TYPE 2 DIABETES;

Effects of socio-demographic factors among patients.

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ABSTRAC… Objective: To determine the effects of various socio-demographic factors upon the prevalence of diabetes mellitus. **Background:** Type 2 Diabetes is growing at an epidemic scale. Besides genetic predisposition, numerous environmental factors elicit the development of diabetes. An estimated 246 million people are suffering from diabetes worldwide. Majority of diabetics (80%) live in very poor countries of the world, where even the least expensive lifesaving diabetes drugs are not available. Pakistan ranks number seven in terms of global diabetes burden and is projected to reach number five in 2025. Approximately half of the diabetics are aware of their disease status, and most of them are diagnosed with complications and poor metabolic control. This study determines the effects of various socio-demographic factors upon the prevalence of diabetes mellitus. **Material and Methods: Study Design:** Cross-sectional. **Place:** National Institute of Diabetes and Endocrinology, DUHS, Karachi, Pakistan. **Duration of study:** March 2008 to December 2009. **Sample size:** 1029. **Results:** The mean age of the study sample was 50.5 ±12.1 years. Fifty two percent study participants were males and 48% females. They were from various occupations, educational levels and socio-economic strata. Among these diabetics, 73% had family history of diabetes; 20% were doing exercise, 20% knew self monitoring blood glucose and 6% had knowledge to inject insulin. Only 29% followed diabetes diet. **Conclusions:** A vast majority of diabetic patients was not doing exercise; had least knowledge of self monitoring blood glucose and did not follow diabetes diet. Various environmental factors, lack of related information and peoples' reluctant attitude played important role in the high prevalence of diabetes.

Key words: Diabetes Mellitus, Socio-Demographic Factors, Prevalence

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INTRODUCTION

Type 2 diabetes is a major public health challenge. The complexity of the disease is manifested through microvascular and macrovascular complications. Previous research has indicated both genetic and environmental factors are implicated in disease causation[1].

Family history plays a very significant role in type 2 diabetes etiology and relatives of patients with diabetes have a 10 to 20 fold increased risk of developing diabetes as compared to people with a negative family history for the disease[2].

Diabetes is regarded as 21st century's epidemic. The global burden of diseases includes 246 million people which make about 5.9% of the world's adult population. About 7 million people develop diabetes every year and 3.8 million die due to the disease complications[3].

It has been estimated that for every two persons with diagnosed diabetes, there is another undiagnosed case[4]. Developed countries are spending 10% or more of the annual health budget for managing diabetes and its associated complications. The cost of diabetes treatment amounts to billions of dollars every year[5,6].

Developing countries with 80% of global diabetes population, are spending an insufficient amount for diabetes management and in many parts even the cheapest lifesaving diabetes treatment drugs are unavailable. World Health Organization has forewarned a "tsunami" of diabetes in Asia during the next decade[7].

Pakistani population is reported to have one of the world's highest incidence rates of type 2 diabetes mellitus[8]. With the disease prevalence of 11% among 20-79 age group it will go to number five in 2025. Impaired glucose tolerance (IGT) is found in an equal

proportion. About half of the persons with diabetes are not aware of their disease status, majority are diagnosed when complications are manifested and their metabolic control is also unsatisfactory. Therefore, early and meticulous control of blood sugar would be required for cost effective diabetes care that will improve quality of life of patients as well. Besides, diabetes risk can also be reduced by lifestyle changes comprising of alteration in dietary habits and increased level of physical activity[9,10].

This study determines the effect of various socio-demographic factors upon the prevalence of diabetes mellitus; and there by disseminate information for effective control and prevention of diabetes.

MATERIAL AND METHODS

This study is cross-sectional by design, and was conducted at National Institute of Diabetes and Endocrinology (NIDE), Dow University of Health Sciences, Karachi, Pakistan, where the patients get registered and are regularly followed-up. The diabetic patients visiting NIDE are from various ethnic, linguistic, religious and socio-economic groups. Besides those who are residents of Karachi, the patients from various parts of Pakistan also attend this institute. Thus the results can be generalizable for whole of the country.

A standardized questionnaire-based interview was conducted. Information was collected regarding socio-demographic factors that may influence diabetes prevalence. The data of 1029 diabetic patients was collected during the period from March 2008 to December 2009. The results were analyzed by using SPSS-15.0.

RESULTS

Among the 1029 diabetic patients in our sample, the male to female ratio was 52:48, with mean age of 50.5 ±12.1 years. There was a mixed representation from all major ethnic groups of Pakistan and it encompassed both who were permanently and temporarily residing in the city including also the visitors. Table-I depicts socio-demographic characteristics of our study sample. Fifteen percent of the study population was illiterate. More than half (55%) of the respondents had a monthly income of rupees 10, 000 or less. The income of 41% of our sample was in the range between 11000 and 40,000 rupees. An overwhelming majority of our sample (73%) were having a positive family history of diabetes.

Table-II explains different attributes of the study sample with regards to physical activity.

A total of 209 (20%) study participants were doing exercise on regular basis and of them more than half (56%) were males. Forty percent of the study participants were having a monthly income of rupees 10, 000 or less. Another 21.6% of exercise doers were earning between 11, 000 and 20, 000 rupees per month.

Twenty percent of diabetics knew self monitoring of blood glucose and 6% had the knowledge regarding correct insulin injection. Characteristics of study participants following a diabetic diet (29%) are given in table III. More males i.e. 51.36% were following a diabetic diet. With reference to occupation, 40.47% of the housewives were following a diabetic diet. Among the subjects using a diabetic diet, 32% were graduates and 26.53% had a qualification of either matriculation or intermediate. A family history of diabetes was positive in 63.27% of the study population who were taking diabetic diet.

DISCUSSION

The present study characterized Pakistani diabetic patients with regards to socio-demographic variables, exercise habits, and adherence to diabetic diet. Type 2 Diabetes Mellitus (DM) is a public health problem in Pakistan that affects all ethnicities and regions of

Variable	Frequency	%age
Occupation		
Government Job/ Teachers	158	15.4
Business Men	57	5.5
Doctors/ Engineers	28	2.7
House Wives	418	40.6
Private Job	167	16.2
Retired	108	10.5
Students	20	1.9
Others	73	7.1
Education		
Uneducated	153	15.0
Can Read	63	6.0
Middle Pass	102	10.0
Matric	128	12.0
Intermediate	90	9.0
Graduate	278	27.0
Post-Graduate/ Professionals	215	21.0
Monthly Income (PKR)		
Up to 5000	299	29.0
6000 - 10,000	269	26.0
11,000 - 20,000	218	21.0
21,000 - 40,000	205	20
More than 41,000	38	4.0
Family History of Diabetes		
Positive	751	72.9
Negative	278	27.1

Table-I. Socio-demographic profile of diabetics visiting a tertiary care diabetes hospital in Karachi.

Variable	Frequency	%age
Gender		
Males	117	56
Female	92	44
Occupation		
Government Job/ Teachers	40	19.0
Business Men	10	4.7
Doctors/ Engineers	6	2.8
House Wives	70	33.4
Private Job	32	15.3
Retired	35	16.7
Others	16	7.6
Education		
Uneducated	23	11.0
Car Read	9	4.3
Middle Pass	29	13.8
Matric	24	11.4
Intermediate	90	9.0
Graduate	278	27.0
Post-Graduate/ Professionals	215	21.0
Monthly Income (PKR)		
Up to 5000	70	23.4
6000 - 10,000	66	24.5
11,000 - 20,000	47	21.6
21,000 - 40,000	26	12.2
More than 41,000	0	0
Family History of Diabetes		
Positive	130	62.20
Negative	79	37.80

Table–II. Characteristics of diabetics visiting a tertiary care diabetes hospital in Karachi with regular exercise pattern

Variable	Frequency	%age
Gender		
Males	151	51.36
Females	143	48.63
Occupation		
Government Job/ Teachers	55	18.70
Business Men	16	5.44
Doctors/ Engineers	8	2.72
House Wives	119	40.47
Private Job	41	13.94
Retired	36	12.24
Others	19	6.46
Education		
Uneducated	42	14.28
Can Read	20	6.80
Middle Pass	33	11.22
Matric/ Intermediate	78	26.53
Graduate	94	31.97
Post-Graduate/ Professionals	27	9.18
Monthly Income (PKR)		
Up to 5000	160	36.05
6000 - 10,000	99	33.67
11,000 - 20,000	58	19.73
21,000 - 40,000	28	9.52
More than 41,000	3	1.02
Family History of Diabetes		
Positive	186	63.27
Negative	108	36.73

Table-III. Characteristics of diabetics visiting a tertiary care diabetes hospital in Karachi who were following diabetic diet schedule

Pakistan[11-14]. The composition of our study sample makes our study results more generalizable as it had a diverse mix of people from different parts of the country.

Our study showed that both the genders were equally affected from DM. Previous studies have identified a higher prevalence of type 2 DM is associated with male gender[15].

A high number of the patients (73%) in our study had a positive family history of diabetes. This supports the already proven fact of strong association between family history and prevalence of diabetes[16,17]. Exercise and physical activity can play an independent role in the prevention of type 2 diabetes separately from its effect on weight loss and body composition[18]. However research has identified that middle-aged population of Pakistan is experiencing a rapid and substantial decline of physical activity levels as a result of poor dietary pattern, unhealthy food supply, and increased mechanization, and television viewing, as well as sedentary behavior[8]. Similar results were found by our study and only 20% of the total sample was doing exercise on regular basis.

Previous research has identified a higher prevalence of type 2 diabetes among people belonging to a low socioeconomic status and with low educational levels[19] and majority of diabetics in our study (77%) were earning less than 20, 000 Pakistani rupees a month. With respect to adherence to diabetic diet, we found that only 29% of the diabetics care for the diabetic diet. Patients with educational level matric and above (67%) reported following diabetic diet schedule in our research.

Self monitoring of blood glucose (SMBG) is associated with better metabolic control in type 2 diabetes[20]. The number of the diabetic patients who knew self monitoring of blood glucose (20%) and had knowledge to inject insulin (6%) was very low. This

suggests the least importance given and lack of knowledge of diabetes related factors.

Those who had positive family history of diabetes were comparatively more cautious in doing regular exercise and following diabetes diet. They may know more about diabetes because of their family members suffering from diabetes.

CONCLUSIONS

These results suggest the lack of information of important factors related with diabetes and probably very little time is devoted on health education and health promotion by staff of health care facilities. It may also be possible that people are not receptive to the advice and education given to them by health care practitioners. Our findings in conformation with other studies from Pakistan show that more work needs to be done to improve diabetes care across the different parts of the country.

LIMITATIONS OF THIS STUDY

As this was a descriptive cross sectional study so we were unable to follow patients and see whether they continued with the behavior they shared with us in this survey. In future it is recommended that follow-up studies may be conducted to see consistency of described behavior.

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