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RESEARCH PAPER

OPEN ACCESS

A STUDY OF NUTRITIONAL PROFILE AND RISK FACTOR FOR DIABETIC PATIENTS

DR. NUZHAT SULTANA M.B¹

ABSTRACT

Diabetes mellitus is one of the most common metabolic disorders. India is a home of nearly 33 million diabetic subjects, which is the highest number in the world. A supportive approach to managing blood sugar/glucose is a diet in high fiber. Recently dietary supplementation of fenugreek extract has been promoted to decrease blood glucose in diabetic patient. Hence present study was analyzed the impact of supplementation of fenugreek extract among selected diabetic samples in the age group of 25 to 60 years from four hospitals of A-bad district. These samples were considered as experimental group (i.e.40) and control group (40). For the above study experimental group were supplemented fenugreek extract along with food items or alone daily for thirty days (4weeks). Anthropometric measurement i.e. weight, mid arm circumference, waist hip ratio and BMI as well as blood glucose level was estimated, before and after supplementation. The result of the study indicated that there was significant reduction in the mean weight and BMI as well as fasting and post level of blood glucose in the experiment samples. Thus it was concluded that dietary supplementation of fenugreek extract is an effective measure to bring out the favorable changes in the diabetic patient.

KEY WORDS:

Nutritional factor, risk factors supplementation diabetes mellitus.

INTRODUCTION

Diabetic's mellitus type 2 is a non autoimmune, complex, heterogeneous and polygenic metabolic disease condition, in which the body fails to produce enough insulin, character by abnormal glucose homeostasis (Guptal etal, 2008). According

to WHO nearly 33 million diabetic subjects are present in the world and by 2030 the diabetic patient/ population will be about 370 million. In India it is increase to be 51 million people in 2010 to 87 million by 2030 (Snehalatha Ramchandran2003) Diabetics mellitus is increase morbidity (i.e.4million) and 68% mortality in the age of 20 to 70

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years (IDF Report 2009) and 7.97 million population decrease their quality of life (jonsson 1998). In 2004 one thousand nine deaths are responsible for diabetes mellitus (venkatav etal 2009) where as 2.263 million disable to adjust the life years in India (ICMR2006).

It was found that prevalence of diabetes mellitus in urban area was 3.7% and 3.2% in rural areas (Mohan etal 2008). The highest prevalence of diabetes mellitus type 2 in developing countries occurs in the higher socioeconomic group. The prevalence of diabetes is rising all over the world due to population growth, aging urbanization an increase of obesity and physical inactivity.

Many studies revealed that obesity indicator (BMI, waist circumference, waist/hip rate) are important risk factors for diabetes (Vasquez etal 2007).

It has been denoted by various studies that diabetes were 2.21% greater for individual with pre hypertension than for those with normal blood pressure (Gressetal 2000,Mutti 2009) physical activity and weight control are critical factors in diabetic patient (HUETAL2004) Nearly 75% diabetes mellitus have first degree family history of diabetes. When both parents had diabetes the prevalence rate increased further 62% (vishwanthan etal 1996). Moreover dietary habits are also one of the responsible factor for diabetes mellitus (Misra etal 2009, stanhppe etal 2009). Harder etal in 2006 found that low birth weight (<2.500gms) as compared with a birth weight of >2.500gms was associated with risk of diabetes mellitus type2.

OBJECTIVES

- 1) To study the possible risk factors of diabetes mellitus type 2.
- 2) To categorize the samples according to the intensity of the glucose.
- 3) To study the dietary pattern of the diabetic patient.
- 4) To know the socio economic status of the diabetic patient.
- 5) To study impact of supplementation on anthropometrical measurement and biochemical measurement of the samples.

METHODOLOGY

The study was carried out under the following heads.

- 1) **Selection of area:** Four reputed hospitals of Aurangabad city were selected for the study.
- 2) **Selection of samples:** Two hundred fifty samples (male & female) in the age of 25 to 65 years, middle income group were selected randomly. These samples were collected from four reputed hospitals over a period of three months.
- 3) **Collection of data:** For the present study, data was collected under the following heads.
 - a) Socioeconomic survey
 - b) Anthropometric measurement
 - c) Biochemical measurement
 - d) Dietary consumption pattern

1) **Socioeconomic survey:** With the help of questionnaire cum interview schedule the socioeconomic status of selected sample carried out.

2) **Anthropometric measurement:** For the above study two hundred fifty samples were divided into

two groups. Hundred and twenty five male and female sample were treated as experimental samples and supplemented pure fenugreek powder (extract) for one month. But hundred and twenty five samples male and female were not received any supplementation and treated as control sample. All anthropometric measurement of experimental and control sample were recorded before and after supplementation of fenugreek extract.

3) Biochemical's measurement:

With the help of glucose tolerance test and cholesterol test, blood sugar and cholesterol level was estimated.

4) Dietary consumption pattern:

Daily dietary pattern of the samples were measured with the help of 24 hour recall method. Each and every sample was asked what, which, how many times they had eaten different food stuff daily.

RESULT AND DISCUSSION

(Table 1, Figure 1) The table shows that maximum number of male diabetic patient was 27% in the age between 45-50 yrs but in female 23.4% was between the age of 25-30 yrs. Whereas 4% male and 16.6% diabetic patient were in the age between 30-35yrs. But 18.4% male and 20.8% female diabetic patient was between the age 35-40yrs. Maximum percentage of diabetic patient were found in the age between 45-50 yrs. Only 20% male and 6.4% female were diabetic patient during the age between 55-60 yrs.

(Table 2, Figure 2) The data represent that only 33.6% male and 28.8% female diabetic patient were having normal physical status. But 45% male and 17.6% female diabetic patient were overweight. while 21.6% male and 17.60% female diabetic patient were obese.

(Table 3, Figure 3) The above table represents the risk factors for diabetic mellitus. Study revealed that 21.65% male and 17.60% female responded that obesity was major risk factor for diabetic mellitus. whereas in 8% male and 13.60% female responded that hereditary was the main risk factor for diabetic disorder. But equal percentage of i.e 16% male and female responded that low income was the responsible factor for diabetes mellitus. While in 16% male and 8% female concluded that CHD was the risk factor for diabetes mellitus. Only 20% male and 24% female were responded that low physical activity or sedentary work was mainly risk factor for diabetes mellitus.

ANTHROPOMETRIC MEASUREMENT:

Table 4 - Mean weight of the diabetic patient.

The study table shows that before supplementation the mean weight of the experimental sample was 64.31kg in males and 55.21 kg in females. But after supplementation the mean weight was 63kg in males and 54.93kg in females respectively. While in case of control sample there was no significant changes in their body weight.

Table 5: Mid arm circumference of the diabetic patient

Table 6: Mean waist hip ratio of the diabetic

patient

Table 7: BMI ratio of the diabetic patient

Table 8: Mean blood sugar of the diabetic patient

Table 9: Serum cholestrol of the diabetic patient

Table 10: Percentage intake of nutrients by rural and urban diabetic patient

(Figure 4) The result shows that the percentage intake of nutrients of urban and rural diabetic patient. Urban diabetic patient were taking all the nutrient nearly equal to ICMR recommended daily allowances. But rural sample were taking all nutrients less than as recommended daily allowances by ICMR. It may be due to the lack of knowledge, burden of work, lack of awareness, easy going life makes them difficult to get nutrients from different food stuffs.

CONCLUSION

Fenugreek powder is bitter to our palate, but this powder is good to control the sugar level in diabetic patient. Fenugreek supplement may improve the insulin level and it may delay the onset of diabetes.

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Table 1: Percentage distribution of age of the diabetic patient.

Ager in yrs	Total no of males	Percentage of males	Total no of females	Percentage of females
25-30	03	2.4	08	6.4
30-35	05	04.0	22	16.6
35-40	10	08.0	28	23.4
40-45	23	18.4	26	20.8
45-50	34	27.0	18	14.4
50-55	25	20.0	15	12.0
55-60	25	20.0	08	6.4
Total	125	100.0	125	100.0

Figure 1: Percentage distribution of age of the diabetic patient

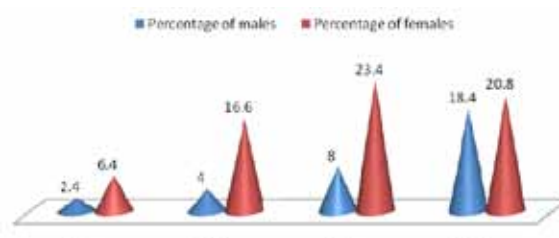


Table 2: Physical condition of the diabetic patient

Physical Status	Total no of males	Percentage	Total no of female	percent-age
Normal	42	33.6	36	28.8
Over weight	56	45.0	22	17.60
Obesity	27	21.6	22	17.60

Figure 2: Physical status of the diabetic patient

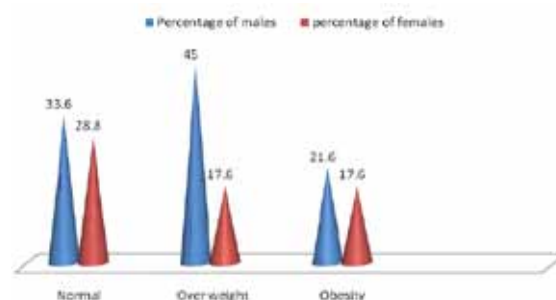


Table 3: Risk factors for diabetic mellitus.

Risk factors for the diabetic mellitus	Total no of males	Percent-age of males	Total no of female	Percent-age of females
Obesity	27	21.6	22	17.60
Hereditary	10	08.0	17	13.60
Low income	20	16.0	20	16.00
High calorie intake	23	18.40	25	20.00
Prevalence	290	16.0	10	08.0
Less physical activity	25	20.00	31	24

Figure 3: Risk factors for diabetic mellitus

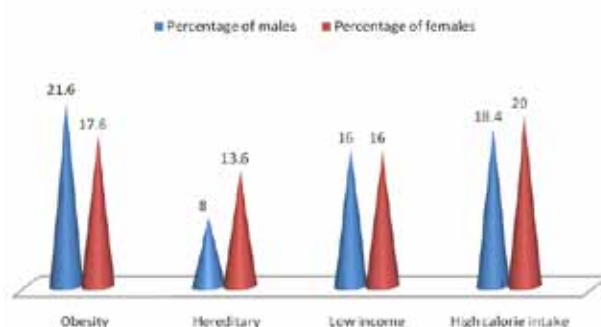


Table 4: Physical condition of the diabetic patient

Groups	Mean weight of male before supplementation in male.kg	SD	Mean weight of male after supplementation.kg	SD	Mean weight of female before supplementation.kg	SD	Mean weight of female after supplementation.kg	SD
Experimental groups	64.31	21.42	63.00	20.80	55.21	19.36	54.93	18.42
Control group	68.42	22.50	68.72	22.62	58.16	20.45	59.00	20.68

Table 5: Mid arm circumference of the diabetic patient

Groups	Before supplementation in male .cm	After supplementation in male.cm	Before supplementation in female.cm	After supplementation in female.cm
Experimental groups	28.21	27.10	23.65	23.00
Control group	27.82	27.80	23.55	24.0

Table 6: Mean waist hip ratio of the diabetic patient

Groups	Before supplementation in male.cm	After supplementation in male.cm	Before supplementation in female.cm	After supplementation in female.cm
Experimental groups	93.43	92.21	85.43	84.36
Control group	90.80	90.73	84.21	85.32

Table 7: BMI ratio of the diabetic patient

Groups	Before supplementation in male.kg/m ²	After supplementation in male.kg/m ²	Before supplementation in female.kg/m ²	After supplementation in female.kg/m ²
Experimental groups	24.66	22.03	23.83	22.08
Control group	25.73	26.83	24.08	24.78

Table 8: Mean blood sugar of the diabetic patient

Groups	Before supplementation in male.mg	After supplementation in male.mg	Before supplementation in female.mg	After supplementation in female.mg
Experimental groups	102	94	108	98
Control group	155	154	160	164

Table 9: Serum cholestrol of the diabetic patient

Groups	Before supplementation in male.mg	After supplementation in male.mg	Before supplementation in female.mg	After supplementation in female.mg
Experimental groups	178	200	208	198
Control group	205	172	188	178

Table 10: Percentage intake of nutrients by rural and urban diabetic patient;

Nutrients	RDA by ICMR For Adult	Male Sample %	Female Sample %
Proteins (GM)	55	89.09	93.09
Calories (Kcal)	2800	73.57	79.10
Calcium (mg)	500	77.57	83.00
Iron (mg)	24	90.00	83.37
Vit A. (mg)	750	86.00	87.06
Vit B1. (mg)	1.2	85.00	80.00
Vit B2. (mg)	(1.4)	67.00	78.57
Vit B3. (mg)	16.0	73.43	78.93
Vit C. (mg)	40	90.17	95.00

Figure 4: Percentage intake of nutrients of urban and rural diabetic patient

