COMMUNITY BASED SURVEY OF ABNORMAL GLUCOSE TOLERANCE AND ASSOCIATED RISK FACTORS IN GADDAP

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ABSTRACT:

A community based diabetic survey was conducted in 1999, at Haji Zakaria Goth, Gaddap, near Baqai Medical University. The investigation was carried out to assess the prevalence of diabetes and its associated risk factors in the above location, with a view to start a community level diabetes management programme. The target population were both males and females above the age of 18 years. Two blood samples of all subject were taken; first for fasting and the second after two hours. A sample questionnaire was also filled for collecting demographic data. The anthropometric parameters such as blood pressure, weight and height were taken of all the subjects. Over all impaired glucose tolerance (IGT) was noted to be 4.4% and the prevalence of overall diabetes was 7.7% (newly diagnosed 4% known diabetes 3.7%).

The setting up of a Diabetic Care Clinic will help to built a preventive frame work for diabetes management and prevention in Gaddap.

KEY WORD:
Diabetes, Community Based Study, Associated Risk Factor, Prevention.

Introduction

The Global burden of Diabetes is enormous with around 194 million people suffering from diabetes and 310 million people with impaired glucose tolerance worldwide. Diabetes is one of the leading causes of death in the developed countries and there is increasing evidence that it is becoming a epidemic in many developing countries. Complications from diabetes are resulting in disability, reduced life expectancy and enormous health cost for virtually every society. (1).

The National Diabetes Prevalence Survey done by Diabetic Association of Pakistan in collaboration with World Health Organization (WHO) in 1994 clearly indicates that the prevalence of diabetes is very high among the indigenous population of Pakistan. In Pakistan, according to World Health Organization Eastern Mediterranean Region (WHO-ERM) Survey Report, 16% of men and 12% of women aged 25 years and above were found to have diabetes while the combined prevalence of diabetes and impaired glucose tolerance that is abnormal glucose tolerance was 25% in both the sexes. (2,3).

According to World Health Organization (WHO) prevalence of diabetes estimates Pakistan was number eight in 1995 and if intervention strategies are not adopted and implemented, Pakistan will be ranked at number four in the year 2025 (4).

A family history of diabetes, obesity, and abdominal fat distribution have emerged as major risk factors for diabetes and impaired glucose tolerance world-wide. The presence of hypertension is also closely associated with glucose intolerance. Other factors are physical inactivity, high fat diet and smoking (5,6).

Thus we are in the midst of a global epidemic of diabetes mellitus and projected increase in the prevalence of the condition over the next two decades emphasises the importance of implementing early detection and prevention programs (7). The huge burden of healthcare costs for persons with diabetes highlights the need for effective prevention programs (8).

The 42nd World Health Assembly, recognizing that diabetes mellitus is a chronic, debilitating and costly disease attended by severe complications, including blindness, heart and kidney disease, invited member states to assess the national importance of diabetes, to implement population-based measures appropriate to the local situation, to prevent and control diabetes and to establish models for an integrated approach for the prevention and control of diabetes at the community level (9).

Baqai Medical University has always worked for an integrated approach towards health in the community. The primary health care program of Baqai Medical University is one of the established and well known for its services to the communities of Gaddap area near Baqai Medical University (BMU). Haji Zakaria Goth is situated at the end point of Karachi near Toll Plaza, Gaddap. The population in this
Goth is poor and illiterate. The only health facility for the people of Haji Zakaria Goth is one provided by the Social Obstetric unit and Baqai Institute of Diabetology and Endocrinology (BIDE) of Baqai Medical University, Karachi.

The Baqai Institute of Diabetology and Endocrinology did a survey of Haji Zakaria Goth to see the prevalence of abnormal glucose tolerance (diabetes/IGT) and its associated risk factors in this Goth.

AIMS & OBJECTIVES:

The basic aim of conducting this screening program was to assess the prevalence of diabetes/impaired glucose tolerance and its associated risk factors in Haji Zakaria Goth of Gaddap, Karachi and to start community level diabetes care program.

METHODOLOGY:

This was a two day screening program carried out by the teams of Baqai Institute of Diabetology & Endocrinology and Social Obstetric Department of Baqai Medical University in Haji Zakaria Goth. The total population above the age of 18 years (n=322) was called for this screening program. The turnout was n=136 (35 males and 101 females).

Included all above the age of 18 years who gave consent for the test. Exclusion criteria were those who were known diabetics.

The whole population was informed two weeks before the screening program by door to door visits by the staff of social obstetrics & BIDE and through announcements from the mosque. Banners were also displayed at various spots in the community. Final year MBBS students of Baqai Medical University (BMU) participated in this screening program by helping at all levels. The patient came after fasting for 8-10 hours on the day of the survey and their first blood sample was drawn, then they were given a drink containing 75 grams of glucose with the time noted. They sat in the community hall for two hours where their weight, height and blood pressure was taken. A simple questionnaire was filled for this purpose, which contained different demographic patterns in addition to data on diabetes and its associated factors. A second blood sample was taken after two hours.

The samples were sent to the Baqai Medical University Laboratory every half hourly for analysis. They were tested for fasting and random venous plasma glucose levels. Fasting was defined as no consumption of food or beverage for at least 8-10 hours before testing. An FPG level ≥ 126 mg/dl (7.0 mmol/l) was taken as an indication for evaluation by a physician (8).

STATISTICAL METHODS:

Data analysis was done by statistical package "EPI-Info-96". Body mass index was calculated as weight/height² (kg/m²). The $\chi^2$ test was applied to measure the association among the different variables. The results of different continuous variables are given in the form of averages and standard deviations (S.D). The relative risk was obtained for different associated factors.

RESULTS:

A total of 136 peoples out of 322 people above the age of 18 years were screened in Haji Zakaria Goth, Karachi. The response rate was 42.2% out of which 35 (25.7%) were males and 101 (74.3%) were females (Fig # 1).

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**Fig # 1**

Response Rate for Screening of Diabetes in H.Z. Goth

- **Response**: 42%
- **No Response**: 58%

Total Population > 18 Yrs
n = 332
Responder Population
n = 136

The occupation of the male members of this Goth was drivers (82%), laborers (82%), laborers (8%), shopkeepers (3%), teachers (2%), skilled workers (2%) and unemployed (2%). The female members were 100% housewives. An average household had a family income of Rs. 1100/- per month. The literacy rate was 25%.

The prevalence of hypertension in this survey of Haji Zakaria Goth was 7%. BMI between 26 to 30 was seen in 50 patients (36.7%).
TABLE -1
FREQUENCY DISTRIBUTION OF BMI IN HAJI ZAKARIA GOTH

<table>
<thead>
<tr>
<th>Body Mass Index</th>
<th>Number of Subjects</th>
<th>Percentage of Subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 19</td>
<td>42</td>
<td>31.0%</td>
</tr>
<tr>
<td>Between 19-25</td>
<td>35</td>
<td>25.7%</td>
</tr>
<tr>
<td>Between 26-30</td>
<td>50</td>
<td>36.7%</td>
</tr>
<tr>
<td>&gt;30</td>
<td>9</td>
<td>6.61%</td>
</tr>
</tbody>
</table>

Overall Impaired Glucose Tolerance (IGT) was 4.4%. The prevalence of smokers was 47.7%.

All the persons screened were habitual of eating “Pan” (with tobacco 58%, without tobacco 42%) Fig # 2.

The prevalence of diabetes in Haji Zakaria Goth was 7.7% (newly diagnosed 4%, known diabetes 3.7%) Fig # 3a & 3b.

Although the majority of women included in this study performed routine household work but no light exercise was observed. These women define their routine daily household work as their exercise. The males were not doing any sort of exercise.

DISCUSSION:

If diabetes is identified and managed properly it is possible to prevent from its complications thus enabling individuals and community to enjoy a normal life. Thus knowledge of true prevalence of diabetes is essential for planning health care services for any area. The sample size of this study was small due to lack of resources, various cultural and social taboos of community; but as no previous such study has been done in this area the population at general were not aware about such a study design. This study is important as an original base line work done for the existing problems of diabetes and the social and cultural factors associated with diabetes.

This was a pilot study for assessing the feasibility of larger surveys of the area. It took a lot of effort and health education by the social workers/volunteers to gather even this small number and the limitations were the social and cultural taboos attached with the giving of blood samples. A lower response rate was observed due to the drawing of blood twice. The community was reluctant to give blood but agreed after a few of the elders of the community such as the leaders and religious figure (maulvi) etc consented to give blood first. The overall response rate of the community was fairly reasonable (42%).

The ratio of female to male patient was 3:1 as the study was conducted on a working day, because of limitations of using the resources and laboratory of Baqai Medical University only on working days.

The newly diagnosed diabetic patients and the previously known diagnosed patients were advised to attend the free
diabetic clinic in Fatima Hospital - Baqai Medical University for further treatment and management. Diabetic patients of this community were on medical treatment but it was observed that they were neither taking any proper medicines nor following any nutritional diet plan.

The prevalence of hypertension among the survey subjects was 7%. Hundred percent of the population were pan eaters while half of them were also smokers.

This survey was designed to provide base line information needed for better planning of health care services for the community, aimed at identifying and managing diabetes in lower socioeconomically and poorly literate population of the area.

Public education and policy planning at the primary care level are needed while such population based screening programs for diabetes and its complication are important aspects of primary and secondary prevention. The cost of complications is a significant burden to the individual, family and the nation as a whole. Thus tertiary care is needed which is provided through a series of specialized clinics for the prevention of complications and limitation of the disease. Prevention programs postulate that greater benefits are obtained by targeting the total population with an integrated program rather than by attempting to screen and treat high-risk individuals (10). Thus the healthcare systems are faced with the challenge of developing systematic approaches to improve the management of diabetic patients, particularly in populations undergoing rapid cultural development.

CONCLUSION:

This survey helped us to gain insight into the magnitude and problem of diabetes and associated risk factors as well as to have awareness on different social taboos and cultural values of the population of Gaddap. The plan to setup a Diabetes Clinic in the future will help to build a preventive framework for diabetes management and prevention in Gaddap Area, Karachi; giving due consideration also to the cultures and beliefs of the community.

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