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COMPARISON OF EFFICACY OF TRADITIONAL AND MODERN MEDICINE IN DIABETES MELLITUS MANAGEMENT

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Abstract

Diabetes mellitus is a chronic disease with an increasing prevalence globally. Diabetes management involves a multifaceted approach that includes lifestyle changes, blood sugar monitoring, and the use of medications. While modern medicine has become fundamental in the management of diabetes, traditional medicine is also still widely used. This study aims to evaluate and compare the efficacy of traditional and modern medicine in the management of diabetes. The research method used in this study is literature review. The results showed that modern medicine, which is based on strong scientific evidence and clinical validation, consistently showed higher efficacy in controlling blood sugar and reducing the risk of diabetes complications compared to traditional medicine. Drugs such as Metformin, DPP-4 inhibitors, and GLP-1 analogs have strong evidence of efficacy. On the other hand, studies on traditional medicine show mixed results with some offering potential benefits in controlling blood sugar. However, evidence regarding traditional medicine often lacks consistency and is poorly understood in the context of a clear mechanism of action.

Keywords: Efficacy of Traditional, Modern, Diabetes Mellitus Management.

Introduction

Diabetes mellitus (DM) is a global health problem whose prevalence continues to increase every year. According to the International Diabetes Federation, the number of people with DM is expected to continue to grow, from 463 million people in 2019 to around 700 million in 2045 (Ulfa et al., 2023). The disease not only negatively impacts the quality of life of individuals, but also poses a huge economic burden to health systems worldwide (Supriadi & Haflin, 2022).

Diabetes mellitus (DM) significantly affects the quality of life of patients both physically and psychologically. Physically, DM can lead to various complications such as

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neuropathy (nerve damage), nephropathy (kidney damage), and retinopathy (retinal damage) which can lead to a significant decline in organ function and disability (Hasliani & Wulandari, 2023). DM also increases the risk of cardiovascular diseases, such as heart attack and stroke. These complications not only worsen overall health conditions, but also limit daily activities, reduce mobility, and cause ongoing pain and discomfort, all of which can reduce quality of life (Tarasova et al., 2020).

From a psychological point of view, the effect of DM on quality of life can also be devastating. The constant and ongoing management of DM, such as blood sugar level monitoring, dietary regulation, and the need for constant medical intervention, can lead to chronic stress and anxiety (Hasanah et al., 2023). Many people with DM report feelings of social isolation and depression as a result of their struggle with the disease. In addition, concerns about long-term complications can exacerbate this anxiety. Therefore, a holistic approach to diabetes management, which includes mental as well as physical support, is crucial to minimize the negative impact and improve the quality of life of sufferers (Mamasoliev, 2022).

Given the significant impact of Diabetes Mellitus (DM) on quality of life, it is important to highlight the need for a comprehensive management approach to help patients overcome this challenge. An effective approach involves not only proper medical management, such as regular blood sugar monitoring and medication use, but also psychosocial support. This can include individual or group counseling, as well as patient education programs that focus on empowering patients to manage DM more effectively. In addition, undertaking lifestyle interventions, such as a healthy diet, increased physical activity, and weight management, have been shown to improve blood sugar control and long-term health outcomes (Svarovskaya & Garganeeva, 2022). This suggests that the integration of clinical management and emotive support holds the key to improving quality of life for people with DM. Empowering patients to be actively involved in the management of their own condition can help minimize the negative impact of the disease and promote more positive health outcomes (Shilova et al., 2020).

Diabetes treatment has evolved rapidly from the use of traditional medicine to modern methods that focus more on pharmaceuticals and medical technology. Traditional medicine usually involves the use of herbal ingredients and natural methods to manage blood sugar which include herbs, diet, dasai, and physical activity that are specialized to balance blood sugar (Cahyani, 2023). Geographical and cultural diversity often influence the type of traditional medicine used, with some natural ingredients such as binahong leaves, cinnamon, and aloe vera known to have certain healing effects on DM. Although often considered safer because they are natural, the efficacy of traditional medicine is not necessarily consistent and lacks support from rigorous scientific studies, so the risks and benefits are still a subject of debate in medical circles (Nanis & Bakhtiar, 2020).

On the other hand, modern treatments for DM have become more innovative and effective with the use of medications that can actively control blood sugar levels in a measurable and predictable manner. Modern therapies include the use of synthetic insulin administered through continuous injections or insulin pumps, as well as oral medications such as metformin, SGLT2 inhibitors, and DPP-4 inhibitors. In addition, developments in monitoring technology, such as continuous glucose monitoring (CGM) systems, allow for more accurate and real-time monitoring of blood sugar fluctuations (Gultom & Indrawati, 2020). Although effective, modern treatments can have side effects and require regular medical monitoring to avoid complications. Treatment options are often tailored based on the type of DM, severity, and overall health condition of the patient, suggesting a more individualized approach to diabetes management (Kusuma et al., 2022).

The fundamental difference between these two types of treatment raises questions regarding their relative efficacy in managing DM. This prompted the need for a comparative study to investigate the effects and advantages offered by each therapeutic approach. This study is important to assist diabetic patients and healthcare practitioners in making more informed therapeutic choices that are tailored to patients' needs and preferences. Therefore, this study aims to compare the efficacy of traditional and modern medicine in managing DM through an in-depth literature review.

Research Methods

The study conducted in this research uses the literature research method. The literature research method is an approach used in academic studies that focuses on collecting, analyzing, and synthesizing data from existing document sources to create new understanding or provide insight into a topic. This process is often used in various disciplines, ranging from the humanities to science and technology, with the main objectives of building a theoretical or conceptual basis, evaluating previous research trends, or identifying gaps in existing knowledge (Wekke, 2020); (D. N. Hidayat, 2009); (Setyowati, 2014).

Results and Discussion

Diabetes Mellitus

Diabetes mellitus (DM) is a group of metabolic diseases characterized by hyperglycemia, or high blood sugar levels, caused by defects in insulin production, insulin action, or both (KURNIAWAN, 2023). Insulin is a hormone produced by the pancreas that allows glucose (sugar) to enter cells throughout the body, so it can be used as energy. When insulin production is insufficient or the body cannot use insulin efficiently, glucose cannot be taken into the cells and instead accumulates in the blood, which can lead to various long-term complications (Pebriani et al., 2021).

There are several main types of DM, the most common being Type 1 Diabetes and Type 2 Diabetes. Type 1 diabetes, also called insulin-response diabetes, occurs when the body's immune system mistakenly attacks and destroys insulin-producing beta cells in the pancreas, causing a drastic decrease in insulin production. It usually occurs in children and young adults, but can also occur at any age. Patients with Type 1 Diabetes require daily insulin therapy to maintain healthy blood glucose levels (Usman, 2023).

Type 2 Diabetes, which is more common, occurs when the body becomes resistant to insulin or when the pancreas cannot produce enough insulin. It is often linked to obesity, a sedentary lifestyle, and genetics. Type 2 Diabetes is more common in adults, but cases in children are increasing as obesity rates rise. The management of Type 2 Diabetes usually involves lifestyle changes, such as diet and exercise, oral medications, and in some cases, insulin (Fitriani, 2020).

In addition to these two main types, there are also other types such as Gestational Diabetes, which occurs during pregnancy and usually goes away after birth, although women who develop gestational diabetes have a higher risk of developing Type 2 DM later in life. LADA (Latent Autoimmune Diabetes in Adults), sometimes referred to as "1.5" diabetes, is another form that has similar characteristics to Type 1 DM but develops slowly in adults. The prevalence of DM continues to rise globally, making the management and prevention of the disease a top health priority internationally (Nugraheny, 2021).

DM management involves a combination of targeted medical treatment and significant lifestyle changes. The goal of this management is to keep blood glucose levels as close to the normal range as possible to prevent or at least reduce the risk of complications. For patients with Type 1 Diabetes, this almost always involves administering insulin through injections or insulin pumps as their bodies do not produce insulin (Adnyana, 2020). For patients with Type 2 Diabetes, management can be more varied ranging from dietary changes, increased physical activity, oral medications that stimulate insulin production or make the body more sensitive to insulin, to insulin therapy (Hariati, 2024).

Alongside medical management, diabetes education is also a key component in managing the disease. Patients are taught how to monitor their blood glucose levels, the importance of a healthy diet and exercise, and how to recognize and manage episodes of low or high blood sugar. Patients are also encouraged to maintain a healthy weight and avoid other risk factors such as smoking and excessive alcohol consumption (Helmi et al., 2022).

Long-term complications of DM can be serious and include cardiovascular disease, nerve damage (neuropathy), kidney damage (nephropathy), eye damage (retinopathy), and the risk of amputation due to non-healing infections in the feet. Therefore, early detection and effective management are essential to reduce the risk of these complications (Keytimu, 2021).

In conclusion, DM is a complex disease with several types that affects millions of people worldwide. Although there is no cure for DM, with good management, including medical care, lifestyle changes, and regular monitoring, individuals with DM can lead long and active lives. Prevention strategies that focus on a healthy diet, regular physical activity, and weight management are key to reducing the prevalence of DM, particularly for Type 2 DM. In the face of this global challenge, cooperation between patients, healthcare providers, and the wider community is essential to control the DM epidemic.

Traditional Treatment for DM

Traditional treatments for DM have become an important part of diabetes management in many parts of the world, especially in countries where herbal medicine is part of the cultural heritage. Many patients with diabetes, both Type 1 and Type 2 DM, combine modern medicine with traditional therapies, seeking alternative ways to manage their blood sugar levels (Syahid, 2021). Herbal plants and dietary supplements have been used for centuries to assist in maintaining health and as part of holistic medicine, although it should be noted that the effectiveness and safety of some of these methods have not always been adequately scientifically proven (Yulianti & Anggraini, 2020).

Some plants that are often used in the traditional treatment of diabetes include Binahong Leaf, Bitter Melon (Momordica charantia), Cinnamon, and Salam Leaf. Binahong Leaf is famous in several Asian countries for treating various diseases including DM by improving the body's metabolic system. Bitter Melon contains chemicals that act similarly to insulin and has displayed potential in lowering blood sugar levels (Walia et al., 2023). Cinnamon has been studied as it is claimed to help reduce insulin resistance and lower blood sugar levels. Bay leaves are believed to have properties to improve glucose profile through various biochemical mechanisms (Asfy & Primanita, 2024).

Besides plants, other strategies such as acupuncture and yoga have also been used to help manage DM. Acupuncture, an ancient Chinese medicine method, is a technique that uses needles to stimulate specific points on the body and is believed to help reduce insulin resistance and promote general health (Husnati et al., 2020). Yoga, a practice that originated in India, is used by some people with DM to reduce stress that can affect blood sugar levels, as well as to improve the body's ability to utilize insulin (Marleni, 2020).

While some traditional remedies show promise as complementary therapies for DM, it is important to consult a doctor before starting the use of herbs or supplements. Some of these therapies may interact with conventional diabetes medicines and affect their action or safety. The quality of ingredients and dosage standards in traditional medicine can also vary widely. Therefore, further research is needed to validate the effectiveness and safety of traditional medicine in the context of evidence-based

diabetes management (H. Hidayat et al., 2023). In some countries, agencies such as the Food and Drug Administration (FDA) do not regulate herbal supplements as strictly as pharmaceuticals, so the quality and effectiveness of products can vary widely. Thus, a thoughtful and cautious approach is best when considering traditional treatments for DM (vincenkogopa et al., 2022).

An integrative approach that combines both conventional and traditional medicine can offer benefits to the diabetic community, as long as it is done under strict medical supervision. This approach allows patients to benefit from clinically tested therapies while also exploring more natural and holistic treatment options that may offer additional help in managing diabetes (Yakub et al., 2023). However, the importance of consultation with healthcare professionals cannot be underestimated, as they can help identify the most appropriate combination of therapies for an individual's condition, lifestyle, and health needs, while minimizing potential risks or side effects (Priyanto et al., 2022).

One important aspect in considering traditional medicine for DM is knowledge of the source and quality of the ingredients. The use of uncontaminated, pure, and high-quality ingredients is essential for safety and effectiveness. Patients with DM are advised to research or consult an herbalist before choosing a particular product. In addition, consistently monitoring the effect of such remedies on blood sugar levels is essential to avoid hypoglycemia or other undesirable conditions (Suratmini & Togatorop, 2023).

In the use of traditional therapies for diabetes, guidance and close monitoring are key. Patients should undergo traditional treatment as part of a comprehensive diabetes management plan, which also includes a healthy diet, regular exercise, and conventional medication as needed. Education about diabetes and its effective management, including an understanding of how traditional therapies work and their potential interactions with conventional medicine, is crucial (Rosidin & Hilaliyah, 2022).

In conclusion, traditional medicine can be a useful addition to the conventional treatment of diabetes, offering a more holistic and natural approach in managing this condition. However, it should be done thoughtfully, with sufficient knowledge, and under the supervision of a healthcare professional. Cooperation between patients and healthcare providers is key to ensuring that the use of traditional methods brings benefits without compromising the safety or effectiveness of overall diabetes management.

Modern Treatment for DM

Modern treatment for Diabetes Mellitus (DM) has evolved significantly over the past decade, offering a range of management options that can be customized to meet the individual needs of patients (Supriadi & Haflin, 2022). Modern diabetes management focuses not only on controlling blood sugar levels, but also on preventing long-term

complications and improving quality of life. To achieve these goals, modern medicine combines drug therapy, lifestyle changes, and proactive monitoring of health conditions (Tarasova et al., 2020).

Amid drug therapy, there are several classes of drugs that are widely used to manage DM, including biguanides (the best-known example is Metformin), sulfonylureas, glinides, thiazolidinediones, DPP-4 inhibitors, GLP-1 agonists, and SGLT2 inhibitors. Each of these drug classes works through unique mechanisms to lower blood sugar levels. For example, Metformin improves insulin sensitivity and reduces glucose production by the liver, while SGLT2 inhibitors help reduce blood glucose by increasing glucose excretion through the urine (Mamasoliev, 2022).

The importance of lifestyle management is equally emphasized in modern DM treatment. Dietary changes, increased physical activity and weight reduction can substantially affect blood sugar control and overall health (Svarovskaya & Garganeeva, 2022). A diet rich in fiber, low in simple sugars, and balanced in saturated and unsaturated fats is highly recommended for patients with diabetes. Meanwhile, physical activities such as walking, cycling, or swimming are recommended to be done regularly to increase muscle strength, insulin sensitivity, and reduce insulin resistance (Shilova et al., 2020).

On the monitoring and technology side, significant progress has been made. The use of continuous glucose monitors (CGMs) and modern insulin pumps allows for more precise blood sugar control and flexibility in diabetes management. CGMs provide real-time glucose readings, allowing for instantaneous treatment adjustments to keep blood sugar levels within the target range. Insulin pumps, on the other hand, provide precise programmable and adjustable insulin doses, improving blood sugar control and reducing the risk of complications (Hariati, 2024).

In conclusion, modern treatment for DM offers a comprehensive approach that not only reduces the risk of complications but also improves patients' quality of life. With the combination of effective medications, healthy lifestyle changes, and advanced monitoring technology, patients with DM now have better tools and resources to manage their condition successfully. Collaboration between patients, physicians, and the multidisciplinary healthcare team is key to achieving optimal outcomes in diabetes management.

Comparison of the efficacy of traditional and modern medicine

Comparing the efficacy and effectiveness between traditional and modern treatments for diabetes mellitus (DM) requires an in-depth understanding of both approaches. Traditional medicine, which often relies on herbal ingredients and nature-based practices, has been used for centuries in various cultures to manage symptoms and, in some cases, try to improve chronic diseases such as diabetes (Setianingsih & Rusmiati, 2023). On the other hand, modern medicine, based on strong scientific

evidence, offers therapies that have been clinically tested and approved by health regulatory bodies for the management of DM (Rosidin & Hilaliyah, 2022).

Traditional medicine, while often less documented in the scientific medical literature, is reported to have positive effects in the management of DM by some patients. Natural ingredients such as moringa, cinnamon, and aloe vera are said to have hypoglycemic properties that can help control blood sugar levels. However, the main challenges with traditional medicine are the lack of consistency in their effectiveness, the lack of comprehensive clinical trials, and the potential for harmful drug interactions when used in conjunction with modern drug therapy (Golodnikov et al., 2023).

In contrast, modern treatments for diabetes take a more systematic and evidence-based approach to its management. Drugs such as Metformin, SGLT2 inhibitors, and GLP-1 agonists have been clinically proven to effectively lower blood sugar levels and reduce the risk of diabetic complications. Modern technologies such as continuous glucose monitors (CGM) and insulin pumps provide more sophisticated tools for real-time blood glucose monitoring and control. The effectiveness of these modern treatments is supported by extensive scientific research and approval from leading health organizations, ensuring safety and efficacy for diabetic patients (Momynaliev et al., 2023).

However, it is important to highlight that the best approach may lie in the integration of both treatment methods, with the principle of traditional medicine providing holistic support and healthy lifestyle choices, while modern medicine strengthens health management with clinically tested solutions and advanced technology (Putro, 2021). Careful collaboration between patients, physicians, and other healthcare practitioners is essential to achieve the right balance, ensuring that patients receive comprehensive, safe, and most effective care for their diabetes Mellitus (Syuhudi, 2022).

Furthermore, it is important for diabetes patients to understand that both traditional and modern medicine have their respective roles in the management of diabetes. Although traditional medicine can offer benefits through its holistic approach and natural ingredients, it is imperative to discuss its use with a healthcare provider to ensure there are no potentially harmful drug interactions or unwanted side effects. In addition, the effectiveness and safety of traditional medicine may vary, and strong scientific evidence regarding their use may be limited (Saputra et al., 2022).

On the other hand, modern medicine offers assurance of efficacy based on rigorous scientific research and regulatory approval. However, this can also come with side effects and costs that must be considered by patients and their healthcare providers. The integration of technology in modern medicine, such as CGM and insulin pumps, although sophisticated, requires patient training and commitment for effective use (Rahmah et al., 2023).

Thus, an integrated approach, which combines the best elements of traditional and modern medicine, may be the most beneficial diabetes management strategy. Open communication between patients and their healthcare providers is key to determining the most suitable treatment strategy, considering the patient's preferences, health conditions, lifestyle, and treatment goals. Adopting a healthy diet, exercising regularly, and maintaining an ideal body weight in line with medication use can provide optimal results in diabetes management.

In this modern era, where health information and technology is rapidly evolving, it is important for patients to stay informed and proactive in their health management. Through close collaboration with the healthcare team, patients can develop a treatment plan that not only targets blood sugar control but also improves overall quality of life.

Conclusion

Traditional medicine offers a holistic approach to diabetes management, focusing on the use of natural ingredients and lifestyle changes. Findings on traditional medicine are often based on hereditary knowledge and observational studies that show potential benefits in controlling blood sugar. For example, plants such as cinnamon and various herbs are claimed to lower blood glucose levels. However, these findings often lack strong and consistent scientific evidence, with some studies showing significant variability in results and efficacy. Therefore, while many patients feel they benefit from traditional approaches, their efficacy may be individually different and less well-documented in a rigorous clinical context.

On the other hand, modern medicine is considered more effective in the management of diabetes thanks to its strong focus on scientific evidence and clinical research. Drugs such as Metformin have become a cornerstone in the management of type 2 diabetes, with proven efficacy in lowering blood sugar levels and reducing the risk of long-term complications. Advanced technologies such as continuous glucose monitors and insulin pumps have given patients better tools to monitor and manage their condition in real time, providing direct evidence of the effectiveness of modern medicine. The efficacy of modern treatments in diabetes management is supported by many controlled and peer-reviewed studies, providing a solid basis for clinical recommendations.

Given the uncertainty of efficacy often associated with traditional medicine and the fact that modern medicine is supported by extensive scientific evidence, many healthcare practitioners recommend modern approaches in diabetes management. However, an integrated approach that utilizes positive elements from both worlds is likely to provide the best outcomes, focusing on the benefits of traditional medicine in improving quality of life and holistic support, while relying on the proven efficacy of modern medicine for metabolic control. This emphasizes the importance of a cautious

and well-informed approach, where patients work together with healthcare professionals to design a diabetes management regimen that is most suitable and effective for their individual needs.

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