Diet History in Patients with Type1 and Type 2 Diabetes in Eslamshahr-Tehran, Iran

Alinavaz M*, and Ahmadi R

Abstract—Diabetes is among the common metabolic disorders in Iran. The aim of this study was to determine the individual characteristics and diet history in patients with type 1 or 2 diabetes in Eslamshahr-Tehran. This cross sectional retrospective study was conducted to investigate patients with type 1 or 2 diabetes referred to care centers during 2010-2012 in Eslamshahr and documentarily profiled. Individual questionnaire, food frequency questionnaire and face to face interview were used to collect the data. The data was analyzed using student t- or Chi-square tests and ANOVA. The results indicated that the frequency of type 2 diabetes was significantly more than type 1 (p<0.01). The frequency of type 1 or 2 diabetes was higher in females than males (p<0.01). A family history of diabetes was observed in 64% and 82% of patients with type 1 or 2 diabetes, respectively. There was lower consumption of cereal food groups in diabetic patients than standard recommended orders (p<0.001). Our finding indicates that lower consumption of cereal food groups, especially whole grains, had considerable role in type 1 or type 2 diabetes development in Eslamshahr-Tehran.

Keywords—type 1 diabetes, Type 2 diabetes, Individual characteristics, Diet, Eslamshahr.

I. INTRODUCTION

Diabetes is a group of metabolic diseases characterized by hyperglycemia resulting from defects in insulin secretion, insulin action, or both. The chronic hyperglycemia of diabetes is associated with long-term damage, dysfunction, and failure of different organs, especially the eyes, kidneys, nerves, heart, and blood vessels [1]. In general, there are four types of diabetes: type 1, type 2, gestational diabetes and miscellaneous diabetes[2]. studies show that a significant population in the world, are suffering from this disease [3], in Iran, nearly three million people have diabetes and according to WHO estimates, the number will reach to 7 million by 2030[4] [5]. The toll of diabetes on health and the economy is enormous and will continue to rise [6].

studies indicate that multiple factors including physiological, genetic, environmental and dietary factors can affect on the appearance and development of diabetes [7]. Because there is no currently available cure for diabetes, primary prevention through diet and lifestyle modification is of paramount importance[6]. It is well documented that dietary factors have a strong relation with many chronic diseases such as diabetes and chronic vascular disease [8]. Although diet and nutrition are widely believed to play an important part in development of diabetes, the effect of specific dietary components on the incidence is still largely unknown. Many studies have shown that diets rich in plant fibers such as vegetables, oats and seeds are effective in improving diabetes, therefore insufficient intake of these food groups can lead to hyperglycemia and diabetes [9][10][11]. To our knowledge, there has been no epidemiologic research on the associated factors concerning diabetes development in Eslamshahr-Tehran. We conducted this analysis to investigate the effect of dietary intake patterns in patients with type 1 and type 2 diabetes in the area.

II. MATERIAL AND METHODS

A. participants

We carried out a retrospective, cross-sectional study, participants were all the men and women with type 1 or type 2 diabetes that were admitted to hospitals or medical centers in Eslamshahr during 2010-2012, in whom diabetes were found by fasting blood sugar test performed either routinely or for a specific purpose.

B. Protocol of Study

After written informed consent was obtained, study participants were interviewed in person by trained interviewers using a structured questionnaire to elicit a lifetime history of a variety of demographic, medical, and lifestyle factors. Standard diet questionnaire was also used to evaluate the usual dietary pattern in cases. Dietary intake information was collected by FFQs designed to assess average food intake over the previous year. A standard portion size was given for each food item. Participants were asked to choose from 9 possible frequency responses, ranging from “never” to “more than 6 times a day” for each food.

C. Statistical Analysis

All values are presented as mean±SD. Statistical significance was evaluated by one-way analysis of variance (ANOVA) using SPSS 19. Significance was measured using Game-s Howell significant for the exact P values and significant differences are noted in the results. Differences with P<0.05 were considered significant.

III. RESULTS

The results indicated that the frequency of type 2 diabetes was significantly more than type 1 (p<0.01). The frequency of type 1 or 2 diabetes was higher in females than males (p<0.01). A family history of diabetes was observed in 64% and 82% of patients with type 1 or 2 diabetes, respectively. Furthermore, statistical analysis suggests that, before the diagnosis of the disease, the mean daily consumption of vegetable, fruit, dairy products and meat groups were consistent with the minimum standard daily requirements,
but there was lower consumption of cereal food groups in diabetic patients than standard recommended orders (p<0.001) (Table I).

| TABLE I  
DAILY CONSUMPTION OF FOOD GROUPS IN PATIENTS WITH TYPE 1 AND TYPE 2 DIABETES IN ESLAMSHEHR, TEHRAN, IRAN. |
<table>
<thead>
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<tbody>
<tr>
<td>Index</td>
<td>Patients with DM1</td>
<td>Patients with DM2</td>
<td>Standard</td>
<td>P1</td>
</tr>
<tr>
<td>-------</td>
<td>------------------</td>
<td>------------------</td>
<td>---------</td>
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</tr>
<tr>
<td>Dairy products</td>
<td>1.81±0.9</td>
<td>1.83±0.2</td>
<td>2.5</td>
<td>NS</td>
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<tr>
<td>Fruit</td>
<td>2.23±1.3</td>
<td>2.18±0.3</td>
<td>2</td>
<td>NS</td>
</tr>
<tr>
<td>Vegetable</td>
<td>2.70±0.4</td>
<td>2.21±0.5</td>
<td>3</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Meat</td>
<td>2.73±0.7</td>
<td>2.76±0.9</td>
<td>2</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Cereal</td>
<td>1.76±0.8</td>
<td>1.75±0.8</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

The data are indicated as mean ± SD . P values are expressed in comparison with standard daily consumptions. N.S. represents no significant difference. DM1 indicates diabetes mellitus type 1 and DM2 indicates diabetes mellitus type 2.

IV. DISCUSSION

The results of current research show that Occurrence of diabetes was more common in females than males and of type 2 diabetes was more common than type 1 . In accordance with this study, some studies show that type2 diabetes is more common in Iranian population and it is also more common among women[12] [13]. The results also indicate that the mean daily consumption of vegetable, fruit, dairy products and meat groups were consistent with the minimum standard daily requirements, but the mean daily consumption of cereal food group, especially whole grains, was significantly lower than standard recommended orders in patients with type 1 and type 2 diabetes. In line with this finding, there are reports indicating that there is an inverse association between whole grains intake and incidence of diabetes [14] [15] [16] [17]. The protective effects of whole grains may depend on the presence or interaction of several biologically active constituents, including dietary fiber, vitamin E, magnesium, folate, and other nutrients and non-nutrients [15]. Dietary fiber is one nutrient that may provide protection against the disease. The beneficial effect of soluble fiber may be mediated through the slow absorption and digestion of carbohydrates that lead to a reduced demand for insulin. Insoluble fiber shortens intestinal transit, which therefore allows less time for carbohydrates to be absorbed [18]. Magnesium, a rich constituent of the grain germ, is a cofactor in several enzymes critical for carbohydrate metabolism and is believed to play a role in glucose homeostasis, insulin action, and the development of diabetes. An inverse relation between magnesium intake and the risk of type 2 diabetes was shown in several prospective studies [19] [20]. Furthermore, Vitamin B-6 and folic acid have a potential effect of reducing the development of diseases linked to metabolic syndrome and type 2 diabetes through a lower concentration of serum homocysteine [21].

V. CONCLUSION

We have shown that in Eslamshahr-Tehran, the prevalence of type 2 diabetes is higher than type 1 and both types of the disease is more common in women. We also have shown that low consumption of cereal food group, especially whole grains, is a risk factor for development of type 1 and type 2 diabetes. However, a case control study is required to clarify the effects of diet on diabetes occurrence.

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REFERENCES


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