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HOW MUCH DO DIABETIC PATIENTS KNOW ABOUT DIABETES MELLITUS?

Sindhu L*

***Corresponding Author:**
Assistant Professor, Govt. College of Nursing, Thiruvananthapuram
E-mail: sindhulalithambika@gmail.com

Abstract
Background: *The prevalence of diabetes mellitus is increasing at an alarming rate. It is a chronic metabolic disorder and puts considerable burden on the healthcare services. Adequate knowledge about their illness is important in controlling their disease and preventing complications. The aim of the present study is to assess the knowledge of diabetes among type 2 diabetes patients.*
Methods: *This cross sectional survey was conducted among 140 type 2 diabetes mellitus patients attending the diabetic clinic of a tertiary care teaching hospital in Thiruvananthapuram, Kerala, India. Patients with type 2 diabetes mellitus between the age group of 25-75 were included in the study were collected using interviewer administered questionnaire. The knowledge of patients was assessed using Michigan Diabetic Knowledge Test along with the interview schedule for socio demographic and clinical data. The data were analyzed using appropriate descriptive and inferential statistics using SPSS.*
Result: *The mean age of the participants was 56±11.6, 50 % were females. 57.1% of study participants had family history of diabetes mellitus. Overall 58.6% of study participants had poor knowledge on the total DKT, while 53.6% did so on the general knowledge subscale and 67.9% on the insulin knowledge subscale. Females, older, people with less education, unemployed and with limited income had significantly lower knowledge.*
Conclusion: *The level of diabetes knowledge among patients with type 2 diabetes was poor, especially among females, older people, those with low educational level and limited family income and unemployed patients. Diabetes educational programme need to be developed to address critical gaps in patient's knowledge.*

Introduction

Diabetes Mellitus is a chronic metabolic illness that requires continuing medical care and ongoing patient self-management education and support to prevent acute complications and to reduce the risk of long term complications (1). The International Diabetic Federation has predicted that there will be 380 million individuals with diabetes mellitus in 2025 (2).

Diabetes Mellitus is growing at an alarming rate all over the world. The rising prevalence of diabetes poses a medical challenge globally and especially in developing countries as almost 80% of diabetes occur in these countries (3). It is estimated that there are currently 32 million people with diabetes in India which is projected to increase by 802 million in the year 2030(4).In India prevalence of type 2 diabetes mellitus in urban area is 15% and that in rural area is 6%(5). India had the largest number of diabetic subjects with 31.7 million cases of type 2 diabetes mellitus in India (6).

The awareness about the disease and its complications is less than satisfactory among patients. Only 23% reported diabetics in a population based sample in Chennai, knew that it could cause a heart attack (7). Patient's lack of knowledge about diabetes care can impede their ability to manage their

illness. Adequate knowledge about the disease and its management significantly increases the metabolic control of individuals. (8). The aim of the present study was to investigate the level of diabetes knowledge in adult with type 2 diabetes mellitus, attending diabetic clinic of a tertiary care centre, Thiruvananthapuram, Kerala, India.

Materials and Methods

This cross sectional survey was conducted in the diabetic clinic of a 1940 bedded multispecialty tertiary care teaching hospital in Thiruvananthapuram, Kerala, India. A total of 140 type 2 diabetes mellitus patients above 18 years and on treatment for diabetes for at least 1 year attending the diabetic clinic were included in the study. After obtaining informed consent from the patient, socio demographic and clinical data were collected from the patients using an interviewer administered questionnaire. Knowledge of patients regarding diabetes was assessed using Diabetes Knowledge Test (DKT) of the University of Michigan Diabetes Research and Training Center (9). DKT is a reliable and valid tool. It comprises of 23 items to test patients' knowledge about diabetes. The first 14 items are appropriate for people who do not use insulin and 9 items insulin use subscales. The knowledge scores were determined by awarding one point for each correct response and zero for a wrong response or no response. The range of knowledge score was 0-23 and was categorized as

Less than 11	poor knowledge
11-17	average knowledge
>17	good knowledge

The first 14 items were related to general knowledge and were

Categorized as Less than 7	poor knowledge
7-11	average knowledge
> 11	good knowledge

Items 15-23 were related to insulin use and were categorized as

Less than 5	poor knowledge
5-7	average knowledge
>7	good knowledge

Table 1:
Shows the socio demographic characteristics and diabetes related data.

(N-140)

	Mean Age (years)	56±11.6
Gender	Male	70 (50%)
	Female	70 (50%)
Education	Below high school	23 (16.4%)
	High school	24 (17.1%)
	Pre-degree	68 (48.6%)
	Graduate & higher	25 (17.9%)
Family history of diabetes		80 (57.1%)
Duration of diabetes	< 5 year	46 (32.9%)
	5-10 years	35 (25%)
	>10 years	59 (42.1%)
Type of treatment	Diet	5(3.6%)
	OHA	80(57.1%)
	Insulin	15 (10.7%)
	OHA+ Insulin	39(27.9%)
	Diet +Insulin	1 (0.7%)
Compliance	Regular	115(82.1%)
	Irregular	25(17.9%)
Occupation	Employed	63(45%)
	Unemployed	77 (55%)

Results and Discussion

The mean age of the participants was 56±11.6, 50 % were females (male to female ratio 1:1).16.4% were having education below middle school and the rest were having above high school education. 93.6 % of participants were married, 57.1% of study participants had family history of diabetes mellitus.97.9% of participants were on treatment with modern medicine. Among the study participants, 3.6% were on diet management, 57.1% were taking OHA, 10.7% were using insulin alone, and 27.9% were using combined OHA and insulin. Hypertension was the most common co-morbidity present among the study participants (52.1%). Dyslipidemia was present in 47.1% of study participants. A for diabetes related complications; retinopathy was present in 37.1%, neuropathy in 27.9%.

Knowledge level and determinants of poor knowledge

Overall 58.6% of study participants had poor knowledge on the total DKT, while 53.6% did so on the general knowledge subscale and 67.9% on the insulin knowledge subscale. However only 2.9% of patients scored "good" in the total DKT, 7.1% scored "good" in general knowledge and 7.5% scored "good" in insulin knowledge. Knowledge deficit was apparent in the question related to testing of glycosylated hemoglobin (HbA1c) - 87.9% were incorrect, free food (84.3% were incorrect), diabetic diet (77.9% were incorrect), treatment of hypoglycemia (84.3% were incorrect, peak timing of insulin reaction (81.8% were incorrect), signs of ketoacidosis (80% were incorrect), cause of insulin reaction (85.4% were incorrect). Table 2 shows a comparison of the mean knowledge score according to the participant's socio demographic characteristics and diabetes related data.

Those who were female, older, people with less education, unemployed and with limited income had significantly lower knowledge.

Table 2:
Knowledge scores of patients

	poor	Average/good	x2	p value
Gender				
Female	51	19	11.775	0.001*
Male	31	39		
Age				
<45	7	16		
45-54	28	14	9.157	0.027*
55-64	32	19		
Education				
Below high school	17	6	16.166	0.001*
High school	14	10		
Pre degree	45	23		
Graduate& higher	6	19		
Occupation				
Unemployed	49	14	17.413	0.001*
Employed	33	44		
Income				
Rs. <3500/	44	19	11.302	0.004*
Rs. 3500-5000	17	8		
Rs. >5000/	21	31		

* significant

Discussion

The St. Vincent Declaration Action Progarmme suggested that all patients with diabetes mellitus participate in education programme to improve patient's outcome such as metabolic control and quality of life (9). Diabetes education is vital for achieving good metabolic control. It provides the patient with knowledge and skill that allows him or her to carry out self-care on routine basis (10). But studies showed that knowledge and skill is deficient in 50-80% of patients with diabetes (11).

The present study revealed that knowledge regarding diabetes was low among females. The finding was similar to that reported by Gulabani *et a*l, who conducted a study on knowledge of diabetes, its treatment and complications among diabetic patients. They found that the mean knowledge score in men were 2.84 points higher than in women and the difference was found to be statistically significant, suggested that they need more intensive health education (12.

The present study revealed that 58.6% of study participants had poor knowledge on the total DKT.Al-Adsani *et al*, using the same DKT conducted a survey in Kuwait adults with type 2 diabetes also revealed that 58.9% were able to correctly able to answer the questionnaire(13).

The main socio demographic factors affecting diabetes according to the present study were gender, age, education, occupation, and income. Old age is seen as a barrier to diabetes education, while younger patients may have higher degree of motivation and adaptability towards this disease (14).

Low level of education, limited family income is the problems faced by many patients and can adversely affect their diabetes outcomes and ability to self manages their illness (15). The present study result is in consistent with the findings of Al-Adsani *et al* (13). They concluded that knowledge of diabetes in a type 2 diabetes population with a higher prevalence of illiteracy was poor.

Limitation

This was a hospital based study.

Conclusion

The level of diabetes knowledge among patients with type 2 diabetes was poor, especially among females, older people, those with low educational level and limited family income and unemployed patients. Diabetes knowledge deficit is a global problem and this explains the poor metabolic control among diabetic patients and support recommendations to the need for educational intervention programmes.

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Conflict of interest

None to declare

Source of funding

None

Ethical Clearance

To conduct the study, ethical committee clearance was obtained from the Institutional Ethics Committee, Govt. Medical College, Thiruvananthapuram, Kerala. Administrative permission was obtained from Medical Superintendent, Govt. Medical college Hospital, Thiruvananthapuram and written informed consent was obtained from the study participants.

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