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RESEARCH ARTICLE
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Educational Model for Cadres and Housewives Against Changes in Family Knowledge and Behavior in Efforts to Prevent Complications of Type II DM in Bunut Wetan Village, Malang Regency

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ABSTRACT

The prevalence of DM has doubled every year. Therefore, preventive promotional efforts are needed to prevent complications. This study aims to determine the effect of educational models on changes in knowledge and behavior of families in efforts to prevent complications of diabetes mellitus. This research design is a quasi-experimental. The research was conducted in Bunut Wetan Malang. The population in this study were housewives. The sample of research was 45 housewives who were divided into 3 groups. Treatment group 1 was housewives who were given training by health workers, treatment group 2 were housewives who were given training from cadres, and group 3 was the control group. The sampling technique used was purposive sampling. The dependent variable is knowledge and coping mechanisms. The independent variable is the family education model. The collected data were analyzed using paired sample t-test. The results of this study indicate that there is an effective effect on treatment groups 1 and 2 with a significance of 0.000 ($p < 0.05$), while in the control group with a significance value of 0.109 there is no significant effect on increasing knowledge and family copping index. So this Educational Model is an educational strategy to increase knowledge and Family Copping Index for Housewives in preventing Diabetes Mellitus from an early age starting from the smallest unit.

Keywords: educational model; complication; diabetes mellitus; family copping; prevention

INTRODUCTION

Background

Diabetes mellitus (DM) is a group of metabolic diseases characterized by increased levels of glucose in the blood (hyperglycemia) caused by abnormalities in insulin secretion, insulin action or both[(1)]. Currently DM is a disease whose prevalence continues to double every year. Approximately 1.3 million new cases of DM are diagnosed each year in the United States. DM is estimated to affect 18.2 million people; 13 million have been diagnosed and around 5.2 million have not been diagnosed. There has been an increase in the prevalence of DM, especially type 2 in old adults[(2)]. DM data in Indonesia in 1995 there were 8.4 million patients suffering from DM. In 2006 it increased to 14.7 million. It is estimated that it will continue to increase in 2030 to 21.3 million[(3)]. DM can cause complications in various body systems. Complications of DM are short term and long term. Short-term complications include hypoglycemia, diabetic ketoacidosis (DKA), and hyperosmolar nonketotic hyperglycemia (HHS). Meanwhile, long-term complications can include macroangiopathy and microangiopathy damage. So that the Early Detection of Complications in this disease is very necessary. In order to carry out early detection of Diabetes Mellitus, promotive and preventive efforts are needed without neglecting curative and rehabilitative efforts.

Promotional and preventive efforts to prevent these complications can be done through education to families. Family education through housewives by cadres and health workers will result in family independence

so that with the family it is hoped that each family member can recognize their own health problems, be able to overcome problems, and be able to use the potential that exists in the family and make the most of the opportunities that exist in their environment. to solve their problems especially their health problems.

From this background, the researcher wants to apply the educational model to cadres and housewives to change family knowledge and behavior in an effort to prevent complications of Type II diabetes through monitoring of blood sugar stability in Bunut Wetan Malang Village.

Purpose

The purpose of this study was to determine the effect of the educational model on cadres and housewives on changes in knowledge and family behavior in an effort to prevent complications of type II diabetes mellitus through monitoring blood sugar stability in Bunut Wetan Malang.

METHODS

This research was a quasi-experimental research with pre and post test study design. This research was conducted in the Work Area of Malang Wetan District. The research was carried out in June - August 2018. The population in this study were cadres and all housewives in the work area of Malang Wetan District. The sample in this study were 45 housewives in the work area of Malang District, Bunut Wetan, divided into 3 groups. Treatment group 1 was housewives who were given training by cadres, treatment group 2 was housewives who were given training from health workers, and group 3 was the control group. The sampling technique used was purposive sampling. The dependent variable is knowledge and coping mechanisms. The independent variable is the family education model. Data were collected using a questionnaire and observation of blood sugar examination results. The data that has been collected were analyzed using paired sample t-test.

RESULTS

General Data

Bunut Wetan Village is one of the villages in Pakis Subdistrict, Malang Regency which has 8 RW and 65 RT with 516 families with a large population of around 9630 people and among these residents there are elderly residents (55 years and over), which are around 500 people, and 200 of them suffer from diabetes.

Posyandu cadres in Bunut Wetan Village have a role in posyandu activities for the elderly as actors in a health system. Cadres are expected to be able to provide a variety of services including height and weight measurement, blood pressure measurement, filling out KMS sheets, providing counseling or disseminating health information, mobilizing and inviting the elderly to attend and participate in elderly posyandu activities, conduct counseling (health, nutrition, social, religion and work) according to their interests[(4)].

So far, the Posyandu for elderly in the area has been implemented in conjunction with the Poskesdes activity in Bunut Wetan Village which is carried out by a nurse assigned by the Pakis puskesmas, so it has not been seen that a separate posyandu activity for elderly is carried out by each RW. Overall, there are 15 cadres for Bunut Wetan village, and hold routine Posyandu for the elderly once a month

Table 1. Distribution of respondent characteristics

No	Characteristic	Treatment 1		Treatment 2		Control	
		f	%	f	%	f	%
1	Age						
	31-40 year	6	40%	2	13.3%	2	13.3%
	41-50 year	8	53.3%	12	80%	12	80%
	51-60 year	1	6.7%	1	6.7%	1	6.7 %
2	Education						
	Elementary	2	13.3%	4	26.67%	5	33.33%
	Junior high	8	53.3%	7	46.67%	7	46.67%
	Senior high	5	33.3%	4	26.67%	3	20.0%
3	Child						
	1 person	0	0%	0	0%	1	6.7%
	2 person	9	60%	8	53.3%	6	40%
	3 person	5	33.3%	6	40%	6	40%
	4 person	1	6.7%	1	6.7%	2	13.3%
	5 person	0	0%	0	0%	0	0%

Special Data

The following shows the results of the description of knowledge identification, family coping index (FCI), and blood sugar for housewives who were educated by health workers (treatment group 1) and housewives who were educated by cadres (treatment group 2) and the observed control group. before and after treatment.

Housewife Knowledge

Table 2. Description of knowledge of housewives

	Before treatment (pre test)		After treatment (post test)	
	Mean	SD	Mean	SD
Treatment group 1	63.27	8.64	82.47	5.15
Treatment group 2	57.13	6.79	77.60	5.74
Control group	48.20	9.40	51.33	11.27

a. Treatment Group 1
   The results of the description of the knowledge of housewives before treatment (pre test) obtained an average of 63.27 and a standard deviation of 8.64, then the knowledge after treatment (post test) obtained an average of 82.47 and a standard deviation of 5.15.
b. Treatment Group 2
   The results of the description of the knowledge of housewives before treatment (pre test) obtained an average of 57.13 and a standard deviation of 6.79, then the knowledge after treatment (post test) obtained an average of 77.60 and a standard deviation of 5.74.
c. Control Group
   The results of the description of the knowledge of housewives before treatment (pre test) obtained an average of 48.20 and a standard deviation of 9.40, then the knowledge after treatment (post test) obtained an average of 51.33 and a standard deviation of 11.27.

Family Coping Index Ibu Rumah Tangga

Table 3. Description of the family coping index for housewives

	Before treatment (pre test)		After treatment (post test)	
	Mean	SD	Mean	SD
Treatment group 1	18.47	4.12	29.40	4.85
Treatment group 2	21.07	6.98	26.40	4.75
Control group	13.00	2.17	13.87	3.16

a. Treatment Group 1
   The results of the description of the family coping index of housewives before treatment (pre test) obtained an average of 18.47 and a standard deviation of 4.12, then the family coping index after treatment (post test) obtained an average of 29.40 and a standard deviation of 4.85.
b. Treatment Group 2
   The results of the description of the family coping index for housewives before treatment (pre test) obtained an average of 21.07 and a standard deviation of 6.98, then the family coping index after treatment (post test) obtained an average of 26.40 and a standard deviation of 47.5.
c. Control Group
   The results of the description of the family coping index of housewives before treatment (pre test) obtained an average of 13.00 and a standard deviation of 2.17, then the family coping index after treatment (post test) obtained an average of 13.87 and a standard deviation of 3.16.

To compare the results before and after treatment on knowledge outcomes, family coping index (FCI), and blood sugar in treatment group 1, treatment group 2, and control group and determine the effect of the Educational Model on changes in knowledge and behavior (Coping Mechanism Index) of families Before and after treatment, the Paired Sample t-test was carried out as follows:

Housewife Knowledge

Table 4. The results of the paired sample t-test on housewives knowledge

Group	t	p-value	Information
Treatment1	13.20	<0.001	Significant
Treatment2	22.77	<0.001	Significant
Control	2.87	0.012	Significant

a. Treatment Group 1
   The results of the paired sample t-test on the knowledge of housewives in the treatment group 1 obtained a value of t = 13.20 and a significance of p <0.001. This shows that there is a significant effect (p <0.05) to increase the results of housewives' knowledge.
b. Treatment Group 2
   The results of the paired sample t-test on the knowledge of housewives in the treatment group 2 obtained a value of t = 22.77 and a significance of p <0.001. This shows that there is a significant effect (p <0.05) to increase the results of housewives' knowledge.
c. Control Group
   The results of the paired sample t-test on the knowledge of housewives in the control group obtained a value of t = 2.87 and a significance of p = 0.012. This shows that there is a significant effect (p <0.05) to increase the results of housewives' knowledge.

Family Coping Index Housewives

Tabel 5. The result of the paired sample t-test with family coping index housewifes

Group	t	p-value	Information
Treatment1	13.44	<0.001	Significant
Treatment2	7.60	<0.001	Significant
Control	1.71	0.109	Not significant

a. Treatment Group 1
   The results of the paired sample t-test on the family coping index of housewives in the treatment group 1 obtained the t value of 13.44 and p <0.001. This shows that there is a significant effect (p <0.05) to increase the results of the family coping index of housewives.
b. Treatment Group 2
   The results of the paired sample t-test on the family coping index of housewives in the treatment group 2 obtained t values of 7.60 and p <0.001. This shows that there is a significant effect (p <0.05) to increase the results of the family coping index of housewives.
c. Control Group
   The results of the paired sample t-test on the family coping index of housewives in the control group obtained t values of 1.71 and p <0.001. This shows that there is no significant effect (p> 0.05) to increase the results of the family coping index of housewives.

DISCUSSION

Based on the results of the activity, the delivery of cadres' knowledge material before training with an average score and after training increased from 63.27 to 82.47, as well as the second treatment group before training with a score of 57.13 and after training increased to 77.60.

With the training of cadres and housewives about DM disease, it is hoped that it can increase cadres and housewives' knowledge about DM, so that they can convey to clients with DM, their families and communities in their regions so that DM disease and complications from this disease can be prevented early.

Training for cadres and housewives for families with family members with DM is very necessary considering that DM management is very dependent on patterns and lifestyles, especially the provision of food. This activity is very useful in helping health workers in overcoming health problems in the community, especially in terms of early detection and prevention of complications early in Type 2 DM in the community.

Diabetes Mellitus Type II in Bunut Wetan Village In the treatment group 1, there was a significant positive relationship between maternal knowledge and FCI Klg, meaning that the higher the mother's knowledge, the higher the FCI Klg. From the above, it shows that the Educational Model is needed as a capital for family empowerment. Family empowerment is all non-constructive facilitation efforts, in order to increase

the knowledge and ability of the family to identify problems, plan and solve problems, without or with the help of other parties, by utilizing the potential of the family and the facilities in the community. With the increase in knowledge, it is hoped that the family can determine problems and know the causes of problems and can identify individual and family potentials, formulate intervention steps through a family approach with family empowerment to increase family independence.

Family empowerment is primarily directed at promotive and preventive efforts (Healthy Paradigm), without neglecting curative and rehabilitative measures. If the family can identify health problems and are able to plan solutions to problems, it will reduce the impact of stress on the family. Family coping will be more positive because it can overcome health problems and recognize the potential that exists in the family to overcome health problems.

Visual education (through pictures) can offer patients more details about DM pathogenesis, dangers, complications, and treatment, thereby increasing knowledge about the importance of controlling risk factors. In addition, through on-site visits, patients can gain general knowledge about the effects of treatment on the body, various dietary diets, alternative treatment options, self-injection of insulin, prescription instructions, warning signs of hypoglycemia, and carbohydrate counting techniques[5]. Better knowledge about diabetes can control and treat diabetes in a timely manner, thereby minimizing the likelihood of developing diabetes complications and thereby reducing morbidity and mortality in diabetics. Diabetes education can improve the quality of life of diabetic patients and can also prevent long-term expenses from complications of diabetes in patients. Various factors such as cost, distance, lack of adequate counselors or clinics, and lack of appropriate services influence diabetics to gain knowledge[6].

Helping diabetics learn and apply knowledge, skills, and behaviors, problem solving, and coping strategies requires a balance of many factors. There are interactions between individuals and the context in which they live, such as clinical status, culture, values, family, and social and community environment. Thus, routine annual assessments of knowledge, skills, and behavior are required for both meeting and non-meeting diabetes patients. Annual visits to educate people about diabetes are recommended to assess all areas of self-management, to review changes in behavior and coping strategies and problem-solving skills, to identify life strengths and challenges for people with diabetes, and to make adjustments in therapy[7].

Knowledge of diabetes is considered an important prerequisite for effective self-care activities that provide health benefits. Diabetics must be equipped with sufficient knowledge to be confident in carrying out self-care activities according to their needs. The higher the frequency of diabetes sufferers exposed to information, the better the knowledge they have. One study found that the short-term improvements in educational parameters were significant in relevant diabetes self-management such as diabetes knowledge and self-care behavior. These findings are of significant importance for clinical and public health to develop diabetes self-management education projects on limited resources[8].

Knowledge is also influenced by the level of education. Individuals with better education may have a higher chance of reading information about diabetes. Such individuals also have more possibilities to communicate with appropriate health workers and know more about the disease[9].

Knowledge emerges as a major problem in the management of type 2 diabetes by patients and healthcare professionals. Patients demonstrate the importance of knowing how they interpret the diagnosis of type 2 diabetes. According to health professionals the components of knowledge about type 2 diabetes management include an individual's understanding of the type of food, the portion of food and the appropriate time to consume the food. Some patients know about the recommended dietary patterns, but because of socio-economic constraints (financial shortages) they are unable to implement the healthy pattern. Some of the challenges of dietary adherence include avoiding favorite foods, choosing healthy alternatives, time management (patients find it difficult to plan treatment with insulin or oral medications) and social support (because most women prepare meals for their families). Patients require the consumption of food in the correct amount for their normal body mass, high in starch and fiber but low in saturated fat. They need physical activity with low-moderate frequency or 20-30 minutes, three or four times a week to improve cardiovascular health. Maintaining body weight and adherence to prescribed medications will also help to improve glycemic control[10].

CONCLUSION

There is a significant effect of family education model to increase the knowledge, family coping index of housewives.

REFERENCES

1. Afaya RA, Bam V, Azongo TB, Afaya A. Knowledge of chronic complications of diabetes among persons living with type 2 diabetes mellitus in northern Ghana. PLoS One [Internet]. 2020;15(10 October):1–14. Available from: http://dx.doi.org/10.1371/journal.pone.0241424
2. Bare S and. Textbook of Medical Surgical Nursing Edition 8 Volume 2. Jakarta: EGC; 2002.

3. Elderly K. Guidelines for the Implementation of Elderly Posyandu. Jakarta: Elderly National Commission; 2010.
4. Gonzalez-Zacarias AA, Mavarez-Martinez A, Arias-Morales CE, Stoicea N, Rogers B. Impact of Demographic, Socioeconomic, and Psychological Factors on Glycemic Self-Management in Adults with Type 2 Diabetes Mellitus. Front Public Heal. 2016;4(September):1–8.
5. Hailu FB, Moen A, Hjortdahl P. Diabetes self-management education (DSME) - Effect on knowledge, self-care behavior, and self-efficacy among type 2 diabetes patients in Ethiopia: A controlled clinical trial. Diabetes, Metab Syndr Obes Targets Ther. 2019; 12: 2489–99
6. Hamzeh A, Almhanni G, Aljaber Y, Alhasan R, Alhasan R, Alsamman MI, et al. Awareness of diabetes and diabetic retinopathy among a group of diabetic patients in main public hospitals in Damascus, Syria during the Syrian crisis. BMC Health Serv Res. 2019;19(1):4–13.
7. Jung AR, Kim H, Kim H-S, Kim C, Choi W-S. Exercise Strategies to Prevent Hypoglycemia in Patients with Diabetes. Korean J Fam Med. 2020;
8. Lemone P & B. Medical surgical Nursing,: Critical thinking in client care (4th ed). New jersey; 2008.
9. Muhammad C, Nazar J, Bojerenu MM, Safdar M, Marwat J. Literature Review. 2016; 5 (2): 110–5.
10. Mshunqane N, Stewart A V., Rothberg AD. Type 2 diabetes management: Patient knowledge and health care team perceptions, South Africa. African J Prim Heal Care Fam Med. 2012; 4 (1): 1–7.
11. Powers MA, Bardsley J, Cypress M, Duker P, Funnell MM, Fischl AH, et al. Diabetes self-management education and support in type 2 diabetes: A joint position statement of the American Diabetes Association, the American Association of diabetes educators, and the Academy of nutrition and dietetics. Clin Diabetes. 2016; 34 (2): 70–80.
12. Sami W, Ansari T, Butt NS, Rashid M, Hamid A. Effect Of Diet Counseling On Type 2 Diabetes Mellitus. Int J Sci Technol Res. 2015;4(8):112–8.
13. Sudoyo AW, Setiyohadi B AI, Simadibrata M SS. Internal medicine textbook. 4th edition. Jakarta: FKUI Inte rna Publishing; 2006.
14. Wolde M, Berhe N, Van Die I, Medhin G, Tsegaye A. Knowledge and practice on prevention of diabetes mellitus among Diabetes mellitus family members, in suburban cities in Ethiopia. BMC Res Notes. 2017; 10 (1): 1–6.
15. Yue J, Mao X, Xu K, Lü L, Liu S, Chen F, et al. Prevalence, awareness, treatment and control of diabetes mellitus in a Chinese population. PLoS One. 2016;11(4):1–15.
16. Zhang Y, Chu L. Effectiveness of Systematic Health Education Model for Type 2 Diabetes Patients. Int J Endocrinol. 2018; 2018.