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Diabetes self-care management (dscm) experience individuals with type 2 diabetes mellitus: a qualitatif study

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Abstract

Background: Self-Care Management is an important part of the lives of individuals with chronic diseases. This is important because they have to adapt their conditions so that they are able to make decisions about how to manage their own health condition. (Objective) This study aims to gain an in-depth understanding of the meaning of diabetes self-care management (DSCM) in type 2 diabetic individuals.
Method: This study uses a qualitative method with a descriptive phenomenological approach. The sampling technique used was purposive sampling. Data saturation occurred in the 4th participant so the participants involved in this study were 4 people with inclusion criteria consisting of 1) Diabetes Mellitus Type 2 (T2DM) individuals with a period of ≥ 6 months; 2) those who did not experience severe complications (such as severe stroke, heart disease, and diabetic ketoacidosis; 3) was able to tell his experience. Data were taken through in-depth interviews for approximately 60 minutes. Data analysis using Colaizzi's method.
Results: The results of the study identified nine themes, including 1) physical responses experienced by people with Diabetes Mellitus Type 2 (T2DM); 2) perception; 3) Self-awareness; 4) routine blood sugar control; 5) adherence to diet; 6) physical activity; 7) adhere to treatment; 8) self-efficacy; 9) non-pharmacological therapy lowers blood sugar levels.
Conclusion: DSCM is important in the management of Diabetes Mellitus Type 2 (DMT2). A better DSCM can reduce complications, reduce visits to health services, and treatment costs and reduce morbidity and mortality. Further research is needed to explore the content stored in DSCM.

Keywords: Diabetes self-care management, Diabetes mellitus Type 2 (DMT2), qualitative

Abstrak

Latar Belakang : Self-care management merupakan bagian penting dari kehidupan individu dengan penyakit kronis. Hal ini penting karena mereka harus menyesuaikan kondisi mereka sehingga mereka mampu mengambil keputusan tentang bagaimana dalam mengelola kondisi kesehatan mereka sendiri. Tujuan dari penelitian ini adalah untuk mendapatkan pemahaman yang mendalam tentnag makna diabetes self-care managemen (DSCM) pada individu dengan diabetes tipe 2.
Metode : Penelitian ini menggunakan metode kualitatif dengan pendekatan fenomenologi deskriptif. Teknik pengambilan sampel yang digunakan adalah purposive sampling. Saturasi data terjadi pada partisipan ke-4 sehingga partisipan yang terlibat dalam penelitian ini berjumlah 4 orang dengan kriteria inklusi yang terdiri dari 1) individu Diabetes Mellitus Tipe 2 (DMT2) dengan jangka waktu ≥ 6 bulan; 2) mereka yang tidak mengalami komplikasi berat (seperti stroke berat, penyakit jantung, dan ketoasidosis diabetik; 3) mampu menceritakan pengalamannya. Data diambil melalui wawancara mendalam selama kurang lebih 60 menit. Analisis data menggunakan metode Colaizzi.
Hasil : Hasil penelitian mengidentifikasi sembilan tema, antara lain 1) respons fisik yang dialami oleh penderita Diabetes Mellitus Tipe 2 (T2DM); 2) persepsi; 3) Kesadaran diri; 4) kontrol gula

darah secara rutin; 5) kepatuhan terhadap diet; 6) aktivitas fisik; 7) mematuhi pengobatan; 8) self-efficacy; 9) terapi nonfarmakologi menurunkan kadar gula darah.
Kesimpulan : DSCM penting dalam penatalaksanaan Diabetes Mellitus Tipe 2 (DMT2). DSCM yang lebih baik dapat mengurangi komplikasi, mengurangi kunjungan ke pelayanan kesehatan, dan biaya pengobatan serta mengurangi morbiditas dan mortalitas. Penelitian lebih lanjut diperlukan untuk mengeksplorasi konten yang disimpan dalam DSCM.

Kata kunci: Manajemen perawatan diri diabetes, Diabetes melitus Tipe 2 (DMT2), kualitatif

INTRODUCTION

Diabetes mellitus (DM) is a group of metabolic diseases characterized by hyperglycemia due to impaired insulin secretion, ineffective use of insulin, or both. According to the International Diabetes Federation (IDF) Diabetes Atlas, Indonesia ranks fifth with the highest number of diabetic patients in the world in 2021(IDF, 2021). Basic Health Research (Riskeskdas) 2018 has reported an increase in DM prevalence in West Java compared to the year 2013 (Kemenkes RI, 2018).

Public perception of diabetes is still considered trivial even though DM has an impact on various aspects of a person's daily life such as physical, psychological, economic, and social impacts. Therefore, the importance of structured individual care in controlling blood sugar is better (Chrvala et al., 2016). One way to overcome the risk of complications for DM patients is to improve Self-Care Management such as diet, physical activity, glucose control, utilization of health facilities (Schmitt et al., 2013), foot care, and treatment. Most people with Type 2 DM (T2DM) are not optimal in performing Diabetes Self-Care Management (DSCM) (Devarajooh & Chinna, 2017).

Self-care management is important for individuals with chronic illnesses. They are able to adjust to conditions and able to make decisions in managing their conditions. It is very important to understand the individual's perspective on the condition for health care providers. This can help meet their needs and plan of care. Poor control of DSCM can cause long and short term complications and increase mortality (Adu et al., 2019; Grady & Gough, 2018). Self-care is a process of maintaining health as a central phenomenon through the practice of health promotion and disease management carried out in both healthy and sick conditions to reduce the impact in managing symptoms in T2DM patients (Iovino et al., 2021; Riegel et al., 2019). Self-care according to (Riegel et al., 2019) includes three dimensions but are interconnected; (i) maintenance of self-care, practices to promote good self-care and maintain physical and emotional stability (eg exercise adherence and taking medication as prescribed), (ii) self-monitoring, i.e. as behavior tracking and self-observation in changing signs and symptoms (eg measuring changes regularly, checking routines), (iii) self-care management ie behaviors required in response to signs and symptoms (eg measuring changes in diet, or medication dosage based on symptom detection and interpretation). Therefore, the related self-care performance includes all three behaviors. Self-care maintenance goals are to maintain health, prevent exacerbation of symptoms, self-care monitoring goals are to recognize ongoing changes, and self-care management goals are effective symptom treatment. Self-care behavior reflects a sequence that is built on the basis of maintaining self-care, then developing skills in self-monitoring and management. People who have all three skills are considered the most adept at self-care. However, various factors cause problems in carrying out proper self-care

This study to aims to determine the experience of individuals with T2DM in Diabetes Self-care Management (DSCM).

METHOD

This study used a qualitative method with a descriptive phenomenological approach. Researchers explore direcly the experiences of individuals with T2DM which have meaning consisting of participant feelings, memories, an action, a belief and a decision. The sampling technique used is

purposive sampling. Data saturation occurred in the 4th participant, so that the participants involved in this study were 4 people.

2.1. Participant and setting

The participants involved 4 individuals with T2DM and the samples in this study were T2DM individuals who actively visited the Chronic Disease Management Program (CDMP) at Tamansari public Health Center in Tasikmalaya City with inclusion criteria aged 40-60 years, suffering from T2DM with a period of ≥ 6 months, did not experience serious complications (severe stroke, heart disease and diabetic ketoacidosis; able to tell his experience, exclusion criteria were not willing to fill in the informed consent.

2.2. Data Collection

Data were taken through in-depth interviews and recorded using a mobile phone with a voice recorder application. The interview session was conducted for approximately 60 minutes at the participant's home. During the interview process, the researcher recorded how the participants' behavior was recorded in a field note (filed note). The interview was terminated when sufficient data had been obtained and no further information was obtained.

2.3. Data Analysis

Analysis of the data using the Colaizzi's method, the researcher reads the transcript again and the researcher identifies meaningful keywords from the participants. Then formed into categories, after which categories that have the same meaning are formed into sub-themes. After that, the researcher described in narrative form, this was done to combine all themes and subthemes to describe the client's overall experience of diabetes self-care management in T2DM patients.

2.4. Ethical considerations

This research has received a research permit from the health research ethics committee of Bakti Tunas Husada University, and has been assessed for feasibility and received approval based on the Ethical Examination Pass Certificate Number 024/ec.01/kepk-bth/IV/2022.

RESULTS AND DISCUSSIONS

The participants who took part in the study consisted of four participants with T2DM who took part in CDMP activities at the Tamansari Health Center, Tasikmalaya City. All participants experienced T2DM on average for more than ≥ 6 months. The participants were of Sundanese ethnicity, so that during the interview the language used was Sundanese mixed with Indonesian. All participants are Muslim and reside in the city of Tasikmalaya, West Java. Participants underwent a period of treatment for diabetes, starting from one to five years. There are nine themes identified from the client's experience with T2DM, including: 1) the physical response experienced by T2DM sufferers; 2) perception; 3) Self-awareness; 4) routine blood sugar control; 5) adherence to diet; 6) physical activity; 7) adhere to treatment; 8) self-efficacy; 9) non-pharmacological therapy lowers blood sugar levels.

3.1. The physical response of people with T2DM.

The physical responses experienced by the participants varied greatly. The themes that were formed were drawn from the conclusions of the participants' statements which were divided into 2 categories of physical responses and the impact felt after being diagnosed with DMT2, including signs of the first complaint of having Diabetes Mellitus, complaints that were felt include constantly sleeping, urinating constantly, tingling hands, often hungry, frequent urination. thirsty, tired, dizzy. While the perceived impact is weight loss and blurred vision. The results of the interviews of the four participants on average they felt the

same physical complaints when they were first diagnosed with type 2 diabetes. The complaints felt by the participants were as follows:

"...sleepy keeps urinating...thirst..."(P1)

".....Tingling in the hands and feet, hungry all the time.... thirsty, eating constantly but losing weight to 39 kg....." (P2).

"...sleepy, weak if you are dizzy, your blood pressure is high so you're sleepy, weak..."(P3)

"….thirst as well as urinating, lack of enthusiasm when sleepy…."(P4).

After more than one year of experiencing T2DM, the effects felt by participants 1 and 2 were weight loss, blurred vision, the complaints felt by participants were as follows:

"……The initial weight of 60 kg dropped to 55 kg and is now 53 kg…"(P1)

"long term effect is stroke, numbness, eye cramps become blurry, that's how you feel…… The initial weight of 50 dropped to 42 and is now 39 kg…."(P2).

2. Perception

The perceptions that patients have about diabetes mellitus are very diverse, such as DM sufferers have a short life, lifelong disease, an embarrassing disease, based on the expressions conveyed by participants 2,3 and 4 regarding T2DM are:

"...Having a disease like this won't last long…"(P2)

"… If it was me, that's what the doctor said, he said that diabetes is lifelong anyway…" (P3)

"... Well, it's normal to just take care of the food, so we can't overeat, maybe a little..." (P3)

"… Ahhh it's humiliating to have a disease like this…" (P4).

3.3. Self-awarness

Self-awareness carried out by participants in diabetes self-care management is through regular treatment, which participants convey as follows:

"… Just be free, don't think about it.... if you think about it, it will increase (blood sugar)…(P1)

"…many other people also have this kind of disease (Diabetes mellitus) ……I surrender and seek treatment…it's destiny….free (his mind)…if you think about it increase in number/complications)....Alhamdulillah...."(P2)

"…the doctor said that diabetes is a lifelong condition… well, I just have to be patient, the important thing is to be controlled by taking regular medication, okay?" (P3.)

"… at first it became a thought…… yes, in the end it wasn't made into a thought, that's what God gave….now it's already bad, doesn't mean not trying (medicine)……" (P4).

3.4. Self-efficacy

The confidence that individuals with T2DM have in diabetes self-care management is to carry out daily activities again as expressed by participants P2 and P3 as follows:

"……now doing activities as usual, the activity used to be sleeping for several months…"(P2).

"...he said it's impossible for a disease to have no cure..."(P3).

3.5. Dietary compliance

Diet compliance was carried out by participants with diabetes self-care management (DSCM) by regulating the amount of food, eating patterns, as expressed by participants 1,2,3 and 4. Participants who followed the diet according to the recommendations of the community health center:

"….the food (eating rice)….the important thing is to take care of it, don't eat too much…"(P1)

"….the diet is regulated…. one small scoop…. don't overdo the rice…" (P2)

"… I have to control my food… no more than a spoonful…" (P3)

"… yes, it has been reduced (meaning eating rice)….. the pattern of eating…(P4)

However, one participant has obstacles in the type of food consumed, likes sweet foods as expressed by participant P1

"… Mother's barrier likes sweet things…… fruit soup……..(P1).

3.6. Glucose management

Blood sugar checks are routinely carried out once a month by each participant at the health center, as follows:

"…… Once a month checked (blood sugar) until now…(P1)

"….. at the community health center (to check blood sugar) every month, in the laboratory (check blood sugar) every month…" (P2)

"…..I go to the community health center every month (to check blood sugar)…"(P3)

"... routinely go to the community health center (blood sugar control) ...".(P4).

3.7. Physical activity

Physical activities were carried out by participants P1, P2, P3 such as: walking, gymnastics. However, participant (P4) only did physical activity by moving the legs because of weakness and complaints of pain in the legs, the following are the participants' expressions:

"… Gymnastics… or doing movements based on counseling (instructions from health workers) …"(P1)

"…if you go to the market (early in the morning) walk…" (P2).

"… If it's sports…. here and there (while giving examples of the same continuous activity) overheating…. walk…" (P3)

"… if it's sports…. move the legs…"(P4).

3.8. Treatment adherence

Treatment for T2DM is quite long, even the treatment can last a lifetime, making sufferers feel bored with the treatment they are undergoing. Based on the expressions of participants 2 and 3, there is compliance in taking diabetic drugs, the following were revealed by participants:

"… every day eaten (while showing the medicine) … Medicine 15 minutes before eating…."(P2)

"…..controlled taking regular medication…."(P3).

3.9. Non-pharmacological therapy in lowering blood sugar levels

Based on the expressions of participants 2 and 4, there is one way to reduce blood sugar levels by utilizing natural ingredients, the following were revealed by participants:

"….eat bitter melon a day out of 1 kg…."(P2)

"…. Mahogany… eats squirrel… eats cucumber……P2)

"…boiling limnocharis… coriander…"(P2)

"…drink binahong (leaves)… African leaves are made into tea…"(P4)

"…beans…. Moringa leaves…"(P4).

DISCUSSION

The results of the study of all participants revealed continued sleepiness, continued urination, tingling hands, frequent hunger, frequent thirst, weakness, dizziness. While the perceived impact is weight loss and blurred vision. Research conducted (IDF, 2021; Nadirawati & Pratama, 2021)(Subiyanto, 2019) T2DM individuals often complain of polyuria, polydipsia and polyphagia and weight loss for no apparent reason.

Meanwhile, non-typical complaints that accompany T2DM include tingling in the legs, itching of the genital area and vaginal discharge in women, blurred eyes, malaise and sleepiness. Polyuria is caused due to increased blood sugar levels in absorbing glucose in the kidney tubules so that more urine comes out, therefore the occurrence of lack of body fluids, feeling

thirsty quickly (polydipsia) can cause people with T2DM to become dehydrated and easily tired, as a result of insulin deficiency they also experience a lack of glucose. As a substitute for energy, the occurrence of weight loss and frequent hunger (polyphagia) from these complaints can cause Peripheral Arterial Deasease (PAD) complications so that it can block arterial flow to peripheral ends such as hands and feet where peripheral nerve cells are damaged/death caused by Numbness, numbness and numbness (neuropathy) may occur. (Nadirawati & Pratama, 2021)

T2DM can cause a variety of complications, resulting in high treatment costs (IDF & AI, 2019). Therefore, by providing education to DMT2 individuals about knowledge and perceptions about their disease is very important (Nabila et al., 2022). Good knowledge increases a better perception of patients, thus, negative stigma about their disease can be improved (Shams et al., 2016; Vos et al., 2018). Having good knowledge and perception, they will have better behavior and lifestyle.

Self-awareness is carried out by means of regular treatment. Self-awareness has three aspects, namely emotional self-awareness which reflects the importance of recognizing one's own feelings, then self-assessment, and self-confidenc (Yuliasari, 2020). Research by Setyorini & Supriyadi (2021) that the acceptance process is influenced by intrinsic factors (individual characteristics/personality, beliefs, motivation, patience, disease severity conditions as well as age and gender) and extrinsic factors (family support, health workers, job demands, as well as social and economic environmental conditions) (Nadirawati & Pratama, 2021)

Self-efficacy possessed by participants is having the belief that their illness can improve, so that individuals with T2DM can adapt to what the respondent does by doing daily activities, having high enthusiasm for monitoring blood sugar levels. Self-efficacy has nothing to do with ability but the belief that individuals have in performing self-care behavior, or the belief that individuals are able to control or control all situations or conditions and are able to produce more positive things (Dwitanta et al., 2020).

Routine blood sugar checks that are carried out are consistently carried out by individuals with T2DM. Routine blood sugar checks can assess the effectiveness of individual self-management of T2DM (Mahathir et al., 2021).

Adherence to diet is a significant determinant of T2DM (Sumamo Elizabeth; Dryden, Donna; Vandermeer, Ben; Ha, Christine; Korownyk, 2013; Toi et al., 2020). Several systematic reviews and meta-analyses (SRMA) of randomized controlled trials (RCTs) showed that dietary modification interventions (low calorie diet with low fat diet can delay or prevent the onset of T2DM. Dietary factors can be divided into subcategories such as pattern diet (eg Mediterranean diet and Dietary Approches to Stop Hypertension (DASH) diet), food groups (eg nuts, seeds, vegetables, fruits) and dietary nutrition.

Many factors affect adherence to treatment in T2DM, such as the characteristics and complexity of the disease and treatment, age, gender, self-esteem, stress, depression, quality of the relationship between patients and health workers, social support and the patient's ability to remain obedient in the midst of daily stress (Swe & Reddy, 2020).

The World Health Organization (WHO) has identified drug non-adherence as a major preventable cause of morbidity, mortality and health care costs (Lemstra et al., 2018). WHO reviewed the literature on secondary non-adherence as follows: 1) the drug does not work if the patient does not take it; 2) drug non-adherence is a worldwide problem that crosses all jurisdictions, (3) the prevalence of drug nonadherence is stark, and (4) this complex problem should be an urgent priority issue for policy makers and health care providers (Jaam et al., 2018). Two

patient behaviors that are important to help achieve good glycemic control include adherence (the degree to which medication is taken at prescribed doses, intervals, and frequencies) and persistence (continuation of medication for a prescribed duration) (Cramer et al., 2008).

Another effort for T2DM individuals is to consume non-pharmacological drugs, namely pariah, squirrel, cucumber, Limnocharis flava, coriander, binahong leaves, african leaves, beans and moringa leaves. The use of binahong leaves has also become a community tradition as a medicine for diabetes and hypertension which is processed into tea as an alternative for DM sufferers to control blood sugar levels that have been researched and believe in its safety (Muflih & Asmarani, 2019).

Evidence based the content contained in Moringa leaves is also very efficacious in lowering blood sugar levels (Syamra et al., 2018). Moringa leaves have nutrients in the form of beta-carotene in vitamin A, antioxidants that protect against disease, vitamin C to help normal insulin hormones, ascorbic acid which helps remove substances in the blood needed by the body by the hormone insulin and vitamin E which prevents diabetes. Bitter gourd is a plant that contains polypeptide-p, quarantine and lectins that can lower blood sugar levels in individuals with T2DM (Puspitasari & Choerunisa, 2021). (Puspitasari & Choerunisa, 2021) Mahogany is one of the plants used by people in Indonesia as an anti-diabetic drug, especially the seeds which contain to lower blood sugar levels and help improve the pancreas organ so that it can increase insulin secretion, so glucose can be absorbed into cells as energy for the body which becomes glycogen in the liver. and muscles (Wulan Sumekar & Fauzia, 2016).

CONCLUSION

DSCM is important in the management of T2DM. The better DSCM can reduce complications, reduce visits to health services, treatment costs and reduce morbidity and mortality.

REFERENCE

1. Adu, M. D., Malabu, U. H., Malau-Aduli, A. E. O., & Malau-Aduli, B. S. (2019). Enablers and barriers to effective diabetes self-management: A multi-national investigation. *PLoS ONE*, *14*(6), 1–22. https://doi.org/10.1371/journal.pone.0217771
2. Chrvala, C. A., Sherr, D., & Lipman, R. D. (2016). Diabetes self-management education for adults with type 2 diabetes mellitus: A systematic review of the effect on glycemic control. *Patient Education and Counseling*, *99*(6), 926–943. https://doi.org/10.1016/j.pec.2015.11.003
3. Cramer, J. A., Roy, A., Burrell, A., & Fairchild, C. J. (2008). Medication Compliance and Persistence. *Value in Health*, *11*(1), 44–47. https://doi.org/10.1111/j.1524-4733.2007.00213.x
4. Devarajooh, C., & Chinna, K. (2017). *Depression , distress and self-efficacy : The impact on diabetes self-care practices*. 1–16.
5. Dwitanta, S., Dahlia, D., Program, M., Magister, S., & Keperawatan, I. (2020). Diabetes Self Management dan Faktor yang Mempengaruhinya pada Usia Dewasa Pertengahan. In *Jurnal Ilmu Keperawatan Medikal Bedah* (Vol. 3, Issue 2).
6. El-osta, A. (2020). *THE SELF-CARE MATRIX : A UNIFYING FRAMEWORK FOR SELF-CARE*. *June 2019*. https://doi.org/10.6084/m9.figshare.12578741
7. Grady, P. A., & Gough, L. L. (2018). Self-management: A comprehensive approach to management of chronic conditions. *American Journal of Public Health*, *108*(8), S430–S436. https://doi.org/10.2105/AJPH.2014.302041

8. IDF. (2021). International Diabetes Federation. In *Diabetes Research and Clinical Practice* (10 edition, Vol. 102, Issue 2). IDF Diabetes Atlas 2021. https://doi.org/10.1016/j.diabres.2013.10.013
9. IDF, & Al, R. W. (Chair) et. (2019). IDF Diabetes Atlas 9th. In *IDF Diabetes Atlas, 9th edition*. https://diabetesatlas.org/idfawp/resource-files/2019/07/IDF_diabetes_atlas_ninth_edition_en.pdf
10. Iovino, P., Lyons, K. S., De Maria, M., Vellone, E., Ausili, D., Lee, C. S., Riegel, B., & Matarese, M. (2021). Patient and caregiver contributions to self-care in multiple chronic conditions: A multilevel modelling analysis. *International Journal of Nursing Studies*, *116*(xxxx), 103574. https://doi.org/10.1016/j.ijnurstu.2020.103574
11. Jaam, M., Hadi, M. A., Kheir, N., Ibrahim, M. I. M., Diab, M. I., Al-Abdulla, S. A., & Awaisu, A. (2018). A qualitative exploration of barriers to medication adherence among patients with uncontrolled diabetes in Qatar: Integrating perspectives of patients and health care providers. *Patient Preference and Adherence*, *12*, 2205–2216. https://doi.org/10.2147/PPA.S174652
12. Kemenkes RI. (2018). *Penyebab Stuntingpada ana*.
13. Lawless, M. T., Tieu, M., Feo, R., & Kitson, A. L. (2021). Theories of self-care and self-management of long-term conditions by community-dwelling older adults: A systematic review and meta-ethnography. *Social Science and Medicine*, *287*(September), 114393. https://doi.org/10.1016/j.socscimed.2021.114393
14. Lemstra, M., Nwankwo, C., Bird, Y., & Moraros, J. (2018). Primary nonadherence to chronic disease medications: A meta-analysis. *Patient Preference and Adherence*, *12*, 721–731. https://doi.org/10.2147/PPA.S161151
15. Mahathir, M., Mailani, F., & Malini, H. (2021). Pengalaman Pasien Diabetes Mellitus yang Tinggal Sendiri dalam melakukan Manajemen Diri. *Jurnal NERS*, *17*(2), 91–101.
16. Muflih, M., & Asmarani, F. L. (2019). *EFEK TEH BINAHONG (ANREDERA CORDIFOLIA (TEN.) STENNIS) TERHADAP PENURUNAN GULA DARAH EFEK TEH BINAHONG (ANREDERA CORDIFOLIA (TEN.) STENNIS) TERHADAP PENURUNAN GULA DARAH EFFECT OF BINAHONG TEA (ANREDERA CORDIFOLIA (TEN.) STENNIS) ON THE REDUCTION OF BLOOD*.
17. Nabila, K. A., Kusumawati, M., & Megawati, G. (2022). Knowledge and Perception of Diabetes Mellitus among Patients with Type 2 Diabetes Mellitus in Five Public Health Centers in Karawang, West Java, Indonesia. *Althea Medical Journal*, *9*(1), 12–18. https://doi.org/10.15850/amj.v9n1.2287
18. Nadirawati, N., & Pratama, I. (2021). Studi Fenomenologi: Pengalaman Klien Lansia dalam Melakukan Perawatan Diabetes Mellitus Tipe 2. *Journal of Telenursing (JOTING)*, *3*(1), 20–36. https://doi.org/10.31539/joting.v3i1.2076
19. Puspitasari, V., & Choerunisa, N. (2021). KAJIAN SISTEMATIK: EFEK ANTIDIABETES BUAH PARE (Momordica charantia Linn.) TERHADAP KADAR GLUKOSA DARAH PADA TIKUS YANG DIINDUKSI ALOKSAN Systematic Review: Antidiabetic Effect of Bitter Melon Fruit (Momordica charantia Linn.) on Blood Glucose Levels in A. In *Generics : Journal of Research in Pharmacy* (Vol. 1, Issue 2).
20. Richard, A. A., & Shea, K. (2011). Delineation of Self-Care and Associated Concepts. *Journal of*

Nursing Scholarship, *43*(3), 255–264. https://doi.org/10.1111/j.1547-5069.2011.01404.x

21. Riegel, B., Jaarsma, T., Lee, C. S., & Strömberg, A. (2019). Integrating symptoms into the middle-range theory of self-care of chronic illness. *Advances in Nursing Science*, *42*(3), 206–215. https://doi.org/10.1097/ANS.0000000000000237
22. Riegel, B., Jaarsma, T., & Stromberg, A. (2018). Theory of self-care of chronic illness. *Middle Range Theory for Nursing, Fourth Edition*, *35*, 341–353. https://doi.org/10.1891/9780826159922.0016
23. Schmitt, A., Gahr, A., Hermanns, N., Kulzer, B., Huber, J., & Hakk, T. (2013). The Diabetes Self-Management Questionnaire (DSMQ). *Journal Health and Quality of Life Outcomes*, *11*(1), 1.
24. Shams, N., Amjad, S., Seetlani, N. K., & Ahmed, W. (2016). Diabetes knowledge in elderly type 2 diabetes mellitus patients and association with glycemic control. *Journal of the Liaquat University of Medical and Health Sciences*, *15*(2), 71–77.
25. Subiyanto, P. (2019). *Buku Ajar Asuhan Keperawatan Pada Pasien Dengan Gangguan Sistem Endokrin*. Pustaka Baru Press.
26. Sumamo Elizabeth; Dryden, Donna; Vandermeer, Ben; Ha, Christine; Korownyk, C. (2013). Annals of Internal Medicine Review Lifestyle Interventions for Patients With and at Risk for Type 2 Diabetes. *Annals of Internal Medicine*, *159*(8), 543–551.
27. Swe, K., & Reddy, S. S. K. (2020). Improving Adherence in Type 2 Diabetes. *Clinics in Geriatric Medicine*, *36*(3), 477–489. https://doi.org/10.1016/j.cger.2020.04.007
28. Syamra, A., Indrawati, A., & Warsyidah, A. A. (2018). Pemberian Rebusan Daun Kelor Terhadap Penurunan Kadar Glukosa Darah Pada Pasien Penderita Diabetes Mellitus (DM). In *Jurnal Media Laboran* (Vol. 8, Issue 2).
29. Toi, P. L., Anothaisintawee, T., Chaikledkaew, U., Briones, J. R., Reutrakul, S., & Thakkinstian, A. (2020). Preventive role of diet interventions and dietary factors in type 2 diabetes mellitus: An umbrella review. *Nutrients*, *12*(9), 1–17. https://doi.org/10.3390/nu12092722
30. Vos, R. C., Kasteleyn, M. J., Heijmans, M. J., De Leeuw, E., Schellevis, F. G., Rijken, M., Rutten, G. E., Gorter, K. J., Van Puffelen, A. L., De Vries, L., Van Der Heijden, A. A. W. A., Baan, C. A., & Nijpels, G. (2018). Disentangling the effect of illness perceptions on health status in people with type 2 diabetes after an acute coronary event. *BMC Family Practice*, *19*(1), 1–10. https://doi.org/10.1186/s12875-018-0720-y
31. Wulan Sumekar, D., & Fauzia, S. (2016). Efektivitas Biji Mahoni (Swietenia mahagoni) sebagai Pengobatan Diabetes Melitus. In *Swietenia Mahagoni) sebagai Pengobatan Diabetes Melitus Majority* | (Vol. 5, Issue 3).
32. Yuliasari, H. (2020). Pelatihan Konselor Sebaya Untuk Meningkatkan Self Awareness Terhadap Perilaku Beresiko Remaja. *Jurnal Psikologi Insight*, *4*(1), 63–72. https://doi.org/10.17509/insight.v4i1.24638