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A Study of Awareness Regarding Diabetes Among Diabetic Patients in Coimbatore

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Abstract:
Background: *Diabetes is a group of chronic diseases, which is associated with long term complications with reduced quality of life and life expectancy. If the patients are aware about their illness, the risk of complications can be prevented. There is a felt need to identify the deficiency of knowledge about diabetes among the diabetic patients. Hence we have selected this study to evaluate the awareness about diabetes among the diabetic patients.*
Materials and methods: *A cross sectional study was introduced randomly to the diabetic patients attending the tertiary care hospitals in Coimbatore. A total of 100 Type II diabetic patients were included in the study. Using a well organized questionnaire, participants were interviewed. The questionnaire focused on general knowledge about diabetes, knowledge on risk factors, knowledge on symptoms and complications, knowledge on medications available, knowledge on lifestyle and non medical measures, things that one should not do and knowledge on monitoring of diabetes.*
Results: *The overall average correct answer was 38%. The average correct answer by the participants for the general knowledge about diabetes 34 %, knowledge on risk factors 28 %, knowledge on symptoms and complications 39%, knowledge on treatment and management 37% and knowledge on monitoring diabetes 62%.*
Conclusion: *The overall awareness of diabetes was found to be low. Our study will clarify the idea regarding the deficiency of knowledge about diabetes in these patients and help to design education programmes to increase the awareness in these areas.*
Keywords: *Diabetes Mellitus, Diabetic complications, Diabetic Education*

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I. Introduction

Diabetes, a chronic metabolic disorder, requiring continous medical care with multifactorial risk reduction strategies. It has become a global burden, steeply rising in developing economies. The prevalence of diabetes globally is 9.3% (463 million people), projected to reach about 700 million by 2045. One in two diabetic persons, do not know that they have diabetes.[1]

The overall prevalence of diabetes in India is 11.8 %, in which 8% are known diabetics and 3.8% are newly diagnosed diabetics, with men and women are almost equally affected. 60.5% lack blood sugar control, though 85.7% take drugs for diabetes, according to a survey conducted from 2015 to 2019 in AIIMS, New Delhi.[2] Patients with diabetes have increased risk of death and a myriad of serious diabetes specific microvascular complications (diabetic neuropathy, nephropathy and retinopathy) and macrovascular complications (coronary artery disease, peripheral vascular disease and stroke).[3] Hyperglycemia is the common characteristic of both type 1 and type 2 diabetes mellitus and has the potential to cause serious complications due to its insidious and chronic nature. Almost half of the newly diagnosed diabetic patients have microvascular complications.[4]

Diabetes will substantially increase, even if the international targets such as sustainable development goals and WHO Global Action plan for the prevention and control of Non Communicable Diseases are met.[5] Prevention of complications is a critical concern, which can further increase the economic burden both on health department and patient itself in developing countries. Only if the patients are aware about their illness in terms of lifestyle modifications, dietary plans, they will develop self management skills and the likelihood of complications can be prevented. By improving their knowledge about the disease, this can be achieved. There is

a need to know their deficiency of knowledge about diabetes. Hence, the main objective of the study is to identify the weakness of knowledge regarding the disease among the diabetic patients.

Our study is very important, since such data would improve the current programmes to address the areas of knowledge deficiency.

II. Materials and methods

The study was conducted over a time span of 6 months in the tertiary care hospitals in Coimbatore during March 2022 to June 2022. It was a cross sectional study. The study was done randomly to the diabetic patients. Both male and female patients diagnosed with Type II Diabetes Mellitus were included in the study. Those suffering from Type 1 Diabetes Mellitus, Gestational Diabetes Mellitus and Diabetes Insipidus were excluded from the study. The duration of diabetes in the patients varied from 10 days to 20 years. The patient's age ranged from 32 to 79 years of age. Total 100 patients were assessed. The well organized questionnaire[6] was divided into eight main sections, focusing different aspects of diabetes mellitus. They are General knowledge of diabetes (8 questions), knowledge about risk factors (4 questions), symptoms (6 questions), complications (5 questions), available medications (1 question) , life style measures (5 questions), things diabetics should not do (4 questions) and knowledge on monitoring of diabetes (3 questions). Participants were interviewed and answers were marked by a medical professional. All questions were asked in layman language, without using medical terms. If the patient was aware of the question, the score given as "1". If the patient is not aware or gives wrong answer, the score is "0". For each section, the maximum possible score and the score obtained by the patients were analyzed and converted to percentage. Average time taken was 20 to 25 min for each patient. Institutional ethical clearance and informed consent were obtained.

III. Results

A total of 100 diabetic patients were included in the study, in which 54 were males and 46 were females. About 22 patients had family history of diabetes. Among 100 diabetic patients, 16 patients were both hypertensive and diabetic. 32 patients were uneducated while remaining patients were educated
(primary/secondary/graduates/post graduates)
Responses of the patients for different items of the questionnaire (n=100) are shown in the Table 1 to Table 3

Table no 1. General Knowledge and Knowledge on Risk factors of Diabetes

General Knowledge of Diabetes	**Correct %**	**Wrong %**	**Unsure %**
Diabetes is a condition of high blood sugar	78	4	18
Diabetes is a condition of not enough insulin in blood	9	7	84
Diabetes is a condition of the body not responding to insulin	4	7	89
Diabetes is non-contagious	46	18	36
Diabetes is not curable	38	29	33
Diabetes occur in children, adolescents, and adults	27	29	44
Insulin is a hormone in blood which controls blood sugar	13	9	78
Insulin is available as a drug for diabetic patients	54	2	44
Knowledge on Risk factors of Diabetes			
Family history of diabetes	40	16	44
Age above 40 years old	31	11	58
Obesity	34	13	53
Pregnancy	7	9	84

Table no.2 Knowledge on symptoms and Complications of Diabetes

Knowledge on symptoms and Complications of Diabetes	**Correct %**	**Wrong %**	**Unsure %**
Symptoms			
Constant feeling of thirst	42	9	49
Frequent urination	67	11	22
Weight loss despite normal appetite	20	9	71

Blurred vision	24	7	69
Slow healing of cuts and wounds	69	11	20
Tiredness and weakness	54	13	33
Complications			
Decaying limbs that require surgical removal	80	7	13
Eye problems	22	14	64
Kidney problems	9	11	80
High blood pressure	29	4	67
Loss of sensation in arms and legs	16	6	78

Table no.3 Knowledge on Treatment, Management and monitoring of Diabetes

Knowledge on Treatment and Management of Diabetes	Correct %	Wrong %	Unsure %
Medications available			
Insulin injections are available for the control of diabetes	71	7	22
Lifestyle and non-medical measures			
Diabetics should carry sweets when they are out	29	22	49
Diabetics should exercise regularly	53	7	40
Diabetics should have a low fat and high fibre diet	58	0	42
Diabetics should care for their toes and feet	18	4	78
Diabetics should have good weight control	40	2	58
Things diabetics should not do			
Diabetics should not donate blood	18	31	51
Diabetics should not smoke	20	4	76
Diabetics should not wear tight shoes	9	4	87
Diabetics should not skip meals when busy	53	3	44
Monitoring of diabetic conditions			
Diabetics should test their blood sugar regularly	91	2	7
Diabetics should go for regular eye check-up	16	7	77
Diabetics should go for regular check-up	78	4	18

In Table 4, the overall average correct answer was 38%. The percentage of correct answer was highest in the knowledge of monitoring section (62%) and lowest was in the knowledge of risk factors (28%)

Table no.4 Maximum possible score, average correct answer (%) for each section

Section	Maximum possible score	Average correct answer (%)
General Knowledge	8	34%
Risk factors	4	28%
Symptoms and complications	11	39%
Treatment and Management	10	37%
Monitoring	3	62%
Total score	36	38%

IV. Discussion

General Knowledege : 78 % of people answered correctly as diabetes is a condition of high sugar level in the blood. But, data collected shows that the overall general knowledge on diabetes mellitus is shockingly poor. The patients had poor knowledge on pathophysiology of diabetes. Most of them were not aware that insulin is a hormone. Merely, 9% of the participants were aware that diabetes is a condition where there is lack of insulin and 4% of patients were aware that diabetes is not responding to insulin. Only one third of the patients knew that diabetes is not curable. 29% of patients answered wrongly as diabetes is curable. Only 27 % of the patients were aware about occurrence of diabetes in children and adolescents and only half of the participants knew that diabetes is not a contagious disease.The average correct answer given by the participants on General knowledge about diabetes was 34 %

Risk factors : People had poor knowledge about the risk factors of diabetes. Only 40% of patients knew that diabetes is hereditary, which is similar to a study in which 38.2 % among diabetic patients were aware of hereditary cause for diabetes.[7] About 34% of participants were aware of obesity as a cause for diabetes . It is similar to study in which 38.3 % of diabetic patients in Tamil Nadu were aware of obesity as a risk factor.[8] But, in contrast to these studies, in another study, only 6.4 % of diabetic patients were aware of the same.[7] It is noteworthy that only 7 % of patients were aware that pregnancy as a risk factor for diabetes. This is similar to studies conducted in Kuwait and Singapore.[6,9] For the section of knowledge on risk factors of diabetes, the

average correct answer by the participants was 28%, which is the lowest score among different sections covered in this study.

Symptoms and Complications : Patients had poor knowledge about symptoms of diabetes except frequent urination and slow healing of wounds. Only 20% of the patients were aware of weight loss, despite of normal appetite. In this context of the study, only 22% of patients were aware of eye problems and diabetic retinopathy can lead to visual impairment and with proper intervention, progression to visual loss can be prevented. About 29% of newly diagnosed diabetic patients have diabetic retinopathy. Close surveillance of the diabetic patients for the existence or progression of diabetic retinopathy is crucial.[4] 80% of them were aware that diabetes may lead to decaying of limbs that require amputation of limbs. Otherwise, knowledge about complications of diabetes was also low. Like other microvascular complications of diabetes, there is a strong association between glycemic control and risk of developing diabetic nephropathy.[4] It is noteworthy that only 9% and 29% were aware about the kidney problems and hypertension respectively in contrast to a study by Deepa et al in which 17.4 % and 7 % were aware of kidney problems and hypertension respectively.[8] Hypertension is highly associated with diabetes and diabetic kidney disease.[10] About 28% of diabetic nephropathy is present in newly diagnosed diabetic patients and 30% to 40% of patients develop diabetic nephropathy in next 10 years of diagnosis.[4]

Only 16 % of the participants were aware of loss of sensation in limbs. In a study by Mitra et al, diabetic neuropathy is present in 20 % of the newly diagnosed diabetic patients.[4] Amputations occur after foot ulcer or injury, which can result from diabetic neuropathy. There is no specific treatment for diabetic neuropathy, though few drugs are available to treat the symptoms. The primary goal is to control symptoms and prevent worsening of neuropathy by improved glycemic control.

In our study, the average correct answer for the symptoms and complications given by the participants was only 39 %, similarly, in another study done in sivaganga district, people had very poor knowledge (74% of people were not aware) about long term effects of diabetes and its complications.[11]

Treatment and Management : 71 % of patients were aware that insulin injections are available to control diabetes. It is really worrying to find that, only 29% of patients knew that they have to use sweets/sugar during the episodes of hypoglycaemic giddiness. Hypoglycaemic attacks are the dark side in the management of diabetes. 22% of patients said that they should not use sugar during hypoglycaemic attacks (They misinterpreted the advice given that they have to reduce food consumption and avoid sugar in tea/coffee). In this study, only half of the patients were aware that they should not skip meals. Patients must be aware of hypoglycaemic attacks to prevent the adverse effects caused by such events. About 58% of diabetic patients were aware of low fat and high fibre diet. Patients should be aware of diabetic diet to maintain optimal glycaemic control, thereby preventing complications.In this study, only 40 % of the participants were aware of good weight control and half of the participants knew to do regular exercise in contrast to a study in Kuwait in which 74% of adolescent population were aware of weight control and exercise.[6] In developing countries like India, there is a myth that obesity is a sign of health and power. This perception drives the eating behaviour. As diabetes can be prevented by altering the lifestyle and increasing the physical activity, the society perception of health and knowledge about risk factors has to be changed with urgent attention by policy makers and health care planners.It is noteworthy that, in this study, only 18% of the patients were aware that diabetic patients with poor glycaemic control should not donate blood. Only 20% of patients were aware that diabetic patients should not smoke. They had very poor knowledge about caring of toes and feet to avoid complications like diabetic foot. It is worrisome that only 9% of diabetic patients were aware that they should not wear tight shoes to prevent diabetic foot ulcer. Diabetic foot ulcer is the commonly occurring complications in diabetics that cause health and economic consequences to patient, society and the country.[12] In this study, the average correct answer given by the participants for the section of treatment and management is only 37%.

Monitoring : Diabetic patients had good knowledge about monitoring of diabetic conditions such that about 91% of the patients were aware of testing the blood sugar regularly and 78% of the patients were aware to go for regular check up. However, only 16% of diabetic patients were aware that they have to do regular eye checkup (once in a year). Once the neuro-degeneration is progressed, the reversal is limited. Early detection of diabetic retinopathy will avoid higher surgeries.[13] Participants scored 62% as the average correct answer for the knowledge of monitoring section, which is the highest score among the different sections covered in this study.Taking into consideration the high prevalence of diabetes in India,[14] it is highly recommended to elaborate the knowledge about diabetes among the diabetic patients to prevent complications. Policy makers should take immediate action to prepare health and social security systems to mitigate the effects of diabetes. NICE guideline considers the care and management of diabetics in adult age. It focuses on diet, education, managing blood glucose and complications in diabetics. It focuses on education, not only to diabetics, but also to the family members.[15] In urban areas of Tamil Nadu, diabetes is highly prevalent in the people of Lower SES. Diabetes in economically disadvantaged section of people is of critical concern, since it has serious implications on the country's health and socioeconomic development.[16] Public awareness can be created in

mass, groups or in individual level. On World Diabetes Day, in collaboration with Ministry of Health, mass campaigns and exhibitions can be conducted. Brochures and pamphlets can be given to the public in local languages covering different aspects of diabetes. Posters regarding awareness can be used in Tertiary care Hospitals, Primary Health Centres and Diabetic clinics. Lectures with power point presentations can be given by the professionals to improve level of awareness about diabetes. One to one interaction with the patients is one of the best methods to create awareness among the diabetics during counselling sessions. Patient education programmes has to meet the cultural,linguistic, literacy and cognitive needs within the local area. Adults with type II diabetes and their carers or family members should also have the opportunity to contribute to the design and provision of local programmes.

Our study is unique, that it had been conducted in tertiary care hospitals, Coimbatore, to study the awareness among the diabetic population. The study represents only the tip of the iceberg and the present scenario in the city.

V. Conclusion

Awareness regarding diabetes among the diabetic patients was poor. With the high prevalence of diabetes in India, it is highly recommended that proper guidance and life style modifications are needed for the patients to maintain optimal glycaemic control and to prevent complications. By multisectoral strategy, there is a need to raise the educational awareness for diabetic patients.

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