THE EFFECT OF CALORIES COUNSELING ON INCREASE THE KNOWLEDGE, ATTITUDE, AND BEHAVIOR DIETARY TO DIABETES MELLITUS PATIENT IN PRIMARY HEALTH CARE

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ABSTRACT

Diabetes Mellitus (DM) is a metabolic disease with hyperglycemia because of abnormalities of insulin. Prevalence of DM increases from year to year and is predicted by 2030 to increase to 366 million. One of the efforts that can be done to reduce the high number of patients with DM is a group of calories counseling to solve the diet problems so that they can control the blood glucose levels. The purpose of this study was to determine the effect of calorie counseling on increasing knowledge, attitude, and behavior of patient dietary with DM in Semanding, Puskesmas Dau, Kabupaten Malang. The method used in this research is quasi-experimental design, a non-randomized pre-posttest control group. The samples were selected into two groups, that is the "intervention" group (n=20), and the "control" group (n=20). The method of data analysis used an independent t-test. The results showed a relationship between the calories counseling and the knowledge of dietary with p-value = 0,000, a relationship between the calories counseling and the behavior of dietary with p-value = 0,152. The research concluded that calories counseling increases the knowledge and behavior of dietary to patient DM in Semanding Dau, Kabupaten Malang.

KEYWORDS

Diabetes Mellitus, Dietary, Calories Counseling, Knowledge, Behavior, Attitude.

INTRODUCTION

Diabetes Mellitus (DM) is a metabolic disease shown by hyperglycemia because of insulin abnormalities (ADAD), 2010). *International of Diabetic Federation* (IDF), (2015), mentioned the increasing number of DM patients in the world from 366 million (2011) to 387 million (2014). According to Riskesdas (2013), it has become known that the DM patient in Indonesia was increasing from 1,1 % in 2007 to 2,1 % in 2013 from the total 366 million people and there is always 3,2 death every year because of complication, such as heart disease, kidney, blindness, atherosclerosis, up to body part amputation (Perkeni, 2006). Nowadays, an unhealthy food pattern is the factor which increases the number of DM patients. The DM patients' diet often constrained with the varieties and amount of food recommendations (Maulana, 2009). DM management with an adjusted diet must be done properly, in which it has to be adjusted with the calorie needs of each individual by paying attention to three elements, which are varieties, amount, and eating schedule. The factor which influences the management of DM is knowledge. Good knowledge causes someone to know and understand so that there will be conscience and changing of attitude. The stimuli of a positive attitude can change someone's behavior in solving their problems (Notoatmodjo, 2007). Counseling is one of the education methods that can impact someone's knowledge, attitude, and behavior in solving their problems. Calorie counseling is a two-way process that involves the counselor and the DM patient to solve the problem related to diet management which fits the calorie needs as an effort to control the blood sugar level (Persagi & *Asosiasi Dietisien Indonesia,* 2011). Based on the research conducted by Rini (2016), she said that education significantly influences the knowledge, attitude, and behavior of the DM patient. Group calorie counseling nowadays started to become a consideration because it is considered

more effective and efficient because of the process use group dynamic principle which has the therapeutic function, like open expressions and feelings related to their disease and diet management so far, trusting and supporting each other (Latipun, 2008). The survey result conducted by the researcher shows that the highest number of DM patients in Kabupaten Malang is in Dusun Semanding Kecamatan Dau. Patient adherence to diet management is not enough with health education, but a counseling approach is needed to explore the barriers experienced by each patient in increasing compliance with calorie consumption. This study aims to determine the effect of calorie counseling on calorie diet knowledge, attitudes, and behavior. The research question is "is there any effect of calorie counseling on the knowledge, attitudes, and behavior of calorie diets in DM patients in primary care?"

MATERIALS AND METHODS

The method that is used in this research is quasi-experimental design, a non-randomized pre-posttest control group. The population of this research is the respondent who is detected with DM in the elder clinic in Desa Semanding. The samples were counted by using the Lemeshow formula, which is 40 respondents. The sample was then divided into two groups, which are the "intervention" group (n=20) and the "control" group (n=20). In analyzing, this research using the SPSS version 24 application. If the data distributed is normal using Independent t-test and if the data distribution is not normal using the Mann-Whitney test. This research was conducted four times a month with a counseling method in a group which was divided into two groups; consisting of 10 respondents in each group. The duration of a calorie counseling meeting is 45 minutes. This research use questionnaire adopted from the previous research conducted by Rini (2016) to measure the knowledge and behavior and Latino Dietary Behavior Questionnaire (LDBQ) for attitude. The respondent who will be given the intervention was invited to the clinic to follow the briefing and *informed consent* to follow this series of research. The first meeting is the pre-test by filling out the characteristic data (age, gender, education, occupation, income) and the questionnaire of knowledge, attitude, and behavior and. Continued with the counseling of DM disease concept, calorie diet introduction, and investigates the respondent's daily food pattern. The media that was used was leaflet. The second meeting is a discussion to solve the problem related to the food menu which fits calorie by using food modeling miniature as well as the competence to buy, and how to make daily food diet which was documented in the monitoring sheet as the evaluation material for the next meeting. The third and fourth meeting is the evaluation of the daily food menu constraints and the next diet planning. The fourth meeting ended with the post-test questionnaire of knowledge, attitude, and behavior.

RESULT AND DISCUSSION

Based on the result in table 1, it is revealed that from 40 respondents, the majority are 56-65 years old, which is 50% in the intervention group and 50% in the control group. While based on gender, it is dominated by females, which is 60 % in the intervention group and 85% in the control group. The last education of the respondents is mostly elementary school, which is 70% in the intervention group and 85% in the control group. The majority occupation of the respondents is not working (housewife), which is 70% in the intervention group and 80% in the control group. The highest income of the respondents is <1.7 million, which is 95% in the intervention group and 100% in the control group.

Based on the result in table 2, shows that before the calorie counseling intervention was done to the control group and intervention group overall are different significantly on the knowledge, attitude, and behavior variable, which are p= 0,004 on the knowledge variable, p=0,003 on the attitude variable, and p=0,000 on the behavior variable. These results indicate that the two groups have significant differences, so it needs to be continued by testing the difference in values after and after the intervention in the two groups. The test used is a two-group independent t-test with normal distribution conditions. the results of the normality test using Kolmogorov Smirnov, showed the results were normally distributed with a value of p=0.427.

Based on the result in table 3, shows that the result of Independent t-test difference pre-posttest on the knowledge variable, it was obtained the p-value= 0,000, the conclusion is that there is a significant

difference in the knowledge variable after being given calorie counseling between the control group and the intervention group. The result of the independent t-test difference pre-posttest on the attitude variable was obtained at p-value= 0, 152, which means there is no significant difference between the two groups. The results of the analysis of independent t-tests on behavioral variables showed the results of the value of p=0.001, which showed a significant difference in the group after the calorie counseling intervention was given.

The Enhancement of Diet Knowledge of the Control and Intervention Group

This research shows that there is a significant increase of knowledge after the calorie counseling compared to before the calorie counseling on the control group toward the intervention group. In this research before the intervention of calorie counseling, there is higher knowledge of the intervention group compared to the control group. This contributes to the increasing knowledge of the intervention group compared to the control group significantly. This research is in line with the research conducted by Malathy et al. (2011), which shows that counseling can increase knowledge with a value of p = 0.0001. and Anuar et al. (2016), which shows that counseling can increase the value of knowledge scores in DM patients in Kuantan, Malaysia. Rini (2016) which used quasi-experimental design giving education through the lecture and booklet methods done in four times of meeting in a month, the result revealed that there is a significant difference before and after the diet education toward the knowledge of DM patient in the intervention group with value p= 0.024. The same research was also conducted by Surya, et al (2015) by using the counseling method to analyze the influence of counseling toward the knowledge of DM type 2 patients which was done for four weeks of intervention. The result of this research revealed that counseling increases the knowledge of DM type 2 patients with a value of p= 0,000. A significant increase can be influenced by some factors, such as age, in which the majority of the respondent's age is >46 years old. According to Febriyanti (2011), someone's age can influence the knowledge level, the older someone's age the higher his mindset will increase. The older someone's get, the more information obtained and the more he understands the needs of food adjustment to prevent the worse complication for DM patients. Notoatmodjo (2005) mentioned that information input is a factor that can increase someone's knowledge. Calorie counseling can provide information to solve the food pattern of DM patients. The information which is given continuously can stimulate reasoning development and increase knowledge. Hence, from the result of this research, it can be concluded that calorie counseling significantly influences the increase of the DM diet knowledge in Dusun Semanding, Dau Kabupaten Malang.

The Enhancement of Diet Attitude of the Control and Intervention Group

This research shows that there is an attitude enhancement after the calorie counseling compared to before the calorie counseling toward the intervention group. However, this enhancement statistically is not significant. In this research, before the intervention of calorie counseling, there is a higher attitude in the control group compared to the intervention group. This contributes to the significant attitude enhancement in the intervention group. According to George et al. (2017), shows that counseling in DM patients can improve attitudes towards care, and Muchiri, Gericke, & Rheeder (2016), shows that counseling interventions can improve positive attitudes in dietary care in DM patients with attitudes was the only score significantly higher in the intervention group + 0.27 (p = 0.028) at 12 months. This research is in line with Phitry (2013) who said that the patients' attitudes are mostly not good, which is 55,6% and 44% with a good attitude, in which education and occupation influence the attitude toward the diet obedience of DM patients. This is because the last education of the majority is Elementary School. This research is different from Rini (2013) who said that there are significant differences before and after the education in the intervention group with the value p= 0,005. This is because almost all of the respondents are educated in Middle School-High School. Attitude formation is influenced by external factors (experience, situation, norms, constraints, and motivation) and internal factors (physiology, psychology, and motive) (Lestari, 2013). Attitude is a response to the knowledge obtained from the given information in calorie counseling. However, in this case, the enhancement of knowledge does not influence significantly enhancing the diet attitude. This is because most of the DM patients still do not act like they should manage their disease. Basuki (2004) argues that an attitude does not guarantee that it would be realized in action. The realization of an attitude becomes

the real action that needs a supporting factor, such as facility. The negative attitude of DM patients may also be caused by the age factor, in which the majority of the respondents are >46 years old. At that age, someone cannot do everything by himself independently. Par and elder also have a limitation as well as physical and memory degradation, so it is difficult to process knowledge obtained related to diet that has to pay attention to three things, which are determining the amount, schedule, and variety of food (Dinda, et.al. 2017). Another factor is education. The majority of respondents' education is Elementary School. Notoadmojo (2003) explained that education is a learning process in enhancing or increasing someone's positive attitude. The lower the education level the lower someone's competence in reacting to problems. DM patients who have a low education level usually cannot easily accept new things related to the effort to improve their health (Rini, 2016). Occupation is a factor which also influences the diet attitude of DM patients. In his research, the majority of respondents are housewives and farmers. Nursalam (2001) said that if DM patients have a job with high activity, then it will disturb their will in doing a diet. The researcher assumes that a farmer thinks that the activity on the field is more important than managing diet patterns because it will just make him hungry. The researcher assumes that the negative attitude is influenced by the norms and beliefs. The norms that grow inside and become the life compass cannot change the positive attitude of a DM patient toward diet (Notoadmodjo, 2007). Moreover, the lack of family supports. The family should have an effective function, such as fulfilling the psychosocial need, taking care of, and supporting each other to fulfill the diet needs of the DM (Sudiharto, 2007). These things give a total picture of why the respondents have a negative attitude (Notoadmodjo, 2007). Therefore, it can be concluded that calorie counseling cannot significantly influence the enhancement of DM patient diet attitude in Dusun Semanding, Dau Kabupaten Malang.

The Enhancement of Diet Behavior of the Control and Intervention Group

This research shows that there is a significant enhancement of behavior before calorie counseling in the control group toward the intervention group. In this research, before the intervention of calorie counseling, there is a higher behavior in the control group compared to the intervention group. However, it does not contribute significantly to the enhancement of behavior in the intervention group compared to the control group. Anuar et al. (2016) which shows counseling can increase the value of behavior in the intervention group was improved after the diet counseling given, as compared to the control group in DM patients in Kuantan, Malaysia. Asif (2014), explained that counseling improves treatment and lifestyle changes, healthy eating as a strategy, promotes walking, exercise and other physical activities have beneficial effects on human health and prevention or treatment of diabetes, and promotes adherence. This research is supported by Rini (2016), that there is significant behavior difference before and after diet education in the intervention group with the value p= 0,003. This research is also in line with other research conducted by Sutiawati (2013) who said that there is a significant influence of nutrients education toward the food pattern with value p= 0.003 by using food frequency to measure correspondents' behavior. A significant enhancement could be influenced by some factors. Anthony (2017) said that education influences someone in absorbing information more easily and can apply it to daily behavior. The continuously given knowledge and skill enhancement in modifying food can change the behavior, either directly or indirectly (Notoadmodjo, (2011). Gender is a factor that can influence DM patients' diet behavior. According to Darussalam (2009), women will be more likely to care about their health and medication compared to men. The researcher thinks that social support also influences the diet adjustment goal of DM patients. In this research, most of the applicants have a proactive attitude in supporting and monitoring the food pattern arrangement for DM patients in Dusun Semanding. The research conducted by Antari (2012) shows that there is a significant and very strong relationship between social support toward the DMT2 patient quality of life with p-value= 0,000. Social support can contribute to increase the DMT2 quality of life and facilitate behavior changes (Yuan et al., 2009). Hence, from this research, it can be concluded that calorie counseling significantly influenced the diet behavior enhancement of DM patients in Dusun Semanding, Dau Kabupaten Malang.

CONCLUSION AND SUGGESTION

The conclusion of the research results shows that calorie counseling can improve knowledge, attitudes, and behavior in DM patients in primary care Dau Malang. It is advised for the clinic institution or medical

support to be more optimal in giving education, assisting, and monitoring the management implementation system of DM patients, especially related to food pattern management. For the elder applicants, it is advised to do a health promotion communication and invite people who are still healthy, risked, or have been detected for DM to keep a better healthy lifestyle and pay attention to the food pattern to keep healthy.

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Table 1. Frequentation Distribution of Diabetes Mellitus Patient Characteristic in Dusun Semanding, Dau Kabupaten Malang (n=40)

Characteristic	Intervention Group		Control Group	
	n	%	n	%
Age				
46-55	11	55	10	50
56-65	9	45	10	50
Gender				
Male	4	20	3	15
Female	16	60	17	85
Education				
No-formal education	5	25	4	20
Elementary School	14	70	16	80
Middle School	0	0	0	0
High School	0	0	0	0
Bachelor Degree	1	5	0	0
Occupation				
Housewife	8	40	10	50
Entrepreneur	1	5	1	5
Labor	2	10	1	5
Merchant	1	5	2	10
Farmer	8	40	6	30
Income				
< 1.7 million	19	95	20	100
≥ 1.7 million	1	5	0	

Table 2. Analyses of the Knowledge, Attitude, and Behavior Pretest Differences before Given the Calorie Counseling of the Control Group and Intervention Group

Variable	Groups		*p-value*
	Control (n1=20)	Intervention (n2=20)	
Knowledge	4,05	4,70	0,044*
Attitude	27,95	25,45	0.003*
Behavior	25,75	21,55	0.000*

*) p-value < 0,05 =data not homogenous; > 0,05 = data homogenous, not significantly

Table 3. Analyses of the Knowledge, Attitude, and Behavior Pre-Post Test on the Control Group toward the Intervention Group

Variable	Control (n=20)		Intervention (n=20)		*p-value*
	Mean±SD	Min-Max	Mean±SD	Min-Max	
Knowledge	0,40 ±1,09	(-1)– 2	3,10 ± 0,85	2 - 5	0,000*
Attitude	0,30 ± 0,86	(-1)– 2	1.90 ± 0,47	(-10) -9	0,152
Behavior	-0,70 ± 2,02	(-6) – 2	2,70 ± 3,97	(-7) - 12	0,001*

*) p-value < 0,05 is significantly, n= total responden