EFFECT OF PORTION CONTROL PLATE FOR GLYCOSYLATED HEMOGLOBIN LEVELS IN PATIENTS WITH TYPE 2 DIABETES

Mei-Fang Yang, Wei-Ning Wang
Department of Food and Nutrition, Taichung Veterans General Hospital Taichung, Taiwan
Address : 1650 Taiwan Boulevard Sect. 4, Taichung, Taiwan 40705, ROC
Tel: 886-4-23592525 Ext. 2600 e-mail: mfyang@vghtc.gov.tw

BACKGROUND

Food control and accurate food portion exchange are very important to diabetes education. However, food exchange lists, used on diabetes education are complicated, time-consuming and frustrated. Therefore, developing simple and doable strategy of food portion control should be clinically effective to improving glycemic control.

OBJECTIVE

The aim of this study was to investigate the effectiveness of food portion control plate for diet education on body weight, body composition, glucose and lipid compared to conventional food exchange system in patients with type 2 diabetes mellitus.

METHODS

We randomly assigned 63 outpatients with type 2 diabetes mellitus who taking insulin over 6 months still suffer poor glycemic control (HbA1c 7%~10%,) to two educated groups. The 30 of them were assigned to the daily use of a commercially available portion control plate for 6 months (intervention group), the other 33 of them were assigned to usual care in the form of dietary teaching for 6 months (usual care control group).

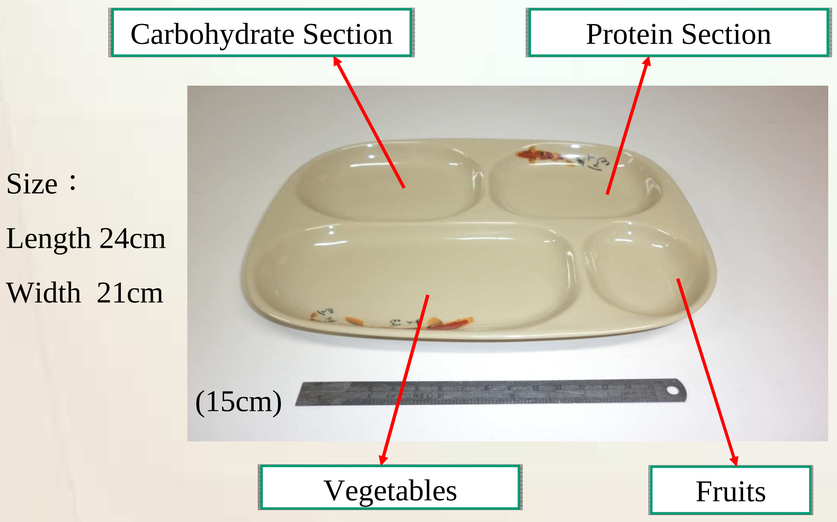

Figure 1. Portion Control Plate

Table 1. Baseline Patient Characteristics

Characteristic	Intervention (n=30)	Control (n=30)
Age (year)	59.1 ± 11.0	65.4 ± 12.9
Sex		
Male	18(60.0%)	20(60.6%)
Female	12(40.0%)	13(39.4%)
Duration of DM (year)	9.4 ± 1.7	15.2 ± 7.1
Body weight (Kg)	74.8 ± 15.9	68.8 ±14.6
Body mass index	27.6 ±4.3	26.3 ±4.3
Body fat (%)	30.9 ± 6.2	30.0 ± 8.5
Blood pressure (mmHg)		
Systolic	137.1 ± 17.5	130.2 ± 17.0
Diastolic	79.5 ± 11.9	75.6 ± 11.1
Fasting blood sugar (mg/dl)	169.2 ± 54.7	164.5 ± 73.9
Glycosylated hemoglobin level (%)	8.8 ± 0.7	8.5 ± 1.1
Total cholesterol (mg/dl)	162.7 ± 39.6	164.2 ± 38.6
Triglycerides (mg/dl)	148.9 ± 87.0	143.1 ± 121.9

RESULTS

The intrapatient change in glycosylated hemoglobin level was not different between intervention group (mean±SD, 8.8±0.7%(pre) vs 8.5±1.2 %(post), P =0.113)and control group (mean±SD, 8.5±1.1%(pre) vs 8.4±1.6%(post), P =0.671). No significant difference was seen between groups with respect to change in body weight, body fat, blood sugar, cholesterol, and triglyceride. Approximately 90% of intervention group felt that it was convenient to use portion control plate, but 74% patients used plate for 0-3 times a week.

Table 2. Changes From Baseline After Six Month

	Intervention (n=30) Mean ± Std	Control (n=33) Mean ± Std	P-value*
BW (Kg)	-0.40 ± 1.86	0.44 ± 2.37	0.139
BMI(Kg/m^2)	-0.13 ± 0.70	0.17 ± 0.90	0.171
BF(%)	0.31 ± 1.34	0.24 ± 2.49	0.901
SBP (mmHg)	0.93 ± 17.59	-2.60 ± 17.49	0.447
DBP (mmHg)	0.93 ± 11.99	-2.17 ± 12.32	0.337
FBS (mg/dl)	-15.18 ± 73.37	-29.09 ± 85.11	0.501
HbA1C(%)	-0.33 ± 1.05	-0.08 ± 1.59	0.497
CHOL (mg/dl)	-0.04 ± 36.79	-0.38 ± 22.44	0.969
TG (mg/dl)	-1.83 ± 80.69	-1.57 ± 79.50	0.991

*For differences between the 2 groups, P<0.05

Table 3. Perception of Using Portion Control Plate (N=30)

	Yes	No
Help to control blood sugar	22(73.3%)	8(26.7%)
Help to control caloric intake	22(73.3%)	8(26.7%)
Let me eat more vegetables	21(70.0%)	9(30.0%)
Let me eat full	29(96.7%)	1(3.3%)
Convenient to use	27(90.0%)	3(10.0%)

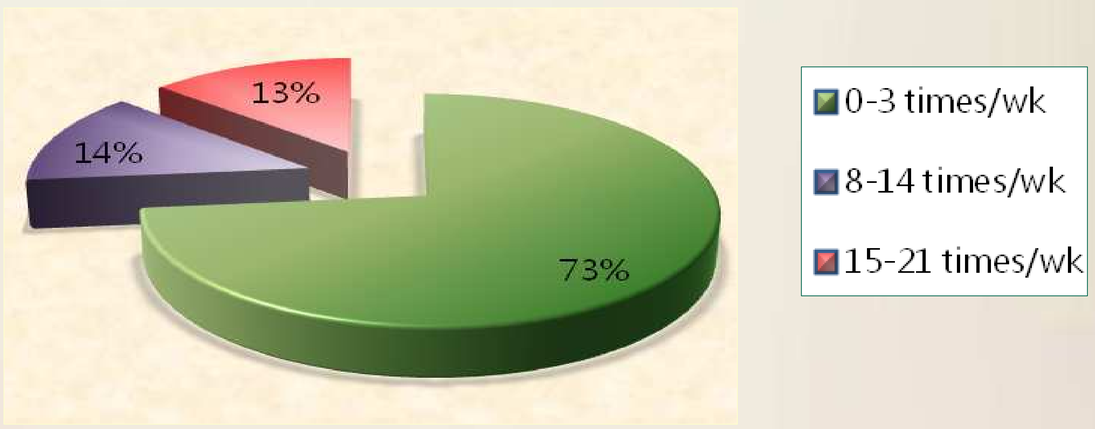

Figure 2. Weekly Frequency of Using Portion Control Plate in Intervention Group (N=30)

CONCLUSIONS

The effectiveness of glycemic control in patients with type 2 diabetes mellitus was no difference between portion control plate and usual care in the form of dietary teaching. Dietitian can choose one of those two for individual patient need.

KEYWORDS

Type 2 diabetes mellitus, Portion control plate, Glycosylated hemoglobin