Profile of Type 2 Diabetic Patients in Urban Slums of Mumbai

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Objective: To study the patient profile among type 2 diabetic patients.

Methodology: Descriptive epidemiological study design was adopted. Sample size was fixed as 203.4 and samples are selected by simple random sampling technique.

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Principal Conclusion: Positive family history as an important risk factor. Hypertension is most common associated disease with diabetes. Ophthalmic complications are most frequent. 60% patients had diabetes past 5yrs.

Keywords: urban slum, hypertension, ophthalmic complications, disease profile.

GJMR-F Classification: NLMC Code: WD 200

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Strictly as per the compliance and regulations of:

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I. Background

Incidence and prevalence of Diabetes Mellitus is increasing rapidly to the tune of recognizing it as modern epidemic. Contrary to our belief Diabetes is not limited only to the people of high socio economic profile but has also shown its existence across all categories of people. It emphasizes the need for periodic assessment of actions at different levels. The number of people with diabetes in India, currently around 40.9 million is expected to rise to 69.9 million by 2025 unless urgent preventive steps are taken. During the year 2004, there were an estimated 37.7 million cases of diabetes in country, of these 21.4 million in urban areas and 16.3 million in rural areas. The estimated total mortality due to diabetes was 1.09 lac; 62.5 thousand in urban areas and 46.6 thousand in rural areas. Same year 2.2 million DALYs were lost due to the disease.

In 2013, according to the World Health Organization, at least 347million people worldwide suffer from diabetes, or 2.8% of the population.

The present study was undertaken to find out prevalence of Diabetes, to understand diabetes patient profile, associated diseases and complications in an urban slum area.

II. Materials and Methods

Study area and population-Urban slum area, Shivajinagar, Govandiwas the study area, it has population 84783 as per record of local health post.(census2011).

The population of study area consists of people migrated from different parts of India in search of job and are now engaged in small scale industries like Zari work, Bag making, Mat weaving and Carpentry etc. Most of men are self-employed and women are house wives, maid servants or vegetable vendors.

a) Study Design

The present study adapted as descriptive epidemiological study, Community based. It was conducted during the period of February 2014 to December 2015.

b) Sample size calculation was based on

- NFHS data 2005-06 indicates the population of more than 40 years is around 25.8%.This when applied to the study area, total Population of more than 40 years totals 21874. Assuming the prevalence of type 2 diabetes around 9.3%in urban slum (3,4), total type 2 diabetic expected were 2034.Taking 10% of this population, sample size was 203.4.The final sample of 215 were considered for study.
- Simple random sampling method (using random number table) was used for sample collection.

Descriptive statistics are used and data presented in percentages. For qualitative data analysis was done with chi square test. SPSS (16 version) was used for analysis of the data.

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III. RESULTS

Table 1: Socio Demographic profile (N=215, Male=71, Female=144)

Class		Male		Female		Total	
		N	(%)	N	(%)	N	(%)
Age Groups	40-60	51	71.8	114	79.2	165	76.7
	61-80	17	23.9	27	18.8	44	20.5
	>80	3	4.2	3	2.1	6	2.8
Socioeconomic status	Class1	31	43.7	64	44.4	95	44.2
	Class2	25	35.2	62	43.1	87	40.5
	Class3	13	18.3	13	9.0	26	12.1
	Class4	2	2.8	5	3.5	7	3.3
Marital Status	Unmarried	1	1.4	3	2.1	4	1.9
	Married	60	84.5	64	44.4	124	57.7
	Widow	10	14.1	77	53.5	87	40.5
Type of Family	Nuclear	49	69	71	49.3	120	55.8
	Joint	7	9.9	22	15.3	29	13.5
	Extended	15	21.1	51	35.4	66	30.7
Education	Illiterate	16	22.5	78	54.2	94	43.7
	Primary	12	16.9	33	22.9	45	20.9
	Secondary	25	35.2	32	22.2	57	26.5
	Intermediate	11	15.5	0	0	11	5.1
	Graduate & above	7	9.9	1	0.7	8	3.7
Occupation	Unemployed	4	5.6	130	90.3	134	62.3
	Unskilled	5	7	4	2.8	9	4.2
	Semiskilled	13	18.3	3	2.1	16	7.4
	Skilled	16	22.5	4	2.8	20	9.3
	Semi professional	1	1.4	1	0.7	2	0.9
	Professional	2	2.8	0	0	2	0.9
	Retired	30	42.3	2	1.4	32	14.9
Total		71	100	144	100	215	100

In this study, out of the total study population of 215, 67% (144) were females and 33% (71) were males. The number of female patients were more because of absence of male patients at home due to their being at work, at the time of visit. 76.7% (165) study subjects were in the age group of 40-60 years followed by those in 61 – 80 years i.e 44 study subjects (Male- 17(23.9%), Female – 27(18.8%)). Remaining 6 study subjects (Male – 3(4.2%), Female- 3 (2.1%)) belonged to the age group of 80 years and above.

According to modified Prasad classification 84.7% (182) of patients belonged to Socio-economic class 1 & 2.

Above table shows that 57.7% are married and 40.5% of study subjects were widows. Majority i.e 55.8% belongs to Nuclear family. Out of 215, 94 (43.7%)

patients are illiterate while only 3.7% patients are Graduate. Because study population is an urban slum population, literacy rate is poor. 62.3% of study subjects were unemployed because most of the participants were female and were house wives.
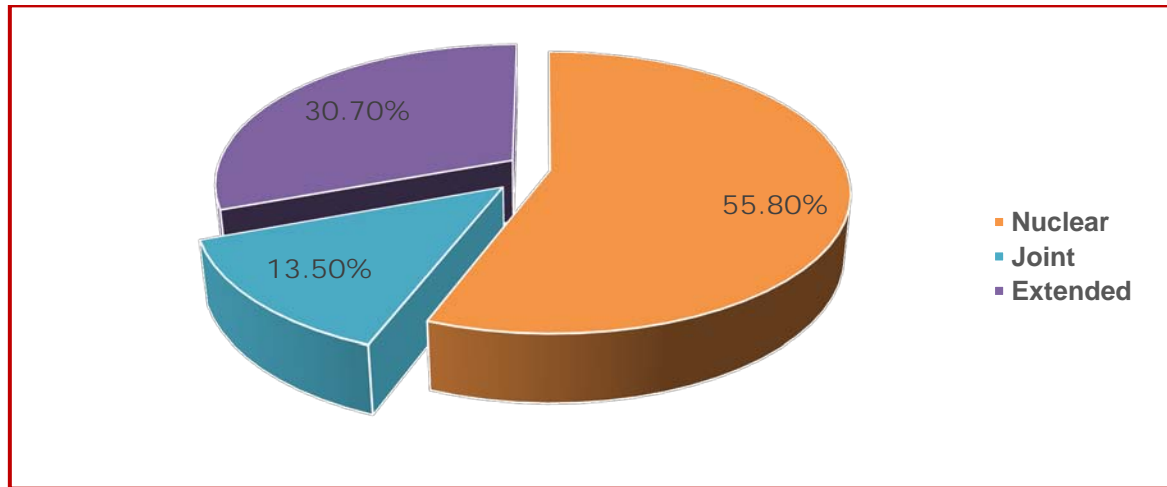

Figure 1: Distribution of study subjects according to their types of family

Table 2: Various aspects about disease (N= 215)

Class		Male		Female		Total	
		N	(%)	N	(%)	N	%
F/H of Diabetes	Present	20	28.2	39	27.1	59	27.4
	Absent	51	71.8	105	72.9	156	72.6
Associated Diseases (N=117)	HTN	26	76.5	65	78.3	91	77.8
	IHD	1	2.9	4	4.8	5	4.3
	HTN+IHD	5	14.7	11	13.3	16	13.7
	Others(stroke)	2	5.9	3	3.6	5	4.2
Complications (N= 59)	Ophthalmic	7	50.0	23	51.1	30	50.8
	Renal	4	28.7	7	15.6	11	18.6
	Foot	1	7.1	6	13.3	7	11.9
	Heart	1	7.1	5	11.1	6	10.2
	Others *	1	7.1	4	8.9	5	8.5
Duration of Diabetes	< 5 years	42	59.2	87	60.4	129	60
	5-10years	18	25.4	40	27.8	58	27.0
	10-15 years	6	8.4	14	9.7	20	9.3
	>15 years	5	7.0	3	2.1	8	3.7
Total		71	100	144	100	215	100

* Impotency, peripheral neuropathy

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Its seen from above table that 27.4% of patients have positive family history which is important risk factor for diabetes. 54.4% patients have associated diseases; most common associated disease is hypertension (77.8%). 27.4% of patients have complications of diabetes; most common complication is ophthalmic like retinopathy and cataract (50.8%). 60% of patients have diabetes since less than 5 years and only 3.7% of patients had diabetes since more than 15 years.
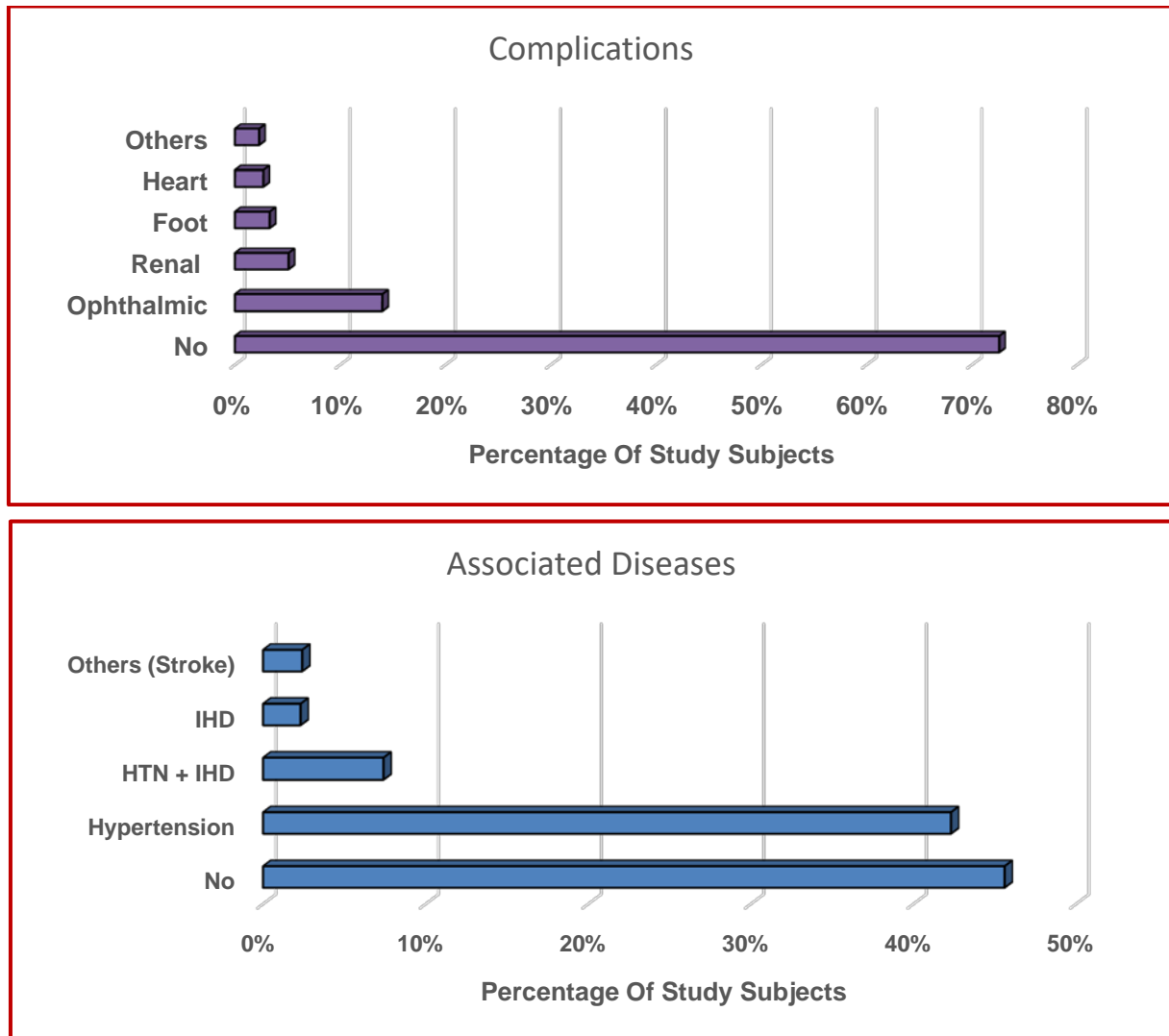

Figure 2: Distribution of Study Subjects According To Complications of Diabetes and Associated Diseases

Table 3: Risk factor profile of study subjects.(N= 215)

Variables	Minimum	Maximum	Mean	Std. Deviation
Age	40	82	56.09	10.55
Duration of Disease	2	20	5.37	4.13
Systolic Blood Pressure	100	210	141.71	19.19
Diastolic Blood Pressure	60	120	94.08	11.94
Fasting Blood Sugar	75	408	171.56	52.37
PP Blood Sugar	100	562	254.71	79.60
BMI	15.60	40.00	25.62	5.16
Calories Intake	1235	4256	1889.17	588.23

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The above table shows that mean age of patient is 56.09 (SD=10.55) years and mean duration of disease is 5.37 (SD=4.13) years. Mean fasting and post prandial blood sugar are 171.56 (SD=52.37) and 254.71 (SD=79.60) respectively. Mean BMI is 25.62 (SD= 5.16) which is above the normal BMI while daily calorie intake is 1889.17 (SD= 588.23). This may be because of decrease calorie intake after diagnosis.

IV. Discussion

The present community based descriptive epidemiological study, was conducted at an urban slum which is a field practice area of Department of Community Medicine. It was conducted during the period of February 2014to December 2015, by selecting 250 diagnosed cases of type II diabetics who were identified from the community (Sample size was 203).Taking into consideration of loss to follow up 215 study subjects data was analysed.

In this study total 2123 diabetic patients were found in community, which gives the present prevalence of 9.7% in population above 40 years of age.

In this study (Table no 1) majority of patients were females this due to fact that survey was carried out during day time and majority of males of this community were engaged in their occupation such as zari work, bag making etc. Majority i.e. 76.7% of patients are in group between 40 to 60 years. Type 2 diabetes usually comes during this age group. According to modified Prasad's classification 113 (52.6%) patients belonged to socioeconomic class 2 and 3.

According to Chennai urban population study 5, the middle income group had significantly higher prevalence of type 2 diabetes compared to the low income group. Age standardised prevalence rates of Diabetes is 12.4% and 6.4% in middles income group and low income group respectively.

The study done by Singh TP, Singh AD, Singh TB from Manipur 6 reported a prevalence of 4.0% in a population aged above 45 years.

The KAP study done by Viral N. Shah et al on 238 Patients in saurastra region Gujarat 7 shows that 61.41% of the patients were in age group between 40 to 60 years. Thus the findings of our study are in accordance with the studies done above.

The study population was mostly inhabited by Muslim population who migrated to Mumbai especially from Kerala, Andhra Pradesh Tamil Nadu. Majority i.e. 205 (75.37 %) of patients belonged to Muslim religion. Almost all i.e. 236 (86.37%) were married.

This study (Table no 1) undertaken in an urban slum population, showed poor literacy rate. Majority of the patients i.e.94 (43.70%) were illiterate, 45 (20.90%) completed their education up to primary school and only 57 (26.50%) had completed Secondary education.

The study done by Viral N. Shah et al in Saurastra region in Gujarat 7 also shows that 88.99% of diabetic patients were either illiterate or had education up to secondary school.

62.3% of patients were unemployed because most of participants were female and housewives. In a study 8 it is found that diabetes is more common among women with lower education compared to higher level of education. Women who had been engaged in manual labour, had diabetes more often compared to those engaged in administrative work.

Family history of diabetes is a major risk factor for development of type 2 Diabetes. In this study (Table no 2) 59 out of 215 patients (27.40%) have positive family history.

The cross sectional study 9 carried out by D ShobhaMalini, A Sahu, et al in Behrampur, Orissa 58% of cases with Diabetes and IGT were having positive family history of Diabetes.

Similar cross sectional study 10 done by Chythra R. Rao, et al in Karnatka the positive family history of diabetes was present in 26% of the population.

In this study 54.4% of patients had associated diseases like hypertension (42.30%) and 27.4% of patients had complications. The most common complications were ophthalmic (14%) like retinopathy and cataract, nephropathy (5.1%), diabetic foot (3.3%). Females were more prone to associated diseases and complications. Associated diseases were more common in 40-60 years of age groups.

Type 2 Diabetes mellitus in association with other medical disorders like obesity and hyperlipidaemia predisposed to cardiovascular disorders. This cluster of condition is known as syndrome X 11.Diabetes is an important component of complex cardiovascular risk factors, and is responsible for acceleration and worsening of atherothrombosis. Major cardiovascular events cause, about 80% mortality in patients with type 2 diabetes patients12, coronary artery disease, hypertension and insulin resistance. Atherosclerosis is responsible for over 80% of mortality in patients with type 2 diabetes, of which 75% due to coronary atherosclerosis and 25% is attributed to cerebrovascular or peripheral vascular disease. Over 50% of newly diagnosed type 2 diabetic patients suffer from coronary artery disease.13

In a cohort study14 , relative risk of all diabetes related mortality in the cohort compared to general population was 2.31 in women and 1.58 in men.

Mean age of patients in this study was 56.09 (SD=10.55) years and mean duration of disease was 5.37 (SD=4.13) years (Table 3). It was observed in Bangalore Urban District Diabetes (BUD) 15 study that the mean age at diagnosis was 48.3 years to those who were aware of diabetes than 50.1 years for those not aware and 47.7 years for those with family history than 50.5 years for those without family history. Almost seven years delay in diagnosis was found between illiterate

and college educated persons and an almost three year delay between city and semi urban area.16

In this study both fasting and post prandial sugar level were high (Fasting>140, PP>200) in 70.3% and 73.5% of patients respectively. Mean blood sugar level were also found to be high (Fasting and PP blood sugar, 171.56(SD= 52.37) and 254.71 (SD=79.60) respectively. (Table 3). It means though patients had diabetes for more than five years still the blood sugar were not under control.

Obesity is an important risk factor to diabetes as it causes insulin resistance on target cells, and higher BMI is associated with high mortality in diabetes. In present study 53 %(114) of patients had BMI more than 25. Mean BMI was 25.62(SD=5.16) which is above the normal BMI.

V. Conclusion

Risk factor profile of diabetic profile was studied and findings were mentioned in results followed by discussion.

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