as water apple and guava. Based on observations of the most common types of guava in the community, particularly guava. Tannin is a substance found in the guava tree's fruit, leaves, and bark. Tannins can lower blood glucose levels. This has been proven by research conducted by Maharani (2013) explaining that there is an effect of giving decoction water from guava leaves on blood glucose levels in patients with type II diabetes mellitus in Leyangan Village, East Ungaran District, Semarang Regency. Guava leaves decoction therapy can be used as an alternative for managing type 2 diabetes mellitus patients' blood glucose levels. The results of interviews with 27 persons who have ingested Diabetes Mellitus medicines but have not been optimal or do not routinely take drugs that cause blood sugar levels to remain high, encouraged the community service team's interest and prompted to perform community outreach.

The Ministry of Gorontalo Polytechnic Health through the Tridarma (Education and Teaching, Research and Development, Community Service) activities of higher education routinely carry out research-based community service. The purpose of this Community Service Activity was to follow up on a study titled The Effect of Giving Guava Leaves Decoction on Blood Glucose Levels.

## METHOD

The target participants of this community service activity program are people with Diabetes Mellitus in the Tuladenggi village, Duingingi sub-district. This activity is carried out in the form of counseling, lectures, discussions, consultations, mentoring, and evaluation of changes in community understanding in Duingingi. District related to clean and healthy living behavior in this case maintaining a diet by giving decoction of guava leaves. Data related to the level of comprehension of the village community was obtained through recapitulation, both through direct interviews and at the time of material presentation.

## RESULT AND DISCUSSION

Community service activities are basically routine activities every year carried out by the academic community in practicing and civilizing science and technology to advance public welfare and educate the nation's life. The results of Community Service activities will generally be used as a process of developing science and technology, a source of teaching materials, and or for the learning of the academic community. The number of community service participants in the Tuladenggi sub-district, Duingingi sub-district is 100 cadres and the elderly. The implementation of community service activities (table 1) is carried out in 3 stages, namely in March-August. Each stage of implementation is carried out for 1 day.

The results of the evaluation results carried out by the community service team with the title Community Empowerment in Lowering Blood Glucose Levels for Diabetes Mellitus Clients

Through Provision of Guava Leaf Boiled Water (*Psidium Guajava*) in Tuladenggi Village, Dungingi District through observation and implementation of blood sampling in determining whether there was an increase or decrease in blood glucose levels. decrease in blood glucose levels. Of all participants who attended a total of 100 people on the first day and 90 people on the second day of the intervention, there were 62 people experienced a decrease in blood glucose levels. This indicates the team's success in providing education about increasing the community's immune system through clean and healthy living by consuming boiled water from guava leaves.

**Table 1.** The Implementation of community service activities

Date	Activity
Wednesday, August 10, 2021	<ol style="list-style-type: none"><li>1. Conduct a site inspection</li><li>2. Collaborate with officials in the Tuladenggi sub-district, dungingi sub-district</li><li>3. Checking the number of cadres and elderly with DM</li></ol>
Friday, August 27, 2021	<ol style="list-style-type: none"><li>4. Conducting health education related to the material in community service.</li><li>1. Presentation of material representatives from the Puskesmas and the Devotion Lecturer Team</li><li>2. Provide feedback related to the material that has been given.</li><li>3. Checking blood glucose levels before giving guava leaf boiled water</li></ol>
Wednesday, September 01, 2021	Checking blood glucose levels 1 week after drinking guava leaf boiled water and evaluating the results of the examination

### CONCLUSION

Overall, the results of community service carried out from August 10 to September 1, 2021, with 100 participants, of which, after intervention for approximately 1 week, the results showed that 62 people experienced a significant decrease. did not experience a decrease, possibly caused by not routine and irregular in consuming the guava leaf decoction.

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