

Original Research Article

Community based cross sectional study on prevalence of risk factors of type 2 Diabetes Mellitus in adult population residing in urban area of Shahjahanpur, Uttar Pradesh

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Abstract

Diabetes is major health problem in India and the burden is rapidly increasing. The present study was conducted to find the prevalence of risk factors of diabetes in adult population residing in urban area of Shahjahanpur, Uttar Pradesh among 218 randomly selected adults between the age of 30-60 years. 51.4% were males, 94.5% were married, 67.9% were Hindus, 63.3% lived in joint families and 71.6% belonged to socio-economic class IV or V. Sedentary lifestyle was seen in 50%, vegetarian diet in 14.7%, family history of diabetes in 3.2%, overweight/ obesity in 49.2%, high WHR in 66.9%, 83.5% respondents took vegetables for more than four days in a week while only 6.5% took fruits for more than four days in a week. Regular assessment of risk factors is important in primordial prevention and decreasing incidence and prevalence of diabetes.

Key words

Type 2 diabetes mellitus, Prevalence, Risk factors, Adults, Urban area.

Introduction

India has the highest no. of diabetes patients and has been correctly termed as “Diabetes Capital of the World”. It is estimated that by the year 2030, the number of diabetics will increase to 101.2 million if the same trends continue and intensive control is not done [1]. Asian Indian phenotype with high insulin resistance and increased abdominal fat deposition is more prone to diabetes and hence, the situation is alarming [2]. In urban population, the diabetes prevalence is 5-25% and in rural areas, it is 2-5% [3].

Various studies have indicated that obesity, physical inactivity, dietary pattern and stress are major contributors for establishment and progression of diabetes [4]. A study conducted in South India found that major risk factors for diabetes were age of 40 years, male gender, body mass index of more than 23 kg/m², waist hip ratio of men >1 and women >0.8, alcohol intake and systolic blood pressure of more than 140 mm of Hg [5]. Primordial prevention focuses on reduction of risk factors for a disease with the goal of preventing the very much onset of disease. It is prevention in its truest sense. Study of pattern of risk factors is essential for monitoring of trends and timely interventions. Various studies have been conducted in different parts of India for studying the prevalence of risk factors for diabetes. No study has been conducted in this part recently. Hence, this study was proposed.

Objectives

The present study was conducted to find the prevalence of risk factors of diabetes in adult population residing in urban area of Shahjahanpur, Uttar Pradesh.

Materials and methods

The present study was cross sectional in nature between September 2016 to February 2017. Study subjects included adult population residing in the selected ward of urban area of Shahjahanpur. Subjects in the age group of 30 to

60 years living in the selected area were included in the study. Seriously ill persons and those not willing to participate were excluded.

A study conducted by Vigneswari, et al. in Tamil Nadu found prevalence of obesity to be 57.3% [6]. Considering relative precision of 10%, confidence level of 95% and non-response rate of 10%, sample size was estimated to be 218. Voter list of adult persons residing in the selected ward was obtained. Using random number table, 218 participants were identified and studied. Informed consent was taken from all the participants. Semi-structured pre-designed questionnaire was used for data collection. Information was obtained regarding socio-demographic profile and risk factors for diabetes including age, physical activity, obesity, family history, dietary pattern etc. Standardized stethoscope, weighing scale, sphygmomanometer, measuring tape of non-stretchable variety were used for data collection.

Data was entered in Microsoft Excel 2010 and analyzed using SPSS v 16.0. After data collection, study subjects were informed about their risk status and were given health education regarding risk factors of diabetes and its prevention. Approval from Institutional Ethical Committee was taken. Confidentiality of records was ensured and informed consent was taken from all the respondents.

Results and Discussion

A total of 218 participants were included in the present study. Mean age of study participants was 45.9 ± 6.7 years. Proportion of males was 51.4%, 94.5% were married, 67.9% were Hindus, 63.3% lived in joint families, 71.6% belonged to socio-economic class IV or V and 69.7% were literate.

The number of diabetics in India is 69.2 million (8.7%) as per the 2015. India is facing dual burden of diseases with chronic diseases contributing equally to infectious diseases [1]. Considering these facts, NPCDCS was launched

in India in the year 2010 in phasewise manner [7]. Risk factors of diabetes are well known and the epidemiology is clearly defined [2, 3]. Still, we find rapid increase in diabetes burden which indicates programmatic issues. Hence, it is important to focus on primordial prevention which will have sustained effect. Thus, surveillance of risk factors is important.

Table - 1 and **Figure – 1** shows distribution of risk factors of diabetes among males and females. In the present study, sedentary lifestyle was seen in half of the respondents and physical activity was lesser in females than males. Gupta et al found that 73% respondents belonged to the group with mild to moderate physical activity [8]. Muthunarayanan, et al. observed that about one fourth of study subjects had light activity [5].

Table – 1: Risk factors of diabetes among males and females.

Risk Factor	Male (n=112)	Female (n=106)	Significance
Dietary Pattern			
-Vegetarian	11 (9.8%)	21(19.8%)	chi ² = 4.3395 p = 0.037
-Non-vegetarian	101 (90.2%)	85 (80.2%)	
Consumption of vegetables			
-<= 3 days/week	17 (15.2%)	19 (17.9%)	chi ² = 0.2978 p = 0.585
- > 3 days/week	95 (84.8%)	87 (82.1%)	
Consumption of fruits			
-<=3 days/week	104 (92.9%)	100 (94.3%)	chi ² = 0.1992 p = 0.655
- > 3 days/week	8 (7.1%)	6 (5.7%)	
Physical Activity			
- Sedentary	44 (39.3%)	65 (61.3%)	chi ² = 10.9124 p = 0.004
- Moderate	55 (49.1%)	35 (33%)	
- Heavy	13 (11.6%)	6 (5.7%)	
Family history of diabetes			
- Yes	3 (2.7%)	4 (3.8%)	chi ² = 0.2101 p = 0.647
- No	109 (97.3%)	102 (96.2%)	
Obesity			
- Underweight	1 (0.9%)	3 (2.8%)	chi ² = 1.2630 p = 0.738
- Normal	56 (50%)	51 (48.1%)	
- Overweight	43 (38.4%)	42 (39.6%)	
- Obese	12 (10.7%)	10 (9.4%)	
Waist circumference			
- Normal	58 (51.8%)	28 (26.4%)	chi ² = 14.6747 p = 0.000
- Abnormal	54 (48.2%)	78 (73.6%)	
Waist hip ratio			
- Normal	107 (95.5%)	39 (36.8%)	chi ² = 84.9593 p = 0.000
- Abnormal	5 (5.5%)	67 (63.2%)	

14.7% respondents were vegetarian. Proportion of vegetarians in females was more than males (p=0.037). Gupta, et al. found that more than 90% respondents were non-vegetarian [8]. 83.5% respondents took vegetables for more than four days in a week and the difference between males

and females was not significant. 93.5% respondents took fruits less than or equal to three days in a week and the difference between females and males was not significant. Vigneswari, et al. found that 14% respondents never ate fruits [6]. Muthunarayanan, et al. found

that mean days of fruit intake was 2.65 ± 1.81 days/ week and for vegetables, it was 4.86 ± 2.14 days/week.

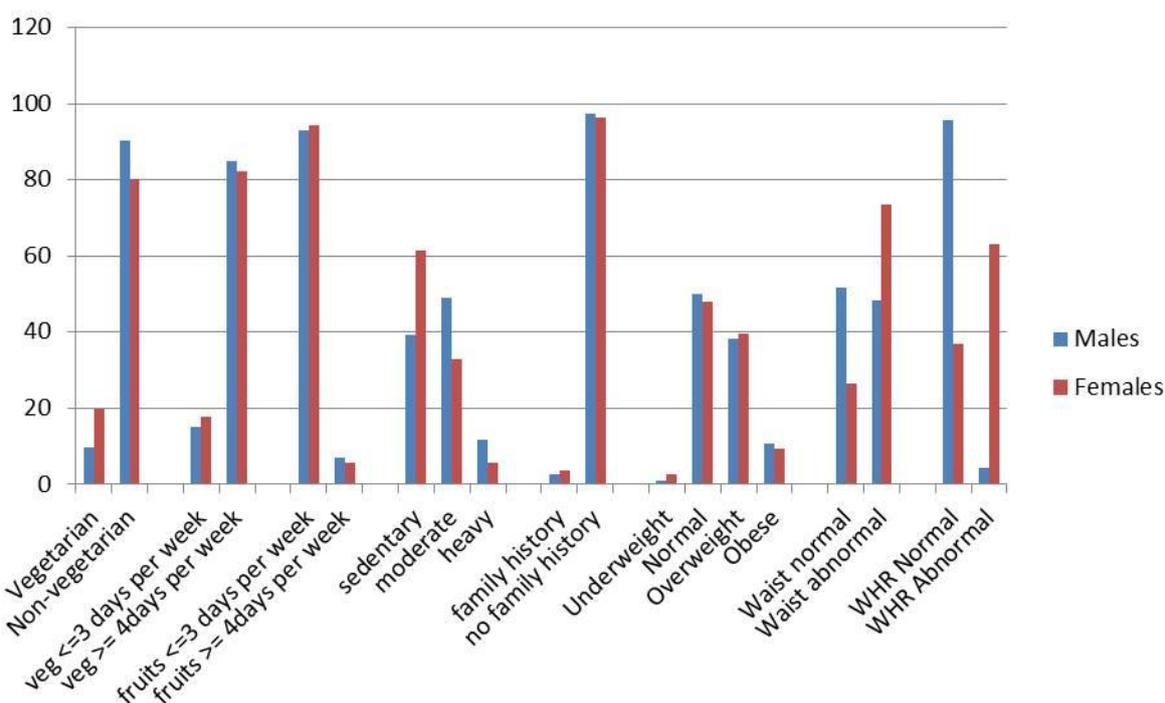
Family history of diabetes was present in 3.2% of the respondents and the male-female difference was not significant. Vigneswari, et al. observed positive family history in 20.5% of respondents [6]. Ahmad et al found positive family history in 6.92% respondents [9] while Gupta et al found it to be 12.19% [8].

49.2% respondents were overweight/ obese. Prevalence of obesity was found to be 57.3% by

Vigneswari, et al. [6], 36.82% by Ahmad, et al. [9], 9.14% by Gupta, et al. [6] and 50% by Malini, et al. [10]. Waist circumference was normal in 39.4% respondents and this was higher in females as compared to males ($p=0.000$). Waist-hip ratio (WHR) was high in 66.9% respondents and this was again higher in females ($p=0.000$). High WHR was seen in 30.9% study subjects by Muthunayanan, et al. and they also found differences in WHR among normal, pre-diabetics and diabetics to be significant [5]. Malini, et al. found WHR to be 94% [10].

Figure – 1: Distribution of risk factors among male and female.

Chart showing distribution of risk factors among males and females



With modernization, major lifestyle changes have been there, most of them leading to establishment of NCDs [11]. It is seen that the prevalence of modifiable risk factors of diabetes is high in the studied population. Notable among these are high WHR (66.9%) and sedentary lifestyle (50%). Regular assessment of risk factor

prevalence will help the planners in monitoring of the trends and will have long term impact on incidence and prevalence of diabetes.

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