ABSTRACT

**Introduction:** Treatment of Diabetes Mellitus Type 2 is not only affected by medical treatment, but also need high knowledge that useful for success in self-care of DM Type 2 patient. From data of field collected that lots of DM’s patient who have minimum knowledge need to be given education program called DSME. Diabetes self management education (DSME) is an ongoing process that has been conducted to facilitate knowledge, skills, and abilities of patients with DM to perform self care. The purpose of this research was to identify the effect of DSME on level of knowledge of DM type 2.

**Method:** The type of research used Quasi-Experiment Design. The number samples was 39 people for treatment group and 39 people for control group by simple random sampling method. The instruments of research that have been used were questionnaire and booklet. **Result:** The result level of significance of knowledge in Mann-Whitney Test was 0.000 (p < α; α = 0.05), so that H0 rejected. **Discussion:** It means there was effect diabetes self management education on level of knowledge in diabetes mellitus type 2. In this research, it is suggested that nurses can use DSME as sources of information and a health promotion program to improve knowledge and self-efficacy in patients with DM type 2.

**Key words:** DSME, level of knowledge

INTRODUCTION

Diabetes Mellitus (DM) is a disease characterized by hyperglycemia due to the body lacks insulin both in absolute and relative (Hasdianah, 2012). If the disease is left untreated acute metabolic complications may occur and long-term vascular complications, both microangiopathy or microangiopathy. This happens due to lack of knowledge on the treatment of patients with Diabetes Mellitus. Such knowledge can be gained from education, counseling or to seek its own resources. It aims to increase the knowledge in tackling health problems. And thus will be able to accept his situation and actively participate in dealing with health issues, especially in preventing complications from Diabetes Mellitus.

Based on data from the International Diabetes Federation (IDF) in the year 2030 as many as 552 million people in the world will have diabetes. More than 50% of people with Diabetes Mellitus died at the age under 60 years old (productive age) (IDF, 2012). From the above data it can be concluded that there are still many patients with Diabetes Mellitus who have less knowledge.

Diabetes Self-Management Education (DSME), which integrates the management of the five pillars of DM emphasize behavioral interventions independently (Norris et al., 2002). DSME using guidance, counseling and behavioral interventions to improve knowledge of diabetes and improve the skills of individuals and families in managing the disease DM (Jack et al., 2004). Health education approach with DSME method not only uses counseling methods, either directly or indirectly, but has evolved to encourage participation and cooperation of people with diabetes and their families (Glasgow & Anderson, 1999). This method is required in diabetes since the traditional method that puts the patient at the
passive role no longer sufficient to capture the complexity of the treatment and the nature of the disease that requires not only health professionals but also the active role of patients in care (Anderson & Funnel, 2005).

Research Pramesti (2014) mentions that after DSME about the level of knowledge, respondents became know how management DM disease properly.

METHODS

This research used experimental design (Quasi-experimental). In this study, there are two groups: 1) the experimental group was treated with the approach principle be educating DSME 2) a control group did not receive treatment. In both groups performed a pre-test and post test. Research carried on working area Bangkalan city health center in December 2015 and January 2016.

The population in this study were patients with type 2 diabetes mellitus in Puskesmas Kota Bangkalan. The sample size used in this study were 39 people in each treatment group and the control group. The independent variables in this study is the level of knowledge. This study uses the instrument in the form of a questionnaire to determine the level of knowledge that is done for two weeks during 4 meetings. The first meeting was pre-test and subsequent intervention approach education with the principle of Diabetes Self-Management Education (DSME) up to four meetings and conducted post-test at the end of the meeting. Statistical analysis was obtained by computer devices using statistical test of Wilcoxon Signed Ranks Test with significance level of p <0.05 and a statistical test Mann Whitney test with significance level of p <0.05.

RESULT

The results showed there were changes in knowledge before and after the educational approach to the principle of DSME. Statistical test results using Wilcoxon Signed Rank Test can be seen in Table 1 and 2. The study also obtained results that there is a difference between the treatment group knowledge which has been given educational approach to the principle of DSME and the control group were not given education the principle approach

<table>
<thead>
<tr>
<th>Knowledge</th>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less</td>
<td>19</td>
<td>10</td>
</tr>
<tr>
<td>Moderate</td>
<td>14</td>
<td>16</td>
</tr>
<tr>
<td>Good</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>39</td>
<td>39</td>
</tr>
<tr>
<td>X</td>
<td>56,15</td>
<td>56,28</td>
</tr>
<tr>
<td>α :0,05</td>
<td>ρ:0,042</td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Level of knowledge among patients with Type 2 Diabetes Mellitus in Puskesmas Bangkalan (the treatment group).

<table>
<thead>
<tr>
<th>Knowledge</th>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less</td>
<td>22</td>
<td>56,41</td>
</tr>
<tr>
<td>Moderate</td>
<td>13</td>
<td>33,33</td>
</tr>
<tr>
<td>Good</td>
<td>4</td>
<td>10,26</td>
</tr>
<tr>
<td>Total</td>
<td>39</td>
<td>100</td>
</tr>
<tr>
<td>X</td>
<td>54,62</td>
<td>73,97</td>
</tr>
<tr>
<td>α :0,05</td>
<td>ρ:0,000</td>
<td></td>
</tr>
</tbody>
</table>

DISCUSSION

The results showed that based on the results that there are differences in knowledge levels in patients with Type 2 Diabetes Mellitus between pre and post given Diabetes Self Management Education as shown in Table 3.

In the opinion of researchers from the research that has been done that the level of knowledge of Diabetes Mellitus Type 2 largely due to lack of knowledge about the understanding of the disease Diabetes Mellitus so that it impacts the maintenance treatment illness. Therefore, researchers gave Diabetes Self Management Education 4 times in 2 weeks time. This provides good benefits in increasing knowledge in patients with diabetes mellitus type 2. Changes in knowledge occurred in the treatment group because of their interest in and
awareness of respondents in DM care management right as one of the factors that can lower blood sugar. Education is given in stages by means of lectures, discussions, sharing of fellow sufferers were more involved respondents and conducted a review before continuing to the next discussion making it faster and easier to accept. Their booklet into the handle also influential that education does not only take place at the face to face but it can be done independently by the respondent at home.

This study is also consistent with the theory Funnel (2012) which states that the education provided through the Diabetes Self Management Education to facilitate and improve knowledge. It is also mentioned by Sidani & Fan (2009) states that the education provided through the Diabetes Self Management Education effective to increase knowledge, attitude, dan metabolic control to patient with Type 2 Diabetes Mellitus.

Factors affecting the level of knowledge is education. The level of education in the intervention group was almost half of secondary education, namely junior and senior high that there are 17 respondents (43.6%). According to the researchers the higher the education the increasing knowledge. Notoatmodjo (2007) said the level of education also determines a person's ability to understand the knowledge acquired, ie the higher the person's level of education the easier the person receiving the information. Criteria respondents minimal secondary education aims to optimize the reception of the information provided. Someone who has been through the secondary level are expected to have experienced the development of attitudes, knowledge, and skill base as the provision of life and can be used to cope with life in the community (National Development Planning Agency, 2009). Patients who have been through secondary education level indicates that the patient has to know basic skills taught in primary education such as reading, math, logic, good communication and writing skills. Patients who have been through secondary education level also showed an increasing cristalized intelligence, so that the ability of patients are expected to be able to understand the material given in the provision of DSME. Cristalized intelligence gained from past experience. Cristalized intelligence will always be changing due to new information obtained will improve our knowledge (Roach, 2011).

Based on the results of research in getting that there is no difference in knowledge levels in patients with Type 2 Diabetes Mellitus between pre and post are not given Diabetes Self Management Education as shown in Table 4.7.

In the opinion of researchers from the research that has been done that the level of knowledge of Diabetes Mellitus Type 2 largely due to lack of knowledge about the understanding of the disease Diabetes Mellitus so that it impacts the maintenance treat illness. In this group there were no significant changes to the increase in knowledge may be possible because no additional education that DSME. So that in the control group who did not get the information DSME has little chance to be able to increase patient knowledge.

This is consistent with the theory Notoatmodjo (1998) which states that the means of sufficient information is one of the external factors that can affect a person's knowledge. The more senses that humans use to receive more information and clearer understanding or knowledge acquired yag.

As for the factors which will affect the lack of knowledge of which is the education factor. Where nearly half of the total respondents, ie 13 votes (33.33%) diabetic patient education is primary education, making them difficult to accept information because of poor ability to read and understand. According to researcher education in general affect the forms of thinking and action of respondents with respect to respondents' awareness of Diabetes Mellitus.

This is consistent with the theory Notoatmodjo (2011) which states that education greatly affects the person's capacity for thought. In general, the higher the education level, the better the level of knowledge, whereas the lower the level of education, the lower or less anyway knowledge.

Nursalam (2011) states that education is an activity or process of learning to develop or enhance certain capabilities so that the educational goals that can stand on its own. The lower the level of education held the lower the ability to be owned by someone in addressing a problem. A Type 2 Diabetes Mellitus patients who have less education background or in the basic level, are unlikely to accept new developments, especially the support degree of health. This is because the educational level of basic education is to simply introduce new
knowledge to someone without any reason and deliberation process will be a science. Respondents who have less education background will find it difficult to accept new information due process of thinking that has been ingrained in him is only temporary because of the absence of sufficient reasoning process of the diabetic patient's own due-owned background.

Another factor is age. The age of the control group almost half of elderly end at 56 years old - 65 years there were 14 respondents (35.9%). The older a person leads to decreased function of the body including the brain function decline to think. This is according to the journal Heriansyah (2014) which states that the respondents were in the age of 56-65 years of age are entering a period where presenil age are starting to show a decrease in body function and prefer the peace of mind of health.

Based on the results that there is influence of the Diabetes Self Management Education knowledge levels in patients with Type 2 Diabetes Mellitus in Puskesmas Kota Bangkalan. The results of analysis of the Mann-Whitney Test was also established \( \rho: 0.000 \) So the significance is smaller than the degree of error \( (0.000 <0.05) \) established researchers significance 5% \( (0.05) \).

It is seen that after a given DSME respondents experienced an increase compared respondents' knowledge before being given DSME. All of the respondents were in the knowledge of Good and Enough. According to Basuki (2009), health education is a process that is ongoing, delivered with excellent communication and precise aim to change the mindset of someone so that the person's motivation, which in turn will increase the knowledge and behavior change, the progress must consequential constantly observed especially by those who gave it. Knowledge is one of the internal factors that affect the formation of human behavior. So that public knowledge about the incidence of type 2 diabetes increases, the necessary knowledge and good manners also discusses the risk factors of type 2 diabetes (Notoatmodjo, 2007).

Health education is also one factor of the amplifier to raise awareness and change the behavior of people through the provision of information. When someone gets the stimulus (stimulus), which contains information on DSME in diabetic patients subsequently received by the person's information, the information will be processed by the brain in such a way so that will increase knowledge, giving rise to a perception of good and good conduct in preventing the disease. Changes perngetahuan one can last long or not depends on the stimulus provided by the providers of health education about DSME. Once a person is given DSME program, one is aware in advance of the stimulus provided then someone will be interested in the stimulus and would weigh on whether or not the DSME program for him. After that someone will start try to do something as desired by the stimulus and the new person will behave in accordance with knowledge. This has led to increased knowledge of patients with Diabetes Mellitus. After Diabetes Mellitus patients have sufficient knowledge of the care would itself be fulfilled and can regulate the development and improvement of the care process against him. Factors that causes the desire memanagemen care of him so that blood sugar can be controlled.

The statement above in accordance with the role of health education for patients with DM. First is to increase knowledge, increase their awareness. Such knowledge will be the starting point of a change in attitude and lifestyle, which eventually became the goal of changing the knowledge of patients with Type 2 Diabetes Mellitus.

In a study conducted provision of health education as much as 4 times in 2 weeks and was measured respondents' knowledge by administering a questionnaire before being given DSME at the first meeting the first week and performed repeated measurements of knowledge by administering a questionnaire at week 4 after two meetings to be given DSME. This is done to provide a correct knowledge to be understood by the patient and the results obtained from the respondents' knowledge is getting better after being given DSME.

According to the theory of stimulus-organism-response states that behavior can be changed only if the stimulus (stimuli) were given a really exceed the original stimulus. Stimulus may exceed the original stimulus means a given stimulus should be able to convince the organism. In this organism convince reinforcement factor plays an important role (Notoatmodjo, 2010).

CONCLUSION

There is a difference in the level of knowledge of patients with type 2 diabetes
mellitus before and after being given Diabetes Self-Management Education (DSME) in Puskesmas Kota Bangkalan.

There is no difference in the level of knowledge of patients with type 2 diabetes mellitus before and after without being given Diabetes Self-Management Education (DSME) in Puskesmas Kota Bangkalan.

There is an effect of Diabetes Self-Management Education (DSME) on the level of knowledge of patients with Type 2 Diabetes Mellitus in Puskesmas Kota Bangkalan.

Suggestion for education, This thesis is expected to add a reference about increasing knowledge of Diabetes Mellitus Type 2. In other hand, for respondent, this study can provide knowledge and can utilize existing methods without having to take medication pharmacological simply obey and keep the advice given researchers the respondents in particular, on the society in general to improve the knowledge of Type 2 Diabetes Mellitus.

For Health Center. This thesis is expected to provide scientific information about the Diabetes Self-Management Education (DSME) on the level of knowledge of patients with Type 2 diabetes in the field p1.

REFERENCES


Syaifuddin. 2006. *Anatomi Fisiologi Untuk Siswa Perawat*. Jakarta: EGC.


