THE EFFECT OF DEMONSTRATION METHOD ON THE ABILITY TO CARE FOR NON-ULCER DIABETIC FOOT OF PATIENTS WITH TYPE 2 DIABETES MELLITUS (DM)

R E Happy Patriyani, Pahlevi Betsytifani
Nursing Major, Politeknik Kesehatan Kementerian Kesehatan, Surakarta

Abstract

Introduction: Along with the increase of the number of persons with Diabetes in the world, by 2032 a surge of diabetic foot problems will also occur (PERKENI, 2011). Through preventive measures on how to care for diabetic foot training using demonstration method, those diabetic foot problems upsurge can be minimized. The objective of this research is to study the impact of demonstration method on the ability to care for non-ulcer diabetic foot of patients with type 2 Diabetes Mellitus. Method: This research used the quasi-experimental method with one group pretest-posttest design. The data were analyzed using paired t-test. Thirty respondents were taken as samples; all are members of Persadia (Indonesia Diabetes Association) of the Local General Hospital of Gemolong unit. The majority of the samples were females (86.7%), aged 46-65 (66.6%), and their highest educational level was secondary high-school (40.0%). Result: The result of the research shows a significant value p=0.000, which indicates that there is an effect of the demonstration method on the ability to care for non-ulcer diabetic foot of patients with type 2 Diabetes Mellitus. Conclusion: The research recommended diabetic persons to apply early detection for abnormalities in their feet prior to the wounds by performing preventive foot maintenance to reduce the incidences of diabetic foot ulcer complications.

Keywords: Demonstration method, the ability to care for diabetic foot, persons with type 2 diabetes mellitus non-ulcer

INTRODUCTION

There is a very high occurrence rate of diabetic ulcer in both developing and developed countries such as happens in Indonesia (Perkeni, 2011). Diabetic foot is the most dreaded chronic complication of diabetes mellitus since it entails a quite high risk of amputation as well as life threatening infections. It is estimated that around a third of DM patients will suffer foot problems (Yunir, 2011 in Persi, 2011). That complication can happen due to the occurrence of hyperglycemia and neuropathy, which cause various changes in skin and muscle, which in turn, result in uneven pressure distribution on the sole of the foot, and thus leads to the occurrence of ulcer (Waspadji, 2007).

There are four main pillars in type 2 Diabetes Mellitus (DM) disease management effort, namely meal planning (diet), physical exercise (sports), drug therapy (insulin), and education (Perkeni 2011). One of the educational materials is the importance of foot care and maintenance. The ability to do it is a preventive measure for persons with chronic DM, in order to decrease the possibility of diabetic foot ulcer complication (Vatankhah et al 2009). Diabetic persons should be taught the way to do early detection on foot abnormalities prior to the wound by examining the foot and doing regular foot maintenance every day, detecting any sore or something that may not be normal, which in turns giving chance to prevent larger sores. Those attempts are proven to significantly decrease the risk of amputation up to 85% (Yunir, 2011 in Persi, 2011, and Basuki, 2009).

Giving a good and proper health education can increase the DM sufferers’ awareness to change their behavior in
undergoing the given treatment. DM sufferers who do not receive health promotion have four times higher risk for complication than those who get health education. Patient educations are smoking cessation, optimize glucose control, appropriate footwear to manage foot structure and biomechanics and never go barefoot (ADA, 2012).

Health education method employed in this research is demonstration method. This method is chosen to make the participants understand the given material better since it employs realia and uses visualization media which can help the participants to comprehend the skills better and which, in psychomotoric way, is more effective in examining and caring for type 2 DM sufferers’ feet. There is high involvement level between the educator and the learners, and the learners are able to demonstrate or practice the skills given by the educator (Syafiful and Aswan, 2010). According to Hurrahman (2008), the psychological and paedagogical benefits of the demonstration method are the followings: the learners’ attention is more centered; the learner’s education process is more focussed on the given materials; and the impression and experience as the learning results are more embedded in the participants.

Several results emerged based on the interview of ten members of Indonesia Diabetes Association (Persadia). They stated that they never executed health education on foot care; three persons cared for their feet by washing, drying, and cutting their toenails and seven only washed and let their feet dry naturally. The researcher’s observation found the following data: five persons had dirty and long toenails and ten persons did not have perfusion nor sensation disturbance and did not show any infection. Thus, it is concluded that they already carried out diabetic foot care, but it was not yet optimal. Additional data given by the head of Persadia (Indonesia Diabetes Association) of the Local General Hospital of Gemolong stated that they never executed health education using demonstration method on the foot care of the type 2 DM sufferer.

Based on those reasons, the researchers were interested to conduct the research entitled “The Effect of Demonstration Method on the Ability to Care for Non-Ulcer Diabetic Foot of Patients with Type 2 Diabetes Mellitus”.

METHODS

This research used the quasi-experimental method with one group pretest-posttest design. The research population was all persons with type 2 diabetes mellitus non ulcer in Persadia of the Local General Hospital of Gemolong, Sragen, Central Java. It was executed from March to May 2015. The samples were thirty respondents with the inclusion criterion of type 2 DM non ulcer sufferers who were able to do their activities independently and the exclusion criteria of DM sufferers who did not join the entire research activities as well as those who resigned from their position as respondent. The research independent variable is the demonstration method on how to care for diabetic foot. The dependent variable is the ability to care for the feet of type 2 diabetes mellitus non ulcer sufferers. The instrument used in the research was an observation sheets/check list of the detailed Standard Operation Procedure on Diabetic Foot Care. It was the research instruments that had been employed by Istiqomah (2008) in her research, which resulted in the validity test result of 0.632 and the reallibility test result of 0.9519.

Pre-test was conducted prior to the research. After the health education intervention using demonstration method was executed, post-test on diabetic foot care using observation sheet/check list was applied. Paired t-test was used to analyze the data.

RESULTS

The objective of this research is to study the impact of demonstration method
on the ability to care for non-ulcer diabetic foot of patients with type 2 Diabetes Mellitus. The respondents’ characteristics are mainly females (86.7%), aged 46 -65 (66.6%), and their highest educational level was secondary high-school (40.0%). On average, the scores for the respondents’ ability to care for diabetic foot prior to and after the health education intervention using demonstration method differ. Detailed result can be perceived in table 1.

Table 1. The average distribution of the respondents’ scores on the ability to care for the diabetic foot based on the results prior to and after (N=30)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
<th>P value</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetic foot care ability</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before</td>
<td>7.33</td>
<td>1.295</td>
<td>0.237</td>
<td>0.000</td>
<td>30</td>
</tr>
<tr>
<td>After</td>
<td>14.73</td>
<td>2.728</td>
<td>0.498</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

On average, the ability to care for diabetic foot prior to intervention is 7.33 with the standard deviation 1.295. After the intervention, the average ability rises to 14.73 with the standard deviation 2.728. It is perceived that the measurement mean difference prior to and after is 7.40 with the deviation standard 1.754. The statistical test result score is 0.000. Thus, it is concluded that there is a significant difference between the ability to care for diabetic foot prior to and after the health education intervention using demonstration method to care for diabetic foot.

DISCUSSION
The research result shows that female respondents get the highest rank of 86.7%. It is in accordance with the research result gained by Trisnawati (2013) that stated that type 2 DM is more prevalent in females, which is brought by the decrease of estrogen hormone levels at menopause. It is in line with Lincoln’s statement (2010 in Heriani, 2013) that estrogen and progesterone hormones affect the way the cells respond to insulin. After the menopause, the hormone levels changes trigger blood sugar level fluctuations. It is also triggered by the higher fat percentage of females compared to that of males, which in turns, can decrease the insulin sensitivity in muscle and liver.

On average, the respondents’ age characteristic data is between 46– 65 age. Type 2 DM prevalences often occur after the age of 40. It is because, as people grow older, the body tissue ability to take the blood glucose steadily decreases (Suiraoka, 2012). The research findings are also prevalent with the research of Kekenusa (2013) which states that persons who are more than 45 year old have eight times the risk of getting the complication if compared to those under 45 year old.

There were two obese respondents while other were normal. They already managed their diet and routinely did DM exercises every Tuesday and Friday, so obesity can be avoided. According to ADA (2011), there are four components in DM management, two of which are diet arrangement and physical exercises. According to Center for Diseases Control and Prevention (2008), a combination between physical activity and the decrease on the number of the calory being eaten induces calorie deficit which in turn, brings about body weight.

The education characteristic of the respondents with secondary high school is owned by 12 of them (40.0%). Knowledge is closely related to education. It is hoped that the higher the people’s educations, the wider the knowledge they gained. The education level affects the knowledge they owned. The higher the education people gained, the easier for them to absorb new information (Notoadmodjo, 2010).
The research result showed that the respondents’ level of ability improves when compared to prior to the intervention. The p-value is 0.000. Because the significance is (0.000 <0.05), and thus, Ho is rejected while Ha is accepted. It proves the presence of the effect of demonstration method on the improvement of the ability to care for non-ulcer diabetic foot of DM patients with type 2. In other words, it shows that demonstration method significantly improve the ability to care for nch result is supported by Waspadji (2007), who stated that health education is education and training on knowledge and skills for the DM sufferers with the aim to support the changes of behavior and mindset, in order to reach for better quality of life. Continuous changes of behave individual and mindest executed by the patients can affect the ability of the indivual in caring for her/his own health. 

Through better knowledge, it is hoped that better end result on health management advice, especially on blood sugar control, will be gained. It is also hoped that the management of DM and caring for diabetic foot gained maximum result, and as such, prevent the occurrence of chronic diabetes complications with diabetic ulcer (Basuki, 2009). The research results executed by Istiqomah (2008) explains that health education intervention techniques using demonstration method shows significant result with the increased comprehension of 90%. Sagala (2011) and (Santyasa, 2007) state that demonstration method in delivering the information is clearer, more concrete, more interesting, and the participants were more active. It is suitable to teach material involving movements, including diabetic foot care. Through demonstration method the participants’ attention is more focussed, they got clearer perception based on the results of their observation, and questioned problems can be answered by examining the demonstration processes (Hasibuan and Moedjiono, 2012). Wibawa’s research results (2007) reveals that demonstration method is more effective to improve respondents’ knowledge on dengue hemorrhagic fever. Learning to care for diabetic foot will be more effective if it employs realia. Demonstration method to care for diabetic foot needs more than one sense. It coresponds to Dale’s statement (1969 in Wibawa, 2007), in which it is stated that the more senses being used to receive something, the more and the clearer are the knowledge/understanding gained. 

CONCLUSION AND RECOMENDATION

Health education using demonstration method can be employed to improve the ability to care for diabetic foot of type 2 DM sufferers. The result of this research will be employed as additional information in identifying diabetic ulcer and in caring for diabetic foot in order to prevent the diabetic ulcer on type 2 DM sufferers. Association of diabetic persons is hoped to be the place to share knowledge in improving the ability on DM management, in order to prevent chronic DM complication especialy on the problem of diabetic ulcers. Diabetic sufferer can do diabetic ulcer early prevention by regularly and individually executing foot care everyday. Subsequent researches may add other variables which may affect the foot care ability of non ulcer DM sufferers. The variables may cover knowledge, attitude, and compliance levels in doing foot care exercise to prevent diabetic ulcers. 

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