

# The Influence of Diabetes Self Management Education (DSME) on Self Care Behavior in Type II Diabetes Mellitus Patients in the Working Area of the Sungai Raya Dalam Community Health Center

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**Abstract**— Diabetes mellitus is a chronic disease with a high incidence rate and is a serious problem and tends to be frightening for society. The number of diabetes mellitus sufferers in Indonesia is quite fantastic. Basic health research (Riskesmas) in 2009 stated that the number of type 2 diabetes mellitus sufferers in Indonesia reached 2% or around 3 million people and experienced an increase in similar research in 2012, namely 2.4% or around 3.5 million people out of Indonesia's total population of around 246,900,000 people and of the 3.5 million people, only around 30% receive regular treatment. In an effort to reduce this risk, an independent diabetes management program is needed for people with diabetes. Diabetes mellitus control will be more effective if early prevention is prioritized through patient self-care efforts in the family. Self-management programs can encourage patients to use existing resources to manage the symptoms they experience, especially in patients with chronic diseases. Diabetes self-management education (DSME) is a health education process for individuals or families dealing with diabetes. DSME uses guidance, counseling and behavioral intervention methods to increase knowledge about diabetes and improve individual and family skills in managing diabetes mellitus. The aim of this research is to determine the effect of Diabetes Self Management Education (DSME) on self-care behavior in Type II DM patients in the Sungai Raya Dalam Community Health Center working area. The results of this research are that there is an influence of Diabetes Self Management Education (DSME) on self-care behavior in Type II Diabetes mellitus patients in the working area of the Sungai Raya Dalam Community Health Center.

**Keywords**— Diabetes mellitus, Diabetes Self Management Education.

## I. INTRODUCTION

Diabetes mellitus (DM) is a disease related to disorders of carbohydrate, fat and protein metabolism. Diabetes mellitus sufferers often experience complications in the blood vessels in the form of macroangiopathy, microangiopathy, neuropathy, decreased body resistance, making it easier for infection, inflammation, ischemia and cell death due to hyperglycemia. The mechanism for cell death in diabetes mellitus sufferers is through an increase in intracellular and extracellular glucose<sup>(1)</sup>. Based on data from the International Diabetes Federation (IDF) (2016), the number of diabetes mellitus sufferers in the world in 2014 was 422 million people, far compared to 1980 which was only 108 million people. The global (age-standardized) prevalence of diabetes since 1980 has nearly doubled, rising from 4.7% to 8.5% in the adult population. In 2012, diabetes

caused 1.5 million deaths. Forty-three percent of these 3.7 million deaths occurred before the age of 70. The percentage of deaths before the age of 70 years due to diabetes is higher in low- and middle-income countries than in high-income countries<sup>(2)</sup>. According to studies on the spread of diabetes, Indonesia is ranked seventh globally with 7.6 million patients recorded in 2012, although the spread of the disease is relatively low, the two regions with the highest spread of diabetes in Indonesia are Ternate where 19.6% of the population suffers from diabetes and West Kalimantan with spread 11.1%<sup>(3)</sup>. Diabetes is known as a "lifelong disease" because it cannot be cured. However, this does not mean that people with diabetes mellitus cannot live normally in their daily lives. Diabetics can live a normal life by controlling the risk of complications due to diabetes mellitus<sup>(4)</sup>. The main goal of managing DM is to regulate blood sugar levels within normal limits to reduce symptoms and prevent complications of DM<sup>(5)</sup>. This research states that the fundamental thing in managing diabetes mellitus, especially type 2 diabetes mellitus, is changing lifestyle, including a good diet and regular exercise. An individual's ability to manage daily life by controlling and reducing the impact of the disease they suffer is known as self-management<sup>(6)</sup>. According to the 2011 consensus on the control and prevention of Type 2 diabetes mellitus in Indonesia, healthy behavior that represents self-management in diabetes mellitus patients includes following a healthy eating pattern, increasing physical activity, using diabetes mellitus medication and medications in special circumstances safely and regularly, monitor blood sugar levels and carry out regular foot care<sup>(7)</sup>. Self-care behavior needs to be understood as a process that not only develops over time but also develops in relation to the type of illness a person experiences and their specific health concerns<sup>(8)</sup>. Self-care behavior allows patients to develop problem-solving skills, increases self-confidence (self-efficacy) and supports the application of knowledge in real life<sup>(9)</sup>. Having problem-solving skills in diabetes mellitus allows patients to make decisions about the best management for themselves. This self-management is also greatly influenced by the knowledge possessed by diabetes mellitus sufferers. To increase the knowledge of diabetes mellitus sufferers in management, it is necessary to provide education by health workers. One form of education that can be given to type 2

diabetes mellitus clients is Diabetes Self Management Education (DSME)<sup>(10)</sup>. Diabetes Self-Management Education (DSME) is a health education process for individuals or families in managing diabetes which has been developed since the 1930s by the Joslin Diabetes Center. DSME uses guidance, counseling and behavioral intervention methods to increase knowledge about diabetes and improve individual and family skills in managing DM<sup>(11)</sup>. People with diabetes who are given education and guidance in self-care will improve their lifestyle so they can control blood sugar well. In addition, the health education provided will be more effective if health workers know the level of knowledge, attitudes and daily habits of patients and families. Health education that suits the needs of patients and families can directly or indirectly increase the ability to care independently so that patient productivity and his family can improve as well<sup>(12)</sup>. Application of a cream of extract of ascaline can treat burns caused by white rats (*Rattus norvegicus*). The most effective healing of burns with a concentration of 55%. Based on this burn study of an ointment of shallot extract (*Aliium Cepa L.*), further studies with different concentrations and a microscopic view of the wound healing process are needed<sup>(3)</sup>.

*Objective*

The aim of this research is to determine the effect of Diabetes Self Management Education (DSME) on self-care behavior in Type II DM patients in the Sungai Raya Dalam Community Health Center working area.

II. METHODOLOGY

*Study Design*

The type of research used is quasi-experimental research. In both groups, the treatment began with a pre-test, and after the treatment was given, measurements were taken again (post test). The data analyzed is data from measuring Self Care behavior scores before treatment and after treatment. The statistical test used is the Wilcoxon Test. When the data being analyzed are the results of measuring self-care behavior scores in the intervention group and self-care behavior scores in the control group, the test used is the Mann Whitney.

*Population and Sample*

The population in this study were all type II DM patients under the auspices of the Sungai Raya Dalam Health Center area and met the inclusion and exclusion criteria. So in this study, the number of samples in the intervention group and the control group was 33 people each.

*Instrument*

The instrument in this research consisted of a Self Care behavior questionnaire.

*Intervention*

The intervention in this study was determined by respondents according to the inclusion and exclusion criteria with the number of samples that had been determined in the two PROLANIS groups. The PROLANIS 2 group was taken as the treatment group and the PROLANIS 1 group as the control group. Week 1, PROLANIS 2 group (Treatment group) was gathered, then the researcher explained the aims, benefits and research procedures in detail then gave informed consent

regarding the aim and willingness to be a respondent in research on the influence of Diabetes Self Management Education (DSME) on self care behavior in diabetes mellitus clients type 2 by researchers and then carry out a pre-test with a questionnaire.

The PROLANIS 2 group (treatment group) received the DSME intervention twice a week by visiting the respondent's house. Researchers held an initial meeting and first session, the initial meeting discussed health history, setting joint goals and targets for achieving blood glucose, as well as observing foot care, the first stage explained the concept of diabetes mellitus (understanding, causes, signs and symptoms, classification and risk factors, acute and chronic complications through calendar media, followed by discussion, problem solving and a review of the goals that have been set. The second stage explains the management of diabetes mellitus, followed by a review of the goals that have been set and discussion and problem solving. The third stage explains stress control and treatment feet, followed by a review of the goals that have been set and targets for achieving blood glucose levels. The fourth stage is an explanation of preventing complications from acute diabetes mellitus and continues with a review of the goals that have been set and problem solving. Then follow up with a discussion about each session and a review of the program. A week later, researchers conducted a post test assessment regarding self-care behavior.

On the same week 1 and on different days, the PROLANIS 1 group (control group) was collected, then the respondents were explained in detail to the aims, benefits and research procedures, then gave informed consent regarding the aims and willingness to become respondents in research on the influence of Diabetes Self Management Education (DSME). towards self-care behavior in type 2 diabetes mellitus clients by researchers and then conducting a pre-test with a questionnaire.

The PROLANIS 1 group (control group) was given a blood sugar check and a pre-test on self-care behavior, then after one month a blood sugar check was carried out and a post-test again on self-care behavior.

*Data Collection*

Data collection procedures are divided into preparatory stages, and preparatory stages. Data analysis in this study consisted of univariate analysis and bivariate analysis. This research uses the Wilcoxon statistical test. When the data being analyzed are the results of measuring self-care behavior scores in the intervention group and self-care behavior scores in the control group, the test used is the Mann Whitney.

III. RESULTS

*The Effect of Diabetes Self-Management Education (DSME) on Self-Care Behavior in Type II Diabetes Mellitus Patients*

TABLE 1. *The Effect of Diabetes Self-Management Education (DSME) on Self-Care Behavior in Type II Diabetes Mellitus Patients (n=33)*

	N	Average ± s.d.	Median (min-mak)	SD	p
Before	7	147.33	145.32	18.63	0,014
After	7	138.19	136.69	18.20	

This research shows that DSME has a significant influence on self-care behavior in Type II Diabetes Mellitus patients. The increased knowledge, motivation, and skills gained through the DSME program contribute to positive behavioral changes, such

as adherence to medication regimens, blood sugar monitoring, diet management, and increased physical activity.

#### IV. DISCUSSION

##### 1. Increased Knowledge and Awareness

Increasing Knowledge and Awareness in Diabetes Self-Management Education serves as an important educational tool in increasing patient knowledge about diabetes and the importance of self-management. Studies show that patients who take Diabetes Self-Management Education show significant increases in knowledge about diabetes and management strategies. This knowledge encourages patients to be more aware of their condition and take proactive steps in managing their disease<sup>(13)</sup>.

##### 2. Behavior Change and Compliance

Increasing knowledge through Diabetes Self Management Education also has an impact on changing self-care behavior. Research indicates that patients involved in Diabetes Self Management Education programs demonstrate better adherence to treatment, regular blood sugar monitoring, and diet management. In addition, Diabetes Self Management Education helps patients develop practical skills to overcome daily challenges associated with diabetes, such as choosing healthy foods and engaging in appropriate physical activity<sup>(14)</sup>.

##### 3. Reduced Risk of Complications

By implementing better self-care behaviors, the risk of diabetes complications can be minimized. Studies show that patients who follow DSME have better blood sugar control and experience a reduction in HbA1c levels, which is an important indicator in diabetes management. In addition, a reduction in blood pressure and an improved lipid profile were also observed, which contributed to a reduced risk of cardiovascular complications<sup>(15)</sup>.

##### 4. Psychosocial Support and Wellbeing

DSME not only focuses on medical aspects but also provides important psychosocial support for patients. Comprehensive education includes coping strategies and emotional support that help patients deal with the stress and psychological burden that often accompanies managing chronic diseases such as diabetes. Patients receiving DSME report improvements in quality of life and overall well-being<sup>(16)</sup>.

#### V. CONCLUSION

Based on the results of the research and discussion, it can be concluded that Diabetes Self-Management Education (DSME) has a significant positive influence on self-care behavior in Type II Diabetes Mellitus patients. Through increased knowledge, better behavior change, and psychosocial support, DSME helps patients manage their diabetes more effectively, ultimately leading to improved quality of life and reduced risk of complications. Wider and structured implementation of DSME in various health services could be an important strategy in better diabetes management in the community.

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