Knowledge Regarding Self-Care Among Patients of Type -2 Diabetes Mellitus and Its Relationship with Their Socio-Demographic Characteristic in Rajshahi City

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Abstract: *Background:* Diabetes mellitus one of the main chronic illnesses that is now a global public health concern. Diabetes complications and mortality might arise from inadequate knowledge about diabetes self-care. The patient's level of knowledge on diabetes self-care has a direct correlation with diabetic complications. *Methods:* This was a cross-sectional descriptive study conducted from January to December 2022. The study focused on patients with type 2 diabetes at Rajshahi Medical College Hospital and Rajshahi Diabetic Association General Hospital. Data was collected from 210 respondents using a purposive sampling technique and a semi-structured questionnaire. *Results:* A total of 210 patients with diabetes, with a mean age of 51.44±8.26 years, were included. Among those 69.5% had good knowledge and 30.5% had poor knowledge regarding self-care among diabetes patients. Knowledge of diabetes self-care was found to be significantly correlated with residency (p<0.01), education level (p<0.001), and monthly income (p<0.01). *Conclusions:* Knowledge of self-care is essential for keeping diabetes under control. The government and mass media must work to raise public awareness about its importance for diabetes patients.

Keywords: Knowledge, Self-Care, Diabetes Mellitus.

Article at a glance:

Study Purpose: The purpose of this study was to assess knowledge on self-care among patients of type 2 diabetes mellitus and its relationship with their socio demographic characteristic in Rajshahi city.

Key findings: The present study showed that more than two third of the respondents had good self-care knowledge. Among the socio-demographic factors, residence, educational status, and income had a statistically significant relationship with self-care knowledge among diabetes patients.

Newer findings: There was no significant relationship between respondents' occupation and their knowledge of diabetic self-care.

Abbreviations: DM: Diabetes mellitus, SD: Standard deviation, SPSS: Statistical package for social sciences, DSCK: Diabetes Self-care Knowledge Scale.

INTRODUCTION

Diabetes mellitus (DM) is a metabolic disease defined by a consistently high blood glucose level linked to insufficient or nonexistent pancreatic insulin secretion, either alone or in combination with concurrent impairment of insulin action.[1] Diabetes mellitus (DM) is a major illness that is affecting over 171 million people globally and is on the rise. By 2030, there will likely be 366 million more people living with diabetes than there are now.[2] By 2040, there will be 140 million diabetics in Southeast Asia. The adult incidence of diabetes in Bangladesh is 8.3% currently.[3] Due to the chronic nature of diabetes and the fact that ambulatory care

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handles the majority of the patient's daily needs, it is essential to encourage and strengthen self-care among all patients with diabetes.[4,5]

Healthy eating, regular exercise, self-monitoring blood sugar, and taking medications as prescribed are all examples of self-care practices for individuals with diabetes.[6] Day by day self-care is essential for achieving diabetes-related positive health outcomes, and numerous research studies have shown a strong correlation between self-care and glycemic control.[7] Diabetic self-care can lower the risk of hospitalizations and emergency room visits, as well as decrease potential organ damage, according to the American Diabetic Association.[8] Patients' lack of knowledge about self-care has been connected to the annual growth in the severity of diabetes.[9]

According to Inzucchi[10] a patient who is well-informed will have the greatest advantage in achieving and sustaining control over their blood sugar and cardiovascular risk factors. Therefore, inadequate self-care knowledge can result in poor long-term metabolic management, which can pave the way for the emergence of problems related to diabetes, including retinopathy, nephropathy, neuropathy, and atherosclerotic alterations. Therefore, patients need to be educated about all the different facets of self-care, from general lifestyle guidance to information regarding the medication they are prescribed (cardiovascular risk factors including obesity and smoking; frequent medical and ophthalmological checkups; foot care, food, etc.).[11]

In Bangladesh, little research has been conducted on knowledge about self-care among diagnosed diabetes patients. Assessing these factors could help the concerned authorities and physicians to develop a plan for diabetes self-care.

METHODS

A cross-sectional study was conducted in Rajshahi City to find out the knowledge on self-care among patients of Type 2 Diabetes Mellitus and its relationship with their Socio demographic Condition January 2022 to December 2022 was the study's period. Patients with type 2 diabetes at Rajshahi Medical College Hospital and Rajshahi Diabetic Association General Hospital participated in the study. Purposive sampling was used to choose the 210 respondents of the sample. For this investigation, patients who had Type 2 DM for at least six months were taken into consideration. An ethical review committee (ERC) approval and each respondent's signed informed permission were obtained prior to the study starting. Diabetes self-care knowledge (DSCK-30) tool was used to assess the knowledge on self-care among patients with type 2 diabetes mellitus. Items was scored as correct or incorrect, 0 for incorrect answer and 1 for correct answer and the correct items was summed to attain a total score and converted to percentages.

Good self-care knowledge refers for those study respondents who answered more than or equal to 70% of knowledge questions correctly. Poor self-care knowledge refers for those study respondents who answered less than 70% of knowledge questions correctly. All data were analyzed by using the 'Statistical Package for Social Sciences (SPSS)' software, 26.0 version. Categorical variables were summarized by using numbers and percentages while continuous variables were summarized by means and standard deviation (SD). Association of socio-demographic characteristics with knowledge and practice on self-care were determined by Chi-square test. A p-value <0.05 was considered statistically significant for all tests.

RESULTS

Table-1: Socio-demographic characteristics of the respondent (n=210)

Variables	Frequency	Percentage (%)
Age in years	27	12.9
≤40 years	90	42.8
41-50 years	62	29.5
51-60 years	31	14.8
>60 years		
X±SD =51.44±8.26 years		

Gender		
Male	51	24.3
Female	159	75.7
Residence		
Rural	119	56.7
Urban	91	43.3
Religion		
Islam	194	92.4
Hinduism	13	6.2
Christianity	3	1.4
Marital status		
Married	200	95.2
Unmarried	4	1.9
Divorced	6	2.9
Type of family		
Nuclear family	134	63.8
Three generation family	43	20.5
Joint family	33	15.7
Educational Status		
Illiterate	40	19
Primary	38	18.1
Secondary/higher secondary	89	42.4
Graduate or above	43	20.5
Occupation		
Housewife	141	67.1
Farmer/Day labour	17	8.1
service	11	5.2
Engineer	10	4.8
Business	16	7.6
Other answer	15	7.1
Monthly Income		
≤ 10000 taka	92	43.8
11000-20000 taka	79	37.6
21000-30000 taka	22	10.5
>30000 taka	17	8.1
X±SD = 16304.76± 10156.31 taka		

More than two-fifths (42.8%) of the respondents were in the age group of 41-50, with a mean age of 51.44 ± 8.26 years. The majority (75.7%) of the respondents were female. More than half (56.7%) were from rural areas, and 67.1% were housewives. The majority (92.4%) were Muslim, 95.2% were married, and 63.8% belonged to nuclear families. More than two-fifths (42.4%) had secondary or higher secondary levels of education. Additionally,43.8% had a monthly family income below 10,000 taka. The mean monthly family income of the respondents was 16304.76± 10156.31 taka (Table 1).
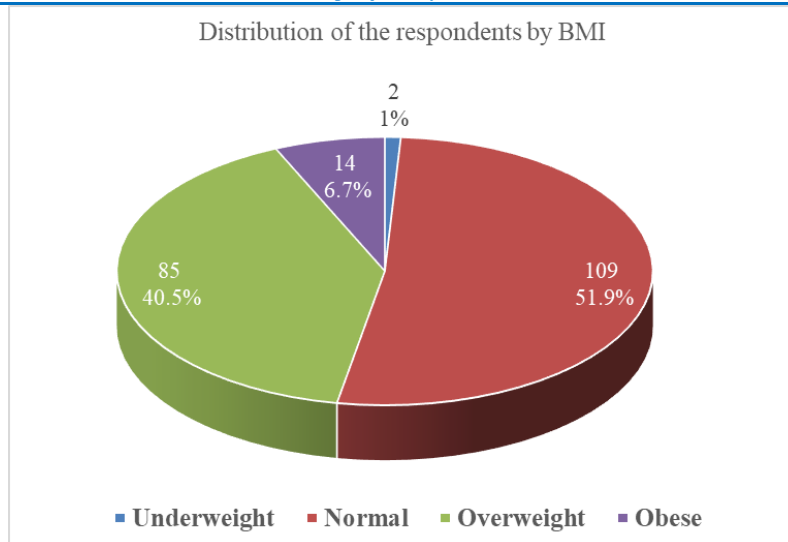
Figure 1: Distribution of the respondents by BMI (n=210)

Regarding Body Mass Index (BMI) measurement, more than half (51.9%) of the respondents had a normal BMI, while 40.5% of the respondents were overweight. The mean BMI of the respondents was 24.81 ± 3.11 kg/m² (Figure 1).

Table 2: Disease Profile (Type 2 DM) of the respondent (n=210)

Variables	Frequency	Percentage (%)
Duration of Diabetes mellitus in year		
1-4 year	55	26.2
5-9 years	65	31
10-14 years	44	21
15-19 years	27	12.8
20-30 years	19	9
X±SD =8.94 ±5.99years		
Family history of Diabetes Mellitus		
Yes	116	55.2
No	94	44.8
HBAIC level		
Controlled (<7)	44	21
Uncontrolled (>7)	166	79
X±SD =9.5±2.7		
Comorbidities of the patient		
Yes	95	45.24
No	115	54.76
Having glucometer		
Yes	81	38.6
No	129	61.4

Out of 210 respondents, 31% had a duration of diabetes mellitus of 5-9 years, 26% had a duration of 1-4 years, and 21% had a duration of 10-14 years. The mean duration of diabetes mellitus among the respondents was 8.94 ± 5.99 years. More than half (55.2%) of the respondents had a family history of diabetes mellitus. The majority (79%) had uncontrolled diabetes mellitus, 45.24% of the respondents had at least one comorbidity, and 61.4% did not have a glucometer (Table 2).
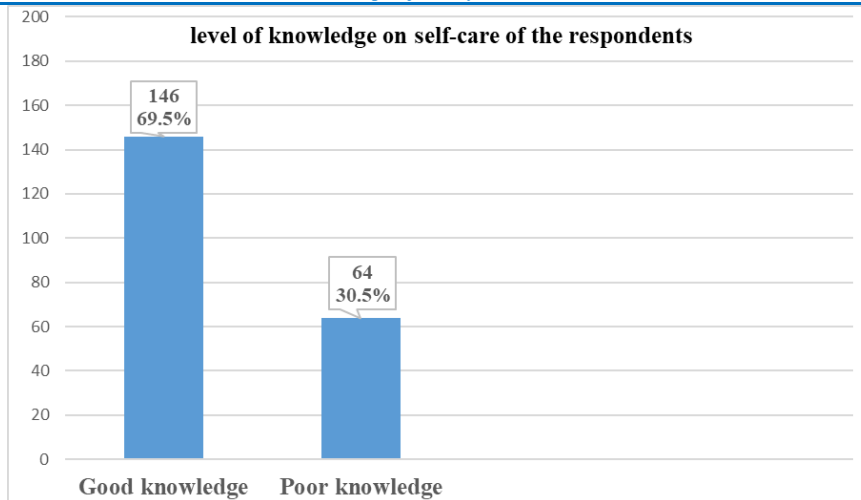
Figure 2: Distribution of the respondents by level of knowledge on self-care (n=210)

The majority (69.5%) of the respondents had a good level of knowledge, while 30.5% had a poor level of knowledge about diabetes self-care.

The mean knowledge score was 22.81 ± 2.9 (Figure 2).

Table 3: Relationship between sociodemographic characteristics and knowledge regarding diabetes self-care

Variables	Poor Knowledge N (%)	Good knowledge N (%)	χ^2	p-value
Age of the respondents				
≤50 years	20(27%)	54(73%)	χ^2=0.64	>0.05
>50 years	44(32.4%)	92(67.6%)		
Gender				
Male	14(27.5%)	37(72.5%)	χ^2=0.29	>0.05
Female	50(31.4%)	109(68.6%)		
Residence				
Rural	46(38.7%)	73(61.3%)	χ^2=8.67	<0.01
Urban	18(19.8%)	73(80.2%)		
Marital Status				
Married	60(30%)	140(70%)	χ^2=1.07	>0.05
Unmarried	1(25%)	3(75%)		
Divorced	3(50%)	3(50%)		
Type of family				
Nuclear family	37(27.6%)	97(72.4%)	χ^2=2.19	>0.05
Joint family	10(30.3%)	23(69.7%)		
Three generation family	17(39.5%)	26(60.5%)		
Education status				
Illiterate	27(67.5%)	13(32.5%)	χ^2=37.26	<0.001
Primary	14(36.8%)	24(63.2%)		
Secondary/Higher secondary	16(18%)	73(82%)		
Graduate or above	7(16.3%)	36(83.7%)		
Occupation				
Housewife	46(32.6%)	95(67.4%)	χ^2=7.35	>0.05
Farmer/Day labour	7(41.2%)	10(58.8%)		
service	4(36.4%)	7(63.6%)		
Engineer	2(20%)	8(80%)		

Business	4(25%)	12(75%)		
Other answer	1(6.7%)	14(93.3%)		
Monthly income				
≤10000	41(44.6%)	51(55.4%)	χ^2=15.95	<0.01
11000-20000	16(20.3%)	63(79.7%)		
21000-30000	5(22.7%)	17(77.3%)		
>30000	2(11.8%)	15(88.2%)		

There was a statistically significant relationship between the level of knowledge on self-care and residence, education status, and average monthly family income (p<0.01, p<0.001, p<0.01, respectively). However, the relationship between the level of knowledge on self-care and age, gender, marital status, type of family, and occupation was not statistically significant (p>0.05) (Table 3).

DISCUSSION

The evaluation of knowledge about diabetes self-care is a crucial initial step in creating programs that are suitable for diabetes education. In the current study, more than two-fifths (42.8%) of the respondents were in the age group of 41-50 years, and the mean age of the respondents was 51.44 ± 8.26 years. Nearly similar findings were observed in the study conducted by Hasnain in Lahore Hospital, where the mean age was 50.60 ± 8.36 year.[12] In the current study, the majority (69.5%) had good self-care knowledge, while 30.5% had a poor level of self-care knowledge. These findings are nearly similar to studies conducted in North Ethiopia[14] and Bangladesh[21] where 70.4% and 66% had good self-care knowledge, respectively. Another study revealed that in Nigeria, 79.5% of people had good knowledge and 20.5% had poor knowledge.[16] The knowledge level of current study was higher than that in a study conducted by Desalegn [20], where 58% had good knowledge and 42% had poor knowledge. The discrepancy may be attributed to difference in the study population. Urban patients were more likely to possess good knowledge regarding diabetes self-care.

Among 119 rural respondents, 38.7% had poor knowledge and 61.3% had good knowledge, while among 91 urban respondents, 19.8% had poor knowledge and 80.2% had good knowledge. Similar results were obtained in a cross-sectional study by Niguse et al.[14] in Ethiopia, where 76.7% of

urban residents demonstrated higher knowledge of diabetes self-care compared to 47.2% of rural residents. Another study by Sahile et al.[17] reported that the diabetic self-care knowledge of urban residents was 73.1% higher than that of rural residents. However, a different study revealed that the relationship between residence and level of knowledge on self-care was found to be statistically non-significant (p>0.05).[20] This relation could be due to more opportunities for exposure to information about diabetes self-care through the mass media, books and internet in urban areas.

In this study, the relationship between education status and the level of knowledge on self-care of the respondents was found to be proportionately significant (p<0.001). Similar findings were reported in a study conducted by Khan et al. in Pakistan.[13] Comparable results are mentioned in another study, which also showed a significant association with the education of the respondents.[16] However, the relationship between education status and the level of knowledge on self-care was found to be statistically non-significant in studies conducted in Ethiopia by Niguse et al.[14] and Desalegn.[20] In this study, a statistically significant relationship (p<0.01) was observed between average monthly family income and the knowledge level on self-care among respondents.

Higher income correlated with higher proportions of good knowledge on self-care. A study on type 2 diabetes patients in North Ethiopia found that among those whose average monthly family income was low, 58.4% had good knowledge and 41.6% had poor knowledge on self-care. Among respondents whose average monthly family income was high, 89.2% had good knowledge and 10.8% had poor knowledge on self-care. (p<0.01).[14] A study conducted in Lahore also indicated a significant relation between monthly family income and knowledge on self-care (p<0.001).[12] Similar findings were also found in

studies done by Khan et al. in Pakistan[13] and Kassa et al. Southeast Ethiopia.[18] But studies by Mekonnen and Hussien[19] and Desalegn [20-23] showed that the relationship between average monthly family income and level of knowledge on self-care of the respondents was statistically non-significant. Patients having higher monthly family incomes were expected to have frequent visits to their physicians, and participate in health education programs.

CONCLUSIONS

Being a chronic condition, diabetes mellitus necessitates lifelong medical care as well as lifestyle modifications. Demanding self-care practices across a range of domains is essential to preventing major morbidity and mortality. In order to increase patients' awareness of self-care and, consequently, their level of active involvement in their own treatment, the scope and regularity of diabetes messaging should be expanded, with a focus on the areas where knowledge gaps were discovered.

Authors' contributions

AR, MJH and NF: Concept and design, data acquisition, interpretation, drafting and final approval. AR, MAR and MSJ: Data acquisition, interpretation, drafting, final approval and agree to be accountable for all aspects of the work.

Declarations
Funding

Conflict of interest

Authors declared no conflict of interest.

Ethical approval

Ethical approval of the study was obtained from the Ethical Review Committee, Rajshahi Medical College, Rajshahi. Informed consent was taken from all participants. All the study methodology was carried out following the relevant ethical guidelines and regulations.

Consent for publication: Taken.

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