

# Diet History and Diabetes Occurrence

Davallo P\*, Ahmadi R, and Poorsoltan N

**Abstract**—Diabetes mellitus is a major health problem in all nations. The aim of this study was to assess diet history in diabetic patients. This was a retrospective cross-sectional study conducted on diabetic patients. Data collection methods were questionnaire and interviewing which was designed by the project researchers. Patients' usual dietary intakes were assessed by means of 168-items food frequency questionnaire (FFQ). Occurrence of diabetes was more common in females than males. Low vegetable consumption in type I diabetes and high meat consumption in type I and II of diabetes is associated with the development of the disease. With regards to these data, following a healthy diet pattern including high vegetable and low meat consumption is recommended for diabetes management.

**Keywords**— Dietary History, Diabetic Patients, Iran.

## I. INTRODUCTION

**D**IABETES is a group of metabolic disease characterized by hyperglycemia and metabolic changes which could be the result of insufficiency or defect in insulin secretion, insulin action or both [1], [2]. It's a worldwide prevalence disease with growing trend and is more prominent in developing countries [3]-[5]. Epidemiologic studies indicate diverse distribution of diabetes in Iran [6]. But in general, prevalence of diabetes in Iranian adults is higher in the Islamic Republic of Iran than in other developing countries [7]. Hyperglycemia [8], nephropathy, retinopathy and autonomic and peripheral neuropathy [9], urinary, cardiovascular [10] and sexual dysfunction [11] are main symptoms of diabetes.

Global studies indicate that following western dietary pattern plays an important role in incidence and progression of diabetes [12]. Healthy diet plays an important role in management and prevention of diabetes [13], [14]. The main aim of this study was to assess diet history of type I and II diabetes in North-western Iran.

## II. MATERIAL AND METHODS

This was a retrospective cross-sectional study conducted on type I and II diabetic patients (from newly diagnosed to severe stage) who admitted to hospital or medical centers in Hamedan, during 2007-2009. Data collection methods were questionnaire

Pooneh Davallo Khongar (\*corresponding author) is Master of science in public health in Nutrition, Faculty of Nutritional Sciences and Dietetics, School of Public Health, Tehran University of Medical Sciences, Tehran, Iran. (e-mail: poonehdavallo@yahoo.com).

Rahim Ahmadi (PhD) is with the Department of Physiology, Faculty of Basic Sciences, Islamic Azad University, Hamedan Branch, Hamedan, Iran. (e-mail: Rahahmadi2012@yahoo.com).

Nooshin Poorsoltan (Msc student) is with Endocrinology and Metabolism Research Center, Tehran University of Medical Sciences, Tehran, Iran (e-mail: Diamond\_mps@yahoo.com).

and interviewing which was designed by the project researchers according to previous studies [5], [6], [10]-[13]. Patients' usual dietary intakes were assessed by means of food frequency questionnaire (FFQ) which could estimate the last year dietary intake. Patients were asked to report each food item consumption frequency according to consuming in day, week and month or year pattern. All analyses were performed using the Statistical Package for Social Sciences software version 19 (SPSS Inc., Chicago, IL, USA). Game's-Howell test was used as post hoc. During whole research all ethical consideration were taken into account.

## III. RESULTS

According to the results of this study, 27.6% (n=171) of patients were diabetic type I and 72.4% (n=449) were diabetic type II. Type II diabetes frequency was significantly higher than type I (P<0.05). Our findings also show that the number of female patients was significantly more than male (p<0.001).

Table I also represents food groups daily intake in type I diabetes in men and women.

**Table 2: Different food groups daily intake in type I diabetes**

| Food Groups | Men       | P-value | Women     | P-value |
|-------------|-----------|---------|-----------|---------|
| Dairy       | 2.74±1.26 | N.S     | 2.96±1.26 | N.S     |
| Fruits      | 1.86±3.49 | P<0.001 | 2.83±1.86 | N.S     |
| Vegetables  | 2.01±1.02 | P<0.001 | 2.16±1.02 | P<0.001 |
| Meat        | 6.75±2.54 | P<0.001 | 6.27±2.54 | P<0.001 |
| Cereals     | 6.39±1.38 | N.S     | 5.92±1.38 | N.S     |

The data are indicated as M±SD. P-values are expressed in comparison with minimum required daily intake. N.S. represents no significant difference.

Results show that mean vegetable daily intake in both sex was significantly less than standard minimum required amount (p<0.001). Besides, mean meat daily intake in both sex, and also mean fruits daily intake in men are significantly more than standard minimum required amount (p<0.001). There was not any significant difference in other dietary parameters.

Table II represents daily intake of different food groups in type II diabetes in men and women.

**Table2: Different food groups daily intake in type II diabetes**

| Food Groups | Men       | P-value | Women     | P-value |
|-------------|-----------|---------|-----------|---------|
| Dairy       | 2.35±1.15 | N.S     | 2.32±0.95 | N.S     |
| Fruits      | 2.33±1.23 | N.S     | 2.64±1.45 | P<0.001 |
| Vegetables  | 2.34±1.24 | N.S     | 2.78±3.57 | N.S     |
| Meat        | 7.22±2.32 | P<0.001 | 6.30±1.95 | P<0.001 |
| Cereals     | 6.39±1.38 | N.S     | 5.92±1.38 | N.S     |

The data are indicated as M±SD. P-values are expressed in comparison with minimum required daily intake. N.S. represents no significant difference.

In type II diabetes, results show that mean meat daily intake in both sex and also mean fruit intake in women was significantly more than standard minimum required intake ( $p<0.001$ ). There was no significant difference between other food groups.

#### IV. DISCUSSION

According to the results of this study the prevalence of type II diabetes was more than type I in our study population. There are other studies showing the increasing global trend of diabetes prevalence and incidence [6], [15]-[17].

Our findings also showed that mean vegetable consumption in people with type I diabetes in both sexes was less than standard level. Moreover, in diabetes type I and II, meat consumption in both sexes was higher than the minimum standard intake. Studies show that consumption of dairy products including milk, cheese, yoghurt and ice cream may have an association with the different disease in reproductive system in women [18]. Also it was reported that fruit and vegetable consumption has an inverse relation with CVD [19]. There are some studies show that diets rich in fibers such as vegetables, apple, barley and seeds have an effective role in blood glucose management in diabetic patients. Results from some studies revealed that garlic and onion consumption results in blood glucose decrease [20], [21]. Grains have an important role in preventing of diabetes. Whole grains are the key to weight control because of their effects on satiety [22]-[24]. There are some studies suggesting that fruit may be associated with diabetes compared with vegetables [25], [26].

A large meta-analysis also suggest that both processed meat and unprocessed red meat are associated with higher risk of diabetes; however, the association of processed meat and diabetes was considerably stronger than unprocessed red meat [27].

#### V. CONCLUSION

Our findings show that occurrence of diabetes was more common in females than males. Low vegetable consumption in

type I diabetes and high meat consumption in both types of diabetes are associated with the development of diabetes. However, more research are required to elucidate precise association between diet and diabetes development

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**Pooneh Davvalo Khongar (Corresponding author)** received his BS degree in Nutrition Sciences and at present she is MSc student in Faculty Nutritional Sciences and Dietetics School of Public Health, Tehran University of Medical Sciences, Tehran, Iran