



Talking about Determination of an Appropriate Amount of Energy Intake and Actual Meal for the Diabetic and/or Obesity

Hiroshi Bando*

Department of Endocrinology, Tokushima University/Medical Research, Tokushima, Japan

ABSTRACT

Adequate nutritional therapy and research has been crucial for diabetes and obesity. Recent topics include Calorie Restriction (CR) and Low Carbohydrate Diet (LCD). It is rather difficult to calculate energy intake in person and also to calculate the energy of the meal. There are some methods for investigating these factors, such as the Total Energy Expenditure (TEE), Physical-Activity-related Energy Expenditure (PAEE), Metabolic Equivalent (MET) values and the Doubly-Labelled Water (DLW) method. Multi factors would be involved in the study. Further investigation would be expected for determination of an appropriate amount of energy intake and meal energy in the future.

Keywords: Energy intake; Total energy expenditure; Type 2 diabetes mellitus; Calorie restriction; Low carbohydrate diet

INTRODUCTION

Diabetes has been a major medical problem in the world. There are various different diabetic and obesity situations in the world. It is important to investigate the research in fundamental therapy including the aspects of medicine, energy intake (meal) and exercise. In nutritional energy intake or meal study, it is ideal to study the detail difference in medical diet (nutrition), population habit and region in the world. In general, the continuing adequate and proper meal was used for an easier way of the fundamental therapy in diabetes and/or obesity than nutritional energy intake [1].

Obese people with type 2 diabetes typically lose less weight in obesity treatments than do obese people without type 2 diabetes. It has been proposed that a 15%-20% reduction in weight could result in remission and a return to normal pancreatic function remission of type 2 diabetes [2].

LITERATURE REVIEW

The acceptability of VLEDs in individuals with and without type 2 diabetes is not well understood. While VLEDs have been found to be acceptable in obese people with and without type 2 diabetes, during the course of a 12-week VLED, participants'

appetite, nausea or vomiting, bowel function, emotional eating and social eating all decline in terms of acceptability as judged by evaluation of the product's flavor [3]. Either a very small number of trials were included in previous systematic reviews of VLEDs or the focus was broader and included other weight reduction techniques. Some pertinent reviews are out-of-date and have a number of methodological flaws, like meta-analyses that combine controlled and uncontrolled trials. The current systematic review and meta-analyses of VLED-using controlled trials in overweight or obese individuals with The purpose of type 2 diabetes was to assess the effectiveness of VLEDs for glycaemic management and weight loss. In order to optimize VLEDs and enhance the future intervention experience, it also sought to give an account of how well-liked VLEDs are among individuals with type 2 diabetes [4].

Regarding nutritional therapy for diabetes/obesity, the proper energy intake amount seems to be one of the fundamental principles. The standard formula has been used as follows: Energy intake per day=standard weight (kg) × physical activity level (kcal/kg), (light exertion 25 to 30, ordinary exertion 30 to 35, heavy exercise 35 and more). In general, it is 1,600 to 2,000 kcal/day for men and 1,400 to 1,800 kcal/day for women. However, this figure has been actually estimated to be

Correspondence to: Hiroshi Bando, Department of Endocrinology, Tokushima University/Medical Research, Tokushima, Japan; E-mail: pianomed@bronze.ocn.ne.jp

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remarkably lower than the meal intake standards of the ministry of health, labor and welfare [5].

Recent topics about nutrition include the comparison between Calorie Restriction (CR) and Low Carbohydrate Diet (LCD). Diabetes has been a major medical problem in the world. Treatment includes three factors, which are diet, exercise and medicine. Among them, continuing adequate and proper meal is the fundamental therapy of diabetes [6].

DISCUSSION

As to the nutritional therapy for diabetes, proper energy intake amount has seems to be one of the fundamental principle. The formula is in the following calculation: Energy intake per day=standard weight × physical activity amount (light exertion 25 to 30, ordinary exertion 30 to 35, heavy exercise 35 and more). In general, it is 1,600 to 2,000 kcal/day for men and 1,400 to 1,800 kcal/day for women. However, this figure has been estimated to be significantly lower than the meal intake standards of the ministry of health, labor and welfare [7].

There was a systematic review on CR and LCD Calorie Restriction (CR) meals and Low Carbohydrate Diet (LCD) meals was conducted for Japanese type 2 diabetic patients. Furthermore, several reports were found concerning the efficacy of LCD As a result, no related papers existed in CR meals and the existence of multiple related papers was revealed in LCD meals. Authors et al. reported the continuation of LCD for 2773 cases with clinical efficacy [8].

As to the basic aspect of CR and LCD, energy balance would be considered. There is a question in. The light of for theoretical evidence of this calculation. Do diabetic patients have less some medical reports would be necessary regarding less requirement and/or consumption calorie a day than in diabetic patients than healthy subjects? There have not found such reports so far however, such reports have not been found. Recently, a report has been found showed that, in which the energy consumption of Type 2 Diabetes Mellitus (T2DM) diabetic patients turned out to be exactly equivalent to healthy subjects by a detailed method called double labeled water method [9].

It is rather difficult to calculate and evaluate energy intake in the life study of normal subjects a normal human life study. It is not a study of meals for laboratory animals or not like a space food. Furthermore, it is also difficult to calculate the energy of the meal of the people. The evaluation by the meal recording method can be checked grasped only about 80% ± 20% [10].

In order to assess the Total Energy Expenditure (TEE) and Physical-Activity-related Energy Expenditure (PAEE), a respiratory chamber has been used more than over a 24 h period. Study on accelerometry showed Metabolic Equivalent (MET) values. This method, however has been not easy to study the detail data because of its expensive However, this apparatus needs large-scale facilities.

By using the Doubly-Labelled Water (DLW) method, the relationship between obesity and daily physical activities have been investigated. It showed the necessity of discussion with not

only BMI, but also Fat Mass Index (FMI, FM/height²) and body fat percentage (%BF) [11].

As a result, TEE was not significantly different between patients with Type 2 Diabetes Mellitus (T2DM) and healthy controls. Similar results was shown in the energy and macronutrient intakes. Consequently, when age and Body Mass Index (BMI) are matched, both groups showed no significant difference in TEE and self-reported energy intake. These findings suggest that the significance of providing calorie-restricted CR meal diets on Japanese T2DM patients may be theoretically in doubt [12].

From actual medical practice, As to CR and LCD, clinical effects between CR and LCD were compared as the randomized trials of dietary interventions. The results were that LCD showed significant decrease of HbA1c and TG and larger degree than those of CR.

In 2011, “clinical practice guidelines we can trust” was presented by the committee on standards for developing trustworthy clinical practice guidelines; institute of medicine of United States. Among them, the committee stated that the results would be scientifically supported by systematic reviews. Successively, international standards for clinical practice guidelines were presented with similar situation. This also has also informed broadly the necessity of scientific evidence by systematic review in the world. As a matter of fact, the number of the registered medical guidelines has have decreased to approximately half than before, in which where it was 2619 in 2014 and 1440 in 2018.

On the other hand, in United States, the guideline of the diabetic nutrition therapy was reported by the study of the systematic review in 2012. This was influential to the diabetic practice with the evidence-based medicine. Successively, recommendations and guidelines for diabetic nutrition therapy were reported, which has been the standard treatment and management so fars.

In the case of the European Diabetes Association, it has been clearly stated that control and management of energy intake is unnecessary for diabetic patients with BMI less than 25. Diabetes and nutritional therapy guidelines are different according to region and country. One of the reasons may be that the proportion of carbohydrate intake is has been different for the actual meal contents in each country.

Here, reference data related to CR and LCD are shown. Authors and collaborators colleagues have continued comparative clinical studies of CR, LCD and M value that is calculated from the fluctuation in blood glucose seven times per day). Diabetic patients were provided CR (carbohydrate 54%) on day 1, 2 and super-LCD (carbohydrate 12%) on day 3, 4. They were categorized into 3 groups (low, middle, high) according to the level of Morbus (M) value. The data of HbA1c, blood glucose after 2 hours after of breakfast and M value were shown in day 2 vs. day 4 as follows: i) Low group: 6.1%, 168 mg/dL vs. 118 mg/dL, 26 vs. 10, ii) Middle group: 7.9%, 218 mg/dL vs. 142 mg/dL, 94 vs. 19, iii) High group: 9.3%, 330 mg/dL vs. 165 mg/dL, 343 vs. 84, respectively. Thus, the LCD dramatically improves improved the glycemc variability in only 2 days.

CONCLUSION

In summary, it is actually not easy difficult to calculate and estimate the nutritional energy intake and also to calculate the energy of the meal. Proper energy intake in diabetic patients. Therefore, in a comparative study of CR and LCD, multi factors would be involved in the changes of glycemic response and variability in a comparative study of CR and LCD. Lots of studies such as CR vs. LCD, Meal Tolerance Test (MMT) and various types of meals in various regions of the world, would be expected for nutritional therapy for diabetes. Determination of an appropriate amount of energy intake and actual meal energy for the diabetic and/or obesity in the future across the world.

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