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The Effect of Education through Video Self Care Management on Type 2 Diabetes Mellitus Patients: A Quasi-Experimental Study

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ABSTRACT

The prevalence of diabetes patients is 537 million worldwide, and this number is expected to reach 783 million by 2045. Indonesia ranks fifth in the world as of 2021, with 19.47 million patients. One way to increase knowledge and change the behavior of patients is through health education that can be provided to patients with type 2 diabetes mellitus, which is self-care management. The aimed of this research was to determine the effect of education through videos self-care management on type 2 diabetes mellitus patients in Meninting Village. The research method is a quasi-experiment with a one group pretest-posttest design. The samples of the research were 18 respondents. Instrument Self-care Management using the Summary of Diabetes Self-care Activities (SDSCA) questionnaire which consists of 20. The self-care management questionnaire has been used by previous researchers, the calculated r value was > 0.378. The research results showed an average pre-test score of 30.50 with a standard deviation of 3.930, while the average post-test score was 35.59 with a standard deviation of 1.243. The average post-test result experienced an increase after being provided education through video about self-care management. A ρ value of 0.001 (< 0.05) was obtained, indicating that video education is effective in improving self-care management among patients with type 2 diabetes mellitus in Meninting Village. It is recommended that this method be frequently implemented to enhance self-care management related to diet, physical activity, and foot care.

ABSTRAK

Prevalensi penderita diabetes adalah 537 juta di seluruh dunia, dan jumlah ini diperkirakan akan mencapai 783 juta pada tahun 2045. Indonesia menempati peringkat kelima di dunia pada tahun 2021, dengan 19,47 juta pasien. Salah satu cara untuk meningkatkan pengetahuan dan mengubah perilaku pasien adalah melalui pendidikan kesehatan yang dapat diberikan kepada pasien diabetes melitus tipe 2, yaitu manajemen perawatan diri. Tujuan dari penelitian ini adalah untuk mengetahui pengaruh edukasi melalui video manajemen perawatan diri pada pasien diabetes melitus tipe 2 di Desa Meninting. Metode penelitian adalah quasi eksperimen dengan desain one group pretest-posttest. Sampel penelitian sebanyak 18 responden. Instrumen Manajemen Perawatan Diri menggunakan kuesioner Summary of Diabetes Self-care Activities (SDSCA) yang terdiri dari 20. Kuesioner manajemen perawatan diri telah digunakan oleh peneliti sebelumnya, nilai r hitung > 0,378. Hasil penelitian menunjukkan rata-rata skor pra-tes sebesar 30,50 dengan simpangan baku 3,930, sedangkan rata-rata skor pasca-tes sebesar 35,59 dengan simpangan baku 1,243. Rata-rata hasil pasca-tes mengalami peningkatan setelah diberikan edukasi melalui video tentang manajemen perawatan diri. Nilai ρ sebesar 0,001 (< 0,05) diperoleh, yang menunjukkan bahwa edukasi video efektif dalam meningkatkan manajemen perawatan diri pada pasien diabetes melitus tipe 2 di Desa Meninting. Disarankan agar metode ini sering diterapkan untuk meningkatkan manajemen perawatan diri terkait diet,

aktivitas fisik, dan perawatan kaki.

A. INTRODUCTION

Diabetes mellitus is a long-term or chronic disease that occurs due to insulin (a hormone that regulates blood sugar and glucose) produced by the pancreas being insufficient, or when the body cannot use the insulin it produces effectively so that the body cannot metabolize carbohydrates, proteins, and fats which can lead to hyperglycemia (high blood sugar levels)(Black & Hawks, 2014). Diabetes mellitus (DM) is a chronic disease characterized by the body's inability to produce or effectively use insulin, a hormone that regulates blood sugar. This can lead to hyperglycemia, or high blood sugar levels. The global prevalence of diabetes is continuously rising, with the International Diabetes Federation (IDF) reporting 537 million sufferers worldwide in 2021, a number projected to reach 783 million by 2045. Indonesia alone ranked fifth globally in 2021, with 19.47 million people living with diabetes, a figure estimated to increase to 28.6 million by 2045(IDF, 2021). It is estimated that around 415 million people in the world suffered from diabetes mellitus in 2018 and will increase to 642 million in 2040 (Riskesdas, 2018). The prevalence of diabetes mellitus in West Nusa Tenggara is 1.2% (19,247 people) of the total number of diabetes mellitus sufferers in Indonesia (Riskesdas, 2018). The prevalence of Diabetes Mellitus sufferers at the Meninting Health Center has always increased with the number of sufferers in 2022 being 637 people (Lobar, 2022). The number of diabetes mellitus sufferers in Meninting village is 153 sufferers (Lobar, 2022). Diabetes mellitus if not treated will risk causing complications.

Diabetes mellitus can cause complications in various body systems, both acute and chronic complications. Diabetes mellitus complications occur in all organs of the body with 50% of deaths due to coronary heart disease and 30% due to kidney failure. In addition to death, Diabetes mellitus can also cause disability. As many as 30% of Diabetes mellitus patients experience blindness due to complications of retinopathy and 10% experience leg amputation(Black & Hawks, 2014). Management of diabetes mellitus patients is carried out through 4 important pillars in controlling the course of the disease and preventing complications, namely providing education to patients, nutritional therapy, physical activity, and pharmacology. One form of increasing knowledge and changing patient behavior is through health education that can be given to type II diabetes mellitus patients, namely self-care management (Habibah et al., 2019).

Education is the addition of a person's knowledge and abilities through practical learning techniques or instructions, with the aim of remembering real facts or conditions by encouraging self-direction, actively providing new information or ideas to the community, groups, individuals. One way to do education is by using videos. Self-care management education is 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 diabetes mellitus patients. So that self-care management education becomes an

important element in the care of diabetes mellitus patients, in addition education is also needed for diabetes mellitus patients who have a high risk of complications. Self-care management education aims to provide information support in decision-making, self-care behavior, problem solving and active cooperation with the health team and to improve clinical outcomes, health status and quality (Ardiani et al., 2021). According to research conducted by Habibah et al, 2019, it was found that there was a significant influence on increasing self-care management values in diabetes mellitus patients using audiovisual media before and after being given self-care management.

Based on a preliminary survey from the results of interviews with 5 people with type 2 diabetes mellitus in the Meninting Public Health Center, it was found that 3 out of 5 people said they did not routinely apply self-care management education, 4 out of 5 people said they had never been given education through videos about self-care management of type II diabetes mellitus with problems of regulating diet and physical exercise, 3 people said they had received self-care management education. Based on this background, the researcher was interested in conducting a study entitled "The Effect of Education Through Videos on Self-Care Management in Type 2 Diabetes Mellitus Patients in Meninting Village, Meninting Health Center Work Area.

B. METHODS

The research method used was quasi-experimental design with one group pretest-posttest approach. The research was conducted at Meninting Village, Meninting Public Health Center. The research sample was 18 respondents with a sampling technique using purposive sampling. The inclusion criteria are 1). Willing to be a respondent; 2). Age 45-75 years; 3). Suffering from type II Diabetes Mellitus; 4). Living in Meninting Village while the exclusion criteria are 1). Suffering from type I Diabetes Mellitus; 2). Experiencing hearing loss; 3). Diabetes Mellitus sufferers with complications such as dementia, stroke. The research instruments used were 1). Educational videos given using LCD projectors and laptops in showing educational videos entitled self-care management of type 2 diabetes mellitus patients which were given to respondents twice a week; 2). Instrument Self-care Management using the Summary of Diabetes Self-care Activities (SDSCA) questionnaire which consists of 20 items of questions given to respondents before and after being provided with educational videos on Diet, Blood Glucose Monitoring, Physical Exercise, Medication, and Foot Care. The self-care management questionnaire has been used by previous researchers, the calculated r value was > 0.378 and the Cronbach's Alpha value was 0.894. The data analysis conducted in this study is univariate analysis to determine the frequency distribution and percentage of each variable such as age, gender, education level, and self-care management, while bivariate analysis uses the Paired T Test if the data is normally distributed, and if the data is not normally distributed, the Wilcoxon test is applied.

C. RESULT AND DISCUSSION

1. Result

This section presents the results of research on the Influence of Education Through Video on Self-Care Management in Type 2 Diabetes Mellitus Patients.

1. Univariate Analysis

Table 1. Respondent Characteristics based on age, gender, education level

Gender	**F**	**%**
Male	5	27.8
Female	13	72.2
Total	**18**	**100**
Respondent's Age	**F**	**%**
45-54 Year	7	38.9
55-65 Year	9	50.0
66-74 Year	2	11.1
Total	**18**	**100**
Level of Education	**F**	**%**
Not Educate	5	27.8
Elementary School	5	27.8
Primary School	4	22.2
High School	4	22.2
Total	**18**	**100**

Table 2. Distribution frequency of respondents based on self-care management scores for Type 2 Diabetes Mellitus Patients pre-test and post-test in Meninting Village in 2024.

	N	Min	Median	Max	Mean	SD
Pre test	18	25	30.00	38	30.50	3.930
Post test	18	33	36.00	37	35.59	1.243

Based on table 1.2 above, it can be seen that the average pre-test score is 30.50 with a standard deviation of 3.930, while the average post-test score is 35.59 with a standard deviation of 1.243. The average post-test results showed an increase in both average and standard deviation after education on self-care management was provided

2. Bivariate Analysis

Table3. Normality Test

	Shapiro-Wilk		
Variabel	**Statistic**	**F**	**P -value**
Skor pre test	0.945	18	0.351
Skor pos tes	0.891	18	0.040

Based on the results of the normality test with Shapiro-Wilk, it is known that the score before being given Education Through Videos on Self Care Management on Type 2 Diabetes Mellitus Patients was 0.351 (> 0.05) which means that the data is normal distributed, while the post-test score obtained *p* value of 0.04 (<0.05) which means that the data was not normal distributed. From both pre-test and post-test data, there is one data set that is not normally

distributed (post-test data), so the analysis test used is a non-parametric test, namely the Wilcoxon test.

		N	Mean Rank	Sum of Ranks	*P value*
Post- pre	Negative ranks	1[a]	3.50	3.50	0.001
	Positive ranks	16[b]	9.34	149.50	
	Ties	1[c]			
	Total	18			

Sumber : Data primer 2024

The results of the bivariate analysis above with the Wilcoxon non-parametric statistical test, it can be seen that in the negative rank table, 1 respondent experienced a decrease in self-care management after being given an educational video, the average decrease was 3.50, and the total rank was 3.50, in the positive rank table, 16 respondents experienced an increase in self-care management after being given an educational video, with an average increase of 9.34 and a total increase of 149.50. Furthermore, in the Ties table or the exact same value, 1 respondent was obtained with the same value between the pre-test and post - test, or there was no increase or decrease after being given an educational video. The P Value is 0.001 (<0.05), which indicates that H0 is rejected and Ha is accepted, namely that there is an association of providing Education Through Videos on Self-Care Management in Type 2 Diabetes Mellitus patients

2. Discussion

Self-care management pre-test (before) being given educational videos

Based on the results of the study in table 1.2, it can be seen that the average pre-test score was 30.50 with a Standard Deviation of 3,930. The results of this study are in line with the research of Salsabila et al., (2021) which showed that 31 respondents (71.2%) reported having a poor level of self-care management before receiving audiovisual education related to self-care management. Education is expected to provide behavioral changes supported by the right media, namely audiovisual (Salsabila et al., 2021). Audiovisual is a media that helps stimulate the senses of sight and hearing so that the message is delivered more easily received and understood (Syaipuddin et al., 2024). The success of providing education is supported by several factors, namely supporting facilities and infrastructure such as laptops to play videos, the appearance of the laptop can attract respondents to be able to pay attention enthusiastically, a conducive environment and cooperative diabetes mellitus sufferers (Oktaviani et al., 2021).

Putri's research results (2018) showed that based on several respondents' responses showing poor self-care behavior, there were 67 respondents (49.6%). As many as 36.2% of respondents had never planned their eating habits, as many as 35.5% had never participated in a special training session, and as many as 70.3% had never used lotion or moisturizer on their feet. Lack of physical activity and understanding of foot care was caused by respondents being busy working. Activities such as brisk walking, running, leisurely cycling, balance exercises, and swimming can help achieve maximum heart rate (Ardiani et al., 2021).

The results of this study are also in line with Al-Khawaldeh (2012) who stated that someone with a lower level of education tends to have low self-efficacy. Low education is one factor that can affect a person's level of knowledge. Knowledge of risk factors greatly influences a person's prevention efforts. A person's efforts to protect themselves from diabetes mellitus depend on self-efficacy, motivation and knowledge about the disease because with this knowledge a person has reasons and a basis for determining a choice.

Self-care management post-test (after) given educational video

Based on the results of the study in table 1.2, it can be seen that the average post-test is 35.59 with a Standard Deviation of 1,243. The average post-test results experienced an increase in average and standard deviation after being given education about self-care management. Education is one of the important pillars in managing diabetes as stated by WHO that "education is a comer stone of diabetic therapy and vital to integration of the diabetic into society" (Sugondo, 2013). Diabetes Self Management Education is one example of education that can be applied to diabetes sufferers which aims to improve the patient's Self Care Behavior so that it is hoped that with increased patient knowledge, it can also empower patients to avoid various complications so that quality of life can also improve. Providing health education to diabetes mellitus patients is very important to help change the behavior of DM patients to become better.

Self-care is considered the cornerstone of care for people with diabetes. Therefore, an accurate assessment of diabetes self-care is essential to identify and understand problem areas in managing diabetes itself, to facilitate better glucose control, and to reduce complications due to uncontrolled diabetes mellitus. (Klaus, 2015). This study is in line with the study of Feni Salsabila et al in 2021, there was an increase in self-care management after being given education because knowledge had increased (Salsabila et al., 2021). Education provides behavioral changes supported by the right media, namely audiovisual. Audiovisual is a media that helps stimulate the senses of sight and hearing so that the message is delivered more easily received and understood (Syaipuddin et al., 2024).

The effect of education through video on self-care management

The table also shows the P Value of 0.001 (<0.05), which indicates that H0 is rejected and Ha is accepted, namely there is an Effect of Providing Education Through Video on Self-Care Management in Type 2 Diabetes Mellitus Patients. The average post-test results experienced an increase in average and standard deviation after being given education about self-care management. The management of DM patients is carried out through 4 important pillars in controlling the course of the disease and preventing complications, namely providing education to patients, nutritional therapy, physical activity, and pharmacology. Education plays a very important role in the management of type 2 DM because providing education to patients can change the behavior and confidence of patients in carrying out independent care. The ability to display moving images gives video its own advantages compared to other learning media, and provides a uniqueness that other learning media do not have. The main concept of the topic in learning, long information that is difficult to convey verbally can be presented in the form of films and videos that are easy to understand (Hashimoto & al., 2019).

According to Notoatmojo 2012, education is one of the basic human needs needed to develop oneself. Differences in education levels cause differences in basic health knowledge. The higher the level of education, the easier it is for them to accept and develop knowledge and technology, so that it will increase productivity which will ultimately increase individual confidence in their health and the welfare of their families (Notoatmodjo, 2012). This is because someone with higher education tends to have a better understanding of DM care behavior, is more positive and follows the rules of care accompanied by the emergence of confidence to recover.

This study is in line with the study of Salsabila et al (2021) which used a one-group pre-test post-test design with 43 respondents, obtained a p value of 0.001 (0.05), this figure indicates an increase in self-care by individuals with diabetes mellitus after using audiovisual instructions (Salsabila et al., 2021). This study is also in line with the study of Feni Salsabila et al (202) which states that audiovisual education can improve self-care management as indicated by a p value of 0.001 (<0.05) Changes in behavior because after being given education, knowledge increases, information is conveyed well and respondents tend to do what is expected so that it brings about changes (Salsabila et al., 2021). In addition, the increase in self-care management is related to the use of audiovisuals which are well received by respondents because this media is relatively new so that most respondents have great curiosity. Audiovisual media provides stimulation to the senses of hearing and sight so that it is easily accepted because the five senses that transmit the most knowledge to the brain are the senses of sight (13%-15%) and hearing (75-87%) and as much as 50% of people learn from what they see and hear (Oktaviani et al., 2021).

This is in accordance with the results of research on audiovisual education which has been proven to be efficient in absorbing information longer than other methods. Audiovisual education can help people with DM improve their level of self-care management so that it can facilitate people with DM to carry out self-care independently and prevent complications (Syaipuddin et al., 2024)

D. CONCLUSION AND SUGGESTIONS

Based on the results of the study, an increase in the average post-test score of 35.59 with a Standard Deviation of 1,243 was obtained when compared to the average pre-test score of 3.50 with a standard deviation of 3,930. Significant changes in the 4 pillars of management, namely diet, physical activity, and foot care, have been observed in the diet program. After intervention, respondents have started to limit their consumption of sweet foods and ready-to-eat meals. In terms of activity, respondents are now able to engage in light exercise or activities that induce sweating. For foot care, patients wear footwear when going outside and maintain foot cleanliness. It is hoped that respondents will continuously improve their self-care management related to diet, physical activity, and foot care.

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