Original Research Paper

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Diabetes Prevalence in rural village of south Tamilnadu.

General Surgery

KEYWORDS: Type II Diabetes, Prevalence: Rural Tamil Nadu

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ABSTRACT

Aim: To assess the prevalence of Type II DM in the rural village of south Tamilnadu, at Kerala -Tamilnadu border **Method:** Institutional Ethics Committee approval was obtained for the study and informed consent was taken from all participants. The Inclusion criteria were participants, aged ≥ 20 from Choozhal, a village from rural Tamil Nadu state, India. Data collection was done by household survey by interview method and by a Semi Structured Questionnaire. **Statistical analysis used:** Results were tabulated on Microsoft Excel and SPSS **Result:** In a total of 1444 patients 10.94% had Type II DM. The highest prevalence of Diabetes was in the age group 60 and above, which was 27.1%. Among the patients with Diabetes, 53.1% were females, 46.9% were males and 65.8% have a family history of Diabetes. About 70.51% of people were on treatment for Diabetes and 30% people are not on any medication. **Conclusion:** The study highlights the overall prevalence of Type II DM in the Choozhal village as 10.94%, which is a higher incidence compared to published data. So it is recommended that preventive measures should be activated in this rural population. The fact that around 30% of patients are not taking treatment should alert the health care providers .One of the risk factor of developing Type 2 Diabetes is family history of Diabetes. In our study population, around 22.7% are having family history. Hence it is the role of the healthcare providers to prevent Type 2 Diabetes by giving education.

Introduction

Diabetes mellitus is one of the non- communicable diseases which have become a major global health problem. The International Diabetic Federation (IDF) estimated that there are 415 million people with Diabetes in the world and 78 million people in the South East Asia region. By 2040 this will rise to 140 million. There were 69.1 million cases of Diabetes in India in 2015 [1] In Asia, prevalence of Diabetes is high and it has been estimated that 20% of the current global Diabetic population resides in the South East Asia region. [2] The study done by Indian council of Medical Research (ICMR) in the year 1970 reported a prevalence of 2.3% in urban areas which has increased to 12-19% in the year 2000. [3]Thus, it is clear that both in urban and rural India, the prevalence rate of Diabetes is increasing rapidly but in Kerala where rural prevalence rates has overtaken urban prevalence [4]

The aim of the study is to assess the prevalence of Diabetes in a Rural village of Tamil Nadu near Kerala –Tamilnadu border and to compare the prevalence of risk factor, i.e. family history among the known Diabetic patients and those without Diabetes.

Chandigarh is the Diabetes capital of India followed by Tamilnadu with a prevalence of Diabetes as high as 20% double the national average of 8%. [6,7] we, therefore ,set out to explore the prevalence of Type 2 Diabetes in all the adults above the age of 20 years at Choozhal village of South Tamilnadu and to find out the association of factors like age, gender, family history, duration, treatment among the people with Type 2 Diabetes at Choozhalvillage, south Tamilnadu.

Methods:

Choozhal is a village located near Kerala -Tamil nadu border in Choozhal panchayath in Vilavancode Taluk of Kanyakumari district of Tamil-Nadu state, India with a population approximately 3000. This village has a unique culture of Kerala in their dietary habits ,physical activity etc because of the close proximity to that state .

We conducted a cross sectional survey among the participants. We obtained the list of households from the Panchayath .Through a house to house survey we created an eligible participants list of all the usual adult residents(ie. aged 20 years or above)and advertisements were given through leaflets(door to door) and word of mouth ,the week preceding the visit.

We used a pre-tested questionaire that explored demographic details, past history and family history of Diabetes, diet pattern, physical activity and socio –economic status. Random Blood Sugar of each participant was recorded .

Inclusion criteria was, all those native to the village, ≥20 of age. Excluded were people <20 years of age, pregnant mothers and those not native to Choozhal. The study was conducted over a 4 week period from December 15, 2014 to January 16 2014. The data, including age, gender, family history of Diabetes mellitus, duration of Diabetes and treatment were collected using a semi structured questionnaire and by interview method. The project was approved by the Saraswathy Institutional ethical committee and informed consent was obtained from every person.

Statistical Analysis: Results were tabulated on Microsoft Excel and transposed to SPSS for statistical analysis (SPSS). Data were analyzed using IBM SPSS version 15. Results are expressed as mean and standard deviation.

Results:

The baseline characteristics of the study population are depicted in Table 1. A total 1444 of the participants responded to this study, of which 48% (n =693) were males and 52% females (n = 751). The age distribution of the study population is as follows: 37.60%of the study population were between 40 and 60 years of age, 44.25% were between 20 and 40 years, and 17.15 % were more than 60 years. A total of 1444 patients, 10.94% had evidence of Type II DM. The highest prevalence of Diabetes was in the age group 60 and above, which was 27.1%. Among the patients with Diabetes 53.1% were females and 65.8% have a family history of Diabetes only 70.51% of people were on treatment for diabetes.

Table 1 : The baseline characteristics of the study population

Category	Numbers	Type II Diabetic
Total population (< 20yrs)	1444	158
Males	693	74
Females	751	84
Age group	319	2
20-29 years	324	9
30-39 years	301	32
40-49 years	242	45
50-59 years	258	70
60 years and above		

Table 2 : Age wise prevalence of Type II DM

Age Group(Years)	Frequency		%
	Total	**Type 2 DM**	

20-29	319	2	0.6%
30-39	324	9	2.7%
40-49	301	32	10.6%
50-59	242	45	18.5%
60 and above	258	70	27.1%
Total	1444	158	10.94%

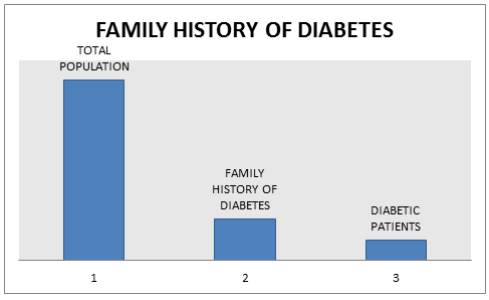
Table 2 shows that out of 1444 people, 158 (10.94%) had Type 2 DM. Above 60 years, 70 (27.1%) had a high prevalence of type II DM. 45 (18.5%) persons have type 2 DM, under the age group of 50-59. Between the age group of 40-45 years, 32 (10.6%) had type 2 DM. 9(2.7%) people between 30-39 years have Type 2 DM and only 2 (0.6%) people had Type 2 DM under the age group of 20-29 years.

Table III: Gender wise percentage distribution among Type 2 DM patients.

GENDER	FREQUENCY	PERCENTAGE %
Male	74	47%
Female	84	53%

Table 3 shows 74(47%) type 2 DM patients were males and 84(53%) were females who had a higher prevalence of Type 2 DM.

Figure 1: Family history of Diabetes



In the total study population 22.7 % are having Family history of Diabetes and Diabetic patients with family history of Diabetes is 158 in number i.e. 10.9% of the total population, People with family history of Diabetes is 171 in number i.e. 11.8% of the total population,hence one of the risk factor of developing Diabetes i.e. (Family history of Diabetes) is 22.7%

Figure 2: Family history of Type 2 DM in patients with Diabetes

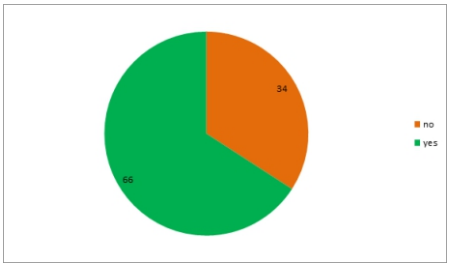


Figure 1 shows that 66% of patients with Diabetes have a family history of Type II DM and 34.% have no family history of Diabetes.

Figure 3: DURATION OF DIABETES

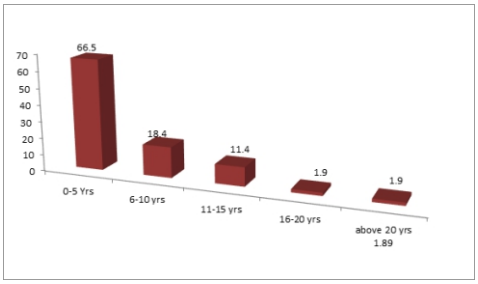


Figure 3: shows the duration of Diabetes in which 66.5% were between the duration of 0-5yrs, 18.4% had duration of 6-10years, 11.4% people had duration of 11-15 yrs, 1.9% people had duration of 16-20 yrs and 1.9% had duration of Diabetes for above 20yrs.

Figure 4:

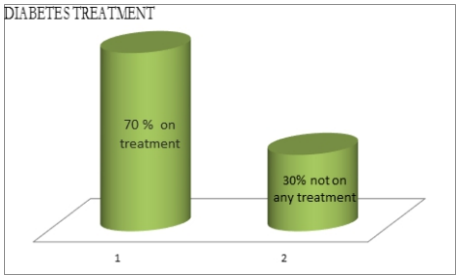


Figure 4: shows that 70% of the patients are on medications or lifestyle modifications and 30% are not on any medication or lifestyle modification.

Discussion

This study finding highlights the fact that Diabetes is increasing in rural areas of south Tamilnadu. A total of 1444 people, 10.94% had evidence of Diabetes, the alarming fact is that 30% of diabetic patients are not on any treatment. In the study population of 1444, 22.8% are having a family history of Diabetes, in this 13.3% are having a family history of Diabetes so they have a risk of developing Diabetes

The number of people with Diabetes has risen from 108 million in 1980 to 422 million in 2014[1].The global prevalence of Diabetes* among adults over 18 years of age has risen from 4.7% in 1980 to 8.5% in 2014[1]. Diabetes prevalence has been rising more rapidly in middle- and low-income countries[1].Diabetes is a major cause of blindness, kidney failure, heart attacks, stroke and lower limb amputation[1]. In 2012, an estimated 1.5 million deaths were directly caused by Diabetes and another 2.2 million deaths were attributable to high blood glucose**[1]. Almost half of all deaths attributable to high blood glucose occur before the age of 70 years[1]. WHO projects that Diabetes will be the 7th leading cause of death in 2030 [2]. The prevalence of Diabetes in our study population was 10.2%, this is high compared to the results reported in rural Tami Nadu arm of the ICMR-INDIAB Study.[7]

There are other potential sources of error with point of care glucometers that may have relevance in large epidemiological studies including strip factors, physical factors like temperature, patient factors especially with contaminant hands that are not washed properly and interfering medications.[8] Finally, there are studies showing that point of care glucometers significantly underestimate the true blood glucose at levels used for diagnosis of Diabetes.[9]

A community based cross-sectional survey done in urban areas of Ernakulam district in Kerala has revealed a very high prevalence of 19.5%.[8] In a large multi-center study involving nearly 20,000 subjects, the prevalence of Diabetes in Thiruvananthapuram was 17% compared to 15% in Hyderabad and New Delhi, 4% in Nagpur and 3% in Dibrugarh.

Various studies in the west used different Diabetes risk scores, based on simple anthropometric, demographic and behavioral factors, to detect undiagnosed Diabetes. (9-12)

In coming decades, India have to cope up with a high rural burden of Diabetes care. Challenge seems more daunting because of the fact that India has a poor track record of equitable distribution of health services with the rural people having poor access.

" Our prevalence estimate of 10.94% percent for type 2 Diabetes is one of the highest rate compared to ICMR study. The highest prevalence of type 2 Diabetes is not completely evident". We presume that this

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high prevalence is due to their dietary pattern and sedentary lifestyle. In the study area, rising age is associated with higher prevalence of Diabetes, as is the female sex. We have looked for prevalence of Diabetes across some other demographic, socio-cultural significant association between some of them, such as positive family history, Age and family history provides one of the strongest associations with type 2 Diabetes.

There is some limitation in our study, we screened around 1444 people above the age group of 20 many of the middle aged male and are not residing in Choozhal because of their jobs are higher studies so the prevalence of Diabetes in females are high compared to males.

Conclusion:

This study shows a high prevalence of type 2 Diabetes in a rural Tamilnadu. It is much higher than the current estimates based on ICMR-INDIAB study. This indicates for urgent strategies from healthcare organizations, since 30% of patients are not on any treatment and the risk factor of developing Diabetes is high in this population based on the family history of Diabetes.

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Nil

Conflicts of Interest :

There are no conflicts of interest .

References:

1. www.idf.org/global-Diabetes-scorecard .Retrieved on 26 December 2016.
2. Available from http;//www.searo.who.int /EN/Section1243
3. Global report on Diabetes. World Health Organization, Geneva, 2016.
4. Joshi SR, Parikh RM. India - Diabetes capital of the world: now heading towards hypertension. J Assoc Physicians India. 2007;55:323–4. [PubMed]
5. Reddy KS, Prabhakaran D, Chaturvedi V, et al. Methods for establishing a surveillance system for cardiovascular diseases in Indian industrial populations. Bull World Health Organ. Jun 2006;84(6):461-469.
6. Anjana RM, Pradeepa R, Deepa M, Datta M, Sudha V, Unnikrishnan R,et al. Prevalence of Diabetes and preDiabetes (impaired fasting glucose and/or impaired glucose tolerance) in urban and rural India: Phase I results of the Indian Council of Medical Research-INdiaDiabetes (ICMR-INDIAB) study. Diabetologia 2011;54:3022-7.
7. Ginsberg BH. Factors affecting blood glucose monitoring: Sources of errors in measurement. J Diabetes Sci Technol 2009;3:903-13.
8. Rush E, Crook N, Simmons D. Point-of-care testing as a tool for screening for Diabetes and pre-Diabetes. Diabet Med 2008;25:1070-5.
9. Kutty VR, Joseph A, Soman CR. High prevalence of type 2 diabetes in an urban settlement in Kerala, India. Ethn Health 1999;4:231-9.
10. Ramachandran A,Jali MV ,Mohan V,Sneha Latha C,VishwanathanM ,High prevalence of Diabetes in an urban population in South India BMJ.1988:297:587-90