Effects of Dietary Pattern and Education on Glycemic Control in Patients with Type 2 Diabetes Mellitus at Dr. Sardjito Central General Hospital, Yogyakarta

Hemi Sinorita*, Saádah**, Setyowati Jazakillah**

ABSTRACT

Aim: to recognize the effect of education and diet on glycemic control in patients with type 2 diabetes mellitus at Dr. Sardjito Central General Hospital, Jogjakarta.

Methods: a cross-sectional study was conducted in 88 patients with type 2 DM who had routine visit to the outpatient clinic in Endocrinology Division of Dr. Sardjito Central General Hospital, Jogjakarta. As inclusion criteria, patients who had routine visit in 3 month continuously with fasting plasma glucose (GDN) ≤ 126 mg/dl was participated as a well glycemic control group, and the one with GDN > 126 mg/dl as poor glycemic control group. Data were recorded which included age, sex, period of DM, daily diet pattern, and education received.

Results: we found that glycemic control was not affected by sex (p=0.52) and age (p=0.38), but it was affected by period of DM (p=0.02). Glycemic control in the present study was affected by dietary pattern (p=0.01), but not by education (p=1.00).

Conclusion: the present study has found significant correlation between regulation of dietary pattern and glycemic control (p 0.01).

Key words: diet pattern, education, glycemic control.

INTRODUCTION

Diabetes mellitus is a lifetime disease to the patients. Therefore, its management requires a life-style modification. Management of diabetes mellitus is generally divided into primary and secondary therapy. The primary therapy includes education, diet, and exercises; while secondary therapy may include oral hypoglycemic drug or insulin, and pancreas implantation.1

Education program in management of diabetes demonstrates significant benefits, which had been demonstrated by worldwide studies with results that had shown decreasing number of hospitalized diabetic patients.2,3,4 A study conducted by DCCT group has demonstrated significant correlation between glycemic control and complication due to diabetes by using intensive education program.2

Regulation of dietary pattern is considered as a main treatment for patients with type 2 DM.5,6 Despite eating or diet regulation which is the most principal therapy in management of patients with DM, more than half of DM patients had failed in such diet program.7,8 Information provided to improve skill in diabetic management has been continuously updated, but yet there is no answer for a right plan. Thus, it is important for clinicians to keep doing on study research and to have constant interest on a novel diet planning approach for patients with diabetes mellitus.5

The present study was conducted to observe the effect of dietary pattern recommended by nutritional division which was compared to the effect of education on glycemic control. No such study was previously conducted at Dr. Sardjito Hospital Jogjakarta. Results of the present study may provide information about daily patient’s behavior which can be referred to improve beneficial services for diabetic patients.
METHODS

A cross-sectional study was conducted in patients with type 2 DM who had routine visit to the outpatient clinic in Endocrinology Division of Dr. Sardjito Central General Hospital, Jogjakarta. Antidiabetic agent(s) was given to be administered as recommended. Inclusion criteria of the present study include patients who had routine visit in 3 months continuously with fasting plasma glucose (GDN) ≤126 mg/dl was participated as a well glycemic control group, and the one with GDN > 126 mg/dl as poor glycemic control group. Data were recorded through medical interview which included age, sex, period of DM, daily dietary pattern, and education received. The education had been provided by educator team at Jogjakarta Diabetes center since 2001, including introduction of diabetes, medical treatment of diabetes, diabetes complication, and prevention of diabetic complication.

Data of subject characteristics were presented as mean value, standard deviation, and proportion. Correlation between the effects of dietary pattern and education on glycemic control was analyzed by chi-square test. P < 0.005 was considered as significant value.

RESULTS

Study was conducted for one-month period in October 2004, at outpatient clinic of Dr. Sardjito Hospital, Jogjakarta. During the study, there were 88 eligible patients with type 2 DM, i.e. 43 females (48.9%) and 45 males (51.1%). Mean value of subject age was 59.63 ± 8.86 (34 – 48 yr) and mean value of DM period was 7.66 ± 5.75 (4 months - 22 years). There were 41 subjects (46.59%) in the poor glycemic control group, and 47 subjects (53.41%) in well glycemic control group.

Table 1. Subject characteristics

<table>
<thead>
<tr>
<th>Variables</th>
<th>Poor GDN (n=41)</th>
<th>Well GDN (n=47)</th>
<th>p</th>
<th>95%CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Male</td>
<td>19</td>
<td>26</td>
<td>0.52</td>
<td></td>
</tr>
<tr>
<td>- Female</td>
<td>22</td>
<td>21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (year)</td>
<td>58.73±7.99</td>
<td>60.40±9.57</td>
<td>0.38</td>
<td>-5.44-2.09</td>
</tr>
<tr>
<td>Period of DM (month-year)</td>
<td>9.54±6.47</td>
<td>6.45±5.47</td>
<td>0.02</td>
<td>0.56-5.62</td>
</tr>
</tbody>
</table>

Table 2. Glycemic control and dietary pattern

<table>
<thead>
<tr>
<th>Dietary pattern</th>
<th>Well GDN</th>
<th>Poor GDN</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appropriate</td>
<td>26(29.54%)</td>
<td>8(7.04%)</td>
<td>0.01</td>
</tr>
<tr>
<td>Inappropriate</td>
<td>21(23.86%)</td>
<td>33(29.04%)</td>
<td></td>
</tr>
</tbody>
</table>

Table 3. Glycemic control and education

<table>
<thead>
<tr>
<th>Education</th>
<th>Well GDN</th>
<th>Poor GDN</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Received</td>
<td>35(39.77%)</td>
<td>31(35.23%)</td>
<td>1.00</td>
</tr>
<tr>
<td>Not received</td>
<td>12(13.64%)</td>
<td>10(11.36%)</td>
<td></td>
</tr>
</tbody>
</table>

In the present study, we found that glycemic control was not affected by sex (p=0.52) and age (p=0.38). However, it was affected by period of DM (p=0.02). Moreover, glycemic control on the present study was also affected by dietary pattern (p=0.001); while education had no effect on it (p=1.00).
DISCUSSION

In the present study, we found a significant correlation between regulation of dietary pattern and glycemic control (p=0.01).

Regulation of dietary pattern is considered as a main treatment for patients with type 2 DM, which leads to well glycemic control and controlled lipid level and body weight within the normal limits. Despite regulation of dietary pattern is considered as one of important therapy for the type 2 DM, most of recommended diets for patient are taken presumptuously albeit agreement that proper and cautious diet management is the main component in management of diabetes.

This fact is reflected in the present study, i.e. 47 subjects in the well glycemic control group, there are only 26 subjects (55.32%) who have successfully applied dietary pattern as recommended and 21 subjects (44.69%) have failed to have dietary pattern as recommended by nutritional division which includes 3 times of meal and 2 or 3 times of additional foods/snacks with recommended quantity, time, and type of food. The dietary pattern is self-managed by the subjects appropriate to their daily activities, i.e. by reducing their dietary consumption after having a large quantity of meal like after overly consumed foods in a party.

Hence, for each diabetic patient, the management of diabetes should cover nutritional assessment which is conducted cautiously and it should be implemented in a real dietary regulation program. A flexible dietary plan adjusted to the demands of novel study is an incessant challenge for dieticians. Concerning to making dietary plan as the daily activities for diabetic patients, the dieticians are demanded to recognize all components of diabetes management and to help individual patients with DM so that the patient’s life style can be adapted into diabetic life-style. To have a maximum benefit, it requires a team approach including reliable dietician and complete record. A medical nutritional therapy is a combination of diabetes management and self-managed education including process and system in which the nutrition control is pointed to the diabetic patient and recommended life style.

In the present study, there is no correlation between education and glycemic control (p=1.00). Of 67 subjects who had received education, only 35 subjects (52.24%) are considered as subjects with well glycemic control.

The purpose of the education program is not only to improve knowledge on diabetes but also to change patient’s behavior by providing support to their family and the patients themselves concerning to the disease in order to implement diabetic treatment into their life style. Education is defined as all things regarding to public campaign, brochures and banners, short meetings with health personnels, societies, and pharmacists. Telephone, internet, and seminars, are often used for quick delivering of an information.

The education program observed that has been studied in all groups of patients with DM has demonstrated significant benefits in glycemic control. DSME (Diabetes Self Management Education) is an important component in management of diabetic patients in order to improve the final result of diabetic management. DSME is a process that facilitates knowledge, skills, and capabilities required to diabetes self management. The process has combined needs, goal, and life experiences of diabetic patients, which is guided based on standard evidence-based medicine. DSME’s goal is to provide information support on decision making, self-treatment behavior, problem solving, and active team cooperation of health personnel, as well as to improve final result, health status, and quality of life. It is important to support the patient, since the present study has demonstrated that one of the etiologic factors causing uncontrolled blood glucose is depression experienced by diabetic patient.

It’s important to evaluate the drawbacks of education method which has been given so far to achieve final result, i.e. awareness to change their behavior adjusted to diabetic life-style.

The study has some or more weaknesses, such as no food recall data are attached on dietary pattern, no additional data of patient’s knowledge resulted from the education they received, no data for educational background, patient’s occupation, family’s role, lipid profile, and BMI. Such weaknesses may become a guide on the next study.

CONCLUSION

In the present study, we conclude that glycemic control is affected by dietary pattern which has statistically shown significant result (p=0.01).

REFERENCES


