Impact of sociodemographic factors on self-care practices among patients with type 2 diabetes in Lahore, Pakistan: an exploratory study

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ABSTRACT

Background: Diabetes is one of the most prevalent diseases worldwide. Self-care practices play an important role in diabetes management and prevention of complications. Demographics, patient knowledge, socioeconomic status, and culture affect self-care practices and, consequently, disease outcomes. This study was conducted to assess self-care practices and determine associations with sociodemographic factors among patients with diabetes.

Participants and methods: A purposive sample of 382 patients with type 2 diabetes was assembled for this exploratory study. A semi-structured questionnaire was adapted to serve as a data-gathering tool. Information was collected regarding sociodemographic features, clinical characteristics, and self-care practices related to diabetes management. Continuous variables were analyzed using frequencies and percentages, and categorical variables were analyzed using chi-square tests.

Results: In total, 382 questionnaires were completed by 382 patients approached for study enrollment. No standard of diabetes self-care was adhered to by all patients. Indeed, only 28.5% of participants reported receiving a glycated hemoglobin test to inform diabetic treatment planning. Sociodemographic factors of age, sex, marital status, educational level, and monthly household income were associated with adherence to self-care practices among patients with diabetes.

Conclusion: Self-care practices of patients with diabetes are influenced by many sociodemographic factors. Clinically, this information can be applied to design and target education and care planning for patients with type 2 diabetes. Providing special attention to patients with diabetes would allow for the provision of realistic recommendations regarding self-care.

Keywords:
Self-care practices; Type 2 diabetes; Pakistan; Developing Country.

INTRODUCTION

Worldwide, more than 400 million people are living with diabetes, and disease prevalence is expected to rise to 1 in 10 adults by 2040.[1,2] Furthermore, complications related to diabetes result in 1.5 million deaths worldwide each year.[1] The prevalence of diabetes in Pakistan is 9.8%, with the disease affecting males and females nearly equally (10% and 9.7%, respectively).[3] Pakistan, which has the seventh highest prevalence of diabetes worldwide, is expected to experience further rises in the disease with advancing urbanization and associated factors of unhealthy lifestyle, genetic predisposition, and maternal and fetal malnutrition.[4]

Recent increases in prevalence can also be attributed to reduced physical activity, obesity, and increased caloric intake.[4-6] Rising smoking rates among Pakistani adults have also contributed to the increased prevalence of diabetes. Furthermore, environmental pollution and consumption of high-caloric and high-fat food likely to contribute to the increasing incidence of diabetes in Pakistan.[7-8]

Management of diabetes and its risk factors remains suboptimal in Pakistan.[7-8] In 2016, complications related to diabetes were responsible for 7,210 male and 9,180 female deaths among persons ages 30 to 69 years and 9,560 male and 12,800 female deaths among persons ages 70 years and older.[3]

Although diabetes is incurable disease, its careful management can prevent complications and premature death.[9] Many complications of diabetes may be avoided by adoption of good self-care practices.[10] These self-

care practices are related to socioeconomic status, education, sex, and marital status among persons with diabetes.[11-14] Demographics, patient knowledge, socioeconomic status, and culture additionally impact disease outcomes.[15] Clinical indicators of diabetes self-care include regular participation in programs for glycated hemoglobin level testing, receipt of treatment tailored to specific diabetes type, adherence to medication, and receipt of follow-up care.[16] These self-care, sociodemographic, and clinical factors play important roles in determining diabetes outcomes.

The health care system of Pakistan, which receives less than 1% of the nation's gross domestic product, is overburdened and under-resourced.[17] Given the rapidly increasing prevalence of diabetes in Pakistan, a focus on treatment is crucial. Diabetes is a chronic disease for which self-care and sociodemographic factors must be addressed. Therefore, this study was conducted to assess self-care practices and associated sociodemographic factors among patients with diabetes in Pakistan.

PARTICIPANTS AND METHODS

The survey used in this study was approved by the Ethical Review Committee, University of Health Sciences, Lahore, Pakistan (No. UHS/REG-18/ERC/185). Moreover, this study protocol adhered to international ethical guidelines for health-related research involving humans.[18]

This exploratory study was conducted between January and March 2018 at a Pharmacy in Lahore, Pakistan. Prior to data collection, introductory leaflets were provided to patients in Urdu, the national language. These leaflets described the benefits and risks of the research, the IRB approval and provisions to maintain confidentiality. All participants then provided written informed consent.

Patients visiting the pharmacy who were ages 18 years or older with at least a 3-year history of type 2 diabetes and able to provide informed consent were eligible for study inclusion. Patients who could not understand and speak English, Urdu, Saraiki, or Punjabi were excluded from the study.

The minimum sample size needed to maintain a 5% margin of error and 95% confidence interval was calculated as 382 using the Raosoft sample size calculator.[19] Using a purposive sampling technique, 382 patients who met inclusion were identified for study participation.

A multi-disciplinary team of authors developed the survey based on reliable, previously validated scales,[20-22] then pre-tested it with 10 patients to assess presentation, acceptability, and question clarity. The survey was comprised of two parts: (1) questions related to sociodemographic factors and clinical characteristics; and (2) yes/no questions regarding self-care practices (cigarette smoking; daily feet checking; daily medication use; exercising at least 20–30 min per day on at least 5 days per week; eating a well-balanced, planned diet; checking random blood glucose level at least once every 3 months; checking home blood sugars per physician recommendations; checking HbA1c levels every 3 months; and use of stress management techniques). The principal investigator conducted all interviews at the pharmacy. Interviews lasted 10–15 min and were conducted in the respondent's preferred language, Saraiki, Urdu or Punjabi.

Data was analyzed using the Statistical Package for Social Sciences software, version 25 (SPSS Inc., Chicago, IL, USA). Continuous variables were analyzed using frequency distributions and percentages. Chi-square tests were used to assess associations between sociodemographic factors and self-care practices. Statistical significance was set at a P value less than .05 for all tests.

RESULTS

The study response rate was 100%, and 65.4% of respondents were female (Table 1). Participants were ages 41–50 years (39.8%), 31–40 years (30.1%), 51 years or older (27.2%), 21–30 years (2.4%), and below 20 (0.5%). Educational levels for participants were low, with 25.4% reporting illiteracy. An additional 20.4% had completed high school or the 10th standard; 18.3% had completed the 12th standard; 17.3% had no formal education but were literate; and 6.3% had completed postgraduate or doctoral training. Most patients (80.6%) were married, and 25.7% lived in nuclear family systems.

Table 2 shows self-care practices reported by 382 participants with diabetes. No diabetes self-management standard was fully adhered to by patients. Highly-reported self-care practices were checking home blood sugars per physician recommendations (69.4%); eating a well-balanced, planned diet (68.8%); using medication daily (68.1%); and checking blood sugar at least once every 3 months (67.0%). Few patients (28.5%) reported checking HbA1C levels.

Table 3 shows sociodemographic characteristics and self-care practices among patients with diabetes. Smoking status and sex were the variable most related to self-care among patients with diabetes in this study. Smoking history differed markedly by sex, with 67.2%

Table 1. Demographic information of diabetic patients (N = 382)

Demographic characteristics	Frequency N (%)
Sex	
Male	250 (65.4)
Female	132 (34.6)
Age	
Below 20 years	2 (0.5)
21 – 30 years	9 (2.4)
31 – 40 years	115 (30.1)
41 – 50 years	152 (39.8)
51 years and above	104 (27.2)
Education	
Illiterate	97 (25.4)
Literate with no formal education	66 (17.3)
High school / 10th standard	78 (20.4)
Intermediate/12th standard	70 (18.3)
Graduate	47 (12.3)
Post graduate/doctorate	24 (6.3)
Marital status	
Married	308 (80.6)
Unmarried	74 (19.4)
Family system	
Joint family system	284 (74.3)
Nuclear family system	98 (25.7)
Rural background	
Yes	217 (56.8)
No	165 (43.2)
Monthly household income (PKR)	
Below 10,000	1 (0.3)
10,001 – 20,000	16 (4.2)
20,001 – 30,000	52 (13.6)
30,001 – 40,000	110 (28.8)
40,001 – 50,000	97 (25.4)
Above 50,000	106 (27.7)
Family history of diabetes mellitus	
Yes	255 (33.2)
No	127 (66.8)

Table 2: Self-care practices of diabetic patients (N = 382)

Self-care practices	N (%)
No cigarette smoking	214 (56)
Daily feet checking	173 (45.3)
Daily medication use	260 (68.1)
Exercising at least 20–30 min per day on at least 5 days per week	178 (46.6)
Eating a well-balanced, planned diet	263 (68.8)
Checking random blood glucose level at least once every 3 months	256 (67)
Checking home blood sugars per physician recommendations	265 (69.4)
Checking HbA1C levels every 3 months	109 (28.5)
Use of stress management techniques	171 (44.8)

of males but 0% of females reporting smoking (p-value = 0.001). Being married (p-value = 0.001) also varied by smoking status. Sex was also related to self-care activities of daily feet checking (p-value = 0.001), daily medication use (p-value = 0.001), regular exercise (p-value = 0.016), eating healthfully (p-value = 0.034), and regular checking random blood glucose level (p-value = 0.030).

DISCUSSION
Study participants from diverse socioeconomic backgrounds did not fully meet the standards of diabetes self-management. The least used self-care strategy was HbA1c testing (28.50%). Sociodemographic characteristics of sex, age, educational level, marital status, and monthly household income were associated with performance of recommended self-care. Sex was the most important sociodemographic indicator of self-care among patients with diabetes.

Our results regarding smoking habits of persons with diabetes differ from those reported by researchers in India. One study there showed that 46.75% of patients with type 2 diabetes were non-smokers, whereas another reported that 88.3% were non-smokers.[20,23] Our findings were also consistent with those from a study conducted in Iran that showed an association between sex and cigarette smoking.[24] In Nepal, tobacco use is also higher among men than women.[25]

With respect to checking feet and exercising, our results also differ from those reported for Indian persons with diabetes. In one study, only 0.5% of persons with diabetes reported regularly checking their feet, and only 20.5% exercised at least 20–30 min on at least 5 days per week.[20] However, our findings were similar with respect to rates of checking blood sugar at least once every 3 months (65.25%) and checking home blood sugars per physician recommendations (72.75%).[20] Low adherence with HbA1c testing may be related to the cost of the test, which is 6.25-times that of the random glucose test.[26]

Consistent with our work, previous studies have also shown that dietary practices, exercise, physical activity, and foot care differ by sex.[23,25] In 2013, Shrestha and colleagues explained that, in developing countries, women are generally assumed to fulfill the dual roles of home-maker and food distributor.[25] Culturally, however, food is intended for women only after husbands and children have taken their food.[25] Thus, we were surprised that more women than men with diabetes in Pakistan reported adherence to recommended dietary practices.

The findings that females were more likely to adhere to medication treatment and obtain HbA1C testing every 3 months may be related to women's

Table 3. Association between socio-demographics and self-care practices among diabetic patients

Demographic characteristics	N	Cigarette Smoking			Daily feet checking			Daily medication use		
		No N (%)	Yes N (%)	p-value	No N (%)	Yes N (%)	p-value	No N (%)	Yes N (%)	p-value
Sex										
Male	250	82 (32.8)	168 (67.2)	0.001*	57 (43.2)	75 (56.8)	0.001*	94 (37.6)	156 (62.4)	0.001*
Female	132	132 (100.0)	0 (00.0)		152 (60.8)	98 (39.2)		28 (21.2)	104 (78.8)	
Education										
Illiterate	163	94 (57.7)	69 (42.3)	0.071	84 (51.5)	79 (48.5)	0.046*	62 (38.0)	101 (62.0)	0.008*
Literate with formal education	219	120 (54.8)	99 (45.2)		125 (57.1)	94 (42.9)		60 (27.4)	159 (72.6)	
Marital status										
Married	308	158 (51.3)	150 (48.7)	0.001*	171 (55.5)	137 (44.5)	0.084	106 (34.4)	202 (65.6)	0.011*
Unmarried	74	56 (75.7)	18 (24.3)		38 (51.4)	36 (48.6)		16 (21.6)	58 (78.4)	
Monthly household income										
PKR. 50,000 and below	276	151 (54.7)	125 (45.3)	0.065	157 (56.9)	119 (43.1)	0.036*	94 (34.1)	182 (65.9)	0.035*
Above PKR. 50,000	106	63 (59.4)	43 (40.6)		52 (49.1)	54 (50.9)		28 (26.4)	78 (73.6)	
Demographic characteristics	N	Eating a well-balanced, planned diet			Checking HbA1C levels every 3 months			Checking random blood glucose level at least once every 3 months		
Age										
50 and below	278	81 (29.1)	197 (70.9)	0.037*	204 (73.4)	74 (26.6)	0.040*	87 (31.3)	191(68.7)	0.050*
Above 50	104	38 (36.5)	66 (63.5)		69 (66.3)	35 (33.7)		39 (37.5)	65 (62.5)	
Sex										
Male	250	84 (33.6)	166 (66.4)	0.034*	184 (73.6)	66 (26.4)	0.042*	89 (35.6)	161 (64.4)	0.030*
Female	132	35 (26.5)	97 (73.5)		89 (67.4)	43 (32.6)		37 (28.0)	95 (72.0)	
Demographic characteristics	N	Checking home blood sugars per physician recommendations			Exercising at least 20–30 min per day on at least 5 days per week			Use of stress management techniques		
Sex										
Male	250	75 (30.0)	175 (70.0)	0.086	125 (50.0)	125 (50.0)	0.016*	135 (54.0)	115 (46.0)	0.069
Female	132	42 (31.8)	90 (68.2)		79 (59.8)	53 (40.2)		76 (57.6)	56 (42.4)	
Education										
Illiterate	163	41 (25.2)	122 (74.8)	0.012*	93 (57.1)	70 (42.9)	0.039*	102 (62.6)	61 (37.4)	0.004*
Literate with formal education	219	76 (34.7)	143 (65.3)		111 (50.7)	108 (49.3)		109 (49.8)	110 (50.2)	
Monthly household income										
PKR. 50,000 and below	276	87 (31.5)	189 (68.5)	0.083	163 (59.1)	113 (40.9)	0.001*	159 (57.6)	117 (42.4)	0.030*
Above PKR. 50,000	106	30 (28.3)	76 (71.7)		41 (38.7)	65 (61.3)		52 (49.1)	54 (50.9)	

tendency to seek out medical care.[27] Indeed, sex is the most important sociodemographic indicator for self-care among patients with diabetes in developing countries.[25] However, a French population-based study showed that medication adherence was equally likely among male and female patients with diabetes.[28]

Our study results are also consistent with findings that educational level is associated with self-care practices of foot care, medication adherence, blood sugar monitoring per physician recommendations, exercise, and stress management.[24,29-32] In general, patients with no formal education are more likely to adhere physician counselling. These patients may be more interested in understanding their disease and management compared with more highly educated persons who have a better general understanding of medical treatment.[22] Thus, patients with no formal education may be more likely than educated patients to check their blood sugar per physician recommendations.[22] Yet, formally educated patients may also have better coping skills to manage stress and illness compared with uneducated patients.[32]

Our finding that marital status was related to smoking status is not corroborated by previous studies.[24,27] A high smoking prevalence among married patients suggests that other variables, such as culture, may interact to influence smoking behavior.[33]

In contrast to our findings, monthly household income has not been previously associated with self-care practices.[23,31] The association between adherence to self-care practices in this study may be explained by previous work showing that a happy family and work life plus good income influence patients to eat well, initiate exercise, purchase glucose and blood pressure monitoring equipment, and adhere to medication therapy.[34] Alternatively, patients with diabetes and higher socioeconomic status may be more aware of their disease.[20] Lastly, patients ages 50 years and younger tend to have greater knowledge of their disease, better diets, and better adherence for testing blood sugar levels at least every 3 months.[20]

Although this study provides valuable insights into the influence of sociodemographic factors on self-care practices among patients with diabetes, it does have some limitations. Owing to limited resources, only patients visiting one pharmacy were surveyed. The experiences and socioeconomic profiles of patients in other settings may differ. Future, larger-scale surveys could supplement the present findings to strengthen the conclusions about self-care practices among patients with diabetes.

In conclusion, this study showed that self-care practices among patients with diabetes in Pakistan are influenced by many sociodemographic indicators. This information should be used in clinical practice to design educational material and implement care plans for patients with type 2 diabetes. Providing special attention to these patient groups will allow for the provision of realistic recommendations for self-care.

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