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Diabetes Mellitus And Its Risk Factor - A Observational Study From Patan, North Gujarat

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ABSTRACT

Introduction - The most common form of diabetes is type 2 diabetes. About 90 to 95 percent of people with diabetes have type 2. This form of diabetes is most often associated with older age, obesity, family history of diabetes, previous history of gestational diabetes, physical inactivity, and certain ethnicities.

The study was conducted in the general hospital, Patan, District NCD cell and selective places in the Patan city covering a population of 500 from January, 2013 to July, 2013

Methodology- This study will be carried out by interviewing patients with type-2 Diabetes while visiting a pre-selected unit. The patients will be interviewed at the time OPD when they came for routine consultations with doctors.Some of the study will be done population base or door to door survey in various areas.

Result-The prevalence of type-1 diabetes mellitus was 3% and the prevalence of type-2 diabetes mellitus was 97% of 500 samples studied including male and female. The Maximum prevalence was in the 51-60 yrs. age group 17.50% male and 14.57% female with a total of 32.07%. The obesity in the type-2 variety was 68.5% is significantly high. The age, BMI, obesity, stress, family history was correlated positively for prevalence of diabetes in both male and female.

Summary-Diabetes has become a major health problem in Gujarat in order to assess the magnitude of the problem and its impact on health and economy of the state we must have all information about the prevalence of type-2 Diabetes in Gujarat

KEYWORDS : DIABETES MELLITUS, PREVALENCE RISK FACTOR

INTRODUCTION

Diabetes in India has a long history since ancient time. It has been mentioned in (chakradatta,rasayana chapter, sloga 195) that Lord Shiva has dictated a formulation for the treatment of prameha to his son Lord Ganesha.

Diabetes mellitus is one of the non communicable diseases which have become a major global health problem. India leads the world with largest number of diabetic subjects thus earning termed the "Diabetes capital of the world". According to the Diabetes Atlas 2006 published by the International Diabetes Federation, the number of people with diabetes in India is currently around 40 million and this number is expected to Rise to 70 million by 2025, unless urgent preventive steps are taken (Mohan V et al 2007). The so called "Asian Indian Phenotype" refers to certain unique clinical and biochemical abnormalities in Indians which include increased insulin resistance, greater abdominal adiposity i.e., higher waist circumference despite lower body mass index, lower adiponectin and higher high sensitive C-reactive protein levels (Deepa R et al 2006). This phenotype makes Asian Indians more prone to diabetes and premature coronary artery disease (Joshi SR 2003).

The present study was conducted in the General hospital, Patan, District NCD (non-communicable diseases) cell and selective places in the Patan city covering a population of 500 from January, 2013 to July, 2013 by using a predesigned and pretested Performa to find out the risk of diabetes in general population by using Indian Diabetes Risk Score.

The classification of diabetes is based on aetiological types (*WHO1999)*. Type 1 indicates the processes of beta-cell destruction that may ultimately lead to diabetes in which insulin is required for survival. Type 2 diabetes is characterized by disorders of insulin action and /or insulin secretion. The third category, "other specific types of diabetes," includes diabetes caused by a specific and identified underlying defect, such as genetic defects.

India is currently experiencing an epidemic of diabetes mellitus. It is quite evident from the above observation that diabetes has become a major health problem in Gujarat in order to assess the magnitude of the problem and its impact on health and economy of the state we must have all information about the prevalence of type-2 Diabetes in Gujarat. Data is needed from each and every place of Gujarat.

AIM AND OBJECTIVE:-

To find out risk age in – male, female.
To find out percentage ratio in male and female.
Rural /urban distribution of diabetes type-2.
Maximum prevalence of Diabetes in both sexes by age.
To find out distribution of diabetes type 1 and type 2.
To find out lifestyle and dietary habit correlated with diabetes type-2.
To find out Percentage of the Complications

METHODOLOGYS

The present study is conducted in three Different ways.

This study was carried out by interviewing patients with type-2 Diabetes while visiting a pre-selected unit. The patients will be interviewed at the time OPD when they came for routine consultations with doctors.

Some of the study will be done population base or door to door survey in various areas.

500 type 2 diabetic patient aged ≥ 20years attending diabetic clinic were interviewed over 6 months. The pre-designed and pre-tested interview questionnaire contained information on various study variables.

Hospital or clinic based studies in which data was collected directly from pathology lab and physician OPD.

The Risk Factors for Diabetes type-2 in Gujarat are age, family history, central obesity, BMI, insulin resistance and metabolic syndrome, physical inactivity and sedentary occupation, stress urbanisation, cardiovascular problem and stroke. Among the above risk factors we try to highlight some of them. We consider (1) Age, (2) Family history, (3) BMI,(4) Stress (hypertension), (5) Obesity as risk factor.

RESULT AND DISCUSSION

Total 500 samples were studied during this study. Both varieties of diabetes mellitus were detected. From which 150 (30%) subjects were studied during OPD in General hospital, Patan 150 (30%) subjects were studied during District NCD cell, and 200(40%) subjects were

interviewed and a questionnaire was filled by patient at the time of OPD when they were came for routine consultations in private dispensary .

The prevalence of type-1 diabetes mellitus was 3% of 500 in the sample studied with both male and female distribution. The prevalence of type-2 diabetes mellitus was 97% of 500 samples studied including male and female. The important observation was that diabetes mellitus spread across the entire age span. And it was significantly present among the under 40 age group. 4%persons diagnosed as diabetes type-2 were unaware of their illness prior to the survey.

AGE AT ONSET

A total 500 sample was selected during this study. This group had 265 (53%) male and 235(47%) female (fig-1).

Figure-1 Showing Distribution by Sex.

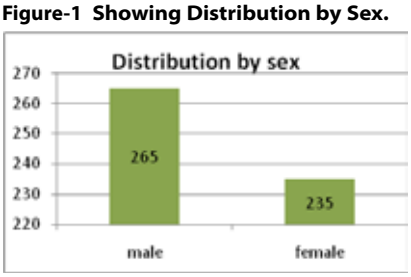


Table -1 Showing prevalence of diabetes in various age groups (both sexes).

Age group	Male %	Female %	Total %
1-10	0.23%	0.16%	0.39%
11-20	0.92%	0.42%	1.34%
21-30	1.81%	1.39%	3.21%
31-40	3.76%	4.23%	8%
41-50	11.72%	11.05%	22.77%
51-60	17.50%	14.57%	32.08%
61-70	15.25%	10.08%	25.34%
71-80	4.05%	1.81%	5.87%
81-90	0.33%	0.583	0.92%
91-100	0.04%	0.01%	0.05%

Figure-2 Showing percentage of the diabetic population in various age groups.

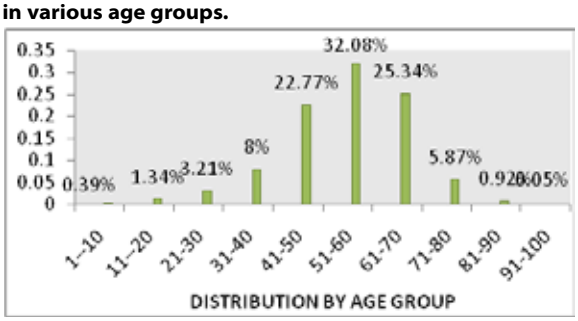
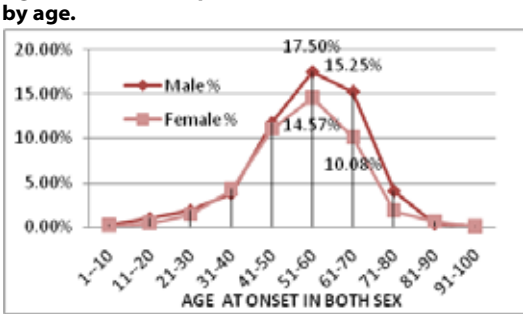


Figure-3 Maximum prevalence of Diabetes in both sexes by age.



Mean age of total samples was 46.16±11.80. Mean age of male was 46.45±10.97 and mean age of female was 45.65±10.55.The Maximum prevalence was in the 51-60 yrs. age group 17.50% male and 14.57% female with a total of 32.07% (table-1).The maximum prevalence of type-2 was in the 41-70 yrs. age groups (fig-2). Prevalence in male was 17.50% and in female was 14.57% (fig-3). The data of this study presents a further escalation of prevalence both in the rural and the urban components of this mixed population.

Urban Total 67.09%	Rural Total 32.90%
Male Urban 33.13%	Male Rural 22.51%
Female Urban 24.84%	Female Rural 19.02%

BODY MASS INDEX

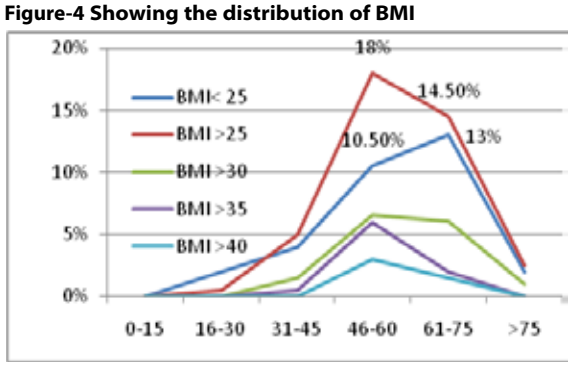
BMI=weight in kilograms divided by the square of the height in meters.

Table-2 Body Mass Index in various age group

Age group	BMI< 25	BMI >25	BMI >30	BMI >35	BMI >40
16-30	2 %	0.5 %	0 %	0 %	0 %
31-45	4 %	5 %	1.5 %	0.5 %	0 %
46-60	10.5 %	18 %	6.5 %	6 %	3 %
61-75	13 %	14.5 %	6 %	2 %	1.5 %
>75	2 %	2.5 %	1 %	0 %	0 %
Total %	31.5 %	40.5 %	15 %	8.5 %	4.5 %

The distribution of body mass index shown in the pathological range over 25 is maximal in age group 41-70(table-2). Minimum levels of obesity were noted in the all categories. The obesity in the type-2 variety was 68.5%. This figure of 68.5% is significantly high. This all persons were having BMI >25. This indicates an increase in obesity and diabetes at a younger age. Persons with BMI < 25 were 31.5% (21.5% male and 10% female) (fig-4).

Figure-4 Showing the distribution of BMI



DISTRIBUTION OF DIABETES TYPE 1 AND TYPE 2

Maximum prevalence of type 1 was in the 0-20 yrs. age group. Maximum prevalence of type 2 was spread in all other age group. The maximum prevalence of type 1 category occurs in the under 20 yrs. age group but a significant number in this group are manage without insulin and could very well be early onset type 2 or late onset type 1. A further follow up will separates these into their true categories. BMI at onset also helps to separate the type 2 from other varieties. Long duration of good control without the need for insulin is the key factor. In the 16-45 yrs. age group, we see an excess of type 2 associated a high BMI, which indicates the same trend (Wijesuriya M A 2007).

COMPLICATIONS

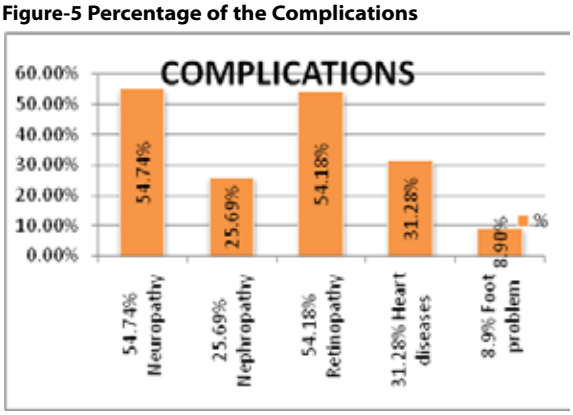
The finding of a clinic-based study of patient is as follows:-

500 (6.34%) subjects were interviewed and a questionnaire was filled by patient at the time of OPD when they were come for routine consultations in private dispensary. Complications detected during the period under review of the patient studied at the private dispensary are listed as below.

Table-3 Percentage of the Complications

Complication	Percentage(%)
Neuropathy	54.74%
Nephropathy	25.69%
Retinopathy	54.18%
Heart Diseases	31.28%
Foot problem	8.9%

Figure-5 Percentage of the Complications



Complications were detected in most of the patient of this group. They were present from the first year of onset and become maximal within 10 years. Therefore, screening for complication is best recommended from the first year of diagnosis on a regular basis yearly.

Prevalence of retinopathy and neuropathy was significantly high.54.74% of the patient had neuropathy (table-3). Patient with neuropathy were significantly older. They had diabetes for a longer period of time. 8.9% had history of foot ulceration. Some of them had foot ulcers at presentation. Neuropathic ulceration is a significant cause of morbidity in patients with diabetes. These high rates are possibly a reflection of not using footwear in the normal course of the working day together with insensitivity to pain secondary to neuropathy(Fernando DJS 1996) 54.18% of the patient had retinopathy(fig-5). Retinopathy accounts for significantly visual handicap so do cataract and refractory errors (Fernando DJS 1996).

HYPERTENSION

Hypertension is a common association seen in a number of the diabetic patient in this study.45.65% of the patient had hypertension (fig-6).56.98% male and 43.01% female had hypertension (fig-7).

Figure-6 Percentage of Hypertension

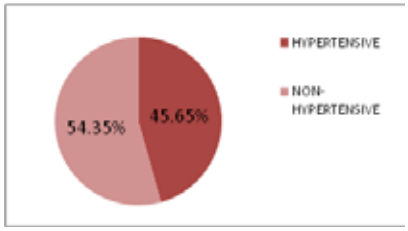
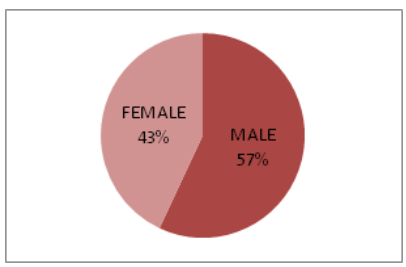


Figure-7 Distribution of Hypertension



FAMILY HISTORY

Diabetic Family history was significantly high in the diabetic group, which being present 33.88% as opposed to 66.11% without any diabetic family history. Although the genetic basis of type 2 diabetes has yet to be identified, there is strong evidence that such modifiable risk factors as obesity and physical inactivity are the main no genetic determinants of the disease(Manson JE et al 1991).

CONCLUSION

As per the aim of this study to assess the risk of diabetes mellitus in adult above the age of 20 years in Gandhinagar and its surrounding areas we find following conclusion.

- Occurrence of diabetes mellitus type 2 increases very fast.
- Onset of type-1 diabetes is very less compared to type-2.
- Diabetes mellitus spread across the entire age span.
- Male are more susceptible then female.
- The Maximum prevalence was in the 51-60 yrs. age groups.
- Diabetes mellitus cases were almost double in urban area then rural area.
- An increase in obesity in younger people increase maximum risk for diabetes.
- Diabetes related complication were significantly higher in older people.
- Nearly 50% diabetic people suffer from hypertension shows strong correlation between stress and diabetes.
- The chances of development of diabetes at early age are more having family history positive.

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