



The Application Of Guava Leaf (*Psidium Guajava*) Decoction In Reducing Blood Glucose Levels In Patients With Type II Diabetes Mellitus

Birrul Walidin^{1*}, Risqina Putri², Cut Rahmiati³, Afrilia Fazrina⁴

¹Student Academy of Nursing Kesdam Iskandar Muda Banda Aceh.

^{2,3,4}Academy of Nursing Kesdam Iskandar Muda Banda Aceh

Received: 2026-07-17

Revised: 2026-07-21

Accepted: 2026-07-22

Published: 2026-07-31

Corresponding Author: Risqina Putri

Author Name*: Birrul Walidin

Email*: birrulbirrul3@gmail.com

DOI:

<https://doi.org/10.63404/juka.v10i6.274>

© 2023 The Authors. This open access article is distributed under a (CC-BY License)



Phone*: +6282215659760

Abstract: Type 2 diabetes mellitus is a metabolic disorder characterized by decreased insulin sensitivity, resulting in impaired glucose uptake by body cells and elevated blood glucose levels. Uncontrolled hyperglycemia may increase the risk of complications, including retinopathy, neuropathy, nephropathy, and cardiovascular disease. One non-pharmacological intervention that may help reduce blood glucose levels is guava leaf decoction, as it contains flavonoids that inhibit glucose absorption after consuming carbohydrate-rich foods. This study aimed to describe the implementation of guava leaf decoction in reducing blood glucose levels among patients with type 2 diabetes mellitus. A descriptive study with a case study approach was conducted using observation and interviews. The research instruments included informed consent forms, assessment sheets, a standard operating procedure (SOP) for preparing guava leaf decoction, observation sheets, a glucometer, and the materials required for the preparation of the decoction. The study involved two patients with type 2 diabetes mellitus in Peunyerat and Mibo Villages, Banda Raya District, Banda Aceh, from November 18 to December 2, 2025. The results showed that blood glucose levels decreased from 210 mg/dL to 174 mg/dL in Subject I and from 215 mg/dL to 167 mg/dL in Subject II after the intervention. These findings indicate that guava leaf decoction may be effective in reducing blood glucose levels and can be considered a complementary non-pharmacological intervention for patients with type 2 diabetes mellitus.

Keywords: Type II Diabetes Mellitus, Blood Glucose Level, Guava Leaf Decoction.

INTRODUCTION

Diabetes mellitus is a chronic metabolic disease characterized by hyperglycemia, defined as a random blood glucose level of ≥ 200 mg/dL and a fasting blood glucose level of ≥ 130 mg/dL. Hyperglycemia is commonly associated with clinical manifestations such as unexplained weight loss, polyuria, polydipsia,

polyphagia, and blurred vision (American Diabetes Association, 2020).

According to the International Diabetes Federation (IDF) (2023), an estimated 540 million people worldwide were living with diabetes mellitus. In 2021, approximately 10.5% of adults aged 20–79 years were affected by the disease. The global prevalence of diabetes

How to Cite:

Walidin, B., Putri, R., Rahmiati, C., & Fazrina, A. (2026). The Application Of Guava Leaf (*Psidium Guajava*) Decoction In Reducing Blood Glucose Levels In Patients With Type II Diabetes Mellitus. *Jurnal Keperawatan Akimba*, 10(6), 16–20. <https://doi.org/10.63404/juka.v10i6.274>

mellitus is projected to increase to 643 million cases by 2030 and 783 million cases by 2045. More than 90% of these cases are classified as type 2 diabetes mellitus.

Indonesia has approximately 10.5 million people living with diabetes mellitus, ranking seventh among countries with the highest number of diabetes cases worldwide (Retiningsih, 2022). The number of individuals affected by diabetes is projected to increase annually, reaching an estimated 16.7 million cases by 2045 if public awareness of type 2 diabetes mellitus remains low and preventive measures continue to be neglected (Puspitasari, 2023).

According to the Aceh Provincial Health Office (2021), there were 184,527 individuals diagnosed with diabetes mellitus, of whom 97,131 (53%) received healthcare services that met the established standards. The report also indicated that only ten districts/cities achieved the standard of diabetes care coverage, namely Central Aceh, West Aceh, Pidie, Southwest Aceh, Gayo Lues, Banda Aceh, Sabang, Langsa, Lhokseumawe, and Subulussalam.

If not properly managed, type 2 diabetes mellitus can lead to various chronic complications. These include diabetic retinopathy, diabetic neuropathy, diabetic nephropathy, and cardiovascular diseases, all of which may significantly impair patients' quality of life and increase the risk of morbidity and mortality (Ministry of Health of the Republic of Indonesia, 2024).

Appropriate management is essential to prevent the development of diabetes-related complications. According to the Indonesian Society of Endocrinology (PERKENI), the management of patients with diabetes mellitus includes both pharmacological and non-pharmacological approaches. Pharmacological therapy involves the use of antihyperglycemic medications, such as metformin, glucophage, diabex, and phenformin, to control blood glucose levels. In contrast, non-pharmacological therapy includes the use of herbal and complementary interventions to help reduce blood glucose levels, such as autogenic relaxation, noni fruit decoction, bay leaf decoction, moringa leaf decoction, and guava leaf decoction (Hidayati & Cumayunaro, 2020).

Guava leaves are believed to help reduce blood glucose levels due to their bioactive compounds. They contain four major flavonoids with antibacterial properties, as well as other pharmacologically active substances, including anti-inflammatory, analgesic, antidiabetic, and antioxidant compounds. Phytochemical screening has shown that guava leaves contain several secondary metabolites, such as polyphenols, flavonoids, monoterpenoids, sesquiterpenoids, alkaloids, essential oils, tannins, and calcium. These compounds may inhibit the activity of the α -glucosidase enzyme in the small intestine, thereby slowing the digestion and absorption of glucose and

preventing a rapid postprandial increase in blood glucose levels. Furthermore, the flavonoids present in guava leaves may enhance insulin sensitivity in peripheral tissues, particularly the liver and skeletal muscles, facilitating glucose uptake by cells and its utilization as an energy source (Cortis, 2022).

A study conducted by Jannah (2021) reported that the participants had a mean blood glucose level of 247 mg/dL before receiving guava leaf decoction. Following the administration of 250 mL of guava leaf decoction daily for six consecutive days, the mean blood glucose level decreased to 202 mg/dL, representing an average reduction of 44.44 mg/dL. These findings suggest that guava leaf decoction may be effective in lowering blood glucose levels among patients with type 2 diabetes mellitus.

These findings are consistent with the study conducted by Nugroho et al. (2022), which reported a mean blood glucose level of 257.09 mg/dL before the administration of guava leaf decoction. After receiving 250 mL of guava leaf decoction twice daily for seven consecutive days, the participants' mean blood glucose level decreased to 189.36 mg/dL, indicating a substantial reduction following the intervention.

The novelty of this study compared with previous research lies in its use of a case study approach involving direct observation of two participants over seven consecutive days. This study not only evaluated changes in blood glucose levels before and after the administration of guava leaf (*Psidium guajava*) decoction but also described the implementation of a herbal-based non-pharmacological intervention among patients with type 2 diabetes mellitus in a primary healthcare setting. The findings are expected to provide additional evidence supporting the application of complementary interventions for blood glucose control in patients with type 2 diabetes mellitus.

METHOD

This study employed a descriptive research design using a case study approach. Descriptive research is a method used to provide an objective description of a particular phenomenon or condition and to address existing problems within a specific context (Wahyuni, 2018). In this study, the case study approach was used to describe the reduction in blood glucose levels following the administration of guava leaf (*Psidium guajava*) decoction among patients with type 2 diabetes mellitus.

This study involved two participants from Mibo Village. The intervention consisted of administering guava leaf (*Psidium guajava*) decoction to evaluate its effect on reducing blood glucose levels. The study was conducted in the working area of the Banda Raya Community Health Center, Banda Aceh, Indonesia, from November 18 to December 2, 2025. Participants received 250 mL of guava leaf decoction once daily in the afternoon for seven consecutive days. Blood glucose

levels were measured two hours after each administration as the post-test assessment.

The research instruments used in this study included an assessment form, an observation checklist, a Standard Operating Procedure (SOP) for the preparation and administration of guava leaf (*Psidium guajava*) decoction, and a glucometer to measure blood glucose levels in patients with type 2 diabetes mellitus. In addition, the equipment and materials required for preparing the guava leaf decoction were provided to ensure consistency throughout the intervention.

RESULT and DISCUSSION

The study results showed that the blood glucose levels of Subject I and Subject II after the administration of guava leaf (*Psidium guajava*) decoction were as follows:

Decoction in Subject I:

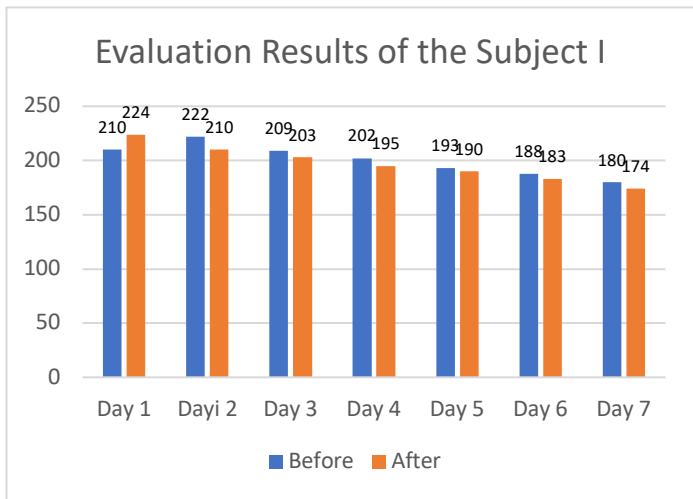


Figure 1: Pre- and Post-Intervention Blood Glucose Levels in Subject I.

As illustrated in the figure 1, Subject I had a baseline blood glucose level of 210 mg/dL on the first day. Following the administration of guava leaf (*Psidium guajava*) decoction for seven consecutive days, the blood glucose level decreased to 174 mg/dL. An increase in blood glucose level was observed on the first day, rising from 210 mg/dL before the intervention to 224 mg/dL after the administration of the decoction. The increase in blood glucose levels may have been influenced by the participant's consumption of high-fat foods following the intervention, thereby reducing the observable glucose-lowering effect of the guava leaf (*Psidium guajava*) decoction on that day. Although guava leaves contain flavonoids and other bioactive compounds that have the potential to improve insulin sensitivity and inhibit intestinal glucose absorption, these effects are not immediate and may not fully counteract the metabolic disturbances induced by the consumption of high-fat

foods. Therefore, the effectiveness of guava leaf decoction as a complementary intervention also depends on the patient's adherence to an appropriate dietary pattern throughout the intervention period.

Decoction in Subject II:

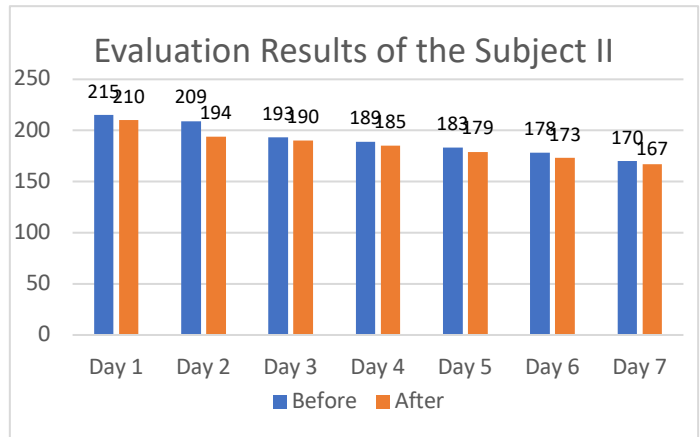


Figure 2: Pre- and Post-Intervention Blood Glucose Levels in Subject II.

As shown in Figure 2, Subject II had a blood glucose level of 215 mg/dL on the first day. After receiving guava leaf (*Psidium guajava*) decoction for seven consecutive days, the blood glucose level decreased to 167 mg/dL.

Based on the results of this study, the administration of guava leaf (*Psidium guajava*) decoction was associated with a reduction in blood glucose levels in both Subject I and Subject II. The findings showed a decrease in blood glucose levels before and after the administration of guava leaf decoction in both participants. Subject I had a blood glucose level of 210 mg/dL on the first day, which decreased to 174 mg/dL on the final day. Similarly, Subject II had a blood glucose level of 215 mg/dL on the first day, which decreased to 167 mg/dL on the final day. Guava leaf (*Psidium guajava*) decoction was administered once daily in the afternoon for seven consecutive days. Post-test blood glucose levels were measured two hours after each administration.

The first factor contributing to the successful implementation of guava leaf (*Psidium guajava*) decoction was the frequency of the intervention. Both Subject I and Subject II completed the entire intervention protocol by consuming guava leaf decoction once daily in the afternoon for seven consecutive days. Post-test blood glucose levels were measured two hours after each administration, allowing the intervention to be implemented as planned.

These findings are consistent with the study conducted by Hapsari and Mutmainah (2014), which reported that adherence to the recommended frequency of treatment plays an important role in maintaining stable blood glucose levels. Non-adherence to the

prescribed treatment frequency may result in suboptimal therapeutic outcomes, even when the type of therapy is appropriate. Therefore, adherence to the recommended treatment frequency is considered a key factor in achieving successful therapeutic outcomes.

The next factor contributing to the successful implementation of the intervention was family support. Both Subject I and Subject II received family support in the form of attention, encouragement, and reminders to consume the guava leaf (*Psidium guajava*) decoction regularly, thereby improving the participants' adherence to the intervention.

These findings are consistent with the study conducted by Aprilianawari and Wahyuni (2022), which reported that family support plays an important role in the successful implementation of interventions and provides motivation to promote adherence to treatment among patients with diabetes mellitus.

One of the factors contributing to increased blood glucose levels in patients with type 2 diabetes mellitus is age. The aging process is associated with a decline in physiological function, including reduced insulin sensitivity and impaired insulin function, which may affect the body's ability to maintain normal blood glucose levels.

This finding is also supported by Tandra (2018), who reported that physiological function generally begins to decline more rapidly between the ages of 30 and 40 years. The risk becomes greater in individuals aged over 45 years, particularly those who are overweight or obese. In Indonesia, the majority of patients with diabetes mellitus are between 30 and 47 years of age, accounting for 25.3% of cases. Furthermore, the risk of developing diabetes mellitus increases progressively with advancing age.

In addition to age, another factor that may influence blood glucose levels is sex. In the present study, both participants were female. Sex may contribute to increased blood glucose levels because women generally have a higher percentage of body fat than men, which may increase the risk of impaired glucose metabolism.

These findings are consistent with the study conducted by Haryati and Geria (2014), which reported that the prevalence of diabetes mellitus is higher among women than men. This may be attributed to the higher percentage of body fat in women, which can contribute to reduced insulin sensitivity in skeletal muscle and liver tissues, thereby increasing the risk of impaired glucose regulation.

Another factor that may contribute to increased blood glucose levels is genetic predisposition. Genetic factors are considered one of the major contributors to elevated blood glucose levels because they increase an individual's susceptibility to developing diabetes mellitus, particularly type 2 diabetes mellitus.

These findings are supported by previous research, which has shown that genetic factors play an important role in an individual's risk of developing diabetes mellitus. Individuals with a family history of diabetes have a higher likelihood of developing impaired glucose metabolism than those without such a history. This evidence supports the conclusion that hereditary factors are among the major risk factors contributing to the development of diabetes mellitus (Dania et al., 2024).

Another factor that may influence increased blood glucose levels is dietary intake. Blood glucose levels in patients with type 2 diabetes mellitus are also influenced by the types of foods consumed, as frequent consumption of foods high in sugar and excessive intake of high-fat foods may contribute to elevated blood glucose levels.

These findings are consistent with the study conducted by Betteng, Pangemanan and Mayulu (2014), which reported that frequent consumption of foods high in sugar is associated with an increased risk of developing type 2 diabetes mellitus, as it may lead to elevated blood glucose concentrations.

In addition to the factors described above, insufficient physical activity may also contribute to increased blood glucose levels. Physical activity plays an important role in the management of diabetes mellitus, as inadequate exercise can impair the function of skeletal muscle cells, thereby reducing their ability to regulate blood glucose levels effectively.

These findings are consistent with the study conducted by Dolongseda (2017), which reported that a lack of regular physical exercise may impair insulin action in individuals at risk of developing diabetes mellitus. Consequently, insufficient physical activity may contribute to an increased risk of impaired blood glucose regulation.

CONCLUSION

Based on the findings and discussion of this case study on patients with type 2 diabetes mellitus, it can be concluded that the administration of guava leaf (*Psidium guajava*) decoction was associated with a reduction in blood glucose levels. Subject I's blood glucose level decreased from 210 mg/dL to 174 mg/dL, while Subject II's blood glucose level decreased from 215 mg/dL to 167 mg/dL. Factors contributing to the successful implementation of the intervention included adherence to the recommended frequency of administration and family support. Factors that may have influenced increased blood glucose levels included age, sex, genetic predisposition, dietary habits, and insufficient physical activity.

ACKNOWLEDGMENTS

The authors would like to express their sincere gratitude to all individuals who contributed to the completion of this

study. Special appreciation is extended to the Director of Iskandar Muda Banda Aceh Army Nursing Academy for the support provided throughout this research. The authors also wish to thank their academic supervisor, the first examiner, the second examiner, and the institution for their valuable guidance, support, and encouragement during the research process. Their assistance and constructive feedback were invaluable in the successful completion of this study.

AUTHOR CONTRIBUTION

The author was responsible for all aspects of the study, including conceptualization of the research, data collection, data analysis and interpretation, manuscript preparation, manuscript revision, and final approval of the version to be published

FUNDING

This research was self-funded by the author and did not receive any financial support from government agencies, institutions, organizations, or other external parties.

CONFLICTS OF INTEREST

The author declares that there are no conflicts of interest regarding the conduct and publication of this study. The author has no financial, professional, or personal interests that could have influenced the results, analysis, or interpretation of the research reported.

REFERENCES

- American Diabetes Association (ADA), (2020). *Diagnosis and classification of diabetes mellitus*. Diabetes care, 33 (SUPPL. 1). <https://doi.org/10.2337/dc10-S062>.
- Aprilianawati, N., & Wahyudi, C. T. (2022). Motivasi diri dan dukungan keluarga dalam mengontrol tekanan darah lansia diabetes mellitus. *Journal JKFT: Universitas Muhammadiyah Tangerang*. Vol: 7(1).
- Betteng, R., Pangemanan, D. H. C., & Mayulu, N. (2014). Analisis faktor risiko penyebab terjadinya diabetes melitus tipe 2 pada pasien di Poliklinik Penyakit Dalam RSUP Prof. Dr. R. D. Kandou Manado. *Jurnal e-Biomedik (eBM)*, 2(2), 1–8.
- Dania, A. (2024). Arjuna. Faktor-Faktor yang Berhubungan dengan Kejadian Diabetes Melitus di Wilayah Kerja Puskesmas Puding Kabupaten Bangka Tahun 2023. *Nursing Science Journal (NSJ)*, 5(1), 48-55.
- Dinas Kesehatan Aceh. (2021). Profil Kesehatan Aceh . Aceh: Dinas Kesehatan Aceh.
- Hapsari, P. N., & Mutmainah, N. (2014). *Hubungan Antara Kepatuhan Penggunaan Obat Dan Keberhasilan Terapi Pada Pasien Diabetes Mellitus Instalasi Rawat Jalan Di Rsud Dr. Moewardi Surakarta* (Doctoral dissertation, Universitas Muhammadiyah Surakarta).
- Haryati, D., & Geria, A. (2014). *Faktor risiko kejadian diabetes mellitus tipe 2 berdasarkan jenis kelamin di RSUD Cilacap*. *Jurnal Kebidanan*, 9(2), 101–212.
- Hidayati, R., & Cumayunaro, A. (2020). *The effect of giving jambu seed leaves boiled water on blood glucose levels in Diabetes mellitus type 2 N Kubu Village in. journal off scientech research and development*, 2(1), 1–6.
- IDF. (2023). Annual Report. International Diabetes Federation.<https://doi.org/10.4337/9781845420765.00011>
- Jannah, F. (2021). Pengaruh pemberian air rebusan daun jambu biji terhadap kadar gula darah pada klien diabetes melitus di desa sungai pinang wilayah kerja upt blud puskesmas tambang tahun 2021.
- Kemenkes. (2024). *Mari Kenali Diabetes Melitus*. Jakarta : Direktorat Jenderal Pelayanan Kesehatan Kementerian Kesehatan Republik Indonesia.
- Leny Puspitasari, SpPD, KEMD. 2023. *Fakta Penyakit Diabetes Di Indonesia Dan Cara Mencegahnya*. SILOAM HOSPITALS.
- Maigoda cortis, T. (2022). *Gel Ekstrak Daun Jambu Biji dan Daun Senduduk*. Pekalongan: Penerbit NEM. 05p.
- Nugroho, Y. W., Handono, N. P., Keperawatan, A., Satria, G., & Wonogiri, H. (2022). Efektivitas pemberian Rebusan Daun Jambu Biji (*Psidium guajava*) terhadap Penurunan Kadar Gula Darah Pada Pasien Diabetes Mellitus. *Journal Keperawatan GSH*, 11(2), 40-44.
- Retaningsih, Veronika, & Firmina Th Kora. (2022). “I peningkatan Kualitas Hidup pasien DM Dengan menjaga Kadar Gula Darah. “02:50-52.
- Tandra, H. (2018). Segala sesuatu yang harus anda ketahui tentang diabetes panduan lengkap mengenal dan mengatasi diabetes dengan cepat dan mudah. Edisi kedua. Jakarta: Gramedia.