Research Article

IMPLEMENTATION OF SELF-CARE MANAGEMENT BASED ON THE OREM THEORY MODEL IN DIABETES MELLITUS PATIENTS IN SUNGAI KITANO VILLAGE

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Abstract

Background: Diabetes mellitus is a serious public health problem that needs to be followed up. Therefore, it is necessary to have a program to increase public knowledge and awareness of diabetes mellitus. Diabetes mellitus sufferers, if not managed health, will experience complications and even death. To avoid complications caused by diabetes mellitus, a person must carry out self-care. **Objectives:** This study aims to determine the effect of implementing self-care management based on Orem's theory on diabetes mellitus patients in Sungai Kitano Village. **Method:** This study uses a case study focusing on one diabetes mellitus patient in Sungai Kitano Village, conducted for 10 consecutive days. **Result:** Knowledge regarding self-care management of diabetes mellitus in clients has increased from poor knowledge to good knowledge with an increase in score from 50% to 90%. **Conclusion:** After implementing self-care management based on Orem's theory for 10 days, it was concluded that there was an increase in knowledge regarding self-care management of diabetes mellitus.

Keywords: *Diabetes mellitus, education, self-care management. Orem's theory*

Introduction

Diabetes mellitus is a serious public health problem and one of the four non-communicable diseases that need to be followed up (Arania et al., 2021). Therefore, it is necessary to hold a program to increase public knowledge and awareness of diabetes mellitus (Sujianto & Riniatsih, 2022). Diabetes mellitus occurs because blood sugar levels are above normal, and the insulin hormone can no longer be used effectively to regulate blood sugar levels, causing an increase in blood sugar levels (hyperglycemia) (Andriani, 2023).

Based on data from the IDF (International Diabetes Federation) in 2021, in Indonesia, it is estimated that the population of adult diabetes mellitus sufferers with an age range of 20-79 years is 19.5 million people, with a total adult population of 179.7 million people and will increase every year (IDF, 2021). Based on data from the 2023 Indonesian Health Survey, the prevalence of diabetes mellitus sufferers in the age group ≥ 15 years in 2023 was 11.7%, and in 2018 it was 10.9%, which means it will increase in 2023. Meanwhile, South Kalimantan is ranked 20th based on the prevalence of diabetes mellitus sufferers in the age group ≥ 15 years in 2023, as much as 1.4%, and in 2018 as much as 1.3% (KEMENKES, 2023). Based on data from the South Kalimantan Provincial Health Office as of October 28, 2024, there were 24 thousand cases of diabetes mellitus spread across 11 regencies in South Kalimantan. The first rank is occupied by Banjar Regency, with 4.3 thousand cases of diabetes mellitus in 2023. Based on data from the East Martapura Health Center, as of October 2024, 38 people suffered from diabetes mellitus. Meanwhile, based on a direct study conducted by Nursing Professional Students of Lambung Mangkurat University, the results of the study were that 7 people suffered from diabetes mellitus in Sungai Kitano Village. The community in Sungai Kitano Village is a wetland environment where many people still do not understand health care due to the influence of low levels of education, economy, society, culture, and access to health information. In addition, the lack of awareness to check their health at the nearest health facility is also a factor that supports the prevalence of diabetes (Agianto et al., 2024).

As a wetland area, the community also uses the surrounding environment as a planting area. Many plants, such as ginger, lemongrass, and soursop, are planted in the Sungai Kitano area. Ginger can be used as a non-pharmacological management of diabetes mellitus because it contains flavonoids that can lower blood glucose levels with its ability as an antioxidant (Ajie, 2015). Therefore, ginger can lower blood sugar levels in patients with diabetes mellitus in line with research conducted by Fitrianti Dewi and Selvy Afrioza that there was a decrease in blood sugar levels in the red ginger intervention group of 53.43 mg/dl compared to the control group of 5.8 mg/dl (Dewi & Afrioza, 2022).

South Kalimantan is mainly based on a wetland environment, especially Banjar Regency (Ilmi et al., 2022). The wetland environment is like swamps, peatlands, brackish water, and waters with stagnant or flowing water (Soendjoto & Dharmono, 2016). Wetlands have an essential role in human life around them. However, wetlands also have the potential to cause diseases, both infectious and non-infectious diseases. Diseases that can potentially attack wetland communities are usually due to polluted water or lifestyle, including diabetes mellitus (Agianto et al., 2024). Based on information from the KKLB study, many people in Kitano Village still do not maintain their lifestyle. People often consume sweet drinks such as tea, coffee, and salted fish, so it becomes a habit. During gatherings, they usually eat and drink lovely things without restrictions. This has the potential to increase the risk of diabetes mellitus. Based on an interview with the Sungai Kitano Village Midwife, it was explained that the posyandu and posbindu activities were routinely carried out once a month and were accompanied by the Martapura Timur Health Center. However, there is low participation of residents in checking their health. This will impact health if they do not carry out regular checks to obtain information about examinations for infectious diseases through posbindu, which will cause health conditions to get worse (Ministry of Health, 2019).

In this case, nurses help people with diabetes mellitus maintain blood sugar levels within normal limits by providing education to increase knowledge (Marbun et al., 2022). Providing education through various media can provide benefits to increase knowledge and behavior (Pranata et al., 2020). In line with the research results (Lembang et al., 2024), health education influences increasing knowledge about self-care in people with diabetes mellitus because diabetes mellitus can cause chronic complications if not controlled. Common complications include coronary heart disease, stroke, and diabetic foot. Although diabetes mellitus cannot be cured, we can control blood sugar levels (Ambar Purwandari et al., 2022). According to Smeltzer, the most crucial chronic complications of diabetes mellitus are microvascular, macrovascular, and neuropathy. When compared to people with normal blood sugar levels, people with diabetes mellitus are 15-40 times more likely to have amputations in the feet or lower legs (Bachri et al., 2022). So, people with diabetes mellitus must maintain glucose or blood sugar levels in the body to remain balanced so that hyperglycemia does not occur (Rahmatiah et al., 2022).

People with diabetes mellitus, if not managed healthily, will cause complications and even death (Rahayu, 2022). To avoid complications caused by diabetes mellitus, a person must carry out self-care because most people with diabetes mellitus have low self-care management behavior in terms of monitoring and preventing complications (Rahmasari et al., 2021). Good self-care management can make people with diabetes mellitus able to survive longer and healthier (Saragi et al., 2024).

Self-care management or self-management allows one to develop problem-solving skills, increase self-confidence, and apply real-world knowledge. The skills and expertise to solve diabetes mellitus problems and help patients decide on the best treatment. This self-management significantly impacts the process and results of disease management (Febrianti & Abd Rahman, 2020). According to Harvey, self-care management is a condition where sufferers can control their disease with the support of a medical team (Aulia et al., 2022). There are five pillars of self-care management of diabetes mellitus. Namely, the first pillar of regulating food intake so that sufferers follow the diet of people with diabetes mellitus. The second pillar is physical activity; sufferers do sports such as jogging, walking, swimming, cycling, and gymnastics. The third pillar is monitoring blood sugar; sufferers routinely check their blood sugar according to

the schedule determined by health workers. The fourth pillar is in terms of taking diabetes medication; patients take medicines according to the recommendations of health workers. The fifth pillar is foot care, with sufferers wearing footwear when leaving the house and maintaining foot hygiene every day (Saragi et al., 2024). Based on the results of the study conducted (Sasmita et al., 2024), it was found that there are still many diabetes mellitus sufferers who do not manage themselves properly because they feel healthy, do not come to health care facilities, and often forget to take medication. Therefore, comprehensive education is needed to change healthy behavior. Educating diabetes mellitus sufferers is one effort to increase knowledge and skills regarding diabetes mellitus (Syarfaini et al., 2023).

Because knowledge is the basis for taking action, if the sufferer knows, they will have the initiative to take action based on their knowledge (Prabowo et al., 2021). The November 23, 2024, study showed that Mrs. W, a diabetes mellitus patient since 2 years ago. Mrs. W does not routinely check her blood sugar levels. Based on the interview, Mrs. W revealed that a lack of knowledge causes a lousy lifestyle, such as routinely consuming sugar and coffee with sugar every morning. Therefore, the author decided to educate Mrs. W about diabetes mellitus. Lack of information and education about lifestyle and self-care is one of the causes of low knowledge of diabetes mellitus sufferers. Thus, to overcome this problem, education about self-care management is needed, based on Orem's theory.

Method

The research method used was a descriptive case study design on diabetes Mellitus patients in Sungai Kitano Village, East Martapura District, Banjar Regency. Data was collected using Gordon's pattern assessment forms through interviews, observation, and physical examination. The assessment results were analyzed for data, diagnoses were established, planning was carried out, and implementation and evaluation of self-care management based on the Orem theory model in diabetes mellitus patients. The activities are carried out in several stages, with the following details:

1. **Stage 1: Pre-Preparation**

   The first stage is determining the research location by collecting data and discussing it with the community service team. The team determined Sungai Kitano Village as the research location and obtained permission from the RT of Sungai Kitano Village to conduct the research. Then, the team surveyed and observed the research location.

2. **Stage 2: Preparation**

   The service team discusses and agrees on the theme of the service to be provided based on the problems obtained. Then, the service team searches for literature reviews from various scientific sources and prepares tools to conduct research. Furthermore, the service team determines the target's readiness after everything is ready regarding materials, tools, and materials.

3. **Stage 3: Implementation**

   a. Building trust with the target

   b. Explaining the purpose of the activity

   c. Explaining the time and place contract of the activity

   d. Questions and answers using the Gordon pattern assessment and physical examination from head to toe, and adding a questionnaire about self-care management knowledge in patients with diabetes mellitus

   e. After the data was collected with 10 meetings, data analysis and diagnosis were carried out, followed by preparing a nursing care plan containing target results and intervention plans.

   f. The Implementation Series was applied to the patient, and the results were documented in the SOAP evaluation sheet.

   Stage 4: Closing

   The activity will end with a photo of the patient.

Results And Discussion

Pre-Preparation

The condition of the wetland environment that is widely utilized by residents positively

impacts the community's life process. However, it can also have a negative effect, one of which is on public health. Inadequate environmental conditions, both in quality and quantity, and low healthy living behavior of the community result in diseases that can threaten the lives of people in wetlands (Megasari et al., 2015). Wetlands also have the potential to cause infectious and non-infectious diseases. One of the diseases that originates from the lifestyle of people in wetlands is diabetes mellitus (Agianto et al., 2024).

Sungai Kitano Village is a village where most of the residents live on the banks of rivers and peatlands. The lifestyle and habits of people in wetlands include smoking behavior and consumption of unhealthy foods, such as the habit of people who like to eat salty foods and often eat and drink sweet things without restrictions during gatherings. Then, they do not routinely carry out health checks at health service facilities, so there is an increase in the index of non-communicable diseases such as diabetes mellitus.

Preparation

Preparation of materials delivered using media in the form of posters. Educational media is a tool used to assist the process of providing education, which clarifies the message's meaning so that educational objectives can be conveyed better and more perfectly (Kustandi & Darmawan, 2020). One printed media for education is a flyer, a leaflet shaped like a leaflet but not folded Bolon (2021).

Implementation

Diabetes mellitus is a chronic metabolic disease or disorder with multiple etiologies characterized by high blood glucose levels (GDS ≥200 mg/dL and GDP ≥126 mg/dL) and accompanied by impaired carbohydrate, lipid, and protein metabolism as a result of insulin function insufficiency (Sulastri, 2022). One of the management of diabetes mellitus is education in providing information about independent blood sugar monitoring, signs and symptoms of hyperglycemia, and its treatment must also be provided. Educating about diabetes mellitus can increase the motivation of sufferers to undergo diabetes mellitus treatment and other diabetes mellitus therapies, such as regulating diet, doing physical activity, taking medication regularly, and checking blood sugar (Romli & Baderi 2020).

The intervention provided is implementing self-care management based on the Orem theory model in patients with diabetes mellitus. Orem's self-care theory explains the concept of care and nursing actions to overcome problems that arise. Nursing care with self-care theory can be applied to overcome patient issues in carrying out self-care and making patients independent in carrying out self-care. Nursing actions can be carried out through guidance, teaching, support, and providing a development environment (Hermalia et al., 2020).

Nursing actions based on Orem's theory applied to Mrs. W in the form of teaching because, based on the assessment, Mrs. W still does not know and understand diabetes mellitus. The teaching method is given to patients regarding self-care management of diabetes mellitus. Self-care is the ability to carry out self-care independently by patients to meet their needs without relying on the surrounding environment. Self-care management in people with diabetes mellitus includes following a diet program, physical exercise, controlling blood glucose levels, medication, and foot care to prevent complications (Malini et al., 2022).

Based on the study results above, it is known that it is crucial to provide education about self-care management in patients with diabetes mellitus. Educating patients with diabetes mellitus is one effort to increase knowledge and skills about diabetes mellitus to avoid existing complications (Syarfaini et al., 2023).

Based on the November 23, 2024 assessment, Mrs. W found that the client's GDS was 240 mg/dl. The client has a history of diabetes mellitus for the past 2 years since 2022. The client's educational history is from elementary school. The client has a family history of diabetes mellitus from her grandfather. A year ago, the client fainted due to high blood sugar. The client found out after checking herself at the Posbindu, but currently, the client does not routinely come to the Posbindu, which is held monthly. The client complains that her blood sugar often goes up and down. The client likes to drink sweet drinks. The client routinely drinks coffee or tea in the morning and can finish 1-2 glasses (250 cc) of tea or coffee. The client said she drinks

sweet drinks because they are delicious and has had a habit since she was young. The client also does not know what diabetes mellitus is. The client thinks that DM is caused only by sweet foods. The client does not understand other factors that can increase GDS. The client said she does not know the signs and symptoms of DM. The client does not know what a DM diet means. The client hopes that her blood sugar levels can be controlled.

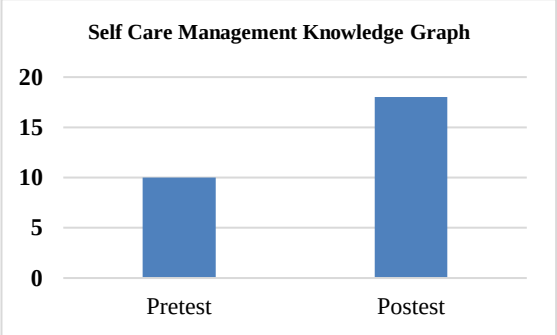


Figure 4.1 Graph of Mrs. W's Knowledge Level

The client's knowledge before education about self-care management was obtained with a score of 10 (50%), which means poor knowledge. After being given education about self-care management for 10 meetings, the client's knowledge score increased to 18 (90%), which means good knowledge. There was an increase in knowledge of 40% after being given education.

The intervention was given by providing education about self-care management in Mrs. W's patients with diabetes mellitus, which was carried out in 10 meetings. Previously, the client was first assessed using a questionnaire on the level of knowledge about self-care management, and a score of 10 (poor knowledge) was obtained based on the results of the GDS examination: 240 mg/dl. Every day, education was carried out about knowledge of diabetes mellitus and self-care management. The materials provided were the definition of diabetes mellitus, signs and symptoms, risk factors, complications, management, non-pharmacological management with ginger infusion, self-care management of diabetes mellitus, meal planning, physical exercise, medication, blood glucose monitoring, and foot care in patients with diabetes mellitus.

At the fifth meeting, the client was given material on managing diabetes mellitus. In addition, the client was also given non-pharmacological management to lower blood sugar levels by utilizing materials that are easy to find. Ginger decoction was chosen as non-pharmacological management because it contains flavonoids that can lower blood glucose levels with its ability as an antioxidant (Ajie, 2015). This study aligns with research conducted by Suharto et al. (2019), which showed a decrease in blood glucose levels before and after ginger therapy. There was a decrease in blood glucose, with an average value before the intervention of 270.50 mg/dl to 222.75 mg/dl. Research conducted by Dewi & Afrioza (2022) found a decrease in the red ginger intervention group of 53.43 mg/dl compared to the control group of 5.8 mg/dl. The Wilcoxon signed rank test, and Mann-Whitney test results showed a value (p) of $0.000 < \alpha = 0.05$. So there is a significant comparison between the intervention group and the control group, which indicates that there is an effect of boiled red ginger water (zingiber officinale var. Rubrum) on blood sugar levels of diabetes mellitus patients in Mekarjaya Village, Sepatan District, Tangerang Regency.

Ginger contains active ingredients that can lower blood sugar levels. The active ingredients in question are gingerol and shogaol. Gingerol and shogaol are derivatives of flavonoid compounds that function as antidiabetics. Ginger as herbal medicine is instrumental because it is easy to find, practical, and economical (Pambudi, 2018; Suharto et al., 2019).

Based on research conducted by Suharto et al. (2019), it was found that giving red ginger infusion by boiling 50 grams of red ginger with 200 cc of water until it becomes 100 cc without using any mixture had an impact on reducing blood sugar levels in respondents after being given red ginger infusion for 7 days, 1x a day. With this effect, providing ginger to DM sufferers will reduce the hyperglycemia experienced by lowering blood sugar levels. In addition, ginger also functions as an antioxidant. Antioxidants themselves function to reduce oxidative damage caused by hyperglycemia.

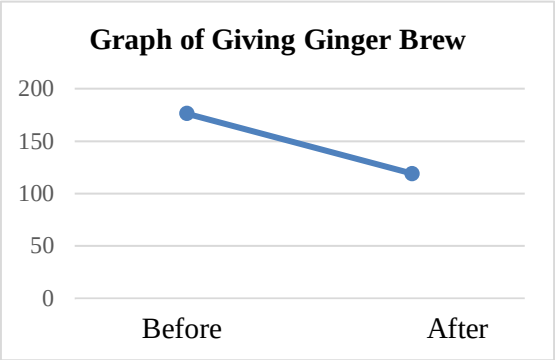
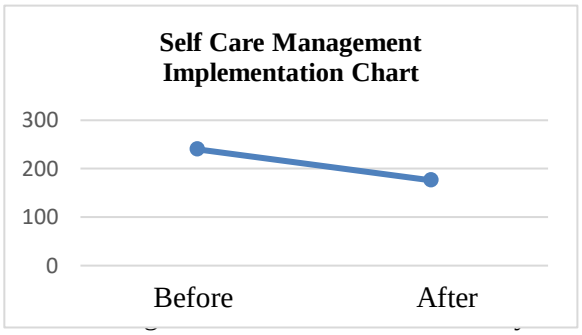


Figure 4. 2 Graph of Giving Ginger Brew to Mrs. W

The graph above shows a decrease in GDS before and after giving ginger decoction as a decrease in blood sugar levels. Before ginger decoction, Mrs. W's GDS was 176 mg/dl, and after giving Mrs. W's GDS became 119 mg/dl. There was a decrease of 57 mg/dl.

Before giving ginger brew, Mrs. W's GDS was checked first, and the GDS result was 176 mg/dl. After 2 hours, the client drank the ginger brew; the GDS was rechecked: 119 mg/dl. There was a decrease in sugar levels in the client by 57 mg/dl. The client also knows the benefits of ginger and how to make ginger brew so that she can practice it independently later. On the sixth day, the client's GDS was 148 mg/dl; it was not possible to give ginger brew again because the drinking rules cannot be given if there are signs and symptoms of hypoglycemia.

Based on the results of providing interventions during 10 meetings in patients with knowledge deficit problems related to lack of exposure to information, the patient's nursing problems were resolved with the ability to explain knowledge about a topic from a scale of 2 (immensely decreased) to a scale of 4 (enormously increased) as evidenced by the results of filling out the knowledge questionnaire regarding self-care management with a score of 10 (50%) (poor knowledge) to 18 (90%) (good knowledge). It was found that there was a 40% increase in knowledge after being given education.



From the graph above, it is known that GDS before education on self-care management was 240 mg/dl, and after being given self-care management for 10 meetings, Mrs. W's GDS became 176 mg/dl, decreasing by 64 mg/dl.

On the last day, Mrs. W's GDS was also checked with an initial GDS of 240 mg/dl, and after the intervention, it became 176 mg/dl. Mrs. W also said that after receiving education, she knew more about diabetes mellitus and would apply what had been taught. This is in line with research (Yunitasari et al., 2019) that there was a significant difference in knowledge before and after education was given in the treatment group with a p-value of 0.000. This shows that the education provided can improve self-care management in diabetes patients. The education method was verbal instruction through explanations and lectures using posters as media. Patient education is one of the critical roles performed by nurses. Nurses must create an appropriate educational model for patients. Nurses provide the information patients need to perform self-care to ensure continuity of care at home (Potter et al., 2013).

Suggestion

Necessary recommendations are not to forget that patient education is needed to increase knowledge and prevent complications of diabetes mellitus. For nurses, health services can add references to providing interventions for diseases using Orem's theory. Health services need to provide health education to people suffering from diabetes mellitus to increase their awareness of the importance of treatment and maintaining a lifestyle. Nursing Education and Research can increase knowledge about one of the nursing theories using the Orem model. It can increase knowledge about diabetes and ginger infusion as a non-pharmacological management so that

it can be used as a source of knowledge and share information with people closest to them or other communities.

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Reference

Agianto, Darmayanti, Y., Lamattappa, M. A., Susanti, Noviana, R., Atni, D. K., & Alisa. (2024). Pencegahan Diabetes Mellitus Berbasis Inovasi "Bujuk Ke ABB" pada Masyarakat Desa. *Jurnal Mandala Pengabdian Masyarakat*.

Ambar Purwandari, C. A., Wirjatmadi, B., & Mahmudiono, T. (2022). Faktor Risiko Terjadinya Komplikasi Kronis Diabetes Melitus Tipe 2 pada Pra Lansia. *Amerta Nutrition, 6*(3), 262-271.

Andriani, W. R. (2023). *Buku Pintar Pengelolaan Diabetes Melitus.* Penerbit NEM.

Arania, R., Triwahyuni, T., Esfandiar, F., & Nugraha, F. R. (2021). Hubungan Antara Usia, Jenis Kelamin, Dan Tingkat Pendidikan Dengan Kejadian Diabetes Mellitus Di Klinik Mardi Waluyo Lampung Tengah. *Jurnal Medika Malahayati, 5*(3), 146 - 153.

Aulia, M., Handayani, P. A., & Ismonah2. (2022). Hubungan Tingkat Stres Dengan Self Management Pada Penderita Diabetes Mellitus Tipe 2. *Jurnal Perawat Indonesia, 6*(3), 1223-1223.

Bachri, Y., Prima, R., & Putri, S. A. (2022). Faktor-Faktor Resiko Yang Berhubungan Dengan Kejadian Ulkus Kaki Diabetik Pada Pasien Diabetes Melitusdi Rsud Prof. Dr. Ma. Hanafiah, Sm Batusangkar Tahun 2022. *Jurnal Inovasi Penelitian, 3*(1), 4739.

Dewi, F., & Afrioza, S. (2022). Pengaruh Air Rebusan Jahe Merah (Zingiber Officinale Var. Rubrum) Terhadap Kadar Gula Darah Pasien Diabetes Melitus Di Desa Mekarjaya. *Nusantara Hasana Journal, 2*(4), 148 - 155.

Febrianti, T., & Abd Rahman, L. O. (2020). Pengembangan Sistem Informasi Keperawatan Kesehatan Komunitas Berbasis Aplikasi Pada Ponsel Untuk Manajemen Diri Pasien Diabetes Melitus: Tinjauan Literatur. *Jurnal Mitra Kesehatan (JMK)*, 2580-3379.

IDF. (2021). *IDF Diabetes Atlas*. Retrieved November Minggu, 2024 from https://diabetesatlas.org/data/en/country/94/id.html

Ilmi, B., Nasruddin, Kumalawati, R., & Riadi, S. (2022). Penanganan Banjir Pada Permukiman Padat Penduduk Sepanjang Sub DAS Martapura Kabupaten Banjar Provinsi Kalimantan Selatan. *Jurnal Geografika (Geografi Lingkungan Lahan Basah), 3*.

Kemenkes. (2019). *Situasi Lanjut Usia (Lansia) di Indonesia.* Jakarta Selatan: Kementerian.

KEMENKES. (2023). *Survei Kesehatan Indonesia Tahun 2023.* Jakarta: Kementerian Kesehatan RI.

Lembang, F. T., Muryani, & Hadi, T. P. (2024). Nursing Agency Dalam Meningkatkan Aktivitas Perawatan Diri Pada Pasien Diabetes Mellitus Di Kalurahan SIDOMOYO. *Majalah Ilmu Keperawatan dan Kesehatan Indonesia, 13*, 40-51.

Marbun, A. S., Aryani, N., Sipayung, N., & Sanita , A. S. (2022). Pengetahuan Lima Pilar Dengan Kadar Gula Darah Pada Pasien Diabetes Melitus Tipe II Di Upt.Puskesmas Kenangan. *Jurnal TEKESNOS, 4*.

Prabowo, N. A., Ardyanto, T. D., Hanafi, M., Kuncorowati, N. D., Dyanneza, F., Apriningsih, H., & Indriani, A. T. (2021). Peningkatan Pengetahuan Diet Diabetes, Self Management Diabetes dan Penurunan Tingkat Stres Menjalani Diet pada Pasien Diabetes Mellitus Tipe 2 di Rumah Sakit Universitas Sebelas Maret. *Jurnal Warta LPM, 24*, 285-296.

Pranata, L., Indaryati, S., & Elisabeth, N. E. (2020). Perangkat Edukasi Pasien Dan Keluarga Dengan Media Booklet (Studi Kasus Self-Care Diabetes Melitus). *Jurnal Keperawatan Silampari, 4*.

Rahayu, C. E. (2022). Pengaruh Diabetes Self Management Education (DSME) Terhadap Pencegahan Kaki Diabetik. *Jurnal Kesehatan STIKes Sumber Waras , 4*.

Rahmasari, I., Putri, Yudhianto, & Purwaningsih. (2021). LITERATURE REVIEW : SELF MANAGement Beresiko Komplikasi

Kardiovaskuler Pada Pasien Diabetes Mellitus. *Prosiding Seminar Informasi Kesehatan Nasional (SIKesNas)* .

Rahmatiah, S., Basr, M., Baharuddin, Khaerunnisa, & Yakub, A. S. (2022). Literature Review : Hubungan Kepatuhan Diet Dengan Kadar Gula Darah Pada Pasien Diabetes Melitus. *Jurnal Ilmiah Kesehatan Diagnosis , 7*(2), 2302-2531.

Saragi, J., Simanullang, M. S., & Sri Br Ginting, F. S. (2024). Self Management Penderita Diabetes Melitus Di Poli Penyakit Dalam Rumah Sakit Harapan Pematangsiantar Tahun 2023. *Journal Of Social Science Research, 4*(5), 7663-7675.

Sasmita, Y., Fathimi, Devi, D., Lizam, T. C., & Yasni, H. (2024). Edukasi Pentingnya Self Management Pasien Diabetes Mellitus Tipe 2 di Wilayah Kerja Puskesmas Samadua Kabupaten Aceh Selatan. *Jurnal Pengabdian Pembangunan Pertanian dan Lingkungan, 1*(2).

Sujianto, U., & Riniatsih, I. (2022). Peningkatan Pengetahuan dan Kesadaran Masyarakat Terhadap Deteksi Dini Penyakit Deabetes Melitus dan Hipertensi. *Jurnal Pengabdian Perawat, 1*(1).

Syarfaini, Ibrahim, I. A., Syahrir, S., Edar, I. W., Jusriani, R., Adha, A., & Yusriyanto. (2023). The Effect of Nutrition Education on Knowledge and Self Management in Patients with Type 2 Diabetes Mellitus. *Al Gizzai: Public Health Nutrition Journal, 3*, 33-42.