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Incidence and Knowledge of Diabetes Mellitus of the Residents of Tura Town: A Case Study

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A B S T R A C T

Diabetes is a huge problem in India and continues to be the 'diabetes capital' in the world. Hence, a cross-sectional study was carried out to evaluate the incidence of Diabetes Mellitus among the outpatients in the Tura Civil Hospital located in a small town in the North-eastern State of Meghalaya, India. A total of 100 outpatients were randomly selected and data were collected by interview method using a pre-designed and pre-structured questionnaire. The results showed that the prevalence of Diabetes was very high, with the incidence of Diabetes higher in the age group of fifty to sixty years (44%), with more males (64%) suffering from Diabetes than females (36%). In comparison to the rural area, the urban area had a higher percentage (55%) suffering from Diabetes. Non-vegetarians (88%) and patients who lived a sedentary lifestyle (73%) were mostly associated with the disease. The knowledge of the patients about the disease was also found to be very poor. Hence, preventive measures and awareness regarding Diabetes Mellitus to serve the population and halt and reduce the prevalence of Diabetes Mellitus are necessary

Introduction

Diabetes is a chronic disease causing significant mortality and morbidity worldwide and hence, is an important public health problem, one of the four priority non-communicable diseases (NCDs) targeted for action by the world leaders. Both the number of cases and the prevalence of diabetes have been gradually increasing over the past few decades (WHO, 2016).

Diabetes is a huge problem in India and continues to be the 'diabetes capital' in the world. According to a study conducted by the International Diabetes Federation, nearly 9% of India's population is likely to be affected with diabetes by 2030 (Hindustan Times, 2017).

According to the International Journal of Diabetes in Developing Countries, India has been witnessing an alarming rise in the incidence of diabetes and an estimated 3.4 million deaths due to high blood sugar have been report by the World Health Organization (WHO) fact sheet on diabetes. The WHO also estimates that 80 per cent of diabetes deaths

occur in low and middle-income countries and projects that such deaths will double between 2016 and 2030. It has also been estimated that the global incidence of Type II diabetes is expected to increase to 438 million by 2030 (Malik, 2016).

There is very little data on the prevalence rates and awareness about Diabetes Mellitus in a country like India. Hence this study was taken up to identify the prevalence rates and evaluate the knowledge and practices of the people residing in North East Indian State of Meghalaya's small town called Tura with a population of 74, 858 (2011 census).

Materials and Methods

A cross-sectional hospital-based study was conducted at Tura Civil Hospital, Meghalaya in the Out Patient Department (OPD) for Non Communicable Disease (NCD) for a period of 2 months. A pre-designed and pre-structured questionnaire was prepared in English language to analyse the prevalence/incidence of diabetes. The questionnaire consists of patient's profile, knowledge about Diabetes Mellitus, patient's medical history and lifestyle practices and perceptions.

The data was carried out using a face-to-face interview method. Each interview was conducted in the outpatient department. A total number of 100 respondents were randomly selected in the study. The data collected was coded and analysed in the excel sheets using Microsoft Excel 2016.

Results and Discussion

As evidenced from Table 1, the majority of the patients (44%) were in the age group of fifty to sixty years followed by 31% who were in the age group of forty to fifty which shows that diabetes is more common among the middle aged and elderly. This is in accordance with the book by Srilakshmi (2014) "Dietetics" where it is stated that the incidence of Diabetes Mellitus is more common in the middle aged and elderly. The incidence of diabetes in males (64%) was more common than females (36%). In a similar research conducted by Yang *et al.*, (2010) it was found that the incidence of Diabetes Mellitus was found to be more in males than females. 44% of the interviewed patients were unemployed with 81% being literate while 19% were found to be illiterate. There were 55% percent of the patients from the urban area and 45% from the rural area. In a similar research conducted by Aung *et al.*, (2018) it was found that the incidence of diabetes is higher in the urban area than in the rural area. According to the *CADI* (Coronary Artery Disease among Asian Indians) Research Foundation, India is facing an outbreak of Diabetes Mellitus; with the incidence of diabetes in urban India being approximately double than that of the rural area. 98% of the patients were married with 88% being non-vegetarians. Thus, it can be concluded that non vegetarians are more prone to diabetes than the vegetarians. A study conducted by Tonstad *et al.*, (2013) and several other studies conducted by other researchers have also shown the association of non-vegetarian diet with diabetes and vegetarian diets with a reduction in the incidence of diabetes. In terms of physical activity, the majority of the patients (73%) led a sedentary which shows that sedentary lifestyle is a contributing factor for the incidence of diabetes in the study population. A similar study conducted by Joshua J. Joseph, *et al.*, (2016) found that the incidence of Diabetes Mellitus especially that of Type II was inversely associated with physical activity while sedentary behaviours were found to be positively associated. Majority (46%) of the patients have been suffering from diabetes for less than one year while there are others who have been suffering for more than one year.

51% of the patients had a normal BMI while a total of 41% were obese and a total of 8% were below the normal BMI (Fig. 1).

49% of the patients had no idea about the causes of diabetes, while 36% considered that food is the main cause of the disease, 3% thought that lack of exercise/sedentary lifestyle is the main cause while others were of the belief that tension/stress (7%) and genetics/heredity (5%) can also lead to Diabetes (Fig. 2). The major causes of Diabetes Mellitus however are auto-immune disorders, sedentary lifestyle, acute stress, genetics, age, pregnancy and infections (Srilakshmi, 2014).

Only a total of 11% patients had a correct knowledge about the cause of Diabetes out of which 5% were from the rural area and 6% were from the urban area. The majority (89%) of the patients either had incorrect knowledge or no knowledge about the cause of Diabetes out of which 40% were from the rural area and 49% from the urban area (Table 2). Thus, education and awareness regarding Diabetes Mellitus is needed.

Majority (41%) thought that frequent thirst is the common symptom of diabetes, while 19% considered other symptoms like slow healing of wounds, light-headedness, leg and joint pain, headache, painful urination, blurred vision and tingling sensation as the signs or symptoms of diabetes (Fig. 3). 38% were aware that eye disease is the complication of diabetes while 12% believed that heart disease is the main complication (Fig. 4). Drugs/medication was believed by the majority (56%) to help control diabetes while 1% of the patients felt that other measures like consuming bitter foods and avoiding sweets can control diabetes (Fig. 5). A total of 55% patients were hypertensive patients while 25% had normal blood pressure and 20% had an elevated blood pressure (Fig. 6).

According to Katayama *et al.,* (2018), over 50% of the patients with Diabetes Mellitus, eventually develop hypertension as a complication which increases the incidence of cardiovascular disease (CVD) by two to three folds and accelerates the progression of diabetic nephropathy.

The majority (71%) had no family history of Diabetes (Fig. 7). 72% of the patients have not been hospitalized for Diabetes, while 28% have been hospitalized (Fig. 8). While 46% of the patients include exercise in their routine, 54% did not exercise (Fig. 9).

Out of the 46% of patients who indulged in exercise, only 52% exercised daily while 42% exercised sometimes (Fig. 10). In a study conducted by Thompson PD, *et al.,* (2003) it was found that daily exercise can improve blood glucose control and reduce the deaths in patients with type II diabetes.

Walking as a form of daily physical activity, was also found to have beneficial effects on reducing the risk of type II Diabetes Mellitus and cardiovascular disease.

A majority of the patients (59%) exercised for duration of less than one hour, while 41% exercised for duration of one hour or more. Brisk walking and jogging were the major forms of exercise practiced (Fig. 11).

76% of the patients were non-smokers while 24% indulged in smoking (Fig. 12). Out of the 24% patients who are smokers, 54% smoke daily while 46% smoke sometimes (Fig. 13). Majority (46%) smoked 1 to 5 cigarettes (Fig. 14).

87% of the patients did not consume alcohol while 13% did (Fig. 15). Out of the 13% of the patients who consumed alcohol, 77% consumed alcohol sometimes while 8% consumed alcohol occasionally (Fig. 16).

Table.1 Patient profile (N=100)

Patient Profile	Frequency	%
AGE		
30-40	12	12
40-50	31	31
50-60	44	44
60-70	9	9
70-80	4	4
GENDER		
Male	64	64
Female	36	36
OCCUPATION		
Unemployed	44	44
Self-employed	16	16
Government Service	22	22
Military Service	18	18
EDUCATIONAL QUALIFICATION		
Graduate	11	11
Higher Secondary	17	17
Matric passed	17	17
Under-matric	36	36
Illiterate	19	19
GEOGRAPHICAL AREA		
Rural	45	45
Urban	55	55
MARITAL STATUS		
Married	98	98
Unmarried	2	2
FOOD PATTERN		
Vegetarian	12	12
Non-vegetarian	88	88
PHYSICAL ACTIVITY		
Sedentary worker	73	73
Moderate worker	27	27
Heavy worker	0	0
DURATION OF DISEASE		
<1 year	46	46
1year-5years	34	34
5years-10years	11	11
10years-15years	5	5
15years-20years	4	4

Table.2 Knowledge about the causes of diabetes according to the geographical area (N=100)

	Correct		Incorrect/ No knowledge	
Geographical Area	Rural	Urban	Rural	Urban
Frequency	5	6	40	49
Percentage	5	6	40	49

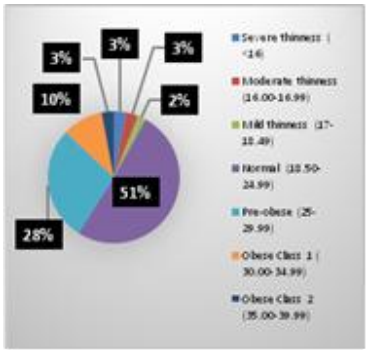

Figure 1: BMI of the patients

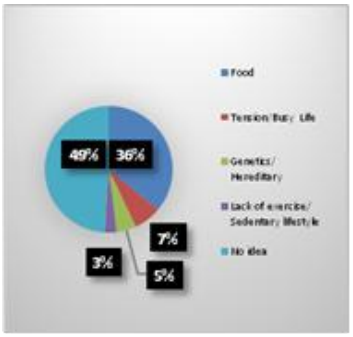

Figure 2: Knowledge about the cause of Diabetes

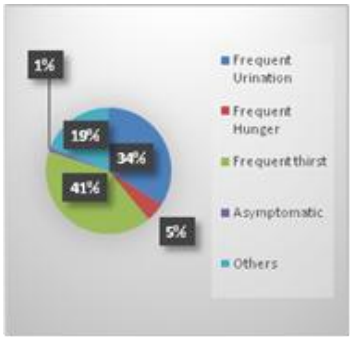

Figure 1: Knowledge about the symptoms of Diabetes

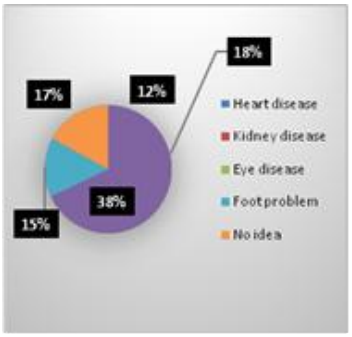

Figure 5: Knowledge about the complications of Diabetes

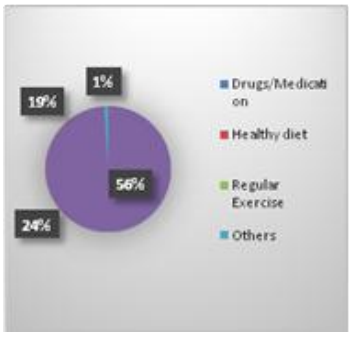

Figure 4: Knowledge about the measures to control Diabetes

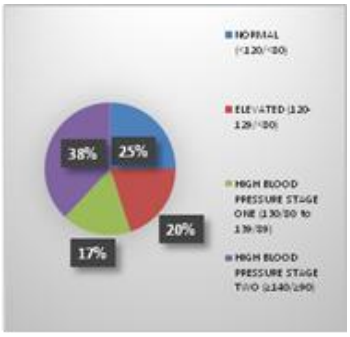

Figure 3: Blood pressure of the patients

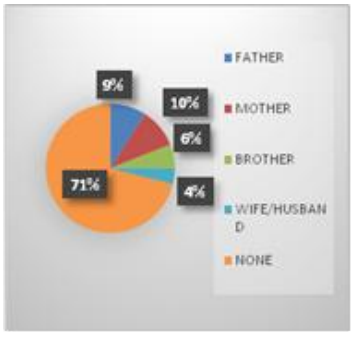

Figure 6: Family history of Diabetes

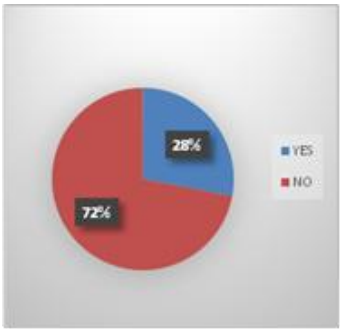

Figure 8: History of hospitalization for Diabetes

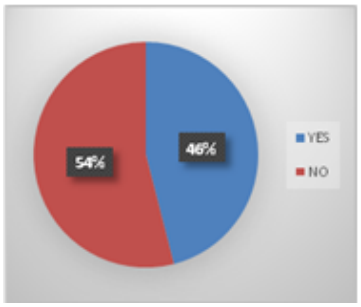

Figure 9: Include exercise in the routine

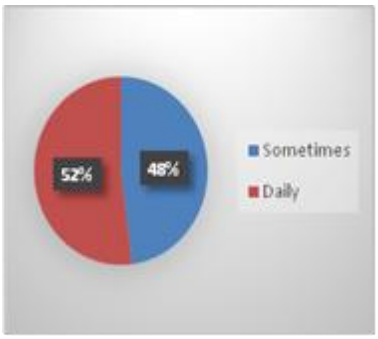

Figure10: Frequency of exercise

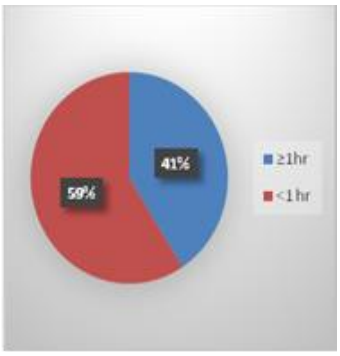

Figure 11: Duration of exercise

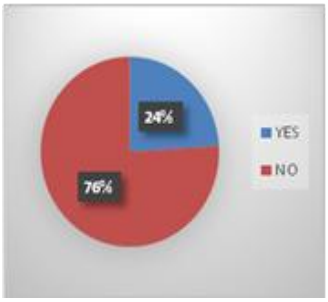

Figure 12: Presence of smoking habit

Figure 13: Frequency of smoking

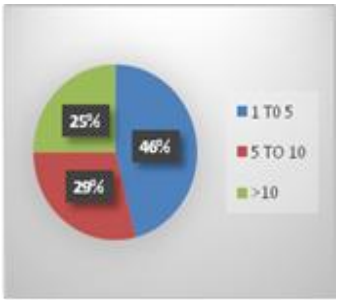

Figure 14: Number of cigarettes smoked

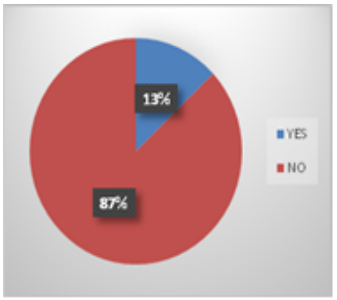

Figure 15: Consume alchohol

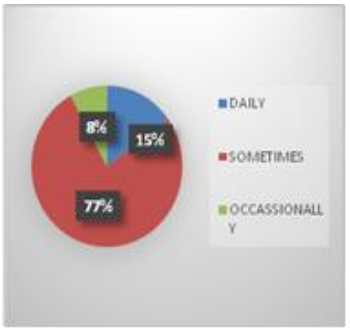

Figure 16: Frequency of consumption of alcohol

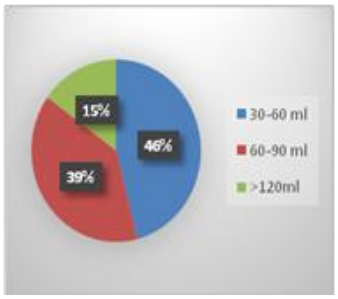

Figure 17: Amount of alcohol consumed

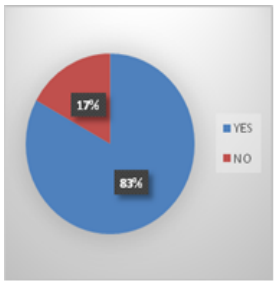

Figure 11: Control measures adopted by the patients

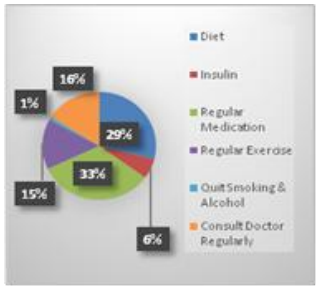

Figure 12: Diet changes adopted

Majority (46%) consumed thirty to sixty ml of alcohol while 15% consumed an amount more than one hundred twenty ml (Fig. 17). A study conducted by Wei *et al.,* (2000) found an elevated risk of developing type II diabetes in non-drinkers and men with high alcohol intake. According to the Dietary Guidelines for Americans, moderate alcohol consumption is defined as having up to 1 drink per day for women and up to 2 drinks per day for men. One standard drink equals 14g.

For controlling diabetes, majority of the patients (36%) used regular medication while 1 % quit alcohol as a measure to control diabetes (Fig. 18).

83% of the patients made changes in their diet, while the remaining 17% made no changes in their diet (Fig. 19). The 83% of the patients who made changes in their diet avoided/limited food items like sweets/sugar, tea, rice, meat especially red meat, roots and tubers, pumpkin, oily and fatty foods, eggs especially the yolk, alcohol, fruits like banana and cruciferous vegetables like cabbage.

Apart from this, they consumed bitter foods like fenugreek seeds, bitter gourd, garlic, whole grains, and parboiled rice so as to control their glucose level.

The prevalence of Diabetes Mellitus among the outpatients in the Tura Civil Hospital was enormously high. It is alarming to know that even in a small town like Tura, the cases of diabetes is high. Moreover, there are still many unaccounted cases of Diabetes in the region. Incidence was higher in the urban area than in the rural area, with higher number of patients in the age group of fifty to sixty suffering from the disorder. More males than females suffered from the disease in the study population with people who lived a sedentary lifestyle and consumed non vegetarian food items being highly associated with the disease. The knowledge of the patients about the disease was also poor.

Thus, preventive measures and awareness regarding Diabetes Mellitus is needed. Furthermore, promotion of healthy lifestyle, diet and exercise should be encouraged to the people.

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