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EFFECT OF SELF-EFFICACY ENHANCEMENT INTERVENTION PROGRAM (SEEIP) AND DIABETES SELF-MANAGEMENT EDUCATION (DSME) BASED ON HEALTH COACHING (HC) FAMILY AWARENESS ON QUALITY OF LIFE OF PATIENTS WITH TYPE 2 DIABETES.

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Abstract
The increase in the number of people with DM and its complications indicates that the public's knowledge about DM is not sufficient to prevent and manage this disease. DM does not directly cause death, but improper management can lead to complications that can be fatal. The aim is to determine the effect *of the Self-Efficacy Enhancement Intervention Program (SEEIP) and DSME (Diabetes Self-Management Education) based on Health Coaching (HC) Family Awareness on the Quality of Life of* Type II DM patients. This type of research is a quasi-experiment design using the two pre-test-posttest with control group design. The population in this study were type 2 DM patients who were controlled in outpatient care. The research sample was 30 respondents, taken by consecutive sampling, divided into 2 intervention and control groups. Research variables include *Quality of Life, Modified Effectiveness (Self-Efficacy Enhancement Intervention Program (SEEIP), and DSME (Diabetes Self-Management Education).* The study used the DSME Instrument, the *Perceived Therapeutic Efficacy Scale (PTES), and WHOQOL-BREF* questionnaires. Statistical analysis used a Paired T-test for pre and post-test of modified DSME and PTES. Independent T-test to distinguish post-test modification of DSME and PTES in intervention and control groups. From the results of the study, it was found that the application of modified DSME and SEEIP in type II DM patients influenced improving the quality of life of type II DM patients. Patients can carry out self-care management, control blood sugar levels, and well as psychologically able to control emotions so that they are always motivated to increase *self-efficacy* which is the need for DM patients to participate in taking care of themselves.

Keywords: *Family Awareness Health Coaching*; *Quality of Life*; DSME; SEEIP; Type 2 DM

1. Introduction

Diabetes mellitus (DM) is a metabolic disease characterized by an increase in blood glucose levels or hyperglycemia that occurs due to impaired insulin work in the blood is unable to secrete insulin in the pancreas (Yanita, 2016). One of the problems that occurs in clients with diabetes mellitus that is serious and a major

challenge to the success of health services is non-compliance with diet, lifestyle, drug consumption, and low interest in consulting a doctor or health service (Khan, Ataur R, Al Abdul Lateef, 2012)

The prevalence of diabetes mellitus in Indonesia based on a doctor's diagnosis at the age of ≥ 15 years was 2%. This figure shows an increase compared to the prevalence of diabetes mellitus in the population ≥ 15 years in the 2013 clear recap results of 1.5%. However, the prevalence of diabetes mellitus according to blood sugar test results increased from 6.9% in 2013 to 8.5% in 2018. This figure shows that only about 25% of people with diabetes know that they have diabetes *(Basic Health Research*, 2018). East Java has a prevalence of diabetes mellitus of 2.1% in 2018, ranking 5th. The prevalence of diabetes mellitus according to doctor's diagnoses in the population of all ages in Gresik Regency in 2018 was 3.46% *(Basic health research*, 2018). The increasing number of people with DM and its complications shows that public knowledge about DM is not sufficient to prevent and manage this disease. DM does not directly cause death, but improper management can lead to complications that can be fatal. (Ferlan 2018)

DM management in general is to improve the quality of life of patients characterized by diabetics being able to carry out daily activities independently and productively (Rudijantoh, 2015). DM management is divided into two, among others, pharmacological and non-pharmacological therapies. Pharmacological therapy consists of oral anti-hypoglycemic and injectable antihyperglycemic (insulin) (ADA, 2015). Non-pharmacological therapy includes education, nutrition/diet therapy, and physical activity (exercise) (Rudijantoh, 2015). Diabetes self-management education (DSME) based on Health Coaching (HC) is carried out by providing health education to patients and families with various learning methods, then training and discussions are held where patients are involved in activities, both in exploring patient feelings to setting goals and interventions. Self-efficacy is an individual's belief about personal ability to perform behavior. In terms of diabetes self-management, self-efficacy is the patient's belief in his ability to perform various diabetes self-management behaviors. Self-efficacy increases the effectiveness of Diabetes self-management education (DSME) with a Health Coaching (HC) approach because it focuses on behavior change. The modification (Self-Efficacy Enhancement Intervention Program (SEEIP) and Diabetes self-management education (DSME) carried out is oriented towards a model of assistance to type 2 DM patients (health coaching) by involving the role of the family as a person who is there every day beside the patient. Family involvement is part of the role of family awareness which is very important and needed by patients in addition to assistance provided by health workers so that patients can change their behavior to continue to improve self-management, which in turn is a strong impetus and motivation to always strive to improve their quality of life despite suffering from type 2 DM.

The purpose of this study was to determine the effect of the Effectiveness of DSME (Diabetes Self Management Education) Modification and SEEIP (Self-Efficacy Enhancement Intervention Program based on Health Coaching (HC) Family Awareness on the Quality of Life of Type II DM patients. Sustainability The implementation of self-management can take place optimally if the family takes the role of controller and patient companion in undergoing treatment. This is also supported by the role of *health* workers in providing education in the form of knowledge, skills, and abilities of DM patients in carrying out self-care with a *health coaching* approach. The health coaching approach in DSME maximizes the achievement of glycemic control goals, namely the concept of counseling education with the concept of partnership and effective communication. In implementing DSME *based on health coaching*, DM patients need confidence in their ability to make behavior changes.

2. Materials and methods

2.1 Materials

The population in this study were all patients with type 2 diabetes mellitus. The sample was a portion of patients with diabetes mellitus who met the inclusion and exclusion criteria of the study as many as 30 people. The sample was divided into 15 respondents who were given the application of the *Self Efficacy Enhancement Intervention Program* and *Diabetes Self Management Education* based on *Health Coaching* and 15 respondents who were not given the application of the *Self Efficacy Enhancement Intervention Program* and *Diabetes Self Management Education* based on *Health Coaching*.

2.2 Data collection procedures

The technique of taking samples with *consecutive sampling.* This study used a *Quasy Experimental* design*, Control Group Pre Test-Post Test Design.* Data was collected from the results of WOD (Interview, Observation, Document). The results were collected in the form of field notes and then copied in the form of transcripts. The research instrument used DSME and questionnaires Perceived Therapeutic Efficacy Scale (PTES) and WHOQOL-BREF.

2.3 Data analysis

Comparative analysis of the level of knowledge, attitudes, and motivation as well as quality of life before and after the group of respondents who were given modified DSME and SEEIP (treatment group) used the independent T-Test if the data were normally distributed and used the Mann Whitney non-parametric comparative test if the data were not normally distributed.

3. Results and discussion

3.1 Measurement of Knowledge of Patients with Type II DM on the Implementation of Modified DSME and SEEIP by actively *involving families.*

Table 1. Measurement of Knowledge of Patients with Type II DM on the Implementation of Modified DSME and SEEIP by actively involving families at Surabaya Islamic Hospital in 2024.

Measurement	Control Group		Intervention Group	
	Before (Pre-test)	After (Post-test)	Before (Pre-test)	After (Post-test)
Knowledge				
a. Less	-	-	-	-
b. Medium	7 (46,7%)	5 (33,3 %)	8 (53,3 %)	-
c. Good	8 (53,3%)	10 (66,7 %)	7 (46,7 %)	15 (100,0 %)
Knowledge Level Comparison 1) Intervention Group *Pre-test vs Post-test,* ***Sig. Wilcoxon test* = 0.005 (<0.05)** 2) Control (post-test) vs Intervention (post-test) group, ***Sig. Mann-Whitney test* = 0.016 (<0.05)**				

Source: Primary Data, June-August 2024

Based on Table 1, it can be seen that there is a significant difference in the level of knowledge in the intervention group providing modified DSME and SEEIP between before treatment and after treatment, with a significance of 0.005 (<0.05). The intervention provided was able to increase patient knowledge to 100% good. In addition, when compared to the group that did not receive the intervention, the significance value was 0.016 (<0.05),

which means that there is a significant difference between the control group and the intervention group with the intervention group providing modified DSME and SEEIP having a better level of knowledge after receiving treatment by applying modified DSME and SEEIP.

3.2 Attitudes of Type II DM Patients on the Implementation of Modified DSME and SEEIP by actively *involving families*

Table 2. Knowledge Attitude of Patients with Type II DM on the Implementation of Modified DSME and SEEIP by actively involving families at Surabaya Islamic Hospital in 2024.

Measurement	Control Group		Intervention Group	
	Before (Pre-test)	After (Post-test)	Before (Pre-test)	After (Post-test)
Attitude				
a. Less	4 (26,7 %)	1 (6,7 %)	3 (20,0 %)	-
b. Medium	11 (73,3 %)	12 (80,0 %)	12 (80,0 %)	10 (66,7 %)
c. Good	-	2 (13,3 5)	-	5 (33,3 %)
Attitude Comparison 1) Intervention Group *Pre-test vs Post-test,* ***Sig. Wilcoxon test* = 0.011 (<0.05)** 2) Control Group (post-test) vs Intervention Group (post-test), ***Sig. Mann-Whitney test* = 0.139 (>0.05)**				

Source: Primary Data, June - August 2024

Based on Table 2, it can be seen that there is a significant difference in attitude in the intervention group providing modified DSME and SEEIP between before and after treatment, with a significance of 0.011 (<0.05). The intervention provided was able to change the patient's attitude for the better. However, when compared to the group that did not receive the intervention, the significance value was 0.139 (> 0.05), which means that there was no significant difference between the control group and the intervention group providing modified DSME and SEEIP, in other words, the attitudes possessed between the intervention group and the control group were almost the same.

3.3 Motivation of Type II DM Patients on the Implementation of Modified DSME and SEEIP by actively *involving families*

Table 3. Knowledge Motivation of Patients with Type II DM on the Implementation of Modified DSME and SEEIP by actively involving families at Surabaya Islamic Hospital in 2024.

Measurement	Control Group		Intervention Group	
	Before (Pre-test)	After (Post-test)	Before (Pre-test)	After (Post-test)
Motivation				
a. Less	2 (13,3 %)	1 (6,7 %)	6 (40,0 %)	-
b. Medium	9 (60,0 %)	8 (53,3 %)	9 (60,0 %)	9 (60,0 %)
c. Good	4 (26,7 %)	6 (40,0 %)	-	6 (40,0 %)
Comparison of Motivation Levels				

1) Intervention Group *Pre-test vs Post-test,* ***Sig. Wilcoxon test* = 0.001 (<0.05)**
2) Control Group (post-test) vs Intervention Group (post-test), ***Sig. Mann-Whitney test* = 0.830 (>0.05)**

Source: Primary Data, June - August 2024

Based on Table 3, it can be seen that there is a significant difference in the level of motivation in the intervention group providing modified DSME and SEEIP between before treatment and after treatment, with a significance of 0.001 (<0.05). The intervention provided was able to increase patient motivation for the better. However, when compared to the group that did not receive the intervention, the significance value was 0.830 (> 0.05), which means that there was no significant difference between the control group and the intervention group providing modified DSME and SEEIP, in other words, the motivation possessed between the intervention group and the control group was almost the same.

3.4 Measurement of Quality of Life of Patients with Type II DM on the Implementation of Modified DSME and SEEIP by Actively *Involving Families*

Table 4. Measurement of Knowledge Quality of Life of Patients with Type II DM on the Implementation of Modified DSME and SEEIP by actively involving families at Surabaya Islamic Hospital in 2024.

Measurement	Control Group		Intervention Group	
	Before (Pre-test)	After (Post-test)	Before (Pre-test)	After (Post-test)
Quality of Life				
a. Less	5 (33,3 %)	2 (13,3 %)	9 (60,0 %)	-
b. Medium	10 (66,7 %)	11 (73,3 %)	6 (40,0 %)	7 (46,7 %)
c. Good	-	2 (13,3 %)	-	8 (53,3 %)
Comparison of Quality of Life Status 1) Intervention Group *Pre-test vs Post-test,* ***Sig. Wilcoxon test* = 0.001 (<0.05)** 2) Control (post-test) vs Intervention (post-test) group, ***Sig. Mann-Whitney test* = 0.013 (<0.05)**				

Source: Primary Data, June - August 2024

Based on Table 4, it can be seen that there is a significant difference in the status of quality of life in the intervention group providing modified DSME and SEEIP between before treatment and after treatment, with a significance of 0.001 (<0.05). The intervention provided was able to improve the patient's quality of life status for the better. In addition, when compared to the group that did not receive the intervention, the significance value was 0.013 (<0.05), which means that there is a significant difference between the control group and the intervention group with the intervention group providing modified DSME and SEEIP having a better quality of life status after receiving treatment by applying modified DSME and SEEIP.

Based on Table 1, it can be seen that there is a significant difference in the level of knowledge in the intervention group providing modified DSME and SEEIP between before treatment and after treatment, with a significance of 0.005 (<0.05). The intervention of providing modified DSME and SEEIP to the intervention group proved to be able to increase patient knowledge to 100% good. Type II DM patients are more aware and understand the steps to control blood sugar and prevent complications can be done with their families. Besides, patients will also be

eager to exercise their bodies to keep their bodies fit, and can also burn piles of sugar in the blood. By increasing the knowledge of type II DM patients, is very beneficial for the effectiveness of the treatment undertaken using the modified method of applying DSME and SEEIP. In addition, the condition of increasing knowledge of the intervention group when compared to the control group, obtained a significance value of 0.016 (<0.05), which means that there is a significant difference between the control group and the intervention group where the intervention group has a better level of knowledge after receiving treatment by applying modified DSME and SEEIP.

This condition can be caused by several factors in DSME management specifically for type II DM patients, where the knowledge and experience that type II DM patients have during their previous treatment and the active role of families and health workers to continue to always accompany patients in their daily lives undergoing treatment. Some respondents stated that they had been treated and carried out self-care with their families according to what was taught by nurses or doctors during treatment control, self-care that was carried out was only limited to blood sugar control and light exercise, regulating diets or food intake according to DM diet instructions. Respondents are type II DM patients who have been undergoing treatment for a long time and have received counseling on DM management so that they know the basic concepts of DM in general and the self-care that must be done. In practice, some patients stated that they were not routine and did not comply with self-care even though they were always instructed and accompanied by their families, such as nutritional arrangements, forgetting to take medicine, making a habit of drinking sweet tea or coffee and rarely doing body movements as recommended (Primary data, 2024). Thus it can be proven that the provision of DSME can change patient behavior through information provided to patients. Providing information to patients is a stimulus that can increase knowledge, thus creating awareness to behave as expected.

In Table 2, it can be seen that there is a significant difference in the attitude of type II DM patients who have received treatment by providing modified DSME and SEEIP with a significance of 0.011 (<0.05) when compared before and after treatment. The intervention provided can change the attitude of type II DM patients for the better, meaning that they understand the treatment that must be undertaken to recover from their disease. However, the attitude of type II DM patients who were not given the treatment or control group, when compared to the intervention group, there was a significance value of 0.139, where this value was greater than 0.05 so that it could be said that the attitude of type II DM patients between those given the treatment of providing modified DSME and SEEIP with the control group had no significant difference. Thus the attitudes possessed between the intervention group and the control group are almost the same. This shows that the experience and knowledge that type II DM patients have had in previous treatment and care have an impact on the formation of attitudes that show a desire to recover and be able to control their blood sugar levels with stable conditions. Although many obstacles are experienced by the patients themselves due to the emergence of anxiety about long and boring treatment it can lead to a detrimental attitude toward healing their disease.

Based on Table 3, it can be seen that there is a significant difference in the level of motivation in the intervention group providing modified DSME and SEEIP between before treatment and after treatment, with a significance of 0.001 (<0.05). The intervention provided was able to increase patient motivation for the better. However, when compared to the group that did not receive the intervention, the significance value was 0.830 (> 0.05), which means that there was no significant difference between the control group and the intervention group providing modified DSME and SEEIP, in other words, the motivation possessed between the intervention group and the control group was almost the same.

The conditions found in patients with type II DM, both in the intervention group and the control group, related to

their attitudes and motivation in undergoing treatment and care for their type of DM, are highly dependent on self-values as a result of understanding and experience during previous treatment. When boredom and problems encountered during treatment begin to appear, it will greatly interfere with motivation which can go up and down, resulting in apathy, indifference, and laziness to continue treatment. However, with the DSME and SEEIP modifications provided, it can be an effort to control the emotional stability of type II DM patients, by trying psychological and spiritual approaches, which are very important and needed to foster a sense of resignation and accept this disease as part of a test of his life and get closer to the Almighty Allah. The existence of family and people closest to the patient who always accompany them patiently and lovingly and spiritual closeness to the Almighty makes the patient feel not alone and accompanied to routinely undergo treatment and care for almost the rest of his life.

Meanwhile, based on Table 4, it can be seen that there is a significant difference in the status of quality of life in the intervention group providing modified DSME and SEEIP between before treatment and after treatment, with a significance of 0.001 (<0.05). Where the treatment of providing modified DSME and SEEIP applied by patients significantly improves the quality of life status of type II DM patients for the better. Moreover, when compared to the group that did not receive treatment or the control group, a significance value of 0.013 (<0.05) was obtained, which showed a difference in which the intervention group that applied modified DSME and SEEIP had a better quality of life status after receiving treatment than the control group.

This proves the effect of providing modified DSME and SEEIP, making type II DM patients better understand and prepare themselves physically mentally psychologically to better accept and adapt to everything experienced in connection with their type II DM disease. It can be proven that the *Self-efficacy enhancing intervention program* (SEEIP) provides motivation, counseling, and monitoring, thus helping to increase knowledge, behavior change, and patient self-efficacy. Mental conditions with acceptance and resignation that healing comes from Allah the Almighty, as well as spiritual efforts undertaken, can make patients calmer and undergo effective treatment. Likewise, DSME is a continuous process carried out to facilitate the knowledge, skills, and abilities of DM patients to carry out self-care. DSME is a process of providing knowledge to patients regarding the application of self-care strategies independently to optimize metabolic control, prevent complications, and improve the quality of life of DM patients. The role of the family is very important in the stages of health care, starting from the stages of health improvement, prevention, treatment, to rehabilitation. (Effendi, F & Mahfudi, 2014). Thus, patients are expected to improve their quality of life even though they must continue to manage themselves and mentally accept treatment for the rest of their lives.

4. Conclusion

Improving the quality of life of type II DM patients will go hand in hand with increased knowledge, including skills (problem-solving, independent blood sugar control, and use of medicines), psychological status (self-confidence, behavior, coping), and utilization of health care facilities (routine control). In line with Hanna. H. H (2006), *Self-efficacy* as the core of SEEIP can be a mediator between knowledge and action. *Self-efficacy* is a dynamic mediation of behavior change, including behaviors related to managing chronic health conditions and promoting healthy lifestyles, so it is expected that with good *self-efficacy* patients are more confident in carrying out self-care management and carrying out their life activities. Thus, it is clear that the application of modified DSME and SEEIP in type II DM patients influences improving the quality of life of these patients. Type II DM patients will then be able to carry out self-care management during their mass life by regularly visiting the doctor to conduct serial laboratory examinations, physical examinations, foot care, DM diet, exercise and get health education. In the end, patients will be able to control blood sugar levels as well as psychologically be able to

control emotions so that they are always motivated to increase *self-efficacy* which is the need for DM patients to participate in taking care of themselves. His ability to take care of himself in the management of DM can reduce the risk of complications due to his DM by being accompanied and supported with love by his closest people and family.

The family already has the motivation to care for the patient in the form of motivation of affection and hope that the patient will recover from his illness soon, it's just that this hope needs to be supported by external encouragement that is strong enough to be able to realize it. Motivation in the form of affection and hope that the family has can be shown by taking the time to take care of their own sick family, preparing all the facilities needed during home care, and helping to provide gradual activity training. The family is the *entry point* in the provision of health services in the community, to determine the risk of disorders due to lifestyle and environmental influences.

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Conflict of interest

The authors declare that they have no competing financial interests or personal relationships that could influence the work reported in this paper.

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