RESEARCH ARTICLE

TO ASSESS THE DIETARY PATTERN OF DIABETIC SUBJECTS

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ABSTRACT

Diabetes mellitus is a group of disease characterized by high blood glucose concentration in the blood and alteration in carbohydrate, protein and fat metabolism. People are greater risk of diabetes due to improper dietary practice, unhealthy life style, lack of physical exercise. The present study was conducted a comparative study of nutritional status among diabetic males and females. Multistage stratified random sampling technique was used for selecting 100 samples in both male and females and an interviewed schedule was developed to collect information regarding socioeconomic profile, dietary pattern etc. Dietary intake between males and females diabetic were highly significant but age, BMI, meal intake per day etc. between males and females diabetic were insignificant. Consumption of high fat and carbohydrate diet was revealed as the major contributing cause of disease in both males and females.

INTRODUCTION

Diabetes mellitus is a chronic metabolic disorder that prevents the body to utilize glucose completely or partially. It is characterized by high blood glucose concentration in the blood and alteration in carbohydrate, protein and fat metabolism. This can be due to failure in the formation of insulin. In contrast, insulin deficiency in a poorly controlled exercise results in increases is glucose concentration and free fatty acids release continues with minimal uptake. This can result in large increase in plasma glucose and ketone levels .Observational studies addressing physical activity, weight loss, and dietary intake of whole grains and fiber etc. provided evidences for factor that might delay or prevent type-2 diabetes boule 2001[1]. Nutritional status is the conditioned of health of individuals as influenced by the utilization of the nutrient. It can be determined only by the correction of information through a medical and dietary history, although physical examination and appropriate laboratory investigations (robinson1978). Diabetes is one of the most common diseases in the countries. People are greater risk of diabetes due to improper dietary practice, unhealthy life style, socioeconomic situation, mental stress and lack of physical exercise MJ Franz[2,3]. Too much fat especially saturated from meat or dairy product contains too much sugars calories, and not enough whole grains, fruits and vegetables are the primary dietary problem challenging the population. The present study is an attempt to know the nutritional status among male and female diabetic patients. Dietary intake with focus on the nutritional status vegetarian and non vegetation diet in the occurrence of the diseases.

MATERIAL AND METHODS

The study is carried out in 100 diabetic male and female diabetic subjects from local hospitals from Agra city. Multistage stratified random sampling technique was used in the selection of samples. An interview schedule was evolved to collect the information regarding socio-economic profile, dietary information and specific information regarding this disease.

Table 1 Distribution of male and female respondent according to age.

Age in Years	Sex of the respondents				Total	
	Male		Female			
	No.	%	No.	%	No.	%
35-45	6	12.50	5	9.61	11	11.00
45-55	4	8.33	13	25.00	17	17.00
55-65	16	33.33	27	51.92	45	45.00
65-75	16	33.33	5	9.61	21	21.00
75-85	6	12.50	2	3.84	8	8.00
Total	48	48.00	52	52.00	100	100.00
Mean	61.08		55.17		58.01	
SD	11.46		8.16		16.31	
t			2.088			
P			<0.05			

Nutrient intake was assessed by 24 hrs food recall method. The subjects were asked to report the food items consumed along

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with their raw ingredients. These were recorded in standard volumetric method and later it is converted in raw weight of foods i.e. groups and nutritive values was calculated using the food tables as per recommended by ICMR.

Table-1 reveals the distribution of male and female respondent according to age**.** Out of 100 diabetic patients, majority of them (45.00%) were in the age group of 55-65 yrs, followed by 21.00% in the age group of 65-75 yrs and the minimum 8.00% in the age group of 75-85 years. Out of the male diabetic patients, majority of them (33.33%) were in the age group of 55-65 and 65-75 years, followed by 12.50% each in the age group of 75-85 years and 35-45 yrs and the minimum 8.33% were in the age group 45-55 yrs. Out of the female diabetic patients, majority of them (51.92%) were in the age group of 55-65 years, followed by 25.00% in the age group of 45-55 years and the minimum 3.84% were in the age group 75-85 years. Further table shows that mean age of male diabetic patients was found to be 58.01 yrs which was more among male diabetic patients (61.08) as compared to female diabetic patients (55.17 yrs). Statistically, significant difference regarding mean age was observed between male and female diabetic patients (t = 2.988, p < 0.05) Ronald Klein, [4].

Table 2 Distribution of the Male and female respondents according to blood sugar level

Blood sugar level (mg/dl)	Sex of the respondents				Total	
	Male		Female			
	No.	%	No.	%	No.	%
Below 100	11	22.91	5	9.61	16	16.00
100-150	16	33.33	12	23.07	28	28.00
150-200	8	16.67	12	23.07	20	20.00
200-250	6	12.50	18	34.61	24	24.00
250-300	7	14.58	5	9.61	12	12.00
Total	48	48.00	52	52.00	100	100.00
Mean	156.42		176.00		166.60	
SD	65.25		55.43			
t			1.621			
P			>0.05			

Table-2 reveals the distribution of the Male and female respondents according to blood sugar level. Out of 100 diabetic patients, majority of them (28.00%) were having the present blood sugar level of 100 -150, followed by 24.00% having the present blood sugar level of 200 -250 and the minimum 12.00%. having the present blood sugar level of 250 -300. Out of the male diabetic patients, majority of them (33.33%) were having the present blood sugar level of 100-150, followed by 22.91% having the present blood sugar level of below 100 and minimum 12.50% were having the present blood sugar level of 200 -250.

Out of the female diabetic patients, majority of them (23.61%) were having the present blood sugar level of 200-250, followed by 23.07% having the present blood sugar level of 100–150 and 150-250 and minimum 9.61% each were having the present blood sugar level of below 100 and 200-300 respectively. Statistically no significant difference regarding mean present blood sugar level was observed between male and female diabetic patients even at 5% level of significance. This difference might be occurred due to performing exercise, restricted diet and taking proper medicine[5] Shah M, Garg 1996.

Table 3 Mean nutrients intake according to sex.

Nutrient	Unit	Respondents				Statistical Values	
		Male (n = 48)		Female (n = 52)			
		Mean	SD	Mean	SD	t	p
Calories	Kcal	1480.10	120.26	1513.52	113.24	1.431	>0.05
Protein	Gm	31.67	1.58	32.25	1.97	1.616	>0.05
Calcium	mg	588.07	53.93	586.26	44.24	0.184	>0.05
Vitamin A	μg	1640.64	118.86	1689.67	150.39	1.799	>0.05
Vitamin B_1	mg	1.13	0.08	1.11	0.07	1.333	>0.05
Vitamin C	mg	28.35	15.28	26.74	10.14	0.617	>0.05
Iron	mg	26.01	3.11	26.36	2.46	0.627	>0.05
Fat	gm	30.84	2.04	30.71	1.90	0.330	>0.05
Riboflavin	mg	0.60	0.05	0.63	0.11	1.732	>0.05
Niacin	mg	13.33	1.53	13.28	1.65	0.157	>0.05
Carbohydrate	gm	226.51	9.34	227.93	10.18	0.725	>0.05
Fibre	gm	6.73	0.91	6.51	0.89	1.222	>0.05
sodium	mg	82.46	8.53	80.43	7.22	1.288	>0.05

Table-3 reveals the mean intake of various nutrients according to sex. Mean intake of calcium, vitamin B_1, Vitamin C, fat and niacin fiber and sodium were found to be more among male respondents as compared to female respondents, while the mean intake of calories, proteins, Vitamin A, iron riboflavin and carbohydrate were found to be more among females as compared to male respondents. Statistically no significant differences regarding mean intake of all nutrients were observed between male and female respondents even at 5% of significance

Table 4– Correlation between numbers of meals per day with various nutrient intakes among male diabetic patients.

Parameters	Unit	Statistical Values				
		Mean	SD	r	t	p
Meals per day		2.65	0.59			
Calories	Kcal	1480.10	120.26	-0.156	1.071	>0.05
Protein	gm	31.67	1.58	-0.087	0.592	>0.05
Calcium	mg	588.07	53.93	-0.367	2.676	<0.05
Vitamin A	μg	1640.64	118.86	+0.433	3.258	<0.05
Vitamin B_1	mg	1.13	0.08	-0.179	1.234	>0.05
Vitamin C	mg	28.33	15.28	-0.333	2.395	<0.05
Iron	mg	26.01	3.11	-0.017	0.115	>0.05
Fat	gm	30.84	2.04	+0.112	0.784	>0.05
Riboflavin	mg	0.60	0.05	-0.165	1.135	>0.05
Niacin	mg	13.33	1.53	+0.424	3.175	<0.05
Carbohydrate	gm	226.51	9.34	-0.201	1.391	>0.05
fiber	gm	6.73	0.91	-0.360	2.617	<0.05
sodium	mg	82.46	8.53	-0.028	0.190	>0.05

Table-4 reveals the correlation between ages with various nutrient intakes among male diabetic patients. Positive and significant correlations were observed between meals with nutrient intake of vitamin A, niacin were observed among the male diabetic patients (p<0.05) i.e. as the meals of the male diabetic patients increases, vitamin A, niacin riboflavin and sodium also increase and *vice-versa*. While positive and insignificant correlations were observed between meals with nutrient intake of, fat were observed among the male diabetic patients even at 5% level of significance. However, negative and insignificant correlations were observed between meals with nutrient intake of Calcium, Vitamin C and fibers were observed. However, negative and insignificant correlations were observed between meals with nutrient intake of calories, protein, iron, riboflavin, carbohydrate and sodium among the male diabetic patients even at 5% level of insignificant.

Table 5 Correlation between numbers of meals per day with various nutrient intakes among female diabetic patients.

Parameters	Unit	Statistical Values				
		Mean	SD	r	t	p
Meals Per Day	Year	2.37	0.48			
Calories	Kcal	1513.52	113.24	-0.297	2.199	<0.05
Protein	gm	32.25	1.97	-0.513	4.226	<0.05
Calcium	mg	586.26	44.24	-0.285	2.102	<0.05
Vitamin A	µg	1689.67	150.39	-0.124	0.884	>0.05
Vitamin B$_1$	mg	1.11	0.07	-0.198	1.428	>0.05
Vitamin C	mg	26.74	10.14	-0.140	1.000	>0.05
Iron	mg	26.36	2.46	+0.073	0.518	>0.05
Fat	gm	30.71	1.90	+0.274	2.015	<0.05
Riboflavin	mg	0.63	0.11	-0.156	1.117	>0.05
Niacin	mg	13.28	1.65	-0.242	1.764	>0.05
Carbohydrate	gm	227.93	10.18	-0.077	0.546	>0.05
fiber	gm	6.51	0.89	-0.030	0.212	>0.05
sodium	mg	80.43	7.22	-0.154	1.102	>0.05

Table-4 reveals the correlation between meals with various nutrient intakes among male diabetic patients. Positive and significant correlations between meals with nutrient intake of fat, was observed among the female diabetic patients (p<0.05) i.e. as the meals of the female diabetic patients increases, nutrient intake of fat, niacin and sodium also increase and *vice-versa*. While positive and insignificant correlations were observed between meals with nutrient intake of iron and niacin were observed among the female diabetic patients even at 5% level of significance. However, negative and significant correlations were observed between meals with nutrient intake of calories, protein, and Calcium were observed. However, negative and insignificant correlations were observed between meals with nutrient intake of Vitamin C, Vitamin A, Vitamin B$_1$, riboflavin, carbohydrate, fiber and sodium were observed among the female diabetic patients even at 5% level of insignificant.

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CONCLUSION

From the study it is evident that nutritional status of both male and female diabetic patients were highly significant but contrary the results like age, BMI, blood sugar level, food habit profile etc. in both diabetic patients showed insignificant. It may be due to poor nutritional status, poor diet and lack of exercise etc. So, as per our study, the diabetes can be controlled by regular exercise, sugar restricts diet and good nutritional status, which may also help prevent diabetes.

Reverences

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