

Assessment of Food Habits and Their Association with Cardiovascular Risk Factors in Employees

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ABSTRACT

Introduction: Cardiovascular disease (CVD) is one of the most causes of mortality in worldwide.

Objective: We evaluated the food habits and their association with cardiovascular risk factors in employees.

Method: A descriptive, cross-sectional study, including employees of offices in the city of Sarvabad, the west of Iran in 2010 was conducted. Data were collected by using questionnaires including demographic factors and dietary habits. The individuals' food habits were ascertained using an 11-item food frequency questionnaire. Frequency of consumption of various food groups and beverages (i.e., meat, fish, milk, fruits, vegetables, cereals, oil, salt, fast food and etc) on daily, weekly or monthly basis was assessed. For statistics, STATA 11 was used; associations were calculated by t-test; $p < 0.05$ was considered significant.

Result: A total of 455 employees were included in the study of which 25% were female with mean age of 34 years (male 33.1 vs. female 38.1, $P < 0.001$). About 1.5% of employees had elevated blood pressure, 10.5% were smokers, 11.2% had family history of CVD, 5.9% were diabetes (male 3.7% vs. female 12.5%, $P < 0.001$) and 9.2% were obese.

The mean of dietary habits of 11-item was significantly higher in the females, obese and diabetes, ($P < 0.001$) but the mean of dietary habits in smoker employees was lower than in non-smoker ones, ($P < 0.001$).

Conclusion: Majority of employees had high prevalence of cardiovascular risk factors such as obesity, diabetes, smoking and family history of CVD. Therefore, the results suggest that nutrition education for employees needs to be more focused on the improvement of dietary habits of staff.

Keywords: Food Habits, Employee, Cardiovascular Risk Factor, Iran

Introduction

As stated in past decades, cardiovascular disease (CVD) is one of the most causes of mortality in worldwide¹. Also CVD account for more than 40% of mortality in Iran².

Iran, like other countries in South Asian has a higher prevalence of CVD risk factors as compared to other parts of the world³⁻⁴. Although it is well accepted that food habits represent a very important component in the

etiology of CVD risk factors, including type 2 diabetes⁵, hypertension⁶, and obesity⁷. But from our review of the literature, there is little known about employee population with respect to how their food habits are related to CVD risk factors.

To provide new data for policy planners and health education programs, we evaluated the

food habits and their association with cardiovascular risk factors in employees.

Material and Method

Study population

A descriptive, cross-sectional study, including employees of offices in the city of Sarvabad, the west of Iran in 2010 was conducted. A total of 577 employees aged 22 to 54 years were randomly selected from the 30 offices and invited to participate. A total of 455 employees completed the survey and examination. (Response rate was 79.0%). Written consent to participate was obtained before data collection.

Data collection

Data were collected between October and December 2010 by using questionnaires including demographic factors and dietary habits. The individuals' food habits were ascertained using an 11-item food frequency questionnaire. Frequency of consumption of various food groups and beverages (i.e., meat, fish, milk, fruits, vegetables, cereals, oil, salt, fast food, rice, fried foods and wholemeal bread) on daily, weekly or monthly basis was assessed.

Then, the average score of the answers to these questions (11-item) was calculated for all subjects in order to evaluate of the food habits in employee population.

Anthropometric measurements

The weight and height were measured to obtain body mass index (BMI) scores (kg/m²). Subjects with a BMI \geq 30 are considered as obese.

Diabetes and hypertension was defined as self-reported current treatment with antidiabetic and antihypertensive medication, respectively⁸⁻⁹.

Smoking status and family history of CVD were assessed by self-report.

Statistical analysis

Data were analyzed using STATA 11 (StataCorp, College Station, TX, USA), and were expressed as means for continuous variables, frequencies for categorical, and standard error of the mean. The Student t test was used to compare means with 95% confidence interval (CI) between dichotomous variables such as gender, smoking status and hypertension status. Statistically significant differences were considered at $P < 0.05$.

Results

The general characteristics of the study participants are presented in Table 1. A total of 455 employees were included in the study of which 25% [95% CI: 20.6, 28.5] were female with mean age of 34 years (male 33.1 vs. female 38.1, $P < 0.001$). The mean of body weight, BMI and occupation time was 71.0 ± 13.1 kg and 25.3 ± 3.7 kg and 10.7 ± 7.6 year respectively. Overall, the mean consumption of food items was 7.2 ± 1.8 .

About 1.5% of employees had elevated blood pressure, 10.5% were smokers, 11.2% had family history of CVD, 5.9% were diabetes (male 3.7% vs. female 12.5%, $P < 0.001$) and 9.2% were obese.

Comparison of mean dietary habits by CVD risk factors are summarized in Table 2. The mean of dietary habits of 11-item was significantly higher in the females, obese and diabetes, ($P < 0.001$ for all comparisons) but the mean of dietary habits in smoker employees was lower than in non-smoker ones, ($P < 0.001$).

Discussion

Our study demonstrated the prevalence of CVD risk factors such as obesity, smoking,

diabetes, hypertension and family history of CVD were 9.2%, 10.5%, 5.9%, 1.5%, and 11.2%, respectively. In addition, the mean consumption of food items was 7.2.

The first important finding of our study was that the estimated prevalence of obesity, diabetes, smoking and hypertension in an employee population is lower than general population of Iran^{3-4, 10}.

Although the majority of the study subjects display good eating habits, the results confirmed a significant difference between genders. The results of the previous similar studies confirmed our findings. Fonseca et al¹¹ evaluated the eating habits among employees in a government-owned bank in the State of Rio de Janeiro. They indicated that men, and particularly younger men, consumed more foodstuffs that were rich in saturated fat, salt, and sugar as compared to women.

We found that the mean of dietary habits in diabetes is significantly higher than in non-diabetes. As stated in another study¹² that dietary patterns are an important risk factor for type 2 diabetes, accordingly this indicated that diabetes patients had more concerns about their self-care.

In studies on the dietary habits of smoker¹³ compared to those of non-smoker individuals, smoker subjects had poor eating habits, as reported in present study.

Because aging is a risk factor for CVD, it is expected that increasing age would be associated with good eating habits. On the other hand, we found a significantly low mean of dietary habits in individuals aged > 40 years compared to aged < 40 years.

Hypertension is a common problem in Iran. National survey data indicate that 26.6 percent of Iranian adults have hypertension⁴. However, Wang et al reported statistically significant relationship between dietary factors and hypertension⁶. But our study was in concordance with the previous observations.

Our study had several limitations including: First, in a cross-sectional studies causality inference to be limited. Second, self-report may underestimate smoking status and dietary intake¹⁴⁻¹⁵. Third, non-responders may differ significantly from study participants. For example obese persons may be less willing to agree to anthropometric measurement or smokers might have less interest in health promotion. In conclusion, according to the stated items results may not be generalizable to the whole of Iranian employees.

Conclusion

Majority of employees had high prevalence of cardiovascular risk factors such as obesity, diabetes, smoking and family history of CVD. Therefore, the results suggest that nutrition education for employees needs to be more focused on the improvement of dietary habits of staff.

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

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Table 1: Characteristics of the study participants*

Characteristic	Value
Age — yr	34.0 ± 7.6
Male sex — no. (%)	343 (75.0)
Married — no. (%)	357 (78.5)
Occupation time — yr	10.7 ± 7.6
Weight — kg	71.0 ± 13.1
BMI — kg/m ²	25.3 ± 3.7
Obesity — no. (%)	42 (9.2)
Smoking status — no. (%)	48 (10.5)
Hypertension — no. (%)	7 (1.5)
Diabetes mellitus — no. (%)	27 (5.9)
Family history of CVD — no. (%)	51 (11.2)
Total mean consumption of food items	7.2 ± 1.8

*Plus-minus values are means ± SD.

Table 2: Comparison of mean dietary habits by CVD risk factors among employee population

Variable	Subgroup	Mean [95% CI]	SD	P - value
Sex	Male	6.95 [6.73, 7.15]	1.96	0.001
	Female	8.08 [7.83, 8.32]	1.32	
Marriage	Single	7.83 [7.53, 8.11]	1.46	0.001
	Married	7.06 [6.85, 7.26]	1.96	
Smoking	No	7.33 [7.15, 7.51]	1.87	0.001
	Yes	6.31 [5.78, 6.84]	1.82	
Blood pressure	No	7.21 [7.04, 7.39]	1.90	0.49
	Yes	7.71 [7.01, 8.41]	0.75	
Diabetes	No	7.15 [6.97, 7.33]	1.90	0.001
	Yes	8.44 [8.10, 8.80]	0.89	
BMI	Non-obese	7.1 [6.91, 7.27]	1.86	0.001
	obese	8.50[7.99, 9.00]	1.61	
Family history of CVD	No	7.24 [7.05, 7.43]	1.91	0.60
	Yes	7.10 [6.63, 7.56]	1.89	
Age	< 40	7.36[7.17, 7.54]	1.7	0.001
	> 40	6.62[6.13, 7.11]	1.8	