

Diabetic Self-Management Education – Effect on Self-Management Care of Type-2 Diabetic Patients

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Abstract

A common problem of a person with diabetes mellitus was the lack of discipline in implementation of their daily self-care management. Diabetes Self-Management Education (DSME) was a system to help diabetes patients manage their activities to improve their health. DSME is the process which can improve the knowledge, skill, and ability of diabetes self-care. This study aimed to determine the effect of using diabetes self-management education (DSME) intervention and how it affected patients' self-care management. This research was quasi experiment with one group pretest-posttest among patients with type-2 diabetes. There were 30 participants assigned by using purposive sampling into DSME intervention. Four sessions of DSME were conducted to the participants using illustrative media/fliers. The data were collected by questionnaires of Diabetes Self-Care Management. Then, it was analyzed by using paired t-test. The results showed that self-care management of the respondents before the intervention was 28.8 and it increased to 35.3 after the intervention (mean different=6.5). There were differences in the self-care score before and after the intervention ($p=0.001$). This study has limited time to do DSME. But, in four sessions, we have tried to explain more about diabetes interactively. Then, better to assess the type-2 diabetes patients with qualitative method or mixed with more participants included for the future researchers. This research was adopting a DSME to found significant improvements in the self-care management in type-2 diabetes mellitus patient. This demonstrates that DSME intervention can be such clinical importance in care of type-2 diabetes mellitus patient.

Keywords: Diabetes self-management education, self-care management, type-2 diabetes patients.

Abstrak

Diabetes Self-Management Education (DSME) adalah suatu sistem untuk membantu pasien diabetes mengelola aktivitasnya untuk meningkatkan kesehatannya. DSME merupakan proses yang dapat meningkatkan pengetahuan, keterampilan, dan kemampuan perawatan diri pada pasien diabetes. Penelitian ini bertujuan untuk mengetahui pengaruh intervensi diabetes self-management education (DSME) dan bagaimana pengaruhnya terhadap manajemen perawatan diri pasien. Penelitian ini merupakan quasi eksperimen dengan one group pretest-posttest pada pasien diabetes tipe-2. Ada 30 partisipan yang ditetapkan dengan menggunakan purposive sampling dengan menjalani intervensi DSME. Empat sesi DSME dilakukan kepada para peserta dengan menggunakan media ilustrasi / brosur. Pengumpulan data dilakukan dengan kuesioner Diabetes Self-Care Management. Kemudian di analisis dengan menggunakan uji-t dependen. Hasil penelitian menunjukkan bahwa manajemen perawatan diri responden sebelum intervensi sebesar 28,8 dan meningkat menjadi 35,3 setelah intervensi (beda mean = 6,5). Ada perbedaan skor perawatan diri sebelum dan sesudah intervensi ($p = 0,001$). Studi ini memiliki waktu terbatas untuk melakukan DSME. Tapi, dalam empat sesi, kami mencoba menjelaskan lebih banyak tentang diabetes secara interaktif. Diharapkan penelitian selanjutnya dilakukan 2 dengan metode kualitatif atau dengan lebih banyak partisipan. Penelitian ini mengadopsi DSME untuk menemukan peningkatan yang signifikan dalam manajemen perawatan diri pada pasien diabetes mellitus tipe-2. Hal ini menunjukkan bahwa intervensi DSME dapat menjadi penting secara klinis dalam perawatan pasien diabetes melitus tipe-2.

Kata kunci: Diabetes self-management education, self-care management, pasien diabetes tipe 2.

Introduction

Epidemiological transition is usually referred to as a change in circumstances characterized by changes in mortality and morbidity from infectious diseases to non-infectious diseases. This happened because of the era of globalization may change the pattern of life in society, starting from the socio-economy and high life expectancy. These changes lead to the increasing of chronic disease (Lathifah, 2013). Nowadays, there is an alteration from infectious diseases to non-communicable diseases. One of the diseases is diabetes mellitus. Diabetes mellitus is one of the non-communicable diseases which will continue to increase in number (Nurlaela, 2015). Diabetes mellitus is a chronic disease with a high incidence and become a very serious problem in the community (Rahmawati et al., 2016). It became a chronic disease due to the pancreas does not produce enough insulin or the body cannot utilize the insulin produced effectively, and causes the concentration of glucose in the blood very high (Lis et al., 2015).

The World Health Organization (WHO) states that diabetes mellitus is in the 9th position of the 10 most important causes of death in the world with the number of deaths 1.26 million people (2.2%) of the approximately 57 million deaths in the world in a year. The number of DM sufferers in Indonesia ranks the 4th highest in the world and the 6th leading cause of death (5.7%) in Indonesia (Wulandini et al., 2016). Diabetes Mellitus sufferers in Indonesia will increase to 21.3 million people in 2030, and is in fourth position after the United States, China and India. Research results from the Ministry of Health, published in 2008, showed the prevalence rate of DM in Indonesia was 5.7%, which means more than 12 million people (Harwadi et al., 2015).

American Diabetes Association (ADA, 2014) Diabetes Mellitus is divided into several types, namely Diabetes mellitus type 1, Diabetes mellitus type-2, Gestational Diabetes, and other Diabetes mellitus. Diabetes Mellitus type-2 is much more frequent than Diabetes Mellitus type 1 (making up about 90% of all diabetes cases) and is usually associated with obesity (Wulandini et al., 2016). DM sufferers are at high risk of experiencing complications in the form of hypoglycemia, hyperglycemia, ketoacidosis, neuropathy which increases the risk of gangrenous wounds that lead to amputation, retinopathy which can potentially lead to blindness, nephropathy which can lead to kidney failure besides these complications DM disease also has a negative effect on the sufferer either physical, psychological, social and economic (Atika & Mutiawati, 2016). According to the International Diabetes Federation (IDF) (2015), the Asia Pacific region is the most affected area with diabetes mellitus, with an incidence of 138 million cases (8.5%). The IDF estimates that in 2035 the incidence of DM will increase to 205 million cases due to lifestyle changes among people with diabetes who are 40-59 years old.

According to WHO, diabetes mellitus is one of the four priorities for non-communicable diseases. Diabetes is the leading cause for blindness, heart attacks, strokes, kidney failure and leg amputations. 80% of the incidence of diabetes can be prevented, take prevention efforts now, diabetes can be prevented or its occurrence can be postponed. With optimal treatment management, diabetes can be controlled and people with diabetes can live long and healthy lives. It is estimated that there are 415 million people with Diabetes Mellitus worldwide in 2015. Among the diabetes sufferers, there are 44.3 million in North America and the Caribbean, 59.8 million in Europe, 29.6 million in South and Central America, and 14.2 million in Africa, and the West Pacific with 153.2 million and also Middle East and North Africa as many as 35.4 million people. In the year of 2015, 415 million adults had diabetes, a 4-fold increase from 108 million in the 1980s. By 2040 it is estimated that the number will be 642 million (IDF Atlas 2015). Nearly 80% of people with diabetes are in low- and middle-income countries. The percentage of adults with diabetes was 8.5% (1 in 11 adults has Diabetes) (WHO, 2016).

In 2015, Indonesia was seventh rank in the world for the highest prevalence of diabetes sufferers in the world along with China, India, the United States, Brazil, Russia and Mexico with an estimated number of people with diabetes. There were 10 million diabetes with complications become the third highest cause of death in Indonesia. The prevalence of people with diabetes in Indonesia shows increasingly, 5.7% in 2007 to 6.9% in 2013. 2/3 of people with diabetes in Indonesia do not know they have diabetes, and have the potential to access health services lately (already with complications). The prevalence of overweight, which is one of the biggest risk factors for diabetes, continues to increase (WHO, 2016).

Based on Ministry of Health in 2014, diabetes is ranked 4th of chronic diseases in Indonesia. Yogyakarta is the highest province, while West Sumatra province ranks 14th out of 33 provinces with a 1.3% total prevalence of sufferers. They mostly occur in the age range of 56-64 years with a prevalence of 4.8%, this figure shows that West Sumatra is still one of the provinces in Indonesia that has the highest diabetes sufferers. This percentage should be a reference for all parties including health services to carry out proper management to reduce the number of people with diabetes, especially type-2 diabetes mellitus, where 90% of people with diabetes in the world are type-2 diabetes mellitus.

Diabetes mellitus is a heterogeneous group of disorders characterized by an increase in blood glucose levels or hyperglycemia with very varied symptoms, often symptoms are not felt or are not realized by the sufferer, such as polyuria (frequent urination of large volumes, especially at night), polyphagia (increased appetite and lack of energy), polydipsia (often feeling thirsty and want to drink as much as possible), tingling sensations and weight loss (Harwadi & Ibrahim, 2015). It is one of the main threats to human health. Actually, an important role in the management of type-2 Diabetes was education. Education is the process of transmitting knowledge and skills, so that it was needed to change the knowledge of diabetic patients. Education for type-2 diabetic patients is important as an initial step in controlling type-2 diabetes mellitus. One of the goals of giving education is to increase knowledge that will cause changes in attitudes and lifestyles so can increase adherence that affects quality of life. Education is one process that takes place continuously and has to be monitored. The goals of health education are first of all to increase knowledge about diabetic (Windani et al., 2018).

This knowledge will be the starting point changes in their attitudes and lifestyles and in the end there is a change in behavior community and patients and increased adherence which will then be improve their quality of life. Education carried out in this activity involves the community by using some of media (Amanda et al., 2020). The type of media currently available in hospitals is a limited number of posters. From the results of the interview, it is known that there has been no use of a health education method using modules that can be used independently by patients to increase knowledge (Oktorina et al., 2019). Then, the level of knowledge of diabetic patients on independent glucose monitoring is still low and there is an increase in knowledge after education by demonstrating blood glucose monitoring.

One form of education that is commonly used and proven effective in improving clinical outcomes and quality of life for type-2 diabetic patients is Diabetes Self-Management Education (DSME). DSME was an ongoing process carried out to facilitate the knowledge, skills and abilities of diabetic patients to carry out independent care. DSME is a process of providing knowledge to patients about the application of self-care strategies independently to optimize metabolic control, prevent complications, and improve the quality of life of diabetic patients (Wahyono et al., 2019). Handling Diabetes Mellitus independently and sustainably contained in DSME, is a part of health education which not only involves knowledge and skills, but also psychological counseling if needed to facilitate a lifestyle of diabetic patients (Rahmawati et al., 2016).

According to (Notoatmodjo, 2012), health education is an effort or activity to create health behavior that is conducive to health. Based on Kurniati (2016), the behavior can be changed with giving education stimulatingly (minimal 3 days in a week during a month). It was one of the pillars of diabetes mellitus management. Through planned health education, individuals, groups and communities can be more obedient in the management of diabetes mellitus (Windasari et al., 2009). The health education approach with the DSME method does not only use direct and indirect counseling methods but has developed by encouraging participation and cooperation of people with diabetes and their families. *American Diabetes Association* (ADA) in 2010 stated that DSME can reduce the incidence of diabetes mellitus by up to 58%. Another research by Balagopal et al. (2008) in Tamilnadu, India to over 703 respondents who have diabetes risk factors and have been diagnosed, show that the DSME program can reduce fasting blood sugar levels by 11% in pre-diabetic adults, 17% in pre-diabetic adolescents, and 25% in adult patients with type-2 diabetes. DSME programs are highly effective in improving glycemic control, lipid profile and Body Mass Index, and modestly effective in improving Blood Pressure. Thus, they can reduce the risks of developing diabetes complications (Mikhael et al., 2020).

In Bukittinggi, West Sumatera, Indonesia, there was a General Public Hospital which was a referral hospital for the West Sumatra region. Based on the data obtained from the medical records of this Hospital, it was found that the total number of people with Diabetes Mellitus in 2016-2017 was 1,468 people. Based on Medical Record of this hospital, in 2016 there were 715 people with type-2 diabetes mellitus and 743 people with type-2 diabetes mellitus in 2017. It can be concluded that the incidence of diabetes mellitus is still high in this regional of West Sumatera. Based on a preliminary study, by interviewing three people suffering from Diabetes Mellitus at this hospital, it was found that two of them knowing about diabetes disease and not knowing about how to prevent complications while another person knew about how to prevent it but could not do it according to standards. However, it can be concluded that the patient is still not optimal in regulating his diet. From this description, the researcher wanted to conduct a research on whether the effect of Diabetes Self-Management Education on Self Care Management for Type-2 Diabetes Mellitus Patients.

Method

This research was a quasi experimental research with a one group pre-test and post-test design. It used to see if there was an effect of Diabetes Self-Management Education (DSME) on Self Care Management of Type-2 Diabetic Patients. The research conducted in the General Public Hospital in Bukittinggi, West Sumatera, Indonesia. There were 30 participants assigned by using purposive sampling into DSME intervention which this following criterion: (a) able to carry out their own activities (b) able to communicate well verbally and (c) able to read and write well. Four sessions of DSME were conducted to the participants interactively using illustrative media and fliers. This research was conducted in a month, where the intervention given in 3 days a week then the pre-test was tested. After 3 weeks, the respondents were tested to the post-test about their self-care management. In this study, the data was collected by using questionnaire of *Self Care Management* which was adopted from *The Diabetes Self-Management Questionnaire (DSMQ): development and evaluation of an instrument to assess diabetes self-care activities associated with glycaemic control* (Schmitt et al., 2013). The questionnaire was 16 item questionnaire which assesses self-care activities about Four subscales, 'Glucose Management' (GM), 'Dietary Control' (DC), 'Physical Activity' (PA), and 'Health-Care Use' (HU), as well as a 'Sum Scale' (SS) as a global measure of self-care were derived. The validity of the questionnaire was mean item-total-correlation: 0.46 ± 0.12 ; mean correlation with HbA1c: -0.23 ± 0.09 and the reliability overall internal

was consistency (Cronbach's alpha) was good (0.84). Participants were tested about their diabetes self-care management before and after intervention. Diabetes Self-Management Education (DSME) intervention was provided using a manual which was formed into modules that refer to the guidelines. DSME component in this study deliver the education about the basic knowledge of DM, nutrition / diet management, exercise or physical exercise, foot care, pharmacological therapy and monitoring of blood sugar levels. Data was analyzed by using descriptive analytic and paired t-test to measure the mean different.

Results

Research on the Effect of Diabetes Self-Management Education on Self Care Management of Type-2 Diabetic patients was conducted on 30 respondents in the General Public Hospital in Bukittinggi with a description of the respondents as bellows:

Table 1. Demographic Characteristic

No	Variable	f	%
1.	Gender		
	Male	21	70
	Female	9	30
2.	Knowledge Level		
	Low	24	80
	High	6	20
3.	Occupation		
	Non-Job	6	20
	Civil servants	6	10
	Farmers / Traders / Laborers	18	60
4.	Marital Status		
	Married	24	80
	Non-Married	6	20
5.	Time Suffering of Diabetic		
	2 years	9	30
	More than 2 years	21	70

Table 1 showed that of the 30 respondents, most of the respondents of type-2 diabetic patients (70%) were male, in terms of educational level, it was found that most of the respondents (80%) had low education, while in terms of occupation, the majority of respondents (60%) work as farmers, traders and laborers and in terms of marital status, it was found that most of the respondents were married (80%) and most of the respondents were diabetes patients with diabetes mellitus more than 2 years (70%).

Table 2. Average Score of Self-Care Management Patients

Self-Care Management	N	Mean	SD	Min - Max	95% CI
Pre Test	30	28.8	4.13	23 - 36	25.84 – 31.75
Post Test	30	35.3	3.3	31 – 40	32.93 – 37.66

Table 2 showed that the mean self-care management of respondents before the intervention was 28.8 + 4.13 with the lowest score of 23 and the highest was 36. Based on the results of the interval calculation, at the 95% confidence level, the average self-care management scores of the respondents before the intervention was 25.84 -31.75. Before the intervention, the average self-care management score of respondents was still at a moderate level (self-care management)

where the respondents were unable to manage and self-care in treating and complications of the diabetes mellitus condition they were facing.

Then, the table showed that the mean of the respondent's self-care management after the intervention is 35.3 ± 3.3 with the lowest score of 31 and the highest is 40. Based on the results of the interval estimation believed that at the 95% confidence level the average self-care management score of the respondent after the intervention ranges from 32.93 - 37.66. After the intervention, it was found that in general, the respondents' self-care management was at the high level of self-care management (good), that is, the respondents experienced an increase in their ability to control and treatment indicators, including checking blood sugar levels, controlling blood sugar levels by regulating diet, exercise and discipline in undergoing treatment.

Table 3. Effect of Diabetes Self-Management Education on self-care management of type-2 diabetic patients N = 30

Self-Care Management	Mean	Mean Different	SD	p	95% CI
Pre Test	28.8	6.5	2.013	0.001	5.05 – 7.94
Post Test	35.3				

It showed that the mean of self-care management before the intervention was 28.8 and increased to 35.3 after the intervention. There is a difference in the average score of respondents' self-care management between before and after the intervention with an average difference of 6.5 and p-value = 0.001 ($p < 0.05$), meaning that the provision of Diabetes Self-Management Education has a significant effect on self-care management of type-2 diabetic patients.

Discussion

Self-Care Management Before the Intervention

The results of the study in table 2 showed that the average self-care management of the respondents before the intervention was 28.8 ± 4.13 with the lowest score of 23 and the highest was 36. Self-care is an activity implementer initiated by the individual himself to meet the needs in order to maintain life, health, and welfare according to rising health and illness (Alligood & Tomey, 2006), while diabetes self-care is a program or action that must be carried out throughout the client's life and become fully responsible for every diabetic client. Diabetes self-care is an action taken by individuals to control diabetes which includes treatment and prevention of complications. DSME can be used as a health promotion program to improve care capabilities independent type-2 diabetic patients. DSME can be used as an SOP, reference source, or reference source in the handling of DM patients both in the clinical and community scope (Kurniawati et al., 2019).

Many factors can affect self-care management in diabetes mellitus patients, where self-care management is a form of health behavior in DM patients to treat and prevent complications of diabetes mellitus. According to Lawren Green's theory in (Notoatmodjo, 2012) a person's behavior is influenced by 3 factors, namely reinforcing factors including knowledge, attitudes, motivation, perception, education, value culture and so on; Then the enabling factors include geographic environment, facilities and infrastructure, socio-economic and so on and supporting factors include support from people who are considered important, namely health workers, families, community leaders.

In line with previous research conducted by Indaryati (2018) entitled the effect of Diabetes Self- Management Education (DSME) on diabetes mellitus patient self-care at the

Palembang City Hospital, the results of this study indicate that the majority of respondents in the control group showed moderate self-care management. From the results of the study, it is known that the respondent's self-care management before the intervention was still at a moderate level (moderate self-care management) where the respondents were not fully able to carry out management and self-care in treating and preventing complications from the diabetes mellitus condition they faced. Based on the results of the study, it can be seen that the respondent's self-care management appears to be low on indicators of controlling blood sugar levels, namely the majority of respondents stated that they were unable to check blood sugar levels, improve high or low blood sugar conditions independently and respondents also stated that they were not able to choose foods that were appropriate for the diet in people with diabetes mellitus.

Based on the research findings, the researcher concludes that the lack of self-care management of respondents is more influenced by educational factors which have implications for knowledge of self-care management where in this study it appears that the majority of respondents have high school education / equivalent and at this group of respondents tends to show lower self-care management. Therefore, providing health education and education is one concrete step that can be taken to improve understanding and change self-care management behavior in diabetes mellitus patients so that they can take medication, control blood sugar and prevent complications of diabetes mellitus properly.

Self-Care Management After the Intervention

The results of the research in table 3 showed that the average self-care management of the respondents after the intervention was 35.3 ± 3.3 with the lowest score of 31 and the highest was 40. The intervention in this study was to carry out education with the Diabetes Self Care Management Education (DSME) approach in type-2 diabetes mellitus patients at Hospital. Diabetes self-management education (DSME) is an ongoing process carried out to facilitate the knowledge, skills, and ability of diabetes mellitus clients to carry out independent care. Diabetes self-management education (DSME) is a sustainable diabetes management method by facilitating knowledge and skills (Rahmawati et al., 2016).

The principle of DSME is health education related to the management of diabetes mellitus. Education provided through DSME can facilitate the knowledge, skills, and abilities of DM patients in carrying out independent care. Furthermore, Funnell et al. (2009) states that patient education helps patients make decisions about goals, beliefs, and motivation related to care (Dalimunthe & Nasution, 2016). In line with previous research conducted by Indaryati (2018) the results of this study indicate that the majority of respondents in the intervention group showed good self-care management. The assumption of the researchers was that after the intervention, namely the provision of education with the Diabetes Self-Management Education (DSME) approach, it was seen that there was an increase in the respondent's self-care management, where after the intervention it was found that in general the respondents' self-care management was at the high level of self-care management (good), that is, the respondents experienced an increase in ability on indicators of control and treatment, including checking blood sugar levels, controlling blood sugar levels by regulating diet, exercise and discipline in undergoing treatment. In line with the previous research that said there was an increase in community knowledge about the importance of physical activity after counseling (Rosidin et al., 2019). Even though self-care management cannot be fully carried out independently, the improvement shown by the respondents looks much better than before the intervention.

Diabetes Self-Management Education – Effect on Self-Management Care of Type-2 Diabetic Patients

Effect of Diabetes Self Care Management Education (DSME) on Self Care Management of Patients with Type-2 Diabetes Mellitus. The results showed that there was an increase in the respondent's self-care management from 28.8 before the intervention to 35.3 after the intervention. There is a difference or an increase in the average self-care management of respondents by 6.5 and p value = 0.001, meaning that the provision of education using the Diabetic Self-Management Education (DSME) approach has a significant effect on self-care management in patients with type-2 diabetes mellitus.

The main challenge for diabetes mellitus patients is discipline in dieting and controlling blood sugar levels to prevent or inhibit complications of diabetes mellitus. One aspect that plays an important role in the management of type-2 diabetes mellitus is education. Education for type-2 DM patients is important as an initial step in controlling type-2 diabetic patients. One form of education that is commonly used and proven to be effective in improving clinical outcomes and quality of life for type-2 diabetic patients is Diabetes Self-Management Education (DSME). DSME is a continuous process carried out to facilitate the knowledge, skills and abilities of DM patients to carry out independent care. DSME is a process of providing knowledge to patients about the application of self-care strategies independently to optimize metabolic control, prevent complications, and improve the quality of life of DM patients (Murhayati, 2013). Handling DM independently and sustainably contained in DSME is part of health education which not only involves knowledge and skills, but also psychological counseling if needed to facilitate a lifestyle (Rahmawati et al., 2016). Therefore, the provision of education with the Diabetes Self Care Management Education approach is expected to have a negative effect on the behavior and independence of respondents which is manifested in the form of self-care management in diabetes mellitus patients.

In line with previous research conducted by Hailu et al. (2019) which shows that education with the principle approach of Diabetes Self-Management Education (DSME) is proven to improve dietary compliance behavior in type-2 diabetic patients. Another research also states that after DSME was carried out regarding meal planning, respondents know which types of food should be consumed a lot and which foods should be reduced. The application of education with the DSME principle approach can lead to good self-management skills so that it can improve self-management compliance behavior in type-2 DM patients which has an impact on improving the quality of life (Laili et al., 2011). Providing education with the Diabetes Self Care Management Education (DSME) approach has a significant effect on improving self-care management in diabetes mellitus patients, where there is an increase in respondent self-care management after giving education with the Diabetes Self Care Management Education (DSME) approach.

Before the intervention, it was known that in general the respondents' Self Care Management was at a moderate level (Moderate Self Care Management) where there were still respondents who were unable to control blood sugar levels including diet, lifestyle and checking blood sugar levels, while after the intervention there was seen Increasing the ability of respondents in all aspects of self-care management including controlling blood sugar levels, regulating diet, regulating lifestyle by exercising and increasing discipline in undergoing treatment. The above conditions indicate that the provision of education with the Diabetes Self Care Management Education (DSME) approach has a significant effect on improving self-care management in diabetes mellitus patients.

The result of this research was in accordance with the principles and goals of DSME, namely to empower patients with diabetes mellitus to avoid various complications by supporting decision making, self-care, problem solving and active collaboration with the health team to improve clinical outcomes, health status and quality of life in diabetes mellitus patients. Education with DSME can facilitate the knowledge, skills and abilities of diabetes mellitus patients to carry out independent care. Activity of health education was eventually influencing the patient's knowledge and can change their behavior (diabetes management). The patient's behavior was change in managing the diet. When the education was given to the patients, they explored how to manage the diet and what is the good food to consume or not. It is hoped that the success of this activity will be followed by other patients to do the same.

Conclusion

The results of this study indicate the difference in the mean of the measurement of self-care for patients with type-2 diabetes mellitus before and after being given education using the Diabetes Self Care Management Education (DSME) approach. This means that DSME itself has a significant effect on improving self-care management in diabetes mellitus patients. The results of this study can be a reference for nurses or caregivers of diabetic patients who are treated at home in order to educate patients to continue to improve self-management in order to improve their quality of life. Family is also a motivator for patients in improving self-management skills in terms of activities, diet programs and medication therapy. The family and respondents are expected to be able to apply the knowledge that has been obtained through proper self-care so that is expected the community also participates in helping carry out independent care and reducing complications that occur in diabetic patients.

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