ORIGINAL ARTICLE

KNOWLEDGE, ATTITUDES AND PRACTICES OF TYPE 2 DIABETIC PATIENTS

Naheed Gul

Department of Medicine, Shifa College of Medicine Islamabad, Pakistan

Background: Education is the cornerstone of diabetes care. Because of lack of awareness, most patients suffer from diabetes complications. This study was conducted to determine the knowledge, attitudes and practices among patients with type 2 diabetes. **Methods**: This descriptive study included one hundred type 2 diabetics. Patients were interviewed using a structured questionnaire. The mean age of the patients was 50±5 years with the male to female ratio being 1:3. The data was collected using convenience sampling technique and analyzed using statistical package Epi Info 6.0. The patients' knowledge about the disease, their attitudes and practices were the main outcome measures. **Results:** In our study, patients' awareness about diabetes was low. The mean of correct answers for glycemic control, risk factors and complications was 33.5%, 69% and 39% respectively. Sixty-one percent of the patients regularly checked blood sugar but only few knew target blood glucose values. Only one sixth of all the patients could correctly answer question regarding nutrition. 92% recognized blood pressure as a risk factor while the correct answers for hyperlipedimia, cigarette smoking, sedentary life style and body weight were 42%, 70%, 76% and 66% respectively. Awareness about eye and renal complications was also quite low. Doctors were the main source of information available to the test population. **Conclusions**: The knowledge, attitude and practice scores were low in most areas of diabetes care emphasising the need for additional educational efforts.

Keywords: Type 2 diabetes, knowledge, attitudes, practices

INTRODUCTION

Diabetes is a major and growing health problem affecting more than 171 million people worldwide and the number is expected to rise to 366 million by 2030.[1] Type 2 Diabetes will continue to account for 90% of all the cases. In Pakistan 9.5% of the urban and 9.4% of the rural population suffer from type 2 diabetes. Overall glucose intolerance (diabetes and impaired glucose tolerance) is 22.04% in urban and 17.15% in rural areas.[2] According to the WHO estimates, Pakistan ranked seventh in prevalence of Diabetes. These figures however represent tip of the iceberg with many cases still undiagnosed.[3–5]

Despite all the research, diabetes remains under diagnosed. This then ultimately presents with complications, the direct and indirect costs of which are enormous.[6,7] Diabetes care aims at improving the quality of life of patients with type 2 diabetes through good glycemic control[8], control of risk factors, lifestyle modification[9,10], prevention of complications and diabetes education.[11]

Diabetes education is the cornerstone of diabetes care.[12,13] Improved training of the primary health care providers and patients with diabetes is therefore beneficial.[14] Several studies of family physicians identified the need for improvement in their practices for treating and educating diabetics.[15,16] In Pakistan, there is paucity of information about knowledge and attitudes concerning glycemic control, complications and the health impact of diabetes. There are some studies from Karachi[17] but data from other regions of the country is sparse especially from Northern side.

This study was designed to explore patients' awareness about diabetes, misconceptions about the disease itself, its treatment especially diet and insulin. The information gained could subsequently be helpful to design and initiate comprehensive programmes for detection and control of diabetes and its complications with self-care and community support as its major components.

MATERIAL AND METHODS

This study was conducted at the Department of Medicine, Khyber Teaching Hospital Peshawar. A questionnaire was designed which was pilot tested on 10 diabetic patients in the same hospital to assess the suitability of content. Total study duration was 6 months from August 2004 through February 2005. One hundred consecutive patients with type 2 diabetes with disease duration more than 1 year willing to participate in the trial were included in the study. All patients with type 1 diabetes and patients with any major illness like cardiac failure, chronic renal failure, and Psychiatric illness were excluded from the study. Sampling technique was non-probability (convenience) and study design was descriptive.

Institutional review board approval was obtained before starting data collection. After taking consent, patients were interviewed in the out-patient department in a comfortable environment. The interviewer was well trained in using the questionnaire

and knew the local languages. No interpreter was used. Response rate was 100%. A structured Questionnaire containing both open and close-ended questions was used as a data collection tool. It was divided into five main sections namely demographic data, knowledge about diabetes and glycemic control, risk factors, complications and miscellaneous. Patients who had not received any education either at school or home were included in the uneducated/illiterate group.

The data was tabulated and analysed using Epi Info-6.0. The simple data analysis procedures like percentages, means and ratios of the various variables were calculated as per objectives of the study. The mean age in years, male to female ratio and percentage of the correct answers for diabetes and glycemic control (diabetes meaning, blood glucose monitoring, target blood glucose values, diet and drugs), risk factors (hypertension, smoking, obesity and hyperlipidemia) and complications (hypoglycemia, renal and ophthalmological complications) were calculated. Patients were given options for target fasting and random blood sugar and target blood pressure and diabetic diet. According to American diabetes association guidelines[16] target fasting blood sugar was defined as 80–120 mg/dl and random blood sugar (2 hours after start of meal) as less than 160 mg/dl. Target blood pressure was defined as less than 130/85 mmHg. Diabetic diet was defined as balanced diet, low in sugar, according to body weight. Percentage of the patients who had received diabetes education and the main source of information about diabetes were also calculated.

RESULTS

This study included 100 type 2 diabetic patients with the disease duration ranging from one year to more than 10 years. Baseline characteristics (the mean age, duration of disease, male to female ratio and educational level) of the patients are shown in Table-1. Literacy rate was lower in females compared to males. The results given below are grouped into five main sections namely patients general knowledge of diabetes, glycemic control, risk factors, complications and miscellaneous (source of information about diabetes, amount of time a patient receives from a doctor in clinic and whether there is a need for diabetes care centre at Khyber teaching hospital).

Knowledge about diabetes was very poor. The mean score (percent correct answers) for glycemic control was 33.5% (minimum 17% to maximum 61%). Table-2 summarises the response of patients with respect to different aspects of glycemic control. The knowledge about anti-diabetic drugs was also low. Fifty eight percent of the patients knew that diet, oral hypoglycemic drugs as well as insulin can help control blood sugar while 42 (42%) of the patients had no idea of insulin. Regarding patients' attitude about diet 18 (18%) considered that balanced diet low in sugar/sweets is important for diabetes control while 52 (52%) thought that only sweets should be stopped. Six percent were eating bitter edibles to decrease their blood sugar.

The mean of correct answers for risk factors was 69% (range 42% to 92%). Table-3 describes the patients' correct answers in percentage for health risk factors like hypertension, hyperlipidemia, sedentary lifestyle and cigarette smoking in a patient with type 2 diabetes.

In 23% of the patients, the first presentation at the time of diagnosis was with complications. For complications the mean score (percent correct answers) was 39% (range 11% to 83%). Only 11 (11%) recognised yearly visits to ophthalmologist important while 9 (9%) were of the opinion that they should do consultation only when problem arises (Table-3).

Forty-five (45%) of the patients had ever been educated about diabetes care and the main source of information was a doctor in 78 (78%). Media and relatives/friends were source of information in 4 (4%) and 10 (10%) respectively. Of those who had received diabetes education, 65 (65%) received only 5 minutes from the doctor, while only 4 (4%) received more then 15 minutes. Sixty-five (65%) of the patients strongly recommended that there is a need for a diabetes care centre at Khyber Teaching Hospital Peshawar.

Table-1: Characteristics of Type-2 Diabetics

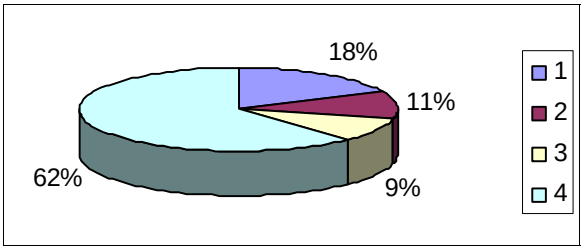
Variables	Results
Age (Years) Mean±SD	50±9.32
Mean duration of the disease (years)	9.7
Male to female ratio	1:3
Education level (% educated)	
Males	42%
Females	12 %

Table-2: Patient response for glycemic control in percentage (n=100)

Statement	Yes	No
Diabetes is a disease which can affect any part of the body	26	74
Diabetes is raised blood sugar only.	22	78
I don't know what diabetes is.	52	48
Family members should be screened for diabetes.	60	40
Patients who check both fasting & random blood sugar.	61	39
Target fasting blood sugar (percent correct answers).	17	83
Target random blood sugar (Percent correct answers).	22	88
Patients who aimed target blood glucose.	28	72
Patients who can adjust anti-diabetic drug according blood sugar level.	55	45
Diabetic diet (percent correct answers).	18	82

Table-3: Knowledge, attitudes and practices of patients regarding risk factors and complications

Statement/Questions	Yes	No
Blood pressure control is important for them	92	8
It is important to check serum lipids for a diabetic patient	42	58
Cigarette smoking is a risk factor for your health	70	30
Exercise help in blood sugar control	75	25
Patients who aim for target body weight	66	34
knowledge of target blood pressure (correct answers)	18	92
Knowledge of Symptoms of hypoglycemia	83	17
It is important for diabetic to do renal function tests	48	52
The no. of patients who perform yearly renal functions	24	76
It is important to consult ophthalmologist	38	62
Patients who consult ophthalmologist yearly	11	89
Patients who carried a diabetes card/bracelet with them	30	70



1=every 6 months, 2=once a year, 3=only when problem arises, 4=don't know

Figure-1: Patients who had an ophthalmologist consult (The frequency of visits)

DISCUSSION

Diabetes is an important cause of morbidity and mortality all over the world. Because of lack of awareness about diabetes, most patients with diabetes suffer from its complications.[1]

Almost half of the patients did not know as to what diabetes is. This finding emphasises that the average knowledge levels are low in communities with higher diabetes prevalence.[18,19] Most patients did not realize the importance of screening other family members for diabetes and this is probably one of the reasons for a large number of people remaining undiagnosed.

Sixty-one percent of the patients checked both fasting and random blood sugar at least once a week despite the fact that most of the patients were illiterate. These data reveal better self monitoring when compared with similar studies from Singapore [19] and even from southern Pakistan.[17] Of those who knew the blood glucose targets only 60 (60%) had ever aimed to achieve target values.

Only few could correctly answer questions regarding dietary requirements in diabetes. This is much less than the figures reported from Karachi.[20] Poor state of knowledge regarding nutrition has also been reported in several other studies.[21,22] This emphasises the need for a dietician trained in diabetic diet to be an integral part of the team. Patients with diabetes need to take safety measures so that they can get early treatment in case of emergencies. Diabetes bracelet/tag is one such measure. Unfortunately 82 (82%) had no idea of it in the study.

Although most patients were aware of the risk factors, only few knew the target values or tried to achieve them. The average knowledge score regarding various risk factors ranged from 40% to 92%. These figures are comparable to the study results in Singapore (31–91%).[19] Only few knew the target blood pressure. Less than half was aware of the importance of checking serum lipids. The percentage of patients who recognised cigarette smoking and sedentary life style as risk factors is small. Obesity is risk factor for type 2 diabetes mellitus and also over all cardiovascular health but the study shows that only half aimed for target body weight.

About one quarter of the patients in our study presented for the first time with complications. This shows the lack of awareness in the general public about diabetes. Only 11% thought yearly visits to ophthalmologist important. Similar results are reported from studies in the developing countries.[22,23] In contrast the knowledge level in certain developed countries has been reported higher.[24] Each year a number of patients die of renal disease due to diabetes however the awareness about it in our study patients was very low.

Half of the patients had never received any education about diabetes. Of those who had been educated about diabetes, report having received only minimum time from the doctor that is 5 minutes because of the rush in the out-patient department. This limitation of health care facilities is perhaps an important factor affecting the level of diabetes education. Most of the patients thus strongly recommended the need for a diabetes care centre. The main source of information was a doctor. Most of the patients were illiterate. They had knowledge scores slightly less than the readers. Most of these patients were women and were less able to put their knowledge into practice.

Our study has limitations due to convenience sampling, which may limit generalisation of the findings. Nevertheless, there is a need for education of the doctors as well as the patients regarding diabetes mellitus.

CONCLUSION

Diabetes education among patients with type 2 diabetes is low in the cohort, emphasising the need for multidisciplinary approach including a well trained community doctor, dietician, diabetic nurse and a community based education program. This is even more important in a resource limited country like Pakistan. This study can be conducted on a large scale in Pakistan so that it is possible to design a diabetes awareness

programme to promote prevention considering the economic burden of the complications of diabetes.

REFERENCES

1. Wild S, Roglic G, Green A, Sicree R, King H. Global prevalence of diabetes–Estimates for the year 2000 and projections for 2030. Diabetes Care 2004;27:1047–53.
2. Shera AS, Jawad F, Maqsood A. Prevalence of diabetes in Pakistan. Diabetes Res Clin Pract 2007;76:219–22.
3. Sheikh MZ. Diabetes Mellitus- The Continuing Challenge. J Coll Physicians Surg Pak 2004;14:63.
4. Zhang X, Geiss LS, Cheng YJ, Beckless GL, Gregg EW, Kahn HS. The missed patients with diabetes: how access to health care affects the detection of diabetes. Diabetes Care 2008;31:1748–53.
5. Rquibi M, Belasen R. Prevalence and associated risk factors of undiagnosed diabetes among adult Moroccan Sahraoui women. Public Health Nutr 2006;9:722–7.
6. Brandle M, Zhou H, Smith BRK, Marriot T, Burke R, Jabaei BP, *et al*. The direct medical cost of type 2 diabetes. Diabetes care 2003;26:2300–4.
7. Kirigia JM, Sambo HB, Sambo LG, Barry SP. Economic burden of diabetes mellitus in WHO African region. BMC Int Health Hum Rights 2009;9:6.
8. Holman RR, Paul SK, Bethel MA, Matthews DR, Neil HH. 10 year follow up of intensive glucose control in type 2 diabetes. N Engl J Med 2008;359:1577–89.
9. Johnson ST, Bell GJ, MCcargar LJ, Welsh RS, Bell RC. Improved cardiovascular health following a progressive walking and dietary intervention for type 2 diabetes. Diabetes Obes Metab 2009;11:836–43.
10. Gutschall MP, Miller CK, Mitchell DC, Lawrence FR. A randomized behavioral trial targeting glycemic index improves dietary, weight and metabolic outcomes in patients with type 2 diabetes. Public Health Nutr 2009;23:1–9.
11. Baradran HR, Knill-Jones RP, Wallia S, Rodgers A. A controlled trial of the effectiveness of a diabetes education programme in a multiethnic community in Glasgow. BMC Public health 2006;6:134.
12. Peyrot M, Rubin RR, Funnell MM, Siminerio LM. Access to diabetes self management education; Results of national surveys of patients, educators and physicians. Diabetes Educ 2009;35(2):246–8, 252–6, 258–63.
13. Funnell MM, Brown TL, Childs BP, Haas LB, Hosey GM, Jenson B, *et al*. National standards for diabetes self management education. Diabetes Care 2009;32(suppl 1):S87–S94.
14. Van Zyl DG, Rheeder P. Survey on knowledge and attitudes regarding diabetic inpatient management by medical and nursing staff at kalafong hospital. J Endocrinol Metab Diabetes South Africa 2008;13(3):90–7.
15. Shera AS, Jawad F, Basit A. Diabetes related knowledge, attitude and practices of family physicians in Pakistan. J Pak Med Assoc 2002;52:465–70.
16. American diabetes association. Standards of Medical care in Diabetes. Diabetes Care 2009;32(suppl 1):S13–S61.
17. Jabbar A, Hameed A, Chawla R, Akhter J. how well do Pakistani patients and physicians adhere to standards of diabetes care. Int J Diabetes Dev Ctries 2007;27:93–6. [cited 2009 Aug 20]
18. Shah VN, Kamdar PK, Shah N. Assessing the knowledge attitudes and practice of type 2 diabetes among patients of Saurashtra region Gujrat. Int J Diabetes Dev Ctries 2009;29:118–22.
19. Tham KY, Ong JJY, Tan DkL, How KY. How much do diabetic patients know about diabetes mellitus and complications? Ann Acad Med Singapore 2004;33(4):503–9.
20. Jabbar A, Contractor Z, Ebrahim MA, Mahmood K. Standard of knowledge about their disease among patients with diabetes in Karachi, Pakistan. J Pak Med Assoc 2001;51(6):216–8.
21. Upadhyay DK, Palaian S, Shankar PR, Mishra P. Knowledge, Attitude and Practice about Diabetes among Diabetes Patients in Western Nepal. Rawal Med J 2008;23(1):1–12.
22. Rafique G, Azam SI, White F. Diabetes knowledge, beliefs and practices among people with diabetes attending a university hospital in Karachi, Pakistan. East Mediterr Health J 2006; 12(5):590–8.
23. Murugesan N, Snehalatha C, Shobana R, Roglic G, Ramachandran A. awareness about diabetes and its complications in the general and diabetic population in a city in southern India. Diabetes Res Clin Prac 2007;77:433–7.
24. Opalinska E, Strzemecka J, Latalski M, Goniewicz M. Health behavior among patients with type 1 and 2 diabetes mellitus reported to provincial diabetic outpatient department. Ann Univ Mariae Curie Sklodowska 2003;58(2):64–70.

Address for Correspondence:

Dr. Naheed Gul, House 271, St-16, Sector G-10/2, Islamabad, Pakistan. **Tel:** +92-51-4603767, **Cell:** +92-321-5248081**.**
Email: doctornaheed@live.com