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Research Article

KNOWLEDGE, ATTITUDE AND PRACTICE ABOUT DIABETES AND ITS TREATMENT IN PATIENTS ATTENDING THE SPECIALITY CLINIC

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ABSTRACT

Diabetes mellitus is a prominent healthcare problem in India. Emphasis on self management and active participation of the patients can help reduce its complications. This baseline study was conducted to evaluate the knowledge, attitude and practice about diabetes and its treatment among patients. A validated self-administered questionnaire was administered to diabetic patients attending the specialty OPD at a tertiary care, teaching hospital. The questions assessed the knowledge, attitude and views about diabetes, its complications and regarding prevention and treatment. Scoring of questions regarding knowledge was done (range 0 to 33). Latest fasting and postprandial blood sugar levels and HbA_{1C} level were also recorded. The data was recorded in a Microsoft Excel 2007 spreadsheet and statistical analysis was done using Graph Pad InStat version 3.06. The study enrolled 200 patients (151 males and 49 females). About 75% patients knew the normal blood sugar levels, symptoms and complications of diabetes. Heart disease was considered to be a major complication and around 70% believed that these complications could be prevented. The mean knowledge score was 12.8±3.3 out of 33. The level of knowledge was better with greater age and duration of diabetes. The attitude of the patients was favourable with majority realizing the importance of lifestyle modifications, uninterrupted treatment and regular follow up. However, few patients actually partook in the lifestyle changes. Attitude of the patients was encouraging but the knowledge and practice was generally lacking among the patients. Motivation and importance of self management patient education regarding drugs, diet and regular exercise is important for decreasing mortality and morbidity due to diabetes.

Key words: Knowledge, attitude, self care practices, diabetes mellitus

INTRODUCTION

Diabetes mellitus is a group of metabolic disorders in which a person develops high blood sugar, either due to inadequate insulin production, or insensitivity of the cells to insulin.[1] Of all the chronic non-communicable diseases, diabetes is associated with highest morbidity and complications and it affects people from all socio-economic backgrounds.[2] Globally the number of people suffering from diabetes is projected to rise from 171 million in the year 2000 to 366 million in 2030.[3] With an estimated 50.8 million people living with diabetes, India has the world's largest diabetic population, followed by China with 43.2 million. The prevalence of diabetes in India varies from 5.4% in northern states to as high 12.3 to 15.5% in south India.[4-6] The increased prevalence of this disease in India is said to be due to increased urbanization, lifestyle transition and change in nutrition (e.g. consumption of diet rich in fat, sugar and calories).[7] Also the incidence of both micro and macro vascular complications involving the nervous and the cardiovascular systems are high perhaps due to a poor glycemic control.[8]

The mainstay of therapy in diabetes mellitus is insulin and oral anti-diabetic drugs. However, studies have shown that implementation of simple lifestyle modifications like decrease in saturated fat intake, increase in dietary fibre content and a regular exercise can significantly reduce blood glucose, insulin and HbA_{1C} levels.[9, 10] Additionally, it is also recognised that empowerment of the patients themselves by promoting self-management results in achieving optimal blood glucose outcome and reduces the incidence of complications.[1] [1]Diabetes self-management education (DSME) has become an integral part of diabetes care for all patients who want to achieve successful health-related outcomes regardless of age.[12] Hence, a combination of knowledge of the disease, the lifestyle modifications as well as the treatment is extremely essential to combat diabetes. Hence it was considered worthwhile to evaluate the knowledge, attitude and practice of diabetes and its management in our set up.

MATERIALS AND METHODS

This was a cross-sectional, observational, questionnaire based study conducted among the patients attending the diabetes outpatient clinic at a tertiary care, teaching hospital in western India. Approval from the Institutional Ethics Committee and requisite permission from the clinic was taken prior to the study. The target population was all patients, above 18 years of age of either gender, diagnosed and undergoing treatment for diabetes mellitus (type 1 and 2) and willing to give an informed consent. A questionnaire was designed by the investigators to test the knowledge, attitude and practice of the diabetic patients regarding the disease and its management. This questionnaire was filled in at a face to face interview with the investigator. It comprised of 22 questions, out of which 3 were general

regarding their disease status. Of the remaining 19, 11 questions pertained to the knowledge (2 of which were specific to patients prescribed insulin) and, 1and 7 were regarding their attitude and practice respectively. The last known results of fasting and post prandial blood sugar and HbA_{1C} level were also recorded. The questionnaire was first administered to 10 patients to assess its suitability and comprehension which was then appropriately modified in consultation with experts. The knowledge of the patients about the disease etiology, symptoms, complications, treatment options, symptoms of hypoglycemia and dosage schedule of insulin (if prescribed) was recorded. More than one option could be chosen. With the exception of the questions regarding insulin, each correct response for the remaining 9 questions was assigned one point and each incorrect response was assigned zero. The maximum attainable score for knowledge was 33 and the minimum was 0. The data was recorded in a Microsoft Excel 2007 spreadsheet. Statistical analysis was done using Graph Pad InStat version 3.06. Pearson's correlation coefficient was used to establish relation between two variables. Chi-square test was used to compare categorical data and ANOVA and Kruskal Wallis test with post hoc tests were used to assess the difference between the means of two population. *P* value of less than 0.05 was considered to be statistically significant.

RESULTS

A total of 200 diabetic patients (type 1 and 2) were enrolled for the study, of which 151 were males and 49 were females (ratio 3:1). Mean age of the patients was 54.28 ± 8.2 years (range36 to 72 years). Majority of the patients (74%) had completed at least their graduation but 12.5% were illiterate. More than half the patients (52%) had a sedentary occupation and around 60% had positive family history of diabetes.

Around three fourth (72.5%) of the patients were diagnosed with diabetes more than 5 years ago. The last known HbA_{1C} level was noted in 124 out of 200 patients and the average was 6.12±0.77%. Forty patients (20%) had developed at least one of the complications, the most common being leg-ulcers and eye problems. Almost half of the patients (47.5%) felt that the disease had restricted their life either physically, mentally, in their work or diet. The responses to questions regarding knowledge are given in Table 1.

Normal blood sugar level was correctly identified by 149(74.5%) patients. More than half the patients (56.5%) believed heredity to be the major cause of developing diabetes. Frequent thirst (50%) followed by frequent urination (38%) were named as the most common symptoms. Only 54(27%) patients knew about glucometer, of which 20(37%) had previously used it. Insulin was prescribed in 27(13.5%) of the total recruited patients, all of whom knew the correct dosage schedule and site of injection.

More than 90% of the patients believed that diabetes mellitus is a lifelong disease wherein the treatment is to be continued even after the blood sugar has been controlled. Regular follow up with the physician for better control of the disease was deemed important by 91% patients. Around 70% of the patients felt that periodic blood sugar monitoring and lifestyle modifications can help control diabetes. Homemade and herbal remedies were considered better than allopathic medications by only 3% patients while 76% patients disagreed with it.

When the practice of the patients was assessed, it was found that only 10.5% undertook a physical exercise for more than 5 times a week while 16.5% never partook in any such exercise. Younger patients with shorter duration of DM were significantly more likely to exercise regularly (p<0.001). Modification of their diet as per the physician's advice was done by 13.5% patients (more than 5 times a week) while 6% did not modify their diet at all. Older patients with longer duration of DM were more likely to follow the physician's advice regarding dietary modifications (p<0.01). Patients who agreed that dietary control and regular exercise is important for control of DM were significantly more likely to follow dietary recommendations and exercise regularly (p<0.001). Blood sugar monitoring in the preceding month was done by 87.5% patients. Patients who felt that blood sugar monitoring was important for control of diabetes were significantly more likely to get their blood sugar tested every month (p<0.001). Around 30% of the patients did not take their medications regularly, forgetfulness and side effects cited as reasons. Older age and long duration of DM were predictors of the patient taking his/her medications regularly (p<0.001). The attitude of patients who were adherent to treatment was significantly more positive towards regular blood sugar monitoring, physician visits and continuing medication even after DM is controlled (p<0.05). When asked if they fasted regularly, 27.5% patients replied in the positive but they decreased the dose of their medication in consultation with the physicians. Herbal remedies for control of diabetes were consumed by 79% of the patients, of which bitter gourd juice and fenugreek (*karela* and *methi* in vernacular respectively) were frequently used.

The mean knowledge score of the patients was 12.8 ± 3.3 (out of 33) which is around 38.8% of the maximum. No patient scored more than 20 out of 33 (60.6%). The level of knowledge was not associated with gender, family history of DM, education, occupation or history of complications. The older the age of the patients and the duration of diabetes mellitus, better was the level of knowledge (p<0.001). The practice of patients, especially with regard to diet modification as per physician's advice and compliance of the anti-diabetic medication was also significantly better in those with higher knowledge score (p<0.001). The attitude of the patients with respect to regular blood sugar monitoring, physician visits, importance of lifestyle modifications and adherence to the treatment in spite of good blood sugar was significantly better in those with a higher knowledge score (p<0.01).

DISCUSSION

Diabetes mellitus is a disease of enormous importance not only in terms of the vast population it affects but also because of the quality of life in those who suffer from it. The disease effects the economic productivity negatively (more sick days, morbidity, disabilities) and it is expected to increase as the affected population gets younger.[13] Achieving and maintaining glycemic control is the ultimate goal but it continues to be highly elusive. Empowering the patients with knowledge regarding self management of diabetes is the best weapon in our arsenal. The American Diabetic Association has paved the way and come up with Diabetes Self Management Education, an intervention delivered to the patient by a multidisciplinary team of at least a trained nurse and dietician.[14] The patients are educated regarding the disease, its treatment options, nutritional management, preventing and detecting complications and integrating psychosocial adjustment with daily care. Such an intervention is yet to be introduced in India, where poor knowledge of the disease and its treatment is well documented.[15-17] Hence, this study was done to analyze the knowledge, attitude and practice of the diabetic patients in our set up which can then become the basis of suitable educational interventions.

Table 1: Knowledge of the patients regarding diabetes and its treatment

Question		Number of patients (%)
Normal blood sugar level		149 (74.5)
Possible causes of diabetes mellitus	Hereditary	113 (56.5)
	Racial	0 (0)
	High calorie diet	78 (39)
	Inadequate exercise	77 (38.5)
	Older age	100 (50)
Symptoms of diabetes	Weight loss	38 (19)
	Frequent urination	76 (38)
	Frequent hunger	55 (27.5)
	Frequent thirst	100 (50)
	Asymptomatic	25 (12.5)
Complications of diabetes mellitus	Heart disease	115 (57.5)
	Kidney disease	67 (33.5)
	Eye disease	65 (32.5)
	Stroke	43 (21.5)
	Foot problem	35 (17.5)
Can diabetes mellitus be prevented by routine investigations?		142 (71)
Treatment options of diabetes mellitus	Oral antidiabetic drugs	186 (93)
	Insulin	76 (38)
	Healthy diet	76 (38)
	Regular exercise	70 (35)
	Control of weight	76 (38)
	Cannot be treated	12 (6)
Knowledge of symptoms of hypoglycemia		146 (73)

The demographics of our patients were same as observed before in a nationwide study to determine the prevalence of DM.[18]Majority of the respondents belonged to the age group of 40-60 years and were males. Around 60% patients had family members suffering from DM confirming that hereditary is an important risk factor of developing DM.[18] The average HbA_{1C} level was 6.12±0.77% showing that most of the patients were well controlled, which is understandable as majority of they were diagnosed with the disease more than 5 years ago. The questionnaire was designed specifically to extract their knowledge regarding etiology, symptoms, complications and treatment options. The average score of knowledge was 12.8 ± 3.3 (out of 33) which meant that only 40% of the maximum score was achievable. It also means that the knowledge of the patients was grossly inadequate.

Normal blood sugar levels, heredity as a possible etiology, classical symptoms of disease (polydipsia, polyuria and polyphagia), heart disease followed by ophthalmic and kidney disorders being the complications were some commonly identified facts by respondents in our study as has also been observed elsewhere in India and abroad[19, 20, 21] Almost all of the patients said that oral antidiabetic drugs and insulin form an important part of the treatment of diabetes. However, healthy diet, regular exercise and weight control were recognized as possible treatment options by only 40% of the patients. This is worrying as it has been proven convincingly that not only do these lifestyle changes improve glycemic control significantly but if instituted early, they prevent the progression of pre-diabetic stage to full blown diabetes.[9, 22] Our study showed that monitoring of blood glucose at home using glucometer was also very low due to the lack of awareness and knowledge as seen similarly by others also.[15,19]While a regular self monitoring of blood glucose has been recommended, glucometers (and test strips) are relatively expensive and laboratory estimation of blood glucose is done free of cost in our set up. Also, the method of using the glucometer and interpretation of its results may need a proper training. A positive finding in our study was that majority of the patients (72.5%) knew about hypoglycemic symptoms that may be seen during treatment with anti-diabetic agents. Majority of the patients also (83.8%) knew how to relieve the hypoglycemic symptoms using common glucose supplements. All patients who were prescribed insulin were also aware about its exact dosage schedule which is reassuring.

The attitude of our patients was generally favourable. Most of our patients felt that that diabetes was a lifelong disease which required regular follow up and that the medication should not be stopped even when the glycemic control is achieved. Regular blood sugar monitoring was also recognized to be important for a better control of DM. Surprisingly, the role of dietary control and regular exercise in control of diabetes was also realised by most of the patients. However, majority of the patients did not practice the lifestyle changes as suggested. This shows that the patients look upon these modifications not as a part of the treatment but as an adjunct to drug therapy. It needs to be impressed that these changes are paramount in the quest for glycemic control. As far as compliance is concerned, around 70% of the patients took the medication regularly (missing less than 3 doses in a month) similar to seen in studies conducted in Bijapur and Kolkata.[16,19] Age and duration of diabetes were found to be predictors of practice. Dietary modifications and adherence to drug therapy were less likely to be followed by younger and recently diagnosed patients while regular exercise was less likely to be followed by older patients with longer duration of diabetes. It shows that the practice about those items where doctors come into play is good (e. g. regular investigations) but where the patients need to exercise their own will (e.g. diet control, exercise and drug compliance) the application is lacking.

As observed in various studies, the knowledge of the patients in our study could be positively correlated with their age and duration of diabetes.[23, 24] The patients with better knowledge scores were more likely to have a favourable attitude towards the disease and good practice with respect to self management strategies. These results reaffirm our belief that when the patient is empowered with knowledge, they are more likely to make the right choices which will enable them to control the disease.

Much of the focus in the treatment of DM has been given to the drugs, rightly so. But somewhere, the importance of simple

lifestyle changes, which constitute the primordial prevention, is lost on the patients. The next step that needs to be outlined is the formulation of a curriculum for training the nurses and physicians to impart knowledge regarding self management to the patients so that they may themselves take control of their disease.

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