



Study of Type 2 Diabetes Mellitus Patients Attending Urban Health Training Centre of Community Medicine Tertiary Care Hospital, Maharashtra

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Financial Support: None declared

Conflict of Interest: None declared

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How to cite this article:

Kawale SN, Shinde MA, Pandve HT, Shinde PS. Study of Type 2 Diabetes Mellitus Patients Attending Urban Health Training Centre of Community Medicine Tertiary Care Hospital, Maharashtra. Natl J Community Med 2020;11(8):319-323

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Date of Submission: 23-06-2020

Date of Acceptance: 17-08-2020

Date of Publication: 31-08-2020

ABSTRACT

Introduction: Diabetes mellitus is a heterogeneous group of diseases, characterized by chronic hyperglycemia, resulting from environmental and genetic causes. Aim - To study the cases of type 2 diabetes mellitus attending urban health training centre of community medicine department of tertiary care hospital, Maharashtra.

Method: It was a hospital based observational descriptive study done in urban health training centre from January to December 2016 including all known cases of type 2 diabetes mellitus which was around 700.

Result: Maximum cases were from age group 40-49 years (38.16 %) and 48% were males and 52 % were females. Maximum cases were Hindu 43% having unskilled occupation 19% and nuclear family 46%. Whereas 37% and 18 % study subjects were having BMI of 25- 29.9 and ≥ 30 respectively, 28 % were having family history of diabetes mellitus, 37% were having Hypertension, 55 % men and 57% women were having abnormal waist-hip ratio, 29 % men and 09 % women were having habit of alcohol intake. Whereas 37% men and 25% women were having habit of tobacco intake.

Conclusion: Type 2 diabetes mellitus patients having modifiable and non-modifiable risk factors for the causation of the disease.

Keywords: Diabetes Mellitus; Urban Health Training Centre; Tertiary care hospital.

INTRODUCTION

Diabetes is an "iceberg" disease. Once regarded as a single disease entity, diabetes is now seen as a heterogeneous group of diseases, characterized by a state of chronic hyperglycemia, resulting from a diversity of aetiologies, environmental and genetic, acting jointly. The underlying cause of diabetes is the defective production or action of insulin, a hormone that controls glucose, fat and amino acid metabolism. Characteristically, diabetes is a long-

term disease with variable clinical manifestations and progression. Unfavourable modification of lifestyle and dietary habits that are associated with urbanization are believed to be the most important factors for the development of diabetes. The prevalence of diabetes is approximately twice in urban areas than in rural population¹.

During year 2014, the number of cases of diabetes worldwide is estimated to be around 422 million, of these more than 90 per cent are type 2 diabetes.

In 2015, an estimated 1.6 million people died from consequences of high blood sugar². More than 80 per cent diabetes deaths occur in low and middle income countries. The global prevalence of diabetes in 2014 was estimated to be 8.5% in adults aged 18+ years². By 2025, >75% of diabetics are expected to reside in developing countries.

Unfortunately, there is still inadequate awareness about the real dimension of the problem among the general public. There is also a lack of awareness about the existing interventions for preventing diabetes and the management of complications. Inadequacies in primary health care systems, which are not designed to cope with the additional challenges posed by the chronic non-communicable diseases, result in poor detection of cases, suboptimal treatment and insufficient follow-up leading to unnecessary disabilities and severe complications, often resulting in early death.

Although the urban health training centre (UHTC) under community medicine department of tertiary care hospital caters to the urban slum population, this hospital based observational descriptive study was undertaken in all known cases of type 2 diabetes mellitus coming to UHTC to study the risk factors associated with diabetes mellitus in them.

AIM AND OBJECTIVE

The research was conducted to study the cases of type 2 diabetes mellitus attending urban health training centre of community medicine department of tertiary care hospital, Maharashtra.

MATERIAL AND METHODS

The study was a hospital based observational descriptive study carried out in urban health training centre of community medicine department of tertiary care hospital. It is a duration based study carried out from January 2016 to December 2016 i.e. for total 12 months. All the known cases of type 2 diabetes mellitus attending the UHTC during the study period willing to participate in the study procedure were included in the study which was around 700. While patients unwilling to participate in the study procedure were excluded from the study.

Data collection- After explaining the purpose of study and obtaining verbal informed consent from the patients, all patients were interviewed with the help of preformed structured questionnaire comprising of questions related to epidemiological and clinical details of the subject, age, sex, address, salt consumption, physical activity, addictions, medical history about diabetes and hypertension and fami-

ly history of diabetes mellitus amongst their parents and siblings. Blood pressure was measured as per WHO guidelines³. Anthropometric measurements of each study subject i.e. weight, height, waist circumference and hip circumference were measured as per the standard techniques.⁴ A clinical examination was conducted on all the participants by trained department faculty/ LMO/ MO/ interns of the centre of department of Community Medicine. The individuals were labeled as known cases of type 2 diabetes mellitus only when they showed the reports and evidence of antidiabetic medication or previous medical examination reports. Records of all patients were studied and data regarding their clinicosocial profile was analyzed. Data was entered in Microsoft excel sheet and it was analyzed with Epi info software. Statistical analysis was done by using simple proportions and percentages. Throughout the study anonymity of all patients was maintained and privacy as well as confidentiality of the data was assured.

RESULTS

The present hospital based observational descriptive study was carried out among 700 known cases of type 2 diabetes mellitus who attended Urban Health Training Center of the Department of Community Medicine during the study period.

Table 1 shows distribution of 700 study subjects according to age and sex. It showed that 48 % were males and 52 % were females. The maximum numbers of individuals were from age group 40-49 years (38.16 %) followed by age group 30-39 years (22.90 %) and 50-59 years(19.55%).

Distribution of study subjects according to religion shows that maximum number of individuals were Hindu by religion i.e. 43%. Muslim individuals were 39%, Buddhist individuals were 15% and Christian were 03%.

Distribution of study subjects according to socioeconomic status shows that the maximum numbers of study subjects were from socioeconomic class IV i.e. 39% and minimum numbers of study subjects were from socioeconomic class II i.e. 08%.

Table 1: Distribution of study subjects according to age and sex

Age (yrs)	Males (%)	Females (%)	Total (%)
30-39	88 (54.65%)	73 (45.34%)	161 (22.90%)
40-49	145(54.30%)	122(45.69%)	267 (38.16%)
50-59	61(44.52%)	76 (55.47%)	137 (19.55%)
60-69	30 (28.57%)	75 (71.42%)	105(15.05%)
≥70	12(40)	18(60)	30(04.34)
Total	336(48%)	364(52%)	700(100%)

Table 2: Distribution of study subjects according to demographic characteristics

Variables	Number (%) (n=700)
Religion	
Hindu	301 (43)
Muslim	273 (39)
Buddha	105 (15)
Christian	21 (3)
Socioeconomic class	
Class II	56 (8)
Class III	175 (25)
Class IV	273 (39)
Class V	196 (28)
Occupation	
Professional	1 (0.2)
Managerial	34 (4.8)
Clerical and skilled	84 (12)
Semiskilled	105 (15)
Unskilled	133 (19)
Unemployed	343 (49)
Type of family	
Nuclear	322 (46)
Joint	147 (21)
Three generation	231 (33)
Education	
Illiterate	175 (25)
Primary education	154 (22)
Secondary education	182 (26)
SSC	77 (11)
HSC	63 (9)
Graduate	48 (6.8)
Post graduate	1 (0.2)

Table 3: Distribution of study subjects according to clinicosocial factors

Variables	Number (%) (n=450)
Marital status	
Married	623 (89)
Unmarried	42 (6)
Widowed	8 (1.2)
Divorcee	27 (3.8)
B.M.I	
< 18.5	21 (3)
18.5-24.9	294 (42)
25-29.9	259 (37)
≥ 30	126 (18)
Family history of diabetes mellitus	
Yes	196 (28)
No	504 (72)
Hypertension	
Yes	259 (37)
No	441 (63)
Physical activity	
Sedentary	322 (46)
Moderate	318 (45.5)
Heavy	60 (8.5)
Dietary pattern	
Mixed	504 (72)
Vegetarian	196 (28)

Table 4: Distribution of study subjects according to other high risk factors

Variables	Male (%)	Female (%)
Waist hip ratio		
Normal	151(45)	157(43)
Abnormal	185(55)	207(57)
Alcohol intake		
Yes	97(29)	33(09)
No	239(71)	331(91)
Tobacco intake in any form		
Yes	124(37)	91(25)
No	212(63)	273(75)

Table 2 shows Distribution of study subjects according to demographic characteristics. Maximum individuals were having un-skilled occupation i.e. 19% and minimum individuals were having professional occupation i.e. 0.2%.

Among 700 study subjects, 49% were unemployed individuals and 15% were semiskilled individuals.

Distribution of study subjects according to type of family shows that maximum numbers of individuals were from nuclear family i.e. 46% followed by three generation 33% and joint family were 21%.

Distribution of study subjects according to education shows that maximum individuals were having secondary education 26%. However 25% individuals were illiterate and 22% were having primary education.

Table 3 shows Distribution of study subjects according to clinicosocial factors.

Distribution of study subjects according to marital status shows that 89 % were married, 06 % were unmarried, 1.2 % were widowed and 3.8 % were divorcee.

Distribution of study subjects according to Body Mass Index shows that 03% study subjects were having their BMI below 18.5 while 42 % study subjects were having their BMI in normal range [18.5-24.9], 37 % and 18 % of study subjects were having BMI of 25-29.9 and ≥ 30 respectively.

Distribution of study subjects according to family history of diabetes mellitus shows that amongst 700 study subjects, 28% were having family history of diabetes mellitus and 72% were not having family history of diabetes mellitus.

Distribution of study subjects according history of hypertension shows that 37 % study subjects were having history of hypertension.

Out of total 700 study subjects, 46% were having sedentary activity, 45.50 % were having moderate activity and 08.50 % were having heavy activity.

Distribution of study subjects according to dietary pattern shows that 72% of total study subjects were

having mixed diet and 28 % of total study subjects were having vegetarian diet.

Table no. 4 shows distribution of study subjects according to other high risk factors. Waist hip ratio was calculated as waist circumference divided by hip circumference. The cut-off used for the waist-hip ratio (WHR) for males was 0.9 as normal and for females it was 0.8 as normal.

Out of 336 males in study, 55 % men were having waist-hip ratio > 0.9 and 45 % men were having waist-hip ratio ≤ 0.9. Amongst 364 females in study, 57 % women were having waist-hip ratio > 0.8 and 43 % women were having waist-hip ratio ≤ 0.8.

Considering alcohol intake, 29 % of total male subjects were having habit of alcohol intake, while 09 % female subjects were having habit of alcohol intake. Whereas 37 % of total male subjects were having habit of tobacco intake in any form as compared to 25 % of female subjects who were having habit of tobacco intake in any form.

DISCUSSION

This study was a hospital based observational descriptive study carried out in urban health training centre of community medicine department of tertiary care hospital from January 2016 to December 2016 i.e. for total 12 months considering all the known cases of type 2 diabetes mellitus attending the UHTC during the study period which was around 700.

The distribution of total 700 study subjects according to age and sex showed that 48 % were males and 52 % were females. The maximum numbers of individuals were from age group 40-49 years (38.16 %) followed by age group 30-39 years (22.90 %). In a study done Dr. Ramchandra A et al⁵, the maximum number of diabetics were in the age group of 40-59 years with no significant difference between genders.

Distribution of study subjects shows that maximum number of individuals were Hindu by religion i.e. 43% and 26% were having secondary education. Dowse GK et al⁶ and Bharati DR et al⁷ found no association between type 2 DM with religion and education in their studies.

In our study, maximum study subjects 49% were unemployed while 19% study subjects were having unskilled occupation and 15% were having semi-skilled occupation. Dr. Ramchandra A et al⁵ showed significant association between unemployed category of occupation and diabetes mellitus. The study findings are similar to our study. In our study, maximum study subjects belonged to nuclear family i.e. 46% followed by three genera-

tion 33% and joint family were 21%. Aswar Nandkeshav R et al⁸ in their study found the prevalence of diabetes mellitus was 10.1% among study subjects belonging to nuclear families and 8.8% among subjects belonging to joint families.

While 89 % in our study were married, 06 % were unmarried, 1.2 % were widowed and 3.8 % were divorcee. In comparison with our studies, Aswar Nandkeshav R et al⁸ found that the prevalence of diabetes mellitus among married study subjects was 10.1% and among widowed & divorced subjects it was 9.8%. No case of DM was found in unmarried. The association between marital status and diabetes mellitus among study subjects was not statistically significant.

Distribution of study subjects according to Body Mass Index shows that 03 % study subjects were having their BMI below 18.5 while 42 % study subjects were having their BMI in normal range [18.5-24.9], 37 % and 18 % of study subjects were having BMI of 25-29.9 and ≥ 30 respectively. The study findings were parallel to other studies done by Vijaykumar et al and Akhter A et al^{9,10}. Family history of type 2 diabetes mellitus was present in 49.4 % participants in a study done by Arora et al¹¹ and 19.9% in a study done by Aswar Nandkeshav R et al⁸ whereas in the present study it was found in 28 % participants. Hypertension was there in 37% study subjects. Similar findings were also recorded in various studies^{9,12}. In our study, 46 % of the study subjects were having sedentary physical activity. The study findings are similar to a study done by Dr. Ramchandra A et al⁵ and Bharati DR et al⁷ in which they found Physical inactivity may alter the interaction between insulin and its receptors and subsequently lead to type 2 DM.

Out of 336 males in our study, 55 % men were having waist-hip ratio > 0.9 while 57 % women were having waist-hip ratio > 0.8. Similar finding were also found by Aswar Nandkeshav R et al⁸ who observed that a higher waist-hip ratio indicates abdominal fat accumulation and increased risk of diabetes due to insulin resistance as compared to less serious gynoid fat distribution in which fat is more evenly and peripherally distributed around the body. In our study, 29 % of total male subjects were having habit of alcohol intake, while 09 % female subjects were having habit of alcohol intake. Similar finding were also found by Carlsson S¹³ who observed excessive intake of alcohol can increase the risk of diabetes by damaging the pancreas and liver and by promoting obesity. In our study, 37 % of total male subjects were having habit of tobacco intake in any form as compared to 25 % of female subjects who were having habit of tobacco intake in any form. The study findings were similar to the study done by Ahmad J et al¹⁴.

Limitations of the study

As it was a hospital based study, the study findings can not be generalised to the whole population. Controversial findings found in the study need further in-depth epidemiological studies.

CONCLUSION

Diabetes mellitus type 2 is caused by various modifiable and non-modifiable risk factors. Early detection and compliance of treatment in the known cases of diabetes mellitus type 2 is the need of the hour to prevent its complications. Health education and awareness programmes should be carried out in urban slum areas to educate the people with diabetes for prevention of disabilities and its complications.

Ethical approval: The study was approved by the Institutional Ethics Committee.

Acknowledgement - We sincerely appreciate the support and co-ordination of the medical and para-medical faculty of the tertiary care hospital.

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