Diabetes Mellitus – Knowledge, Management and Complications: Survey report from Faisalabad-Pakistan

Ijaz Anwer (1)
Ahmad Shahzad (2)
Kashmira Nanji (3)
Farah Haider (4)
Muhammad Masood Ahmad (5)

(1) Anwer Clinic, Peoples Colony Faisalabad;
(2) Al Raheem Clinics, GM Abad, Faisalabad;
(3) Department of Family Medicine, The Aga Khan University, Karachi;
(4) Jinnah Medical and Dental College, Karachi;
(5) Masood Medicare, Mian Colony, Faisalabad

Correspondence:
Dr. Kashmira Nanji
Department of Family Medicine,
The Aga Khan University, Karachi
Pakistan
Email: Kashmira.nanji@aku.edu

Abstract

Introduction: Diabetes mellitus is a major health problem worldwide that increases morbidity and mortality rates due to its complications. The objective of this study was to assess the knowledge of diabetic patients about their disease, its complications and management.

Methods: A cross-sectional study was conducted in outpatient clinics of Faisalabad, Pakistan during March to May 2017. A total of 691 diabetic patients (verified from physician, medical records) were consecutively approached and a pretested, structured questionnaire was used to collect their information. SPSS version 19.0 was employed for entering and analysis of the data.

Results:: Out of the total 691 patients 43.3% were male and 56.7% female. About 49.1% of the patients were below 50 and 50.9% were above 50 years of age. One third of patients (33.4%) think that diabetes is a communicable disease. The majority of the patients (90%) responded that in diabetes sugar and sweets have to be cut down and 82.6% knew that exercise is important for the management of diabetes. Approximately 58% patients responded that they exercise, while 60.7% replied that they monitor and control their blood pressure.

Conclusion: The overall level of awareness in diabetics was found to be low and there is a need to educate the population on this topic. Public and private health sectors need to offer holistic services and training programs for health care professionals. These programs should focus on improving communication with patients, addressing misconceptions and sharing culturally sound strategies with patients for improvement in diabetes management.

Key words: Diabetes mellitus, Knowledge, Awareness, Complications, Pakistan

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Introduction

Diabetes mellitus is a major public health problem that accounts for increased morbidity and mortality rates worldwide because of its various complications mostly related to the cardiovascular system(1). According to the International Diabetes Federation (IDF) 415 million adults are currently living with diabetes and this figure is expected to increase to 642 million by the year 2040(2). It is also reported that 41.7% of adults with diabetes are undiagnosed(3). Diabetes in Pakistan is increasing at an alarming rate. Currently, in Pakistan there are about 7 million people with diabetes and this number is predicted to rise to 14.4 million by the year 2040. With this, Pakistan will rank 8th in the world in terms of prevalence(4, 5) of this disease.

The risk of diabetes is determined by several factors. Ethnicity, family history of diabetes, and history of gestational diabetes, increasing age, obesity, unhealthy diet, physical inactivity and smoking increase the odds of developing diabetes (6-8). Obesity and physical inactivity are estimated to contribute largely towards the global diabetes burden (9-11).

Studies suggest that diabetes related complications can result in 10 to 30% decrease in life expectancy (1, 12). There is a high burden of diabetes-related complications in Pakistani patients. A study conducted by Chavan et al concluded that there is a lack of knowledge among diabetic patients regarding complications and importance of compliance to diabetic medications(13). Different studies have documented a positive association between patient's knowledge about diabetes and treatment compliance(1, 14). However, such studies in Pakistan are limited and are mainly focused around major cities.

Diabetes mellitus (DM) requires multifaceted interventions where patients can make decisions about exercise, weight control, blood glucose monitoring, and compliance to treatment and prevention of complications. Awareness about diabetes and its complications will enable the patients to cope and adjust to their illness. Therefore, the objective of this study was to assess the knowledge of diabetic patients about their disease and its management. It may assist physicians and patients to design strategies to delay the progression of DM complications with proper management and patient education.

Methodology

This cross-sectional study was conducted in the outpatient clinics of Faisalabad Pakistan during March to May 2017. Faisalabad is the third-most-populous city in Pakistan and its residents are comprised of a diverse population belonging to different ethnicities and socio-economic groups. Diabetics patients (verified from physician and the medical record) visiting the outpatient's clinics of more than 18 years of age and who gave consent to participate were included in the study. However patients suffering from serious co-morbid conditions such as cancer were excluded. A total of 691 patients were consecutively interviewed for this study.

A structured pre-tested questionnaire was formulated after extensive literature search and consensus by study investigators. The final questionnaire was comprised of three sections; the first section included the socio-demographic profile of the participants, the second part had questions about knowledge of diabetes and the third part dealt with questions about patients' compliance to various management strategies for diabetes. The English version of the questionnaire was translated into Urdu and was then back translated into English to check for consistency between the two versions.

Written informed consent was obtained from all the participants. The data collectors were trained for maintaining confidentiality of the participant. Personal identifiers were removed from study documents. The study was conducted in accordance with the 'Ethical principles for medical research involving human subjects' of the Helsinki Declaration. Data was entered and analyzed using the Statistical Package for Social Sciences (SPSS version 19). Frequencies and proportion were reported for all variables of interest. A p- value of less than 0.05 was considered statistically significant throughout the analysis.

Results

A total of 720 patients were approached out of which 691 agreed to participate in the study yielding a response rate of 95% (691/720). Demographic characteristics of the participants are presented in Table 1. Out of the total 691 patients, 43.3% were male and 56.7% female. An almost equal proportion of patients were below 50 (49.1%) and above 50 (50.9%) years of age. Three quarters of the patients had education level below matriculation. The majority (91%) of the patients, were married and 47.8% of the patients were employed. Almost half of the patients (50.1%) responded that they have comorbidities other than diabetes.

Table 2 describes the knowledge of patients regarding diabetes. Over one quarter (26%) think that diabetes is not a curable disease and 68% believe that it runs in families. Interestingly, about one third of the participants (33.4%) think that diabetes is a communicable disease. The majority of the patients (90%) responded that in diabetes sugar and sweets have to be cut down and 82.6% knew that exercise is important for its management. Approximately 63.7% of the patients knew that it is important to maintain a healthy weight among diabetics. About 69.6% patients thought that an individual can become dependent on oral tablets for control of sugar. Upon asking about the risk factors of diabetes the patients responded with the following factors: heart disease (63.4%), stroke (54.6%), blindness (78.4%), amputation (63.4%), impotence (35.3%) and infections (63.5%).

Table 1: Socio-demographic characteristics of study participants n=691

Variables	n	%
Gender		
Male	299	43.3%
Female	392	56.7%
Age		
Less than or equal to 50 years	339	49.1%
More than 50 years	352	50.9%
Level of Education		
Below Matriculation	519	75.1%
Above Matriculation	172	24.9%
Marital Status		
Never Married/Widow/Widower	62	9.0%
Married	629	91.0%
Occupational Status		
Employed	330	47.8%
Unemployed/Student/Homemaker	361	52.2%
Co-morbidities		
Yes	346	50.1%
No	345	49.9%

Table 2: Knowledge about diabetes among study participants (n=691)

Questions	Yes %	No %	Don't know %
Is Diabetes Mellitus a curable disease	54.1%	26.3%	19.5%
Diabetes Mellitus runs in families	68.0%	27.4%	4.6%
Diabetes is a communicable disease	33.4%	45.9%	20.7%
Do you have any other disease	50.1%	49.9%	-
Management of Diabetes Mellitus requires cutting down on sweets and refined sugar	90.2%	5.2%	4.6%
Management of Diabetes Mellitus requires physical exercise on a regular basis	82.6%	10.4%	6.9%
Management of Diabetes Mellitus requires reduction in body weight in overweight and obese patients	63.7%	14.3%	22.0%
Smoking and tobacco use is more harmful in a diabetic patient	47.9%	18.2%	33.9%
Does one become dependent on oral tablets used for control of blood sugar	69.6%	19.1%	11.3%
Does one become dependent on Insulin used for control of blood sugar	54.3%	28.8%	16.9%
Diabetes Mellitus is a risk factor for:			
Heart Disease	63.4%	18.1%	18.5%
Stroke	54.6%	28.1%	17.4%
Blindness	78.0%	16.9%	5.1%
Amputation	63.8%	18.8%	17.4%
Impotence	35.3%	11.3%	53.4%
Infections	63.5%	16.4%	20.1%

Table 3: Management of Diabetes among study participants (n=691)

Questions	Less than 7 years	More than 7 years	P-value
Do you exercise to control your blood sugar?	58.4%	53.6%	0.18
Do you restrict intake of sweets, sugar and oily foods?	81.7%	80.6%	0.19
Do you attempt to reduce weight?	42.4%	44.4%	0.46
Do you take tablets to control Diabetes?	80.1%	71.4%	0.02
Do you take Insulin to control Diabetes?	41.1%	50.7%	0.01
Do you visit your Doctor regularly for control of Diabetes?	71.8%	68.4%	0.55
Do you self-monitor your blood sugar?	58.7%	59.9%	0.24
Do you monitor and control serum cholesterol as part of Diabetes management?	42.1%	38.5%	0.61
Do you monitor and control blood pressure as part of Diabetes management?	60.7%	60.2%	0.13
Do you smoke?	13.4%	23.4%	0.002
If you smoke then have you tried to stop?	6.5%	12.2%	0.009
Did you give up smoking as part of Diabetes management?	5.2%	9.2%	0.08
What type of treatment were you taking for Diabetes?			
Allopathic	97.7%	96.1%	0.21
Homeopathic	2.3%	3.9%	
Have you suffered from complications of Diabetes?	43.9%	51.0%	0.15
If yes then state which ones?			
Blood pressure	4.9%	12.2%	
Body pain?/weakness	5.9%	2.3%	
Burning feet	.8%	2.3%	
Chest infection	1.6%	1.0%	
Diabetic foot	2.1%	4.3%	<0.001
HCV?/Hepatitis	3.1%	.7%	
Impotence	2.3%	4.9%	
Neuropathy	14.2%	15.8%	
Nephropathy	1.3%	2.6%	
Others	3.4%	3.0%	
Retinopathy	3.6%	2.0%	
None	56.8%	49.0%	

Table 3 describes management strategies of diabetics. Approximately 58% of the patients responded that they exercise and 81% restrict sweets, sugar and oily foods to manage their blood sugar levels. About 80% patients use tablets to control their blood sugar. Slightly over two fifths of the patients (42.4%) attempted to reduce their weight and a similar proportion were monitoring their cholesterol levels. Approximately 58.7% self-monitored their blood glucose (p-0.24). Three fifths (60.7%) of the patients replied that they monitor and control their blood pressure. The majority of the patients (97.7%) were using allopathic medications to manage diabetes. As far as complications of diabetes is concerned most of the patients responded that they are suffering from nephropathy (14%).

Discussion

The results of the study reveal that the level of awareness of patients about diabetes mellitus, its complications and management is low. There is a need to formally educate the diabetics about the proper management of this disease in order to reduce the mortality and morbidity rates associated with it.

Several studies have concluded that there is significant association between knowledge of diabetes and the adherence to treatment (15-18). Previous studies have found that patients with adequate knowledge level were less likely to be non-adherent (15-19). These observations are consistent with the results obtained in the current study, wherein, the participants having better knowledge about complications of diabetes resulted in a compliance rate of oral hypoglycemics to 80%. This suggests the significance of providing formal knowledge regarding diabetes for better compliance, as chronic diseases such as diabetes require proper education and counseling to prevent long term complications and also to decrease the financial burden of these diseases(20).

A systematic review of 21 studies on barriers and promoters of management of diabetes among South Asians concluded that communication with the healthcare provider was a significant barrier in understanding diabetes education(21). The review further elaborated that for exercise, there is lack of resources in the South Asian countries. Lack of parks and affordable sports clubs are barriers to exercise(21). Moreover, there are some misconceptions about exercise such as fear of injury or worsening health due to lack of proper formal education. In the current study, more than half of the participants responded that they do exercise to manage their blood sugar levels.

A study conducted in 2012 in Ethiopia found that the majority of patients (67%) had good knowledge about reasons for developing acute complications(17). In the present study we also found that the participants had a good knowledge about the complications of diabetes, whereby, 78% of the patients responded that blindness can occur as a complication of diabetes. Though cardiovascular diseases (CVDs) are common complication of diabetes however, in this study 63% patients labeled CVDs to be a complication, and only 35% thought that impotence is also a complication. Therefore, sound education is needed in this regard.

A study conducted by Rahman et al (22) in Peshawar, Pakistan on 561 diabetics reported that the level of awareness regarding diabetes and its management was inadequate among studied participants. Only 13% of the female diabetics were aware of why glycemic control is important, and 32.4% were aware of the complications. Only 10% of respondents knew about blood glucose monitoring(22). This is inconsistent with our study findings as in the current study 58% of the patients were doing self-blood glucose monitoring. Though, in our study we have not stratified the results based on gender, nonetheless the proportions still show a better knowledge of the study participants.

Interestingly, in the current study the patients had better knowledge of diabetes complications as compared to the other studies conducted in Pakistan(22, 23). However, almost half of the participants didn't reply or said that diabetes is a communicable disease. This shows that the general knowledge regarding diabetes among the population is poor. Some studies have shown that the knowledge level of some health care professionals is also inadequate or outdated (24-27). Therefore, there is a genuine need to update the health care professionals' knowledge about latest interventions that can assist the diabetics in management of their disease.

Recommendations:
Patient Education: It is imperative that a therapeutic patient education program should be planned which is comprehensive and fulfills individual's clinical and psychological needs, according to the patients' educational level and cultural background.
Person Centered Approach: It is important that clinicians should follow a person centered approach and should not only focus on the disease but to the patient, asking about their responsibilities, work and also their self-management strategies.

Limitations:
This study had several potential limitations. In this study we did not focus on psychological wellbeing of the patients which is an important aspect and a major factor for non-adherence to treatment. The chance of reporting bias cannot be eliminated as this may have resulted in over estimation of the compliance rate of oral hypoglycemic, exercise and doctors' visit among the study patients. Moreover, since this study was conducted in an urban city therefore, the results may differ when generalized to a rural population.

Conclusion

The overall level of awareness in diabetics was found to be low and there is a need to educate the population about this disease. Due to low literacy levels and diverse sociocultural backgrounds, it is necessary to design a comprehensive education support program for the patients, which will result in better treatment adherence and positive health outcomes. The public and private health sector needs to offer holistic services and training programs for health care professionals. These programs should focus on addressing misconceptions, improving communication, and sharing culturally sound strategies with patients for improvement in diabetes management.

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