Original Article

Level Of Self-Care Practices And Its Predictors Among Diabetic Patients Residing In Urban Field Practice Area Of Tertiary Health Care Centre.

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Abstract

Background: Self-care among diabetes is met with a lot of obstacles and challenges including unclear advices from medical practitioners, non-cooperation from family members, financial constraints, the accessibility to health centres, and cultural differences between families and the health-care provider.

Objectives: To assess the self-care practices among male and female diabetic patients in the urban filed practice area of tertiary teaching hospital. To determine the predictors of self-care practices among diabetic patients.

Methods: A community based cross-sectional study was conducted in Urban Field Practice area attached to the department of Community Medicine, Konaseema Institute of Medical Sciences and Research Foundation, Amalapuram among Type 2 diabetic patients who were on treatment for at least 1 year aged 18 years and above during the months of February and March 2022. Data was collected using predesigned semi structured questionnaire using interview technique after taking informed consent. Self-care practices were evaluated from The Summary of Diabetes Self-care Activities (SDSCA) Measure. Data was entered and analysed using Microsoft excel and SPSS ver. 20 software.

Results: Half of the study subjects had good self-care followed by 35% had moderate and rest had poor self-care. There was a statistically significant difference between the self –care practices among male and female subjects.

Conclusion: The present study concluded that overall self-care was good among half of the study subjects, but individual self-care practices were not that good. Increased age, higher education, duration of diabetes and social class were identified as good predictors of level of self-care in Diabetes.

Key words: Self-care, Diabetes, SDSCA, Foot care

INTRODUCTION:

Diabetes mellitus (DM), especially type-2 is the most prevalent long term disease and also acts as the leading modifiable risk factors for many non-communicable diseases, particularly cardiovascular diseases. [1] According to statistics 2021, India ranks second in the global diabetes prevalence with 74.2 million people with diabetes and which is estimated to increase to 124.9 million by the Year 2045. (2)

Diabetes is a chronic disease, requiring a mixed and long term approach for its management, wherein the patient has a vital role to play. Studies across the globe have proven that good glycaemic control helps in preventing vascular complications and this can be achieved by self-care practices on various aspects, which should be maintained at individual level. The patients are required to follow certain self-care practices in order to achieve an optimal glycaemic control and prevent complications such as neuropathy, nephropathy, and retinopathy. (3, 4)

Self-care practices include regular physical activity, appropriate dietary practices, daily foot care practice, adherent treatment regimen, and tackling complications such as hypoglycaemic episodes. [5-7] These self-care practices are found to have an association with the glycaemic control and thereby reduce the incidence of complications occurring due to DM. [8]

Various types of tools are available to measure self-care among diabetics. [9-13]. SDSCA (Summary of Diabetes Self Care Activities) is perhaps the most popularly used self-reporting instrument for measuring diabetes self-management in adults. It tests the self-care practices in the following areas, namely, diet, exercise, blood sugar monitoring, medication

adherence, and foot care during the previous week.(14) It is a validated questionnaire used in various settings.[15] It shows good internal and test-retest reliability and can be generalized to various patient populations with diabetes [14].
Self-care among diabetes is met with a lot of obstacles and challenges including unclear advices from medical practitioners, non-cooperation from family members, financial constraints, the accessibility to health centres, and cultural differences between families and the health-care provider. [16-19]

OBJECTIVES:

1. To assess the self-care practices among male and female diabetic patients in the urban filed practice area of tertiary teaching hospital
2. To determine the predictors of self-care practices among diabetic patients

METHODOLOGY:

Study design: A community based cross-sectional study
Study setting: Urban Field Practice area attached to the department of Community Medicine, Konaseema Institute of Medical Sciences and Research Foundation
Study period: In the months of February and March 2022

Study subjects:
Inclusion criteria: Type 2 diabetic patients who were on treatment for at least 1 year
Aged 18 years and above
And who were willing to participate in the study

Exclusion criteria:
Pregnant women,
Lactating mothers,
Newly diagnosed diabetics (less than 1-year),

Sample size calculation
Considering the prevalence of self-care practice activities among diabetic patients as 47.6% from the previous literature. (20)
The sample size was calculated with a relative precision of 15% and confidence interval of 95%. The minimum required sample size was 187; it was rounded off to 200.

Sampling method
Convenient sampling technique

Data collection:
Data was collected using predesigned semi structured questionnaire using interview technique after taking informed consent. Baseline characteristics like socio-demographic data, personal habits duration of diabetes, Complications of diabetes, associated co-morbidities and any emergency visits in last 3months etc., Self-care practices were evaluated regarding dietary habits, physical activity, blood sugar monitoring, adherence to medications, foot care, and smoking from The Summary of Diabetes Self-care Activities (SDSCA) Measure.[21] Adherence to medication was assessed using Morisky Medication Adherence Scale-4 (MMAS-4).[22] A score of "1" was given for the presence of the following components and "0" was given for the absence of the same. The questions were as follows:
1. Weekly consumption of carbohydrates ≤2 times a week
2. Weekly consumption of fats ≤2 times a week
3. Weekly consumption of fruits and raw vegetables ≥5 times a week
4. Weekly foot examination ≥5 times a week
5. Weekly exercise regimen ≥5 times a week
6. Absence of smoking
7. Periodic blood sugar testing once in 3 months

The subjects were questioned regarding the adherence to medication based on the MMAS-4 and were given a score of 1–4. The questions comprised
1. Never forgotten to taken medicines
2. Never careless about medicines
3. Do not stop taking medicines if the participant feels worse
4. Do not stop taking medicines if the participant does not have any symptoms

Overall scoring of the self-care practices is derived as a collective score of SDSCA (score 0-7) and MMAS-4 scale thus giving a maximum score of 11. The subjects were then categorized into three groups based on total self-care scores:

Grade	Score
1- Poor Self care	0-4
2- Moderate Self care	5-7
3- Good Self care	8-11

BMI was graded as per WHO classification of BMI for Asians. [23]
Fasting blood sugars (FBS) > 110mg/dl and Post prandial blood sugars (PPBS) >140mg/dl were considered to assess the glycaemic control status. [24]

Ethical Permissions
Ethical permissions were obtained from the institutional ethics committee before the start of the study.

Data analysis
Data was entered and analysed using Microsoft excel and SPSS ver. 20 software. Descriptive statistics were expressed as means and percentages. A Chi-square test was used to test the association between various self-care practices among males and females. *P* value <0.05 was considered statistically significant.

RESULTS & DISCUSSION:

Table 1: Baseline characteristics of the study subjects (n=200):

Variable	Frequency (%)
Age	
<50years	80 (40)
>50years	120 (60)
Gender	
Male	100 (50)
Female	100 (50)
Education	
Illiterates	65 (32.5)
Up to high school	92 (46)
More than High school	43 (21.5)
Socio-economic status	
Above Poverty Line	37 (18.5)
Below Poverty Line	163 (81.5)
Alcohol Consumption	
Yes	53 (26.5)
No	147 (73.5)
Duration of Diabetes Mellitus	
1-5years	98 (49)
5-10years	51 (25.5)
>10years	51 (25.5)
No of Hospital Visits in a year	
0-4	140 (70)
05-Aug	32 (16)
09-Dec	28 (14)
Emergency visits in last 3months	
Yes	19 (9.5)
No	181 (91.5)
BMI	
Normal	65 (32.5)
Over weight	92 (46)
Obese	43 (21.5)
Blood Sugars	
FBS Controlled (<126mg/dl)	88 (44)
Uncontrolled (≥126mg/dl)	112 (56)
PPBS Controlled (<200 mg/dl)	75(37.5)
Uncontrolled (≥200mg/dl)	125(62.5)

Mean age of the study subjects was 52.34± 10years, more than half of the study subjects were aged above 50years, male and female subjects were in the equal proportion, around one third of the subjects were illiterates, majority of them belong to BPL social class, Half of the study subjects were diabetics for more than 5years, 10% had emergency visits in the last 3 months, 2/3rd of the subjects were overweight and obese with mean BMI of 26.6kgs/m^2. Only 37- 44% had controlled blood sugar levels. Mean FBS was 159mg/dl whereas mean PPBS was 229mg/dl.
Similarly to this study, Giriappa B, Seeri JS, et al (25) in their study they found that majority of their study subjects were aged above 50years , 60% were males ,20% were illiterates, more than half of the subjects were diabetic for longer than 5years and nearly 2/3rd of the subjects were overweight and obese. Kushwaha AS, Kumari S, et al (26) reported that mean age of the study subjects was 56.6± 10years which is almost similar to this study finding, majority were females, half of

them were diabetics for more than 5years and mean BMI of the study population was 25.55 kg/m2 with standard deviation of 4.2 kg/m2.

Kalaiselvi, *et al* (27) observed that most of their study subjects were females. The mean (SD) age of diabetics was 57±11.1) years and 2/3rd belonged to the lower middle class. Only 40% participants had their blood glucose under control in a study by Shyamsundar Jagdish Raithatha et al (28). In a study by Rajasekharan, *et al*. (29): majority of the subjects had less than 10years of duration of diabetes. Karthik RC, Radhakrishnan A,et al (20) in their study they found that majority of subjects belong to above 50year and around three quarters belong to lower social class which are in line with this study findings. Diabetes is multifactorial in causation and it requires mixed approach for its management. Of these age is an important but non-modifiable risk factor, others are modifiable like alcohol consumption which was present in one quarter of individuals and over 3 quarter were overweight/obese. Other factors which influence outcome of diabetes were duration of diabetes and health seeking behaviour.

Table 2: Self-care practices among study subjects (n=200)

Variable	Male (n=100)	Female (n=100)	P value
Weekly consumption of carbohydrates?			
0-2 days	28	43	0.019*
>2 days	72	57	
Weekly consumption of fats?			
0-2 days	47	55	0.161
>2 days	53	45	
Weekly consumption of fruits and raw vegetables?			
0-4 days	68	83	0.010*
5-7 days	32	17	
Weekly foot examination?			
0-4 days	78	83	0.238
5-7 days	22	17	
Weekly exercise regime?			
0-4 days	54	76	0.001*
5-7 days	46	24	
Smoking history			
Present	20	0	0.000*
Absent	80	100	
Periodic blood sugar testing done over past 3 months			
Yes	78	86	0.099
No	22	14	
Adherence to medications (MMAS-4 scale)			
Good adherence(1+2)	30	25	0.263
Poor adherence (3+4)	70	75	

*statistically significant

There was a statistically significant difference between the following self –care practices (Consumption of carbohydrates less than 2 days a week, consumption of fruits and raw vegetables 5-7days a week, exercise regimen 5-7days a week and absence of smoking) among male and female subjects.

Kushwaha AS, Kumari S, et al (26) showed that three fourth of the patients adhered to a diet plan for at least five days a week, and more than half of the subjects didn't take care of their food. In contrast adherence to medication was highest in a study by Kalaiselvi, *et al* (27) and findings similar to this study were, foot care which was especially lowest and blood sugar monitoring was satisfactory in 79% of the subjects. Rajasekharan, *et al* (29) observed that only 28.3% of the participants checked their feet on all days of the week.

In a study by Karthik RC, Radhakrishnan A, et al (20) they observed that the majority of the participants consumed carbohydrates >2 days in a week and the consumption of fruits and vegetables was very less, 82.4% examined their foot <5 days a week and 80 % did not follow exercise regimen beyond 5 days a week, Smoking history was present in 21.6% and periodic blood sugar testing beyond 3 months was present in 75.2%. It was observed that 70.4% of the study population had high medication adherence.

Self-care is crucial element in secondary prevention of diabetes. The diabetics should take his own care along with medical advice e.g., adherence to diet and medications, quitting smoking, maintenance of optimal weight, following exercise regimen, periodic monitoring of blood sugars and identifying symptoms associated with glycosuria and hypoglycaemia.

Carbohydrate consumption and fats consumption was more among the study subjects as compared to weekly fruits & raw vegetables consumption and exercise regimen. Intake of fruits and vegetables in sufficient quantity not only helps in better control of blood sugar levels but also prevent the complications such as cardiovascular diseases, stroke, gastrointestinal tumours, etc.[30] Life style modification should be advised to follow diabetic diet and to do physical activity to maintain normal BMI.

Though the period glucose monitoring was there among more than three quarter of the study subjects and one quarter had enough hospital visits, blood glucose levels were not in control in more than half of the subjects. This shows that though the subjects were seeking health care but not following the health advice given by health professionals, leading to uncontrolled blood sugars thereby causing dreaded complications and emergency hospital visits.

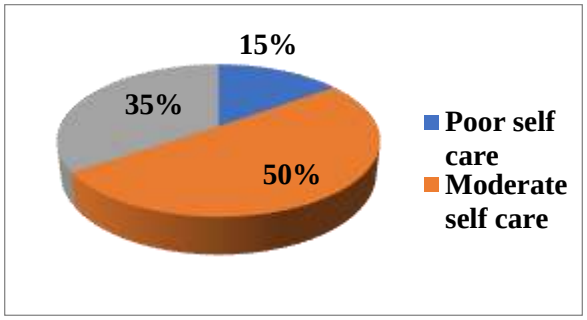

Fig1: Level of self-care among study subjects (n=200)

Half of the study subjects had good self-care followed by 35% had moderate and rest had poor self-care. In contrast to this study, a study by Karthik RC, Radhakrishnan A,et al (20), poor self-care was as high as 52%.

Table 3: Distribution of study subjects baseline variables and level of self-care

Variable	Poor self-care n=30	Moderate self-care n=101	Good self-care n=69	Total	Chi-Square-P value
Age					
<50years	17	47	16	80	0.001*
>50years	13	54	53	120	
Gender					
Male	16	48	36	100	0.774
Female	14	53	33	100	
Education					
Illiterates	10	41	14	65	0.000*
Up to high school	16	48	28	92	
More than High school	4	12	27	43	
Socio-economic status					
Above Poverty Line	2	16	19	37	0.030*
Below Poverty Line	28	85	50	163	
FBS					
Controlled	11	46	31	88	0.678
Uncontrolled	19	55	38	112	
PPBS					
Controlled	12	35	28	75	0.702
Uncontrolled	18	66	41	125	
DM complications					
Present	22	45	35	102	0.022*
Absent	8	56	34	98	

*statistically significant

Increased age, higher education, duration of diabetes and social class were identified as good predictors of level of self-care in Diabetes. It was found that there was a statistically significant association between level of self-care and presence of DM complications. To test the association between duration of diabetes and level of self-care Mann–Whitney U test was performed. It showed that null hypothesis is rejected at significance value of 0.001. Where as in a study by Karthik RC, Radhakrishnan A, et al (20) education, occupation and random blood sugar (180mg/dl) had significant impact on the self-care practices.

It shows that with increasing duration of diabetes there might be changes of getting more knowledge on the disease and improvement in self-care practices related to diabetes. Several studies have shown that several factors like gender, illiteracy, lack of health literacy, poor access to health care, health seeking behaviour and lack of family support mechanisms were associated with poor compliance in diabetes management. [31-33] In this study also age, education,

duration of diabetes and presence of complications were associated with diabetes management. All these factors should be kept in managing diabetic patients to provide better quality of life.

Table 4: Complications and co-morbidities of the study subjects

Variable	Frequency (%)	Variable	Frequency (%)
Complications*		Co-morbidities*	
Diabetic Foot	08 (4)	Hypertension	130 (65)
Peripheral Neuropathy	80 (40)	CAD	17 (8.5)
Nephropathy	02 (1)	CVD	08 (4)
Retinopathy	09 (4.5)	Hypothyroid	28 (14)
UTI	08 (4)	CKD/Chronic Liver disease	07 (3.5)
Multiple	21 (11.5)	Multiple	47 (23.5)
None	102 (51)	None	48 (24)

*n not 100% (because of multiple responses for complications and co-morbidities)

Half of the subjects had diabetic complications and 11% of them had multiple complications. Most of associated co-morbidity was hypertension in 65% of the subjects followed by hypothyroid and one quarter had multiple co-morbidities. In a study by Shyamsundar Jagdish Raithatha et al (28) among the participants, 6%, 11%, and 30% persons reported suffering from eye, cerebrovascular, and cardiac complications and 40% had associated hypertension.
Kushwaha AS, Kumari S, et al (26) observed that among the co-morbidities 62.3% of the patients were hypertensives, followed by 36.2% having heart problems and 10% had no associated co-morbidities. Kalaiselvi, *et al* (27) found that more than half of the diabetics (57.4%) were found to have coexisting hypertension.
Good control of blood sugars prevents diabetic complications. Self-care not only plays a vital role in early identification of warning symptoms of uncontrolled diabetes, it also helps in preventing disabilities associated with diabetic complications. Therefore it is important for diabetics to stick on to diet, drugs, exercise, foot examination and blood glucose monitoring of regular basis to prevent the dreaded complications. Associated co-morbidities like hypertension and other diseases should be under control as most of the risk factors of NCDs are common and they themselves are the independent diseases.

CONCLUSIONS:

The present study concluded that overall self-care was good among half of the study subjects, but individual self-care practices were not that good. There was a statistically significant difference between the following self-care practices (Consumption of carbohydrates less than 2 days a week, consumption of fruits and raw vegetables 5-7days a week, exercise regimen 5-7days a week and absence of smoking) among male and female subjects. Increased age, higher education, duration of diabetes and social class were identified as good predictors of level of self-care among Diabetics.

RECOMMENDATIONS:

Management of diabetes is a multipronged approach; self-care should be part of management of all the diabetic cases beginning from the diagnosis of the case. A part from monitoring of blood sugars periodically, Health Care workers should focus on promoting self-care practices among the patients as well. Reinforcement is needed to inculcate self-care practices related to any NCDs. As Diabetes Mellitus is chronic disease, it requires lifelong commitment to have healthy and happy life. Life style modification like stick on to diabetic diet, adherence to medication, abstinence from smoking & alcohol, regular physical activity, periodic blood sugar monitoring and daily foot examination should be done to improve quality of life.

Strengths and Limitations:

Being community study is strength of this study. Using validated tool for assessing self-care practices is strength of this study.
We could not assess the HbA1c values of the study participants to look for long term glucose control, which is better indicator than FBS and PPBS.

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