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Relationship of food preferences, education level and food awareness among diabetic population in central U.P.

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ABSTRACT

The study is an attempt to create more awareness among the diabetics regarding dietary pattern and role of food in their health as well. 57 per cent respondents acknowledged the consumption of salads and green vegetables as control measure whereas only 41 per cent respondents opined that it is better to consume smaller meals at regular intervals. It was found that respondents up to High School level education were less aware of harmful food stuff as compared to respondents above High School level education. Maximum respondents considered sugar and sweets, rice, puri and paratha and fat as harmful foodstuff. Most of the females in both samples were strictly vegetarian. Majority of diabetics males were almost equally distributed in three food habit categories.

Key words : Diabetes, Dietary habits, Beneficial foods, Harmful foods

INTRODUCTION

India has the largest diabetic population in the world. It is estimated that in 1996 around 19.4 million individuals in the country were suffering from this deadly disease, which is likely to go up to 57.2 million by the year 2025 (Ramchandran, 1998). Diabetes mellitus begins at an early age amongst Indians. Increase duration of uncontrolled diabetes leads to late complications (Raheja *et al.*, 2001). Diabetes is one of the most leading causes of death and it ranks third among chronic diseases (Park, 2000). In spite of its wide prevalence, unknown to known diabetes ratio is about 1.8:1 in urban areas, while it is as high as 3.3:1 in rural areas (Indian task force, 2003). Anuradha and Vidhya (2000) observed that diabetes is gaining ground throughout the world in both developed and developing countries. The incidences of diabetes are increasing at an alarming rate in India. It was estimated that India had 19.4 million diabetics in 1995, and expected to register a near three-fold increase by year 2025. Diet control is foundation stone of diabetic treatment and for many diabetics, it is the only treatment needed. A diabetic can eat almost any food, provided it is balanced and within the permissible calorie

limits, dietary management for diabetics should not aim only to achieve glycemic control, but also to normalize dyslipidaemia, commonly associated with it (Srilaxmi, 2000). Considering the gravity of the problem, the present study was designed and carried out with the objective to assess the dietary pattern and food awareness among diabetics of different age, sex and income groups of people in the study area.

MATERIALS AND METHODS

The present study has been conducted in the Kanpur city of Uttar Pradesh in India. Kanpur is assured to be near and true representative of the state as it has a rural urban mix economy. Primary and secondary data were analyzed for the purpose. Due to large sample population, sample survey method was used for sampling. Three stage sampling procedure was adopted. At first stage *i.e.* selection of hospitals, purposive sampling technique has been used while for selection of samples respondents' random sampling technique was preferred. For the present study, 200 diabetic respondents were chosen from various hospitals. The study was conducted at two state

government hospitals and four private endocrinological specialty hospitals where most of the population of the city and nearby used to visit for their health check ups. All diabetic population attending OPD and admitted in the selected hospitals were considered as cases for sampling. The diabetic population was grouped into three according to their age as 20-40 years, 40-60 years and 60 years and above. Following purposive population sampling 26 cases in the first age group, 142 in second and 32 in the third were selected randomly. Later, in these respondents were redistributed by their sex and family income. Data were collected through specially designed and pre-tested personal interview schedules. This information was verified and crosschecked for their reliability from the case history available in the hospitals. The cooked food consumed by each respondent was recorded nearest to the actual intake and value of nutrients was obtained from the reference values. Based on dietary habits, patients were classified as strictly vegetarian, non-vegetarian and eggetarian. Tabular analysis was used. Other statistical tools of data analysis supported by both the simple and complex mathematical operations, were also used to analyze the required results based on objective of the study. Chi square test, t test measure of central tendencies and dispersion were used.

RESULTS AND DISCUSSION

The findings of the present study have been discussed in the following sub heads :

Dietary pattern:

Dietary measures are an essential part of the treatment of diabetic patients. In case of diabetes calories need per day of an individual and the proportion of calories derived from carbohydrates, fats and proteins are the basic fundamental to formulate diabetic diet. There is a need to create awareness and educate diabetic population to maintain good metabolic control.

It is observed from Table 1 that majority of females were strictly vegetarian, among the rest 20 per cent were

occasional non-vegetarian, however, less than 10 per cent of females were regular non-vegetarian. Among the rest, over 20 per cent were occasional non-vegetarian. Less than 10 per cent of the females of both the categories were regular non-vegetarian. While, in non-diabetic sample, over 60 per cent of males were strictly vegetarian and rest were almost equally distributed in other two food habits. Diabetic males were almost equally distributed in the three food habits *i.e.* strictly vegetarian (31.03 per cent), occasionally non-vegetarian (36.2 per cent), regular non-vegetarian (32.76 per cent). It may be due to awareness and recommendations of dietitians. It is concluded that vegetarians (mainly male) were less prone to diabetes. Rayappa *et al.* (1999) analyzed the impact of socio-economic factors on diabetes care and concluded that the uneducated, unemployed people, especially those living in semi urban or rural areas who can not afford or do not have access to even bare minimum health care facilities, are likely to be diagnosed late and likely to develop or have at present diabetes related complications.

Table 2 shows that out of total respondents, majority (83.50 per cent) had an idea that dietary management is essential. 57 per cent respondents acknowledged the consumption of salads and green vegetables as control measure whereas, only 41 per cent respondents opined that it is better to consume smaller meals at regular intervals. It was also seen that females were more cautious about the dietary restriction than males but in case of rest of the two measures, males dominated significantly. 7.76 per cent male and 5.95 per cent female were not aware of such dietary measures.

Awareness about beneficial and safe foods:

It was observed that low carbohydrate and fat food items with high fibre are beneficial for NIDDM patients. Cereals with bran, pulses with husk, some of the fruits with skin, raw vegetables as salad, green vegetables and low saturated fat are liberally allowed in diabetic diet. Table 3 reflects that Roti is considered safe by majority of respondents. Green vegetables came at second followed

Table 1 : Sex-wise distribution of diabetic and non-diabetic respondents according to their food habits

Food habits	Diabetics			Non-diabetics		
	Male	Female	Total	Male	Female	Total
Strictly vegetarian	36 (31.03)	59 (70.24)	95 (47.50)	74 (60.66)	58 (74.36)	132 (66.00)
Occasionally non-vegetarian	42 (36.21)	17 (20.24)	59 (29.50)	22 (18.03)	16 (20.51)	38 (19.00)
Regular non-vegetarian	38 (32.76)	8 (9.52)	46 (23.00)	26 (21.31)	4 (5.13)	30 (15.00)
Total	116 (100.00)	84 (100.00)	200 (100.00)	122 (100.00)	78 (100.00)	200 (100.00)

Note – Figures in parentheses are percentage to respective column's total

Table 2 : Education and sex-wise perception about dietary measures of diabetes

Dietary measures	Up to High School		Above High School		Total	
	Male	Female	Male	Female	Male	Female
Dietary restriction is essential	26 (76.47)	19 (76.00)	69 (84.15)	53 (89.83)	122 (86.52)	72 (85.71)
Better to consume smaller meals at regular intervals	11 (32.35)	6 (24.00)	40 (48.78)	25 (42.37)	65 (46.10)	31 (36.90)
Consumption of salad and green veg. is must	17 (50.00)	12 (48.00)	50 (60.98)	35 (59.32)	85 (60.28)	47 (55.95)
Not aware	4 (11.76)	3 (12.00)	5 (6.10)	2 (3.39)	7 (4.96)	5 (5.95)
Total	34 (100.00)	25 (100.00)	82 (100.00)	59 (100.00)	141 (100.00)	84 (100.00)

Note - Figures in parentheses are percentage to respective column's total

Table 3 : Education and Sex-wise knowledge of diabetic respondents about safe foods

Safe foods	Up to High School		Above High School		Total	
	Male	Female	Male	Female	Male	Female
Roti	29 (85.29)	20 (80.00)	71 (86.59)	50 (84.75)	121 (85.82)	70 (83.33)
Dal	26 (76.47)	20 (80.00)	60 (73.17)	47 (79.66)	107 (75.89)	67 (79.76)
Green vegetables	27 (79.41)	19 (76.00)	70 (85.37)	51 (86.44)	121 (85.82)	70 (83.33)
Milk	17 (50.00)	10 (40.00)	47 (57.32)	29 (49.15)	76 (53.90)	39 (46.43)
Fish	4 (11.76)	2 (8.00)	12 (14.63)	5 (8.47)	17 (12.06)	7 (8.33)
Fruits	4 (11.76)	3 (12.00)	7 (8.54)	7 (11.86)	14 (9.93)	10 (11.90)
Fats and oils	2 (5.88)	2 (8.00)	2 (2.44)	3 (5.08)	5 (3.55)	5 (5.95)
Total	34 (100.00)	25 (100.00)	82 (100.00)	59 (100.00)	141 (100.00)	84 (100.00)

Note - Figures in parentheses are percentage to respective column's total

Table 4 : Education and sex-wise awareness of diabetic respondents about harmful foodstuff

Foods avoided	Up to High School			Above High School			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Sweets and sugar	18 (52.94)	13 (52.00)	31 (52.54)	55 (67.07)	40 (67.80)	95 (67.38)	73 (62.93)	53 (63.10)	126(63.00)
Fruits	11 (32.35)	6 (24.00)	17 (28.81)	22 (26.83)	14 (23.73)	36 (25.53)	33 (28.45)	20 (23.81)	53 (26.50)
Milk	7 (20.59)	3 (12.00)	10 (16.95)	13 (15.85)	5 (8.47)	18 (12.77)	20 (17.24)	8 (9.52)	28 (14.00)
Rice	13 (38.24)	14 (56.00)	27 (45.76)	26 (31.71)	31 (52.54)	57 (40.43)	39 (33.62)	45 (53.57)	84 (42.00)
Fat	5 (14.71)	5 (20.00)	10 (16.95)	16 (19.51)	15 (25.42)	31 (21.99)	21 (18.10)	20 (23.81)	41 (20.50)
Puri and paratha	6 (17.65)	8 (32.00)	14 (23.73)	22 (26.83)	26 (44.07)	48 (34.04)	28 (24.14)	34 (40.48)	62 (31.00)
Alcohol	1 (2.94)	1 (4.00)	2 (3.39)	5 (6.10)	2 (3.39)	7 (4.96)	6 (5.17)	3 (3.57)	9 (4.50)
Total	34(100.00)	25(100.00)	59(100.00)	82(100.00)	59(100.00)	141(100.00)	116(100.0)	84 (100.0)	200(100.0)

Note – Figures in parentheses are percentages to respective column's total

by Dal and Milk in the order. Only 4.50 per cent of the diabetics held the view that fats and oils be consumed without any ill effects. Similar pattern but with a varying proportion can be seen if Table 3 is viewed from the angle of sex-wise distribution of the sample respondents.

Table 3 also reveals that according to educational distribution of the respondents, that over 85 per cent of the respondents with above High School level education considered both the Roti and the green vegetables safest food followed by Dal while only Roti was considered safe by the 83 per cent of the diabetics upto High School level education. About 78 per cent of this category preferred Dal and green vegetables. Pulses like gram, peas, beans etc. in both the whole sum grains and dehusked forms are considered good source of protein for all vegetarians. Combination of cereals and pulses in diet provides nearly all-essential amino acids. Green leafy vegetables are considered good sources of vitamin C, carotene, folic acid, calcium and iron minerals and are prescribed to all diabetics in their diet. Mono unsaturated fat may result in lower triglyceride level and better glycemic control than carbohydrate.

Awareness about harmful foodstuffs:

Besides distributing the total calories especially the carbohydrate calorie, it is necessary for the diabetics to control the intake of all type of concentrated carbohydrates. Table 4 presents a clear picture of the awareness of diabetic respondents about the harmful foodstuffs.

Table 4 shows that 63 per cent of the diabetic respondents believed to avoid sweets and sugar and rice, 42 per cent rice as to them as these are the two main harmful foodstuffs. In spite of that, majority of diabetics consume them occasionally just to satisfy their taste in stings. An equal proportion of both the males and females (*i.e.* about 63 per cent) were well aware that sweets and

sugar are highly harmful for diabetics. Respondents suffering from this complication are very strict in following it. However, in festivals and functions most of them loose the control, which further leads to diabetes related problems. 4.96 per cent males having educational status above High School considered alcohol harmful as compared to 3.39 per cent of respondents' upto High School. Sahay and Sahay (2002) reported that exercise constitutes the first step in the treatment of type II diabetes along with diet. Exercise improves the condition of a diabetic patient due to several factors. There is an increase in the number of insulin receptors as well as the sensitivity of insulin receptors. In addition, there is an elevation of 2-3 DPG levels in the red blood cells and reduction in the hemoglobin. These promote the delivery of oxygen to the peripheral tissues, which result in the improved efficiency of the diabetic. The best form of exercise recommended to a diabetic is a stepwise increase of aerobic exercises. On the other hand, isometric exercises like weight lifting, sustained handgrip are to be avoided in diabetics as they increase the arterial pressure.

Conclusion:

Majority of diabetic respondents believe that diet management is essential and it was also found that awareness about dietary measures among the people with higher level of education is more. It was observed that Roti, green vegetables, milk, pulses and legumes are considered beneficial and safe by majority of diabetics respondents. It was found that respondents belonging up to High School level education were less aware of harmful food stuff as compared to respondents belonging to above High School level education. Maximum respondents considered sugar and sweets, rice, puri and paratha and fat as harmful foodstuff. Most of the females in both samples were strictly vegetarian. Majority of diabetics

males were almost equally distributed in three food habit categories.

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