AN EPIDEMIOLOGICAL PROFILE OF DIABETES MELLITUS AMONGST HIGH RISK AGE GROUP - A COMMUNITY BASED STUDY.

Nadeem Ahmad*, Suresh Chandra** R.P. Sharma** J.P. Srivastava***, S.C. Saxena***

Resident*, Associate Professor**, Professor***

Department of Community Medicine, G.S.V.M. Medical College, Kanpur.

Abstract :

Research Question : *What is the epidemiological profile of Diabetes mellitus amongst high-risk age group population in urban and rural areas of Kanpur.*

Objectives : *To study the prevalence, magnitude, possible associates and socio demographic variables related to Diabetes mellitus amongst the high risk age group population in urban and rural areas of Kanpur.*

Study Design : *Cross-sectional study.*

Setting : *The study was performed on five thousand population each in urban and rural areas of Kanpur.*

Participants : *High risk age group population i.e. 45 years and above.*

Study variables: *Age, sex, education, working status, social class, Impaired glucose tolerance, Body mass index, Hypertension, family history of diabetes mellitus.*

Statistical analysis : *Chi-square test. Percentages.*

Results : *The overall prevalence of Diabetes mellitus amongst high risk age group population was found to be 7.6% with 11.3% in urban areas and 3.6% in rural areas. The overall maximum prevalence was in the 56-60 years age group. Higher prevalence was observed amongst the graduates and onwards (30.1%), social class-I (32.1%), sedentary lifestyle (62.5%), obese (19.7%), hypertensives (39.5%), family history of diabetes mellitus (31.5%). It was observed that 77.7% cases in rural areas and 26.9% cases in urban areas were newly diagnosed.*

Introduction :

Type-2 diabetes mellitus is a modern age epidemic and estimated to affect 150 million people world wide. It is projected that the disease prevalence will be more than double from 135 millions in 1995 to 300 millions by 2025[1].

WHO (1985)[2] reported that the characteristic symptoms of diabetes mellitus are excessive thirst, polyuria, polyphagia, pruritus and unexplained weight loss, or may be asymptomatic till complications present themselves. Quite often, diabetes is discovered because of an abnormal result of a routine blood or urine glucose test.

The Revised criteria for diagnosing Diabetes mellitus issued by National diabetes Data Group and World Health Organization :

- Symptoms of Diabetes plus random blood glucose concentration $\geq$ 200 mg/dl. Or Fasting plasma glucose concentration $>=$ 126mg/dl. Or

- Two hour plasma glucose $>=$ 200mg/dl during an Oral glucose tolerance test.

Source : Adapted from **American Diabetes Association,** 2000[3]

An urban-rural difference in the prevalence rate was found indicating that the environmental factors related to urbanization had a significant role in increasing the prevalence of diabetes[4]. The prevalence of diabetes in urbanizing rural population was found to be

midway between the rural and urban populations Although the prevalence of Type-2 diabetes is 4-6 times higher in urban India than in rural areas, the number of people with IGT is high (7.8%) even in the rural population which may indicate the presence of a genetic basis for Type 2 diabetes in the ethnic group[4]. Family history of Diabetes, Age, Body mass index, insulin resistance and sedentary lifestyle showed positive association with diabetes in Indian populations.

Material and Methods :

The present study was conducted amongst the individuals of high-risk age group population in the urban and rural areas of Kanpur. In this study five thousand population each in urban and rural areas of Kanpur was surveyed by selective screening epidemiological research technique to cover high-risk age group population i.e. 45 years and above as per ADA criteria 2000[3]. Survey was conducted by house to house contact. The high-risk age group persons were identified for detailed interviews and investigations and the detailed information was collected on a predesigned and pretested proforma.

The target individuals of high-risk age group were requested for the collection of urine sample two hours after taking meal/breakfast. Screening was conducted by urine examination with the help of DIASTIX. The urine positive individuals were considered as SUSPECTS and these suspects were further approached for confirmation of diagnosis by post-prandial blood glucose test i.e. by taking blood sample two hours after meal with the help of GLUCOMETER as per WHO criteria (1985)[2] to establish them as CASE. The data in examinations and investigations was analyzed by using various relevant techniques of biostatistics.

Observations & Discussion :

In the present study from a total of 1054 high risk age group population of 45 years and above 554 (52.5%) belonged to urban areas and 500 (48.0%) to rural areas with (52.0%) males and (48.0%) females. Majority belonged to age group 56-60 years (22.3%). Most of the diabetics were Muslims (11.2%) followed by upper caste Hindus (10.1%) and others (8.6%). Majority of diabetics were graduates and onwards (30.1%) and belonged to social class-I (32.1%) and class-II (25.3%). Observations regarding the prevalence and various socio-demographic variables are described as follows.

Table-1 shows that the maximum prevalence of Diabetes mellitus was observed in the age group 56-60 years (11.0%), followed by 51-55 (8.9%) and 61-65 years (8.8%). The maximum prevalence of IGT was in the age group of 51-55 years (16.1%). This finding is in confirmity with the studies carried out by Diabetes Research Centre, Chennai where prevalence increased among urban Indian adults from 5.2% in 1984 to 13.9% in 2000 (Ramachandran et al, 2002)[5].

Table - 2 points out that the prevalence of Diabetes mellitus was higher in males (12.2%) as compared to females (10.4%) in urban as well as rural areas (males 3.1% and females 3.3%) whereas that of IGT was more in females of study population. In urban areas prevalence of diabetes (11.3%) and IGT (15.5%) was more than 3 times higher than the prevalence of diabetes (3.6%) and IGT (7.0%) in rural areas.

Table - 3 shows that in those with

sedentary lifestyle the overall prevalence of Diabetes mellitus (11.0%) and IGT (16.8%) was higher and was followed by moderate (2.3% and 2.9% respectively) grade lifestyle.

Table-4 shows that the prevalence of Diabetes mellitus/IGT in those with diabetic parents was 31.5% and 19.2% which was higher than the corresponding figures in those with no history of diabetes in parents. These observations are similar to observations made by Vishwanathan et al (1996)[7]. If both parents are diabetic then the association becomes stronger.

Table-5 shows that high blood pressure is a common and modifiable risk factor for Diabetes mellitus. In this study overall 39.5% of the diabetics were hypertensives and this matches with the various epidemiological studies which observed that in type 2 diabetics about 40-53 % people were hypertensives.

Table - 6 reveals that the association of obesity with type 2 diabetes is complex and is compounded by several heterogenous factors. In the present study the maximum prevalence of diabetes mellitus (19.7%) and IGT (24. 0%) was amongst obese followed by in overweight i.e. 8.1% and 16.3% respectively. Similar observations were made by Ramachandran et al (1992)[4] who observed maximum prevalence of diabetes amongst obese (21.5%).

Table-7 shows that 77.7% diabetes cases in rural areas and 26.9% cases in urban areas were newly diagnosed whereas in the urban areas most of the diabetics were known diabetics (73.0%) as contrast to only (22.2%) diabetics in rural areas.

Table - 8 shows the association between diabetes mellitus and its risk factors and reveals that majority of diabetics were leading a sedentary lifestyle (90.1%) and (56.7%) were obese. Tobacco/ Pan masala chewing shows a current trend of the society which has also been observed among the diabetics (33.3%).

TABLE - 1
Age wise prevalence of Diabetes Mellitus and IGT Cases in the Study Population

Age group	Diabetes mellitus		Impaired Glucose Tolerance		Normal		Total	
	No.	%	No.	%	No.	%	No.	%
45-50	10	4.6	20	9.3	184	85.9	414	20.3
51-55	20	8.9	36	16.1	167	74.8	223	21.1
56-60	26	11.0	29	12.2	181	76.6	236	22.3
61-65	15	8.8	18	10.6	136	80.4	169	16.0
66-70	7	6.2	12	10.7	93	83.0	112	10.6
71-75	3	4.5	5	7.5	58	87.8	66	6.2
>= 76	0	0.0	1	2.9	33	97.0	34	3.2
Total	**81**	**7.6**	**121**	**11.4**	**852**	**80.8**	**1054**	**100.0**