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DIABETES MELLITUS;
FREQUENCY AMONG GENERAL POPULATION OF RAHIM YAR KHAN

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ABSTRACT… Objective: To determine the frequency of diabetes mellitus and to assess the level of awareness about diabetes amongst persons attending a free health camp in cultural festival of Rahim Yar Khan. **Study Design:** Cross sectional observational study. **Place and duration of study:** Three days free health camp arranged in a cultural festival in Rahim Yar Khan. **Results:** Over all frequency of type II diabetes was 19.38% and the frequency of diabetes increased both in men and women with increasing age (p<0.001). Newly diagnosed subjects were 6.77% and these do not know that they were suffering from diabetes. 18.92% subjects were having glucose intolerance and 61.70% subjects were having random blood glucose level within normal limits. Diabetes was correctly defined by 57% subjects and this was significantly associated with educational level, suffering from the disease and presence of disease amongst family members. 14.62% gave history of presence of disease in their families. As compared to females, males were more suffering from disease and these were consuming more foods and snacks than females (p<.0.01). **Conclusion:** High frequency of diabetes mellitus was observed amongst the study population. This may be due to health consciousness and higher level of educational status in the subjects who participated. Emphasis on health education and preventive strategies are needed to increase public awareness and early detection of high risk groups and risk factors of this common disease in our country. The lifestyle behaviors and environmental factors are strong modifiers of diabetes The life style changes and interventions in early age may prove to be more effective than interventions done at a later stage.

Key words: Type II diabetes, life style factors, awareness, Glucose intolerance.

INTRODUCTION

Diabetes Mellitus is a chronic disease which can cause substantial preventable morbidity and mortality. It is a very dreadful affliction if not treated and controlled properly. WHO estimates that non-communicable diseases account for nearly 40% of all deaths in the developing countries[1]. The global burden of non-communicable diseases is emerging as a major public health challenge and this is projected to account for 73 % of global mortality by the year 2020[2]. The global prevalence of diabetes type II is expected to increase from 194 million in 2006 to 333 million by the year 2025; the greatest number of cases being in China and India[3,4]. Pakistan is 7th in the world according to latest estimates of the prevalence of disease with 7 million people suffering from diabetes and by the year 2025, this country is expected to be 4th with 15 million people suffering from diabetes[5].

In virtually every developed society, chronic diseases are known among the leading causes of blindness, cardiovascular diseases, stroke, renal diseases and limb amputation. Developing countries are expected to full experience the brunt of disease with a 200 % rise in prevalence. Recent epidemiological studies have shown that type II diabetes in younger population is frequent. The incidence and prevalence of Diabetes type II is increasing due to unhealthy life styles, increase in prevalence of obesity and ageing of the population[6]. Pakistani children are adopting a progressively unhealthy life style with increased sedentary habits. The entertainment such as television, computer and video games are resulting in physical inactivity, increased intake of junk foods have resulted in increasing prevalence of obesity and diabetes[5]. The full effects will be shown when these children become adult and will be in the most productive years leading to severe economic & social burden. The life style changes and interventions in early age may prove to be more effective than interventions done at a later stage[7]. These lifestyle behaviors and environmental factors are strong modifiers of diabetes. The role of family, schools, colleges and community must be assessed for the risk of diabetes in young population. This information will be useful in designing and implementing preventive programs on diabetes for all socio-economic groups.

The studies conducted in Pakistan presents a gloomy pictures i.e., the prevalence of diabetes was 8.6%, 11.1%, 13.9% in general population while in other studies, 16.2% in men and 11.7 % in women were diabetic. Impaired glucose tolerance was detected in 8.2% of men and 14.3% of women and using fasting blood sugar criteria the frequency was 6.3%[7,8,9,10,11].

Random Blood Sugar testing is a key element in screening of hidden cases who never seek medical attention for diabetes. It is also useful in monitoring of blood sugar level in homes and it allows patients to play active role in their care and improve treatment efficacy. This is an easy procedure and gives result within 15 seconds offering improved sugar level control and control of long term complications[12]. The present study was conducted to assess the prevalence of diabetes and impaired glucose tolerance among general population attending a free health camp during Rohi mela in Rahim Yar Khan, Punjab.

METHODS

This cross sectional observational study was conducted in a local cultural festival (Rohi Mela) in Rahim Yar Khan City, in a free health camp by Department of Community Medicine, Sheikh Zayed Medical College, Rahim Yar Khan. It was advertised locally and banners were displayed in the Mela. The camp lasted for 3 days and a total of 650 subjects participated in the study. Only adults of either sex and more than 20 years of age were included in the study. All subjects came voluntarily. An informal, verbal consent was taken from all subjects and after enquiring personal demographic information like age, sex, occupation, educational status etc. all subjects were asked if they had ever been told by a doctor that they had diabetes. The trained interviewers obtained all information from participants on socioeconomic variables, cigarette smoking, diabetes mellitus and family history of diabetes. Random blood glucose level was

estimated by a Glucometer strip (EasyGluco) using capillary blood. Diabetes was diagnosed if the blood glucose reading was ≥ 200 mg / dl and impaired glucose tolerance if the reading was between 140 – 199 mg / dl[12]. Diabetes was considered to be already present if a physician had made a diagnosis previously. All the information enquired from the subjects was entered into a pre-designed structured performa having all the relevant details. An operational definition of diabetes was formed to differentiate between diabetes, impaired glucose tolerance and individuals having RBS level within normal limits i.e. random blood sugar level more than 200 mg/dl of blood as diabetic, 141 – 199 mg/dl as glucose intolerance and < 140 mg/dl as normal[13]. All those individuals who were not aware of having high level of blood glucose were asked for further investigations and proper check up. The known diabetics with high level of RBS were motivated for regular treatment and proper care of their food habits. Smokers were motivated to quit smoking.

RESULTS

A total of 650 subjects having mean age of 38.01 years with standard deviation 11.59 years and range 21-75 years were included in the study during a period of three days. There were 517 males (79.5%) with mean age 37.82 years and standard deviation 11.59 years and range was 21.75 years and 133 females (20.5%) having mean age 38.76 years and standard deviation 11.60 years and range was 21 to 70 years. There was no significant difference of age (P<0.05) between males and females. 38.5% of the study population was 40 years or more and 3.23 % were above 60 years of age. General characteristics of the study population are given in table I. Overall the literacy rate was high among study population i.e. 68% population had education 10 years or more of formal education i.e. males were 74% while females were 43%.

The occupational distribution was 136 (20.93%) subjects were government servants (males=24%, and females=9%). 97 (14.92%) were working in private sector (males 15.28% and females 22.55%). 90 men and 3

women were labourers and 51 (38.35%) females were house wives. 107 subjects i.e. 58 males and 49 females (Males=15.28% and females 22.55% respectively) were not actively indulged in physical work and 108 subjects (16.62%) were land lords and were supervising their farm labour.

The frequency of previously diagnosed diabetes mellitus type II was 10.44% in men (54) and 21.05% (28) in women. Overall newly diagnosed diabetes was present in 44 (6.77%) subjects i.e. Random blood glucose level ≥200 mg / 100ml was detected in 34 males (6.58%) and 10 (7.52%) females. There was a higher rate of positive family history of diabetes in the subjects with diabetes as compared to those with normal blood glucose level i.e. 73% versus 27% and this was statistically very significant (P<0.001).

Out of all study population 117 (18%) were smokers. Male smokers were 21% and females 7%. There were 9 subjects who gave history of quitting smoking due to advice of the doctor. The mean random blood sugar level of the study subjects was 151.03 mg/dl with standard deviation 66.84 while range was 75 - 445 mg/dl. Males had mean random blood glucose level of 149.44 mg / dl with Standard Deviation 64.72 mg while range was 75 to 400 mg / dl and females with mean 157.21 mg/dl and standard deviation 74.72 mg / dl with range 75 to 445 mg/dl. There was no statistically significant difference according to gender in mean age and mean blood sugar level below 40 years while blood sugar level was much higher among females than in males and advancing age was found to be statistically significant (p<0.001) with the development of diabetes.

A total of 370 (57%) participants correctly defined diabetes. There was statistically significant association between the ability to correctly define diabetes and educational level and the presence of disease in them or in the family.

Table-I. General characteristics of the study population			
Variable	Males (n=517)	Females (n=133)	Total
Age (years)			
21-40	311 (60.15%)	89 (66.92%)	400 (61.54%)
41-60	192 (37.13%)	37 (27.82%)	229 (35.23%)
>60	14 (2.72%)	07 (5.26%)	21 (3.23%)
Educational status			
Illiterate	33	49	82(12.6%)
Primary	45	25	70 (10.8%)
Middle	58	2	60 (9.2%)
Secondary	160	19	179 (27.5%)
Higher secondary	102	22	124 (19.1%)
Graduation and above	119	16	135 (20.8%)
Occupational status			
Govt. service	124	12	136 (20.92%)
Private service	79	18	97 (14.92%)
Business/shopkeeper	58	-	58 (8.92%)
Laborers	90	3	93 (14.31%)
House wife	-	1	51 (7.85%)
No work	58	49	107 (16.46%)
Land lord	108	-	108 (16.62%)
Family history			
Diabetes	64 (12.38%)	31 (23.30)%	95 (14.62%)
None	453 (87.62%)	102 (75.70%)	555 (85.38%)
Previously diagnosed			
Diabetes	54 (10.44%)	28 (21.05%)	82 (12.62%)
None	463 (89.66%)	105 (88.95%)	568 (87.38%)
Blood glucose level			
< 140 mg/dl(normal)	324	77	401 (61.70%)
141 – 200(impaired)	105	18	123 (18.92%)
> 201(diabetes)	88	38	126 (19.38%)
Newly diagnosed	34 (6.58%)	10 (7.52%)	44 (6.77%)

Table-II. Distribution of variables by gender			
Variable	Males (n=517)	Females (n=133)	Total
Age (years)	37.82+11.59	38.76+1160	38.01+11.59
Blood sugar (mg/dl)	149.44+64.72	157.21+74.72	151.03+66.84
Newly diagnosed	34(6.58%)	10(7.52%)	44(6.77%)
Previously diagnosed	54(10.44%)	28(21.05%)	82(12.62%)
Correctly defined	296(57.25%)	74(56%)	370(57%)
Smoking	108)21%)	9(6.76%)	117(18%)

DISCUSSION

The present cross sectional observational study was conducted in Free Health Camp in a cultural Rohi Mela arranged by the Department of Community Medicine, Sheikh Zayed Medical College, Rahim Yar Khan for a period of three days. As all individuals participated in the Health Mela voluntarily, the findings of the current study i.e., 19.38 % subjects affected with type II diabetes are much higher than those found in other studies in Pakistan and Pakistan National Surveys[14,15]. These findings may be an overestimation of the magnitude of the problem due to selection bias. This was a free health camp and people from all sects of life & socio-economic groups, rural and urban and males and females visited the cultural mela and those people visiting health camp were most likely more health conscious, suffering from a chronic disease and individuals accompanying the diabetic patients got checked their random blood sugar.

The persons who visited free health camp were probably educated, health conscious and had diabetes and or the presence of diabetes in their family member, having other chromic diseases and other life style risk factors. So these cause some limitations in the findings of the present study. These results can not be generalized to the general population.

It was observed that 6.58 % subjects were unaware of their disease, i.e., diabetes. This is inconsistence with other studies showing 25-50 % detection of diabetes among people suffering from the disease but never seek any medical attention for a diagnosis or treatment[15]. 51 (41%) out of 123 subjects having impaired blood glucose level at the time of estimation of blood sugar were unaware that they were at risk of developing type II diabetes in future. In a study conducted in Kashmir showed the prevalence of diabetes mellitus 0.95%, more in males than females and in older population[16]. In the present study, males participated were more than females, as the males are indulged more in out door activities than females, so more males visited mela than females. This diverse situation of male to female ratio is always seen in other studies[17,18].

Diabetes mellitus like other non-communicable diseases is caused by or associated with unhealthy life style. Unhealthy diet, obesity, smoking and physical inactivity are among the major life style issues and these are important risk factors for development of diabetes mellitus[19]. The frequency of smoking was high i.e., 18% subjects were smokers and males were 21%& females were 6.76%. As unhealthy life style is prevalent in our society leading to more and more cases of obesity and overweight and in future it will cause huge increase in prevalence of diabetes in Pakistan[20]. Pakistan has a highest growth in diabetes, due to this increase; preventive strategies are needed to apply on general population rather targeting high risk population and this will show greater benefits.

Diet has been considered a very important external determinant of non-communicable diseases, along with

physical inactivity. The change of traditional plant foods and home made cooked & raw vegetables, intake of whey and bread has occurred to meat, fat and other animal products in the form of fast foods as well as high use of junk foods. These have significantly increased the incidence of diet related non-communicable diseases especially diabetes, obesity, coronary heart disease, cancer and stroke[21]. It is very important to be noted that men frequently take meals out side homes and taking snacks is becoming a social norm and symbol of social status and the presence of saturated fats, cholesterols, salts, sugars and accompanying catch ups and other items in there diets are leading to significantly increase in incidence and prevalence of diabetes. On the other hand the female population usually stays at home and is having little physical activity leading to overweight with alternately end up in diabetes mellitus.

As several epidemiological studies conducted in South Asians show a rapidly increasing trend in the prevalence of diabetes. There is an equally large pool of individuals with impaired glucose tolerance, many of whom will develop type II diabetes mellitus in future[6]. The results have shown that control of blood sugar level and its complications is possible and can lead to reduction in morbidity, mortality and health care cost. Due to rapid increase in the incidence of diabetes in Pakistan, preventive strategies are needed to be targeted towards healthy and general population and this will show greater benefits in this situation rather than targeting only high risk and diseased population. Health care professionals must become cognizant of evidence based guide lines and update clinical practice and care services for myths about diabetes mellitus and teaching materials[22].

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LEARNING IS BEST IN ADVERSITIES

Shuja Tahir