OP 17

The Medical Nutrition Therapy in Diabetes Quality Improvement Program in the Community Primary Care Clinics, Taichung City - Based on the Diabetes Case Management Program 2001, Taiwan

Martin M-T Fuh, HY Chang, HY Su, CT Chang, RH Chen, CC Chen, LW Hsieh, CC Lee, CC Lin

China Medical University Hospital, Taichung, Taiwan

Background and Aims. *In order to assess the nutritional status of a diabetes cohort following by the MNT intervention and ensuing demonstration of quality of diabetes care, a nationally standardized, multi-professionally integrated, and patient-center healthcare program – Diabetes Case Management Program (DCMP) 2001 was implementing at the community primary care clinics, Taichung City.*

Materials and Methods. *From Jul. 2003 to Jun. 2005, around 1400 diabetes beneficiaries were randomly and cumulatively recruited in DCMP 2001 via monthly outpatient visits in 24 community primary care firms at Taichung City, Mid-Taiwan. Accordingly, the diabetes should tri-monthly be able to have dietary consultation after seeing physician. The nutritional assessment and medical nutrition therapy (MNT) intervention were individually recommended after adequate record of personal dietary history. All data were presented as mean±SEM. Comparison between sexes, Student's t test was used for continuous variables, and Chi-Squre test was used for categorical variables. The significant level was set at $P<0.05$.*

Results. *The dietary consultation has been conducting within the community computerized primary care settings with partially–designed IT and database depository in the Primary Diabetes Care Association (PDCA), Taichung City. The distributions of the differences (A-R) between actual (A) and recommendatory (R) total daily caloric intakes indicated patients' adherence of eating habits to MNT (Fig. 1). The distributions of percentage of macronutrients in daily caloric intakes in this community diabetes cohort demonstrated the eating styles as well (Fig. 2). The actual total daily caloric intakes were significantly different in both sexes at different ranges of age . Furthermore, the gender differences of distributions of A-R and percentages of macronutrients in daily caloric intake were also shown significant statistically .*

Conclusion*. Based on these cross-sectional data, the results shown that there were more than 40% of total cases in this community diabetes cohort had their A-R daily caloric intakes either above the level of + 200 kcal or below the level of -200 kcal of the MNT recommendation. As a matter of fact, the distribution of percentages of macronutrients in daily caloric intakes, however, clearly indicated that a considerable opportunity existed for dieticians to improve the quality of nutritional care after implementing DCMP 2001. Moreover, the relationship between eating habitudes and metabolic control needs to be further elucidated at the community primary care level.*

Full text. e-Journal: *http://www.medassocthai.org/journal*

OP 18

Development of a Food Service System that Enables Consumers to Plan and Assess Their Diet and Provides Practice in Healthy Eating

Noriko Sudo[1], Tetsuji Yokoyama[1], Kayoko Sato[1], Shunsaku Mizushima[1,2]

[1]National Institute of Public Health, [2]Japan NIKKOKUTRUST, Saitama Prefecture, Japan

Background and Aims. *Having practice in healthy food choice and dietary assessment could lead to develop healthy eating habits and contribute to prevent diabetes and other chronic diseases. This report described a new food service system that enables consumers to plan and assess their diet easily.*

Materials and Methods. *The subjects were nine men and seven women aged 35 to 54 years old who participated in a one-week international training course on chronic disease prevention. The newly developed food service system which combined with food records method (FR) was provided as an optional practice in nutritional management of their diets during the course. Its usefulness and applicability in their countries were examined in this pilot study from their replies to the feedback sheets.*

Results. *Participation rate in FR was 81% and they found its concept and implementation were easy since energy and macronutrient intakes could be estimated without food-weighing scales or food composition tables. They also appreciated its helpfulness in food choice since foods were served in a portion size by five food groups with the cards that showed unit content per serving (one unit = 80 kcal). All they had to do were: (1) Find out how many units they need to eat, (2) Choose food according to the units, (3) Record how many units they took from each group.*

Conclusion. *Although validation of this system and its applicability in other population should be further examined, having practice in healthy eating using this system could promote nutritional education on the institutional setting in Japan.*

Full text. e-Journal: *http://www.medassocthai.org/journal*

OP 19

Prevalence of and Factors Associated with Diabetic Retinopathy

Thanya Chetthakul, Thongchai Prathipanawatr, Chaicharn Deerochanawong, Somponse Suwanwalaikorn, Petch Rawdaree, Sirinate Kritiyawong, Yupin Benjasuratwong, Gobchai Puavilai, Pongamorn Bunnag, Chardpraorn Ngarmukos, Natapong Kosachunhanun, Sathit Vannasaeng, Nattachet Plengvidhya, Rattana Reelawattana, Puntip Tantiwong, Chulaluk Komoltri, Wannee Nitiyanant

Department of Medicine, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, Thailand

Background and Aims. *Diabetic retinopathy (DR), a sight-threatening, chronic complication of diabetes mellitus (DM) remains the leading cause of blindness in working-aged people. It can be prevented with appropriate medical and opthalmological care. Objective To determine the prevalence of and factors associated with DR in Thailand.*

Materials and Methods. *A cross-sectional, multicenter, hospital-based studies were carried out from April to December 2003. Diabetic patients in diabetic clinics of 11 tertiary centers were registered. Retinopathy of participants was evaluated by the opthalmologists.*

Results. *There were 7,119 of a total of 9,419 diabetic patients received retinal examinations, this composed of 4,604 patients with type 2 diabetes and 347 with type 1 diabetes. The prevalence of DR was 30.7%. In patients with type 2 diabetes, 22% had non-proliferative DR (NPDR), 9.4% had proliferative DR (PDR), 44.3% had cataract, and 1.5% had DM related legal blindness. In patients with type1 diabetes, 10.9% had NPDR, 10.7% had PDR, 16.7% had cataract, and 1% had DM related legal blindness. In patients with type 2 diabetes; mean age, duration of diabetes, mean fasting plasma glucose (FPG), mean HbA1c, mean serum LDL, mean serum triglyceride (TG) and mean systolic blood pressure (BP) levels were significantly higher in patients with DR than in those without DR. Adjusted for age, duration of diabetes, HbA1c and systolic BP, factors (adjusted odd ratio [95% confidence interval]) associated with DR were duration of diabetes 10-14.9 years (2.4 [1.7-3.5]), 15-19.9 years (3.9 [2.7-5.7]), ? 20 years (5.7 [3.9-8.3]), latest HbA1c > 7% (1.5 [1.4-1.8]), systolic BP ? 140 mmHg (1.6 [1.4-1.8]), positive urine microalbuminuria (1.6 [1.3-2.0]), positive proteinuria (4.2 [3.0-5.8]). In patients with type 1 diabetes; mean age, duration of diabetes, mean BMI, mean serum TG, mean systolic BP and mean diastolic BP levels were significantly higher in patients with DR than in those without DR. Factors associated with DR were female sex (2.5 [1.2-4.9]), duration of diabetes 5-9.9 years (3.6 [1.3-9.9]), 10-14.9 years (6.1 [2.1-17.5]), 15-19.9 years (15.4 [5.0-47.7]) and ? 20 years (18.2 [5.6-59.7]). The latest HbA1c and BP did not emerge as factors associated with DR in type 1 diabetic patient.*

Conclusion. *Diabetic retinopathy affects about one third of diabetic patients in Thailand. In both type of diabetes, factor associated with DR is duration of diabetes which is more than five years. Latest HbA1c level, systolic BP, positive microalbuminuria and positive proteinuria are found to be factors associated with DR in type 2 diabetes. Regular screening for DR and more aggressive management of metabolic factors should be done to reduce the prevalence of DR.*

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OP 20

Mediteran Diet in Hospital – Our Experience

Dario Rahelic, Eva Pavic,
Blazenka Dusper, Lada Bradic, Velimir Bozikov

Dubrava University Hospital, Zagreb, Croatia

Background and Aims. *Scientific researches confirmed favourable influence of mediteran diet on chronic diseases, especially on diabetes mellitus. Mediteran diet is applicable in our hospital since 2002 and clinical dietetics recommend mediteran diet to patients with diabetes mellitus. The aims of this study were to determinate contentment of diabetic patients with mediteran diet, to compare expenses of mediteran and standard diabetic diet and to investigate the effectiveness of mediteran diet in hospitalized patients after 6 months.*
Materials and Methods. *Ninety adult patients (61% males and 39% females, age 33-71) with type 2 diabetes mellitus who were hospitalized due to regulation of glycaemia entered the study. Fifty patients were supplied with mediteran diet and fourty patients were supplied with standard diabetic diet. First day of hospitalization patients filled out poll about nutritional habits. All patients were educated about diabetic diet by clinical dietetics.Patient were controled in the outpatient ambulance six month after hospitalization.*
Results. *Despite fact that Croatia is mediteran country 45% of patients declared that they did not have informations about mediteran diet before hospitalization. Comparison of standard diabetic and mediteran diet showed that mediteran diet was 7% more expensive than standard diabetic diet. After six month patient filled out poll about nutritional habits again and poll showed that 68% of patients who were supplied with mediteran diet followed diet from hospital experience and 44% of patients who were on standard diabetic diet during the hospitalization followed the diet from hospital experience.*
Conclusion. *Mediteran diet has benificial effect on regulation of glycaemia in patients with diabetes mellitus. The 7% more cost of mediteran diet in comparison with standard diabetic diet after six month resulted with better following of diet from hospital experience in patient who were supplied with mediteran diet in comparison to patients who were supplied with standard diabetic diet during the hospitalization. Mediteran model of diabetic diet should be consider in education and in hospital nourishment of patients with diabetes mellitus as part of treatment and improvement quality of life in diabetic patients.*

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OP 21

Comparative Plasma Glucose and Triglyceride Responses in Patients with Diabetes Mellitus to Diabetrimr Instant Noodles and a Locally Available Popular Instant Noodles

Shankar Praveen, Choy MY, Cheong M, Yew LH, Authilakshmy,
Sri Rahayu Masjum, Lee PL, Lim HS.

Diabetes Center, Changi General Hospital, Singapore, Singapore

Background and Aims. *Instant noodles are a common convenience food that people in many Asian countries eat. The majority of these are made from highly refined carbohydrate like refined white rice or wheat flour and are deep-fried in palm oil to achieve short cooking time. They, therefore, induce a rapid and large increase in plasma glucose levels upon ingestion. Cassia Foods Private Limited in Singapore has developed a brand of instant noodles called DiabetrimR that has considerably less carbohydrate, is 95% fat free, contains 29.2 grams of fiber per 100 grams and therefore has a relatively smaller caloric content. The aim of this study was to ascertain the postprandial glycemic and triglyceride rise following ingestion of DiabetrimR instant noodles compared to that after ingestion of a popular brand of locally available instant noodles.*

Materials and Methods. *The study was a single-blind, randomized cross-over design. A total of 30 patients were recruited. All patients had type 2 diabetes mellitus on either diet or sulphonylurea. Patients on acarbose, metformin, thiazolinedione or insulin were excluded. They were randomly assigned to either take DiabetrimR instant noodles (DN) followed by a popular brand of locally available instant noodles (PN) at least one day apart or vice versa. The patients acted as their own control and they were blinded to the type of noodles they were served. Plasma glucose level was measured at baseline (after overnight fast) and at 1-hour and 2-hours post-ingestion. Plasma triglyceride was correspondingly measured at baseline and at 2-hours post-ingestion. Sulphonylurea therapy was withheld on the morning of the study. The primary end points were changes in plasma glucose level at 1-hour postprandial and 2-hours postprandial from baseline and changes in plasma triglyceride levels at 2-hours postprandial from baseline.*

Results. *There were 18 male and 12 female patients. Their mean age was 50.7 years. Their mean HbA1c and mean fasting plasma triglyceride levels done over the last three months before the study entry date were 7.2% (NR: 4.4-6.4%) and 2.5 mmol/L respectively. Sixteen patients were on diet control and 14 were on sulphonylurea therapy. After ingesting the DiabetrimR instant noodles (DN) plasma glucose (mean ± SD) rose from 7.86 ± 2.47 mmol/L to 9.96 ± 2.43 mmol/L in 1 hour and 9.29 ± 2.74 mmol/L in 2 hours. After ingesting a popular brand of locally available instant noodles (PN) the corresponding rise was from 7.73 ± 2.21 mmol/L to 12.28 ± 2.64 mmol/L and 11.97 ± 3.49 mmol/L respectively. The rise in plasma glucose from baseline 1-hour after ingesting DN was 54% less than after ingesting PN (mean ± SD 2.10 ± 1.14 vs. 4.55 ± 1.40 mmol/L respectively) (mean difference in rise 2.45 ± 1.28 mmol/L; $p < 0.001$; 95% CI 1.97-2.93). The rise in plasma glucose from baseline 2-hours after ingesting DN was 59% less than after ingesting PN (mean ± SD 1.43 ± 1.06 vs. 3.47 ± 1.92 mmol/L respectively) (mean difference in rise 2.04 ± 1.48 mmol/L; $p < 0.001$; 95% CI 1.48-2.59). The mean rise in plasma triglyceride levels 2 hours postprandial from baseline was negligible and similar for DN and PN (0.22 ± 0.80 mmol/L and 0.22 ± 0.58 mmol/L respectively)*

Conclusion. *Compared to a popular locally available instant noodle, DiabetrimR instant noodles demonstrated significantly lower 1-hour and 2-hours postprandial rise in plasma glucose. It offers a viable dietary option to patients with diabetes mellitus, especially those who have problems with postprandial glycemic control.*

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OP 22

Physical Activity: Plurality of Issues Constitutive of Its Implementation In Type 2 Diabetes, A Qualitative Study

Balcou-Debussche M, Debussche X, LeMoullec N, Favier F

Sa-So laboratory UPJV Amiens , Saint Denis, Reunion

Background and Aims. *Beneficial effects of physical activity in type 2 diabetes are well known, but practical implications for patients in daily life are questionable. REDIA-prev 2 randomised study was undertaken in order to test the effects of therapeutic patient education managed in hospital setting. The aim of the present qualitative study was to identify among a subset of patients included in REDIA-prev 2 the complexity of elements that intervene as obstacles or incentives for putting into practice physical activity in everyday life.*
Materials and Methods. *Forty-one type 2 diabetic patients (53±1.9 yrs, 17-72), issued from low or medium socio economic groups, were enrolled.They attended to a 5 day-long educational cycle in hospital setting. Semi structured interviews were conducted at home 2 to 3 weeks after hospitalisation, completed by a 4 hour-long observation of effective practices 3 to 4 weeks later. Thematic analysis of interviews was performed to identify emerging themes. Observations of practices were guided through a grid including : geographic location, housing type, ordinary activity, daily organisation, house equipment, social network, familial and professional concerns.*

Results. *Several elements convene diversely to constitute interdependency networks: social relationships scheme (family, neighbourhood), social support, social representations, differentiated individual dispositions, and social occupations in relation to essential activities (job, children, catering...). Discourses on physical activity take reference from hospital (57%) and personal experiences (38%), much more than from other health professionals (7%) and family or relatives (6%). Patients living in rural or semi-rural areas are more disadvantaged as regard to exercise than in urban area. Nature and amount of effective physical activity depends on the presence of diverse elements, on an individual and contextual point of view: the question of exercise cannot be separated from environment issues and from the weight of representations such as those linked to the body, the social place of physical activity, the role of women. The individual capacity to induce necessary changes and the possibility from social network to favour, integrate, accompany, and maintain pertinent adjustment are of importance. As a whole, physical activity is feeled either as a necessity, a pleasure, or a benefit in managing the disease.*

Conclusion. *The specific relationships that each patient bind with physical activity are constitutive of the effective potential implementation of practices. Health professionals need to integrate obstacles and resistances and have to consider the individual and social representations to help their patients implement these practices.*

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OP 23

The Effect of a Daily Walk on Glycemic Control and Aerobic Capacity in Newly Diagnosed Type 2 Diabetic Patients

Kang Il Lim [1)], Hee Jung Ahn [1)], Hyo Jeong Kim, Kang Seo Park, Kyung Wan Min, Kyung Ah Han

Diabetes center, Eulji General Hospital [1)], Dep. Of Internal Medicine Eulji medical college
Diabetes center, Eulji General Hospital, Seoul, South Korea

Background and Aims. *A recommendation to accumulate 10000steps throughout the day has many advantages. This level of steps per day is approximately equivalent to an energy expenditure of 300 and 400kcal/day. Furthermore, regular walking for exercise in diabetes care reduces blood glucose levels and improves insulin sensitivity. However, it is not known how many additional steps per day needed to attain effective treatment goals for T2DM population. The purpose of this study was to investigate the effects of increased walking step per day on glycemic control and cardiorespiratory fitness improvement in patients with newly diagnosed T2DM.*

Materials and Methods. *We included thirty Korean patients aged 46-62 years who presented with new-onset T2DM and subsequently followed for three months at the Eulji medical diabetes center. They were encouraged >10000 step/day to walk, and daily walk steps were recorded using pedometers. A gradual loading exercise test was administered on an electrically stationary upright cycle ergometer to estimate the rate of oxygen consumption (VO2), exercise time, load, and metabolic equivalent (MET). Before and after intervention, metabolic profiles and aerobic exercise level were evaluated for all subjects. Subject descriptive comparisons were made with paired t-tests. The pearson's correlation coefficients were calculated as well to analyze the linear relationship among variables.*

Results. *The results showed that steps per day were increased, and body mass index, aerobic exercise level and glycemic control were significantly improved. However, lipid profiles were not affected during exercise intervention. There was a positive correlation between increases in steps per day and changes of aerobic capacity such as peak VO2 ($r = 0.484$, $p < 0.01$). Otherwise, increases in steps per day was negatively correlated with changes in HbA1c ($r = -0.761$, $p < 0.01$). Table 1. Major clinical profiles and changes in subjects with walking exercise.*

	Baseline	12 wks	p
BMI (kg/m^2)	24.9 ± 3.0	23.8 ± 2.9	< 0.001
Waist circumference (cm)	85.5 ± 7.4	82.9 ± 8.0	0.003
Fasting blood sugar (mg/dl)	143.4 ± 29.9	117.9 ± 18.3	< 0.001
PP2 (mg/dl)	235.4 ± 83.9	130.6 ± 31.4	< 0.001
HbA1c (%)	7.9 ± 1.8	6.5 ± 1.0	0.003
Peak VO2 (ml/kg/min)	17.1 ± 3.8	20.0 ± 5.0	< 0.001
Exercise time (min)	498.3 ± 201.8	589.1 ± 254.4	0.001
Exercise load (watt)	85.2 ± 35.4	99.4 ± 40.2	0.001
MET	4.9 ± 1.1	5.7 ± 1.3	< 0.001
Steps per day	5403 ± 2644	14466 ± 4727	< 0.001

Values are mean ± SD

Conclusion. *This study suggests that both glycemic control and aerobic capacity are improved with increases in the number of steps per day walked. We concluded that walking more steps per day is necessary for T2DM patients to manage a blood glucose level and aerobic capacity. Additionally, using pedometer and monitoring a daily walk activity can be recommended as a simple and accurate method of evaluating exercise volume.*

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