Comparison of the Dietary Factors between Diabetes and Non-Diabetes in Employee Population

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ABSTRACT

Objective: The purpose of this study was to obtain baseline data on dietary management of employee diabetes. We estimated the prevalence of self-reported diabetes and foods habits.

Methods: A cross-sectional study was conducted in 2011 using questionnaires distribution in Sarvabad city, located in the west of Iran. The subjects included 455 employees aged 22-54. The statistical analyses were performed using by STATA 11 package program and significant difference was evaluated by t-test and X^2-test. A P-value < 0.05 was considered to be statistically significant.

Results: Seventy-nine percent of the participants responded to the baseline questionnaire; of whom 25% were female with mean age of 34.3 years [95% CI: 33.6, 35.0]. 78.5% of the respondents were married. The prevalence rate of diabetes in this employee population was 5.9% (male 3.7% vs. female 12.5%, P < 0.001). Significant differences were found in the mean consumption of dairy products (1 vs. 0.54, respectively, P < 0.001), fruits (1 vs. 0.8, respectively, P = 0.008) and cereal (1 vs. 0.65, respectively, P < 0.001) in diabetes compared to the non-diabetes. The frequency of consumption of liquid oil and fast foods in non-diabetes and diabetes was 0.90, 0.52 (P < 0.001) and 0.55, 0.37(P= 0.03), respectively. Fast foods and liquid oil consumption in non–diabetes were significantly higher than diabetes. No differences were found in vegetable and salt consumption. Frequency of food consumption by diabetes and non-diabetes groups is summarized as follows.

Conclusion: Overall results show that diabetes prevalence among staff is high, therefore, nutrient intake of the staff needs to be improved and a well-balanced diet should be emphasized.

Keywords: Diabetes, Employee, Dietary Factors, Iran

Introduction

Nowadays, the health and economic burden of diabetes mellitus, primarily type 2 diabetes, is large and expected to increase significantly in the next decades [1]. In Iran in 2007, approximately 8.7% of adults (age 15-64 years) had diabetes, primarily type 2, while nearly 15% of people in the age group 55 years or older were diabetes [2]. Diabetes mellitus is one of the prevalent chronic diseases that its morbidity, mortality and cost is high and it will be beneficial to identify individuals who are at higher risk for developing the disease and who specifically may benefit from intensive diabetes prevention strategies [3-4].

Dietary factors research is of considerable interest in nutritional epidemiology [5-7] and owing to the fact that the incidence of diabetes in developing countries is rising [8] owing to a proportionate increase in many risk factors such as dietary change (i.e. fast food, salt

intake, low intake of fruit and vegetable), increasing prevalence of obesity and etc [9].

Therefore this study was designed to determine the prevalence of self-reported diabetes and comparison of the foods habits between diabetes and non-diabetes.

Material and Method

This cross-sectional study was conducted in 2011 in Sarvabad city, located in the west of Iran. The subjects included 455 employees aged 22-54 that had Iranian nationality and were living in their current address at least for 6 months. A questionnaire was designed to obtain demographic information such as age, gender, education, occupation time, marital status and diabetes status. Another questionnaire for frequency of consumption of various food groups included liquid oil, dairy products, fast food, vegetables, fruits, cereal and salt on daily, weekly or monthly basis, was assessed. The validity of the questionnaire was confirmed by the Iranian Ministry of Health and Medical Education [10].

The subjects' occupation time was determined according to number of years spent at office. Diabetes status was defined by a combination of self-reported medical history and medication use. Any individuals who reported a positive medical history with valid medication use/treatment for high blood sugar were considered diabetes cases.

The statistical analyses were performed using by STATA 11 (StataCorp, College Station, TX, USA) package program and significant difference was evaluated by Student's t-test and chi squared test. A P-value < 0.05 was considered to be statistically significant. Descriptive statistics were computed for all variables, including means for continuous variables, frequencies for categorical variables, and standard error of the mean. T-test was used to compare mean differences of age and education in diabetes and non-diabetes and also to assess the differences in mean consumption of various food items in diabetes and non-diabetes. Chi-square test was used to determine the frequency distributions in men and women.

Results

We evaluated a total of 577 employees, of which 122 (21%) were rejected due to noncompliance with study protocol or due to incomplete data, resulting in a final sample size of 455 staff. Subjects' characteristics are presented in Table 1. Mean age was 34.3 years [95% CI: 33.6, 35.0], 25% were female and 78.5% were married.

Table 2 shows demographic and frequency of food consumption by diabetes and non-diabetes groups. The prevalence rate of diabetes in this employee population was 5.9% (male 3.7% vs. female 12.5%, P $<$ 0.001).

Overall, mean consumption of food items was significantly higher in women (5.2 ± 1.1 in women and 4.4 ± 1.5 in men, $P < 0.001$), and in diabetes (5.2 ± 0.8 in diabetes and 4.6 ± 1.5 in non- diabetes, $P = 0.03$).

Significant differences were found in the mean consumption of dairy products (1 vs. 0.54, respectively, P $<$ 0.001), fruits (1 vs. 0.8, respectively, P = 0.008) and cereal (1 vs. 0.65, respectively, P $<$ 0.001) in diabetes compared to the non-diabetes. The frequency of consumption of liquid oil and fast foods in non-diabetes and diabetes was 0.90, 0.52 (P $<$ 0.001) and 0.55, 0.37 (P= 0.03), respectively.

Fast foods and liquid oil consumption in non–diabetes were significantly higher than diabetes. No differences were found in vegetable and salt consumption.

Discussion

Among employees of Sarvabad city aged 22 to 54 years, the prevalence of diabetes was 5.9%. The prevalence of diabetes in the present study was lower than in the general Iranian population [2, 11] and prevalence of diabetes in women was higher than men. Similar results have been reported in other studies [2, 12].

Diabetes' food habits seem high healthy than those of non-diabetes. This is in concordance with findings of some of other studies [13-14].

Our study demonstrated that non-diabetes consumed significantly more liquid oil and fast food than diabetes.

We also observed that high salt intake was prevalent in diabetes and non-diabetes groups but was not significantly [15].

Vegetarian and other low-fat diets generally increase intakes of carbohydrate, fiber, and several micronutrients [16-17], which are associated with reduced incidence of type 2 diabetes [18-19]. In this study mean consumption of food items including dairy products, fruits [15] and cereal in diabetes is significantly higher than in non-diabetes.

In our study, we attempted to eliminate the influence of confounding factors on dietary habits of diabetes and non-diabetes, but several limitations are noted. One of the limitations of this study was over estimate in report of food frequency questionnaire. Additionally, because of paucity of time as well as financial limitations, we could not evaluate the dietary factors of total of employee population and other risk factors.

Conclusion

Overall results show that diabetes prevalence among staff is high, therefore, nutrient intake of the staff needs to be improved and a well-balanced diet should be emphasized.

Conflict of Interest: The authors have no conflicts of interest to declare for this study.

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Table 1: Distribution of demographic characteristics

Variable	Male (n=343)	Female (n=112)	P-value	Total [95% CI] (n=455)
Age, yr (Mean, SD)	33.1 (7.3)	38.1 (7.2)	< 0.001	34.3[33.6, 35.0]
Occupation time, yr (Mean, SD)	12.1 (7.5)	6.5 (6.1)	< 0.001	10.7[10.0, 11.4]
Married	86%	55%	< 0.001	78.5%[75.0%, 82.2%]
Diabetes	3.7%	12.5%	0.001	5.9%[5.5%, 6.4%]
Education, % >= academic	46.4%	45.5%	< 0.001	59.8%[55.2%, 64.3%]
Total mean consumption of food items (Mean, SD)	4.4 (1.5)	5.2 (1.1)	< 0.001	4.6[4.5, 4.7]

Table 2: Demographic and mean frequency consumption of some food items among diabetes and non-diabetes

Variable	Diabetes	Non-diabetes	P-value
Age, yr (Mean, SD)	35.1 (7.6)	34.3 (7.6)	0.5
Occupation time, yr (Mean, SD)	14.4 (2.5)	10.5 (7.1)	0.009
Education, % >= academic	48.1%	60.5%	0.2
Dairy products	100%	54%	< 0.001
Liquid oil	52%	90%	< 0.001
Vegetables	56%	51%	0.6
Fruits	100%	80%	0.008
Cereal	100%	65%	< 0.001
Fast foods	37%	55%	0.03
Salt	78%	65%	0.1
Total mean consumption of food items (Mean, SD)	5.2 (0.8)	4.6 (1.5)	0.03