ORIGINAL ARTICLE

Diabetes Self-care Knowledge and Adherence to Self-care practices among patients attending the Diabetic Clinic of a Tertiary Care Hospital

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ABSTRACT

Objectives: To assess the self-care knowledge and adherence to self-care practices among diabetic patients attending Benazir Bhutto Hospital, Rawalpindi, and their association with demographic characteristics.
Study Design: Descriptive cross-sectional study
Place and Duration of Study: Diabetic Clinic of Benazir Bhutto Hospital, Rawalpindi from 1st May 2019 to 31st December 2019.
Methodology: The Diabetes Self-care Knowledge Questionnaire (DSCKQ-30) was used to evaluate the variables under study. Socio-demographic information was also collected. A total of 380 patients were interviewed. Diabetic patients aged greater than 18 years and those taking anti-diabetic medication for at least one month before the study were included. Pregnant women, those newly diagnosed (less than one month), or yet to be placed on medication, were excluded.
Results: The majority of the study sample i.e., 212 (55.8%) patients had a high (>70%) overall knowledge level about self-care while 168 (44.2%) showed low (<70%) overall knowledge. It was found that self-care knowledge was predicted by age (p<0.001), monthly income (p<0.001), education (p<0.002), duration of diabetes (p<0.006), and by the presence of friends and relatives with diabetes (p<0.05).
Conclusion: Diabetes self-care knowledge was generally high among the population studied. However, adherence to self-care practices was low. Thus, the doctor should briefly cover the essential aspects of diabetes mellitus to maintain adherence to self-care practices among patients.
Key words: Quality of life, Self-care, Benazir Bhutto Hospital, Diabetes Mellitus, Diabetes Self-Care Knowledge Questionnaire (DSCKQ-30).

INTRODUCTION

Diabetes mellitus (DM) has been described as a multimedia metabolic disorder, characterised by a chronically elevated level of blood glucose with disorders of insulins, carbohydrate, fat and protein metabolism, or both.[1] The IDF has declared that DM affects at least 285 million people around the world. It is anticipated that by 2030 it will cross an impressive 438 million.[2] In about 14.5 million patients with diabetes, Pakistan is likely to have been in 2025.[3] As one in twenty deaths in developing countries is linked to DM[4], DM becomes the world's leading source of morbidity and mortality. DM is affected by the quality of life of a million people because, over time, the health of individuals, families and communities will decline significantly.[5]

Macrovascular (coronary artery, peripheral artery and stroke) complications (diabetic nephropathy, neuropathy and retinopathy) include adverse effects of DM.[6] The development of retinopathy can begin before even DM is diagnosed from the age of 7.[7] Some 40 % of patients with type 1 or type 2 DM are nephropathically affected[8], while neuropathy involves a large proportion of amputations, more than 80% of which occur after foot ulceration or injury.[9] However, cardiovascular disease is the key factor responsible for death; it is also the most costly as regards health costs.[10]

Self-management techniques, blood glucose control, nutritional constraints, routine foot care, and ophthalmic exams may prevent several DM complications.[2] However, most patients with diabetes do not take proper preventive steps even though they are guided by health care practitioners.[11] The key reasons behind impaired glycemic regulation and increased incidence of complication are the lack of health education and inconsistent follow-up in developing countries.[12] In order to determine self-care levels in diabetic patients at Benazir Bhutto Hospital (Rawalpindi), our study used the Diabetes self-care Knowledge Framework (DSCKQ-30). Secondly, we have assessed the relationship between knowledge of self-care and demographics.

MATERIALS AND METHODS

It is a descriptive cross-sectional study done through simple, convenient sampling at the Diabetic clinic of Benazir Bhutto Hospital, Rawalpindi, between September 2018 and October 2019. The questionnaire was distributed

and filled under direct supervision after verbal consent. The questionnaire had two parts; demographic details followed by the Diabetes Self-Care Knowledge Questionnaire (DSCKQ-30). The DSCKQ-30 is further divided into three components; Modifiable lifestyles, Adherence to Self-Care Practices, and Consequences of uncontrolled blood sugar level. The DSCKQ-30 is a valid and reliable source for quantitative measurement of the patient's knowledge of self-care practices.[13] For ease of comprehension, the questionnaire was translated into URDU, i.e., most patients' mother tongue. The questionnaire was distributed among 400 patients, of whom 20 did not meet our criteria and were excluded. Diabetic patients aged over 18 years and those taking anti-diabetic medications for at least one month before the study were included. Pregnant patients, those newly diagnosed (less than one month), or yet to be placed on medication, were excluded from this study. Microsoft Excel and SPSS version 23 analysed the results.

RESULTS

Four hundred questionnaires were distributed, out of which 380 were correctly filled, representing a response rate of 95%. 201 (52.9%) of the participants were female compared to 179 (47.1%) males, giving a female to male ratio of 1.12:1. One hundred forty of them (36.8%) were 50-59 yrs old. Regarding education level, 126 (33.2%) were illiterate while 98 (25.8%) had received tertiary level education. 293 (77.1%) and 59 (15.5%) were married and widows, respectively. Unemployment was found in 208 (54.7%), while 75 (19.7%) had some private business. 62 (16.3%) received wages from 9000-19078 Rupees per month. People suffering from DM for 1-5 years were 134 (35.3%), while those having DM for more than ten years were 113 (28.7%). A more significant part (65.5%) had family, relatives, or friends suffering from DM. There were 59 (15.5%) smokers, while only 4 (1.1%) were alcoholics (Table 1).

Table 1: Socio-demographic characteristics of the respondents (n=380)

Variable	No.	%
Gender		
Male	181	47.6
Female	199	52.4

Age (years)		
<30	35	9.2
30-39	29	7.0
40-49	100	26.3
50-59	142	37.4
69-69	63	16.6
>69	11	2.9
Education		
No formal education	123	23.4
Primary	61	16.1
Secondary	98	25.8
Tertiary	98	25.8
Marital status		
Single	24	6.3
Married	291	76.6
Widowed	61	16.1
Divorced	4	1.1
Occupation		
Civil Servant	26	6.8
Self-employed/Business	75	19.7
Retired	43	11.3
Student	8	2.1
Labourer	20	5.3
Unemployed	208	54.7
Monthly income (PKR)		
< 9,000	37	9.7
9,000-19,078	63	16.6
19,078-14,515	40	10.5
> 44,515	28	7.4
Unsalaried	212	55.7
Duration of diabetes (years)		
<1	63	16.6
1 – 5	138	36.3
6 – 10	64	16.8
> 10	115	30.3
Do you have family members, relatives or friends with diabetes?		
Yes	251	66.1
No	129	33.9
Current smokers		
Yes	320	84.2
No	60	15.8
Alcohol intake		
Yes	4	1.1
No	376	98.9

Table 2: Correlation between demographic characteristics and self-care knowledge levels

Variable	Overall DSCKQ-30			Modifiable lifestyles			Adherence to self-care practices			Consequences of uncontrolled blood sugar level		
	High know n (%)	Low know n (%)	P	High know n (%)	Low know n (%)	P	High know n (%)	Low know n (%)	P	High know n (%)	Low know n (%)	P
Gender												
Male	108 (60.3)	71(39.7)	0.092	112 (62.6)	67 (37.4)	0.209	89 (49.7)	90 (50.4)	0.21	152 (84.9)	27 (15.1)	0.645
Female	104 (51.7)	97(48.3)		113 (56.2)	88 (43.8)		87 (43.3)	114 (56.7)		174 (86.6)	27 (13.4)	
Age (years												
< 30	20(57.1)	15(42.9)	<0.001	20(57.1)	15(42.9)	<0.001	16(45.7)	19(54.3)	<0.001	8 (28)	7 (20)	0.004
30-39	7 (23.3)	23(76.7)		8 (26.7)	22(73.3)		7 (23.3)	23(76.7)		26(86.7)	4 13.3)	
40-49	39(38.6)	62(61.4)		39 38.6)	62(61.4)		31(30.7)	70(69.3)		78(77.2)	23(22.8)	
50-59	98 (70)	42 (30)		102(72.9)	38(27.1)		91 (65)	49 (35)		128(91.4)	12(8.6)	
60-69	48(77.4)	14(22.6)		48 77.4)	14(22.6)		27(43.6)	35(56.5)		58 (93.6)	4 (6.5)	
> 69		12 (100)		8 (66.7)	4 (33.3)		4 (33.3)	8 (66.7)		8 (66.7)	4 (33.3)	
Education												
No formal education	63 (50)	63 (50)	0.001	79 (62.7)	47(37.3)	0.035	50 (39.7)	76(60.3)	0.023	107(84.9)	19(15.1)	0.039
Primary	26(42.6)	35(57.4)		26 (42.6)	35(57.4)		22(36.1)	39(63.9)		46 (75.4)	15(24.6)	
Secondary	68(71.6)	27(28.4)		61 (64.2)	34(35.8)		53(55.8)	42(44.2)		87 (91.8)	8 (8.4)	
Tertiary	55(56.1)	43(43.9)		59 (60.2)	39(39.8)		51 (52)	47 (48)		86 (87.8)	12(12.2)	
Marital status												
Single	16 66.7)	8 (33.3)	0.071	12 (50)	12 (50)	0.01	16(66.7)	8 (33.3)	0.042	24 (100)	-	0.127
Married	160(54.6)	133(45.4)		170 (58)	123 (42)		136(46.4)	157(53.6)		246 (84)	47 (16)	
Widowed	36 (61)	23 (39)		43 (72.9)	16 27.1)		24 (40.7)	35 (59.3)		52 (88.1)	7 (11.9)	
Divorced	-	4 (100)		-	4 (100)		-	4 (100)		4 (100)	0 (0)	

Occupation											
Civil Servant	20 (71.4)	8 (28.6)		20 (71.4)	8 (28.6)		16 (57.1)	12 (42.9)		24 (85.7)	4 (14.3)
Self-employed/ Business	28 (37.3)	47 (62.7)		31 (41.3)	44 (58.7)		16 (21.3)	59 (78.7)		64 (85.3)	11 (14.7)
Retired	37 (90.2)	4	<0.001	37 (90.2)	4	<0.001	33 (80.5)	8 (19.5)	<0.001	37 (90.2)	4
Student	8 (100)	-		8 (100)	-		8 (100)	0 (0)		8 (100)	0 (0)
Laborer	8 (40)	12 (60)		12 (60)	8 (40)		8 (40)	12 (60)		16 (80)	4 (20)
Unemployed	111 53.4)	97 (46.6)		117 (56.3)	91 (43.8)		95 (45.7)	113 (54.3)		177 (85.1)	31 (14.9)
Monthly Income (PKR)											0.756
< 9,000	7 (100)	-		7 (100)	-		7 (100)	-		7 (100)	-
9,000-19,078	28 (77.9)	8 (22.2)		32 (88.9)	4 (11.1)		24 (66.7)	12 (33.3)		28 (77.8)	8 (22.2)
19,078-14,515	46 (74.2)	16 (25.8)	<0.001	42 (67.7)	20 (32.3)	<0.001	34 (54.8)	28 (45.2)	<0.001	54 (87.1)	8 (12.9)
> 44,515	12 (40)	18 (60)		12 (40)	18 (60)		8 (26.7)	22 (73.3)		30 (100)	0 (0)
Unsalaried	108(52.7)	97 (47.3)		114 (55.6)	91 (44.4)		92 (44.9)	113 (55.1)		174 (84.9)	31 (15.1)
Duration of diabetes (years)											0.126
< 1	28 (43.1)	37 (56.9)		39 (60)	26 (40)		24 (36.9)	41 (63.8)		50 (76.9)	15 (23.1)
5-Jan	66 (49.3)	68 (50.7)		74 (55.2)	60 (44.8)		54 (40.3)	80 (59.7)		118 (88.1)	16 (11.9)
10-Jun	41 (63.1)	24 (36.9)	0.005	31 (47.7)	34 (52.3)	0.003	33 (50.8)	32 (49.2)	0.011	61 (93.8)	4 (6.2)
> 10	77 (66.4)	39 (33.6)		81 (69.8)	35 (30.2)		65 (56)	51 (44)		97 (83.6)	19 (16.4)
Do you have family members, relatives or friends with diabetes?											0.053
Yes	148 (59.4)	101(40.6)		153 (61.5)	96 (38.5)		130 (52.2)	119 (47.8)		203 (81.5)	46 (18.5)
No	64 (48.9)	67 (51.2)	0.048	72 (55)	59 (45)	0.222	46 (35.1)	85 (64.9)	0.001	123 (93.9)	8 (6.1)
Current smoker											0.001
Yes	35 (59.3)	24 (40.7)		43 (72.9)	16 (27.1)		31 (52.5)	28 (47.5)		47 (79.7)	12 (20.3)
No	177(55.1)	144(44.9)	0.552	182 (56.7)	139 (43.3)	0.02	145 (45.2)	176 (54.8)	0.297	279 (86.9)	42 (16.1)
Alcohol intake											0.142
Yes	-	4 (100)		4 (100)	-		-	4 (100)			4 (100)
No	212 56.4)	164(43.6)	0.024	221 (58.8)	155 (41.2)	0.095	176 (46.8)	200 (53.2)	0.062	326 (86.7)	50 (13.3)

(Alcohol intake rightmost column: <0.0001)

DISCUSSION

Diabetes mellitus poses serious threats to the lifestyle of a patient. This study showed that people are well aware of the self-care knowledge about this disease. But, when we talk about the practical implementation of that knowledge to increase life expectancy and elevate living standards, the results are worth noticing. Patients are least interested in becoming adherent to self-care practices. Thereby, increasing the burden of DM complications in Pakistan; a developing lower-income country.

The gender distribution of our study showed female to male ratio of 1.12:1. Similar results were found showing more females in previous studies.[14-16] The majority of patients (63.42%) belonged to the 40-59 years age group, which is in accordance with a study done in South India.[17] A study done in Nigeria found that almost 97.7% of the patients received formal education[15], while this percentage was comparatively low in our review (66.84%). This is because the literacy rate in Pakistan is very low, i.e., 45%[18]. A majority (35.3%) of patients in our study had DM for five years or less, contrary to other studies showing most of the population suffering from DM for more than five years.[14,19,20] In our study, 249 (65.52%) patients had relatives or friends suffering from DM, which contrasts to a study in Warangal, India, which showed only 24.13% similar patients.[21] However, a study at the University of UAE supported our findings, reporting 64.4% of patients with relatives/friends having DM.[14]

The patients' overall knowledge level was high, as 212 (55.8%) had a>70% knowledge level. This contrasts with a study done in India which showed poor knowledge and practices regarding DM [19]. The overall percentage of correctness for DSCKQ-30 was 73.9%. Similar results were found by Indians (75.9%), while a study in South Africa reported contradictory findings.[22] On the other hand, it is relatively higher as compared to studies done in Ethiopia[20] and UAE.[14] This could be because of low functional health literacy among patients.[23] The self-care knowledge questionnaire had three components, i.e., modifiable lifestyles, adherence to self-care practices, and Consequences of uncontrolled blood sugar. The patients' performance was best in the third component (percentage correctness=83.2%), indicating that patients were apprised of the hazardous effects of DM on the body. However, a study done in Kolar, India, showed the opposite results with maximum patients not knowing the harmful consequences.[24] In our study, the patients showed the worst performance in the second component (percentage correctness=65.4%), which contradicts a previous study by Padma et.al.[25]

Most patients knew that physical activity is essential for health, but they did not realize that it reduces the need for insulin. Adibe et al[13] found similar results. Only 49.7% knew that cigarette smoking aggravates diabetes; while 62.39% of patients in a study done by Padma et al[25] agreed on the fact to stop smoking as it could be harmful. Only 33.4% had the knowledge that diabetic medication was supposed to be taken throughout life. Such low levels of medication knowledge can be because most people believe that diabetes can be treated with bitter herbs.[26] 65.5% believe that FBS (fasting blood sugar) can monitor 2-3 months of blood sugar control. Similar statistics were found in previous studies done by Adibe et al[27] and Jackson et.al.[15] This is due to a want of proper communication between patients and doctors. It is a fact that if a message/information is repeatedly conveyed, its chances of making an impact increase considerabl.[28] Shaking, confusion, behavioral changes, and sweating are

the usual signs of low blood sugar, and a majority (64.2%) identified them correctly, while studies in Nigeria showed opposite results.[13,15,27]

Our study also found a significant relationship between the level of education and DM self-care Knowledge (p=0.01). Other studies have shown relatable results.[27,29,30] This is because a higher education level leads to a better perception. A person with tertiary level education is more aware of DM as compared to an illiterate person. The self-care knowledge of DM also showed an association with the duration of the disease (p=0.005), which is in accord with previous studies. The longer the exposure to a disease, the more knowledgeable the patient becomes about it. Our study also suggested a relationship of self-care knowledge with the occupation and income of the patient. Similar results were also found in the Nigerian study[15], while Adibe and his colleagues showed opposite results.[13,27]

CONCLUSION

To the best of our knowledge, our study was the first of its kind in Pakistan; it utilized the DSCK-30 questionnaire to assess the self-care knowledge regarding DM in a tertiary care hospital. The population under study showed a generally high level of self-care knowledge regarding diabetes, however the adherence to self-care practices was low. Age, relatives with diabetes, monthly income, and duration of diabetes predicted knowledge level. Thus, proper contact is advised between doctor and patient. The doctor should briefly cover the essential aspects of diabetes mellitus to maintain this level of knowledge. The patient's responsibility includes proper follow-up visits to the diabetic clinic, preparing a chart for monitoring blood glucose levels, and strictly following the prescribed medication regimen. Only then can the disastrous effects of unwanted diabetes mellitus complications be avoided.

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