

Self-care practice and its predictors amongst Type-2 Diabetes Mellitus patients in the outpatient department of a tertiary hospital of Kolkata, Eastern India - A cross-sectional study

Jayeeta Burman¹, Aritra Bhattacharya¹, Amitabha Chattopdhyay¹, Indira Dey¹, Sembagamuthu Sembiah², Rudresh Negi²

¹Department of Community Medicine, NRS Medical College, Kolkata, West Bengal, ²Department of Community and Family Medicine, All India Institute of Medical Sciences (AIIMS), Bhopal, Madhya Pradesh, India

ABSTRACT

Purpose: The purpose of this study is to find out the pattern and factors associated with self-care practices among diabetic patients as self-care was considered imperative for the control of disease and enhancement of patient's quality of life. **Methods:** This is a cross-sectional clinic-based observational study conducted among the type 2 diabetes mellitus patients who came for follow up to the outpatient department of a tertiary hospital of Kolkata from September to December 2019. Self-care practice assessed using questions adapted from the "Summary Diabetes Self-Care Activities Questionnaire" by face-to-face interview. Logistic regression used to find out the predictors of self-care practice. **Results:** Self-care practice was unsatisfactory among 67.5% of the patients. Near half (56%) of the patients had mild to moderate distress and about 18% were severely distressed. Self-care practice was significantly associated with the educational level, family history, presence of hypertension, advice given regarding self-care activities, and diabetes distress levels of the participants. **Conclusions:** Primary care physicians should be encouraged to give practical aspects of self-care practices and counseling regarding diabetes distress. To perform self-care practices adequate, support from the family level and community level is imperative.

Keywords: Diabetes, predictors, self-care practices

Introduction

Diabetes considered as the biggest epidemic of this century. Around 80% of the diabetic population lives in developing countries. India ranks second right behind China with a diabetic population of nearly 69.2 million.^[1] The estimation showed

that in 2025 the number of individuals with diabetes will be doubled and 76% of them will be in low-income countries.^[2] A person diagnosed with diabetes perceives it not just an ill-health condition, a threat to the way of living because managing diabetes requires various changes in daily routine.

Diabetes is a chronic illness that needs continuous treatment for life and health education and support for patient self-management to stop acute complications and the risk of long-term complications.^[3,4] The diabetes care is doctor centered for a long time as it was generally

Address for correspondence: Dr. Sembagamuthu Sembiah, Senior Resident, Department of Community and Family Medicine, All India Institute of Medical Sciences (AIIMS), Bhopal, Madhya Pradesh, India.
E-mail: semba9.ss@gmail.com

Received: 06-10-2020

Revised: 02-12-2020

Accepted: 01-01-2021

Published: 08-04-2021

Access this article online

Quick Response Code:



Website:
www.jfmpc.com

DOI:
10.4103/jfmpc.jfmpc_2070_20

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

How to cite this article: Burman J, Bhattacharya A, Chattopdhyay A, Dey I, Sembiah S, Negi R. Self-care practice and its predictors amongst Type-2 Diabetes Mellitus patients in the outpatient department of a tertiary hospital of Kolkata, Eastern India - A cross-sectional study. J Family Med Prim Care 2021;10:1377-82.

prescriptive and therapeutic goals set by health professionals; the literature in noncompliance indicates, these models weren't effective in diabetes care.^[5] Various studies found patient-centered care more beneficial than doctor centered alone.^[6]

Self-care, generally considered the predominant form of health care, has been conceptualized as activities that are undertaken by individuals to promote health, prevent disease, limit illness, and restore health. Self-care practices reflect a self-determined decision-making process.^[7] It necessarily involves a variety of activities, ranging from recognizing and responding to symptoms, to seeking information, to managing diagnosed conditions through regular testing and medication adherence, and implementing changes in activities (e.g., increasing exercise or avoiding smoking).^[8]

Self-care management of diabetes is difficult as it needs a multi-faceted approach like diet, physical activity, blood sugar monitoring, medication adherence, coping skills and risk-reduction behaviours. It helps to attain optimum glycemic control and forestall complications in the future.^[9,10] In a populous and resource-limited country like India, self-care management of diabetes can improve outcomes in management and reduce the expenditure of patients.^[11]

The patients worry most about 'the possibility of serious complications' and 'guilt and anxiety when diabetes management goes off track'. Distress due to the burden of relentless daily self-management and (the prospect of) its long-term complications called as Diabetes distress.^[12] Primary care physicians were the first point of contact for the persons suffering from non-communicable diseases at very early stage; by providing adequate and timely care the course of disease can be changed. They play a vital role in inculcating self-care practices at the earliest among the patients as well as the community. As being constantly in touch with the diabetics, they should be acknowledging the mental distress of the diabetics and to find ways to alleviate the same.

With this background, this study conducted to measure the Diabetic Distress level and self-care practices and to find out the factors associated with the same among Type-II DM patients visiting the tertiary hospital in Kolkata.

Materials and Methods

This study was a cross-sectional clinic-based observational study conducted among the type 2 diabetes mellitus patients who came for follow up to the outpatient department of a tertiary hospital of Kolkata from September to December 2019. All the patients approached; whoever provided their willingness to participate and gave written informed consent was included in the study. The data collected from 367 patients. Patients of other types of diabetes except for type 2 diabetes mellitus, pregnant women, newly diagnosed patients of T2DM, and critically ill patients excluded from this study. Data collected by interviewing each respondent with the help of a structured pre-designed pre-tested schedule.

Independent variables

1. Socio-demographic characteristics.
2. Disease profile (Duration of diabetes, Family history of diabetes, presence of hypertension)
3. The advice given by doctors was assessed using 8 questions regarding dietary habits, physical activity, quitting tobacco, and foot care. Each question had two responses as Yes/No. Each 'Yes' response was given a score 1 and 'No' scored as 0. The attainable score ranges from 0-8; higher the score, more satisfactory advice was given on the self-care practices. Participants scoring more or equal to median were considered as Satisfactory and less than median attained score was considered as Unsatisfactory.
4. Distress level assessed by 'brief diabetes distress screening scale' which consists of 2 questions: (Feeling overwhelmed by the demands of living with diabetes and Feeling that I am often failing with my diabetes routine) and was given a six-point Likert scale scored from 1 to 6. The attainable score ranges from 1 to 12. Higher the score, distress was more. (<3: No distress, 4-5: Mild to moderate, >5: Severely distressed).^[13]

Outcome variable

1. Self-care practice was assessed by questions adapted from the 'Summary Diabetes Self-Care Activities Questionnaire' such as consuming vegetables and fruits, fatty foods, sweets, physical exercise, foot care, monitoring of blood sugar, adherence to medications, smoking. Among the 9 items, few questions were given three-point likert scale ('poor', 'satisfactory', 'good') scored as 1, 2, 3 and the other questions as 'yes' and 'no' scored as 2, 1. Ultimately, the median of the attained score was taken as cut off to label overall favorable (>median attained score) and unfavorable (≤median attained score). The attainable score ranges from 1 to 22; higher the score, more the self-care practices.^[14]

The questionnaire was modified according to the local context and the objectives of the study. Face and content validity was maintained by the expert committee of institution where the study was conducted. The tool was translated into the local language (Bengali) maintaining semantic equivalence and pretesting of the questionnaire was done among 15 diabetic patients. It was revised based on the responses obtained in pre-testing and finalized for use in this study.

Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional research committee and with the declaration of Helsinki. Written Informed consent was obtained from all individual participants included in the study after explaining the academic nature of the study.

Statistical analysis

Data were analyzed using SPSS software (version 16.0). Descriptive statistics were performed. Logistic regression was

used to find out the factors associated with the unsatisfactory self-care practices with *P* value at 0.05.

Results

The mean (\pm SD) age of the participants was 51.4 (9.33) years. About half (49%) of them were above 50 years of age and were females (53%). Among the study participants, 63.5% were Hindus and 43% belonged to other backward castes. About half (53.5%) of them were married and belonged to nuclear families (56.5%). Nearly half (40.5%) had secondary level education and 44.5% were self-employed. The mean (\pm SD) per capita income was 1508.8 (989) INR and 91 (45.5%) of them belonged to socioeconomic Class IV (modified B. G. Prasad scale May 2018). The mean duration of diabetes among participants was 1.5 years.

About half (47%) of the participants had a family history of diabetes and the other half (40%) of patients didn't know about the family history of diabetes. More than half (58%) of patients had received satisfactory advice on self-care practices. [Table 1] Only one-fourth (26%) didn't have any distress (2-3) and more than half (56%) had mild to moderate distress (4-5) and about 18% were severely distressed (>5) [Table 2].

Self-care practice was unsatisfactory (< median score = 20) among two-third (67.5%) of the patients; as 61.5% and 77% consumed a satisfactory level of Vegetable and fruits and fatty foods in the last 7 days. Three-fourth (74%) of the patients didn't take sweets or took sweets once a week and did exercise satisfactorily. Most of them (95%) and (93%) checked their blood sugar in the past 3 months and took their medicine daily; whereas only half (54.5%) of participants took care of their foot regularly. [Table 3] Self-care practice was significantly associated with the education of study participants, family history, presence of hypertension, advice given regarding self-care activities, and diabetes distress levels of the participants [Table 4].

Discussion

There are only a few studies in eastern India regarding self-care activities and diabetes distress amongst type 2 DM patients. The current study found that 67.5% of study participants had unsatisfactory self-care activities whereas a study in a rural area of West Bengal found that 74.4% of study participants had unsatisfactory self-care activities maybe due to the rural urban difference as urban people being more educated and more accessible to the health information.^[15] In the present study, 61.5% adhered to satisfactory diet plan whereas a study done in the urban community in Pune showed higher proportion (75.4%) of the patients adhered to a diet plan for at least five days a week with more than one third (34.8%) following it every day.^[5] The study in the rural West Bengal found lesser percentage (35.4%) of patients followed satisfactory diet.^[15] In a Tamil Nadu study, it was seen that the majority of the participants followed diet plans only 2-4 times/week (62.3%) and took 5 or more serving of

fruits on 2-4 days (61.5%) and High-fat foods such as red meat or full-fat dairy products were taken only 0-1 times/week by the majority of the subjects (65.4%) similar to the present study.^[16]

In the present study, we found that 45.5% had unsatisfactory foot care even after 56% were received advised on foot care whereas in a study in West Bengal 62.6% had unsatisfactory foot care activities and in Pune more than half subjects (56.5%) did not take care of their foot even once.^[5,15] Another study in Karnataka found that checking the feet and inspecting the footwear were not followed by 99.5%.^[3] Foot care and annual eye check-ups were least practised among self-care aspects in studies from Vishakhapatnam.^[17] In the Tamil Nadu study, only 1.5% had checked their feet on all days during the previous week.^[16] The present study found 93% of diabetics with satisfactory drug intake which is higher than 72.3% (rural West Bengal), 79.8% (South India) and 88.1% (Gujarat).^[15,18,19] In the present study, 97.5% had satisfactory blood sugar monitoring which is higher in comparison to rural study (61.5%), Mangalore (75%) and Tamil Nadu (33%) as most of the patients in the present study belonged to the urban community having better resources for blood testing.^[6,15,16] In present study, it was found that 76.5% had a satisfactory physical activity whereas studies in rural west Bengal study (62.6%) and urban Pune (61%) found lesser proportion of satisfactory exercise and in a Tamil Nadu study

Table 1: Distribution of study participants according to the advices given related to self-care activities (n=367)

Characteristics (Received advices on:)	n (%)
Consumption of less oily food	318 (86.5)
Consumption of 1 bowl of vegetables and fruits	330 (90)
Avoid sweets	340 (92.5)
Continuous exercise for at least 30 min everyday	336 (91.5)
Routine blood test at 3 months interval	354 (96.5)
Taking daily medication.	360 (98)
Quitting tobacco use	259 (70.5)
Foot care-cleaning and drying of webbed space of feet	162 (44)

Table 2: Distribution of study participants according to their diabetes distress (n=367)

Category (score)	n (%)
Anxiety about having to live with diabetes	
Never (1)	70 (19)
Sometimes (2)	145 (39.5)
Often (3)	97 (26.5)
Always (4)	55 (15)
Self- assessment of failing to follow diabetic routine	
Never (1)	101 (27.5)
Sometimes (2)	174 (47.5)
Often (3)	64 (17.5)
Always (4)	28 (7.5)
Diabetic distress scale category	
severely distressed (>5)	66 (18)
mild to moderate distress (4-5)	206 (56)
didn't have any distress (2-3)	95 (26)

Table 3: Distribution of study participants according to their self-care practices (n=367)

Characteristics (in the last 7 days)	n (%)	Characteristics	n (%)
Consumption of Vegetables (1 bowl) and 1 fruit		Routine Blood sugar test in past 3 months	
Poor (0-2)	35 (9.5)	Yes	358 (97.5)
Unsatisfactory (3-5)	106 (29)	No	9 (2.5)
Satisfactory (6-7)	226 (61.5)		
Consumption of Fatty Food in the past 7 days		Daily medication adherence	
Bad (6-7)	7 (2)	Yes	341 (93)
Satisfactory (2-5)	77 (21)	No	26 (7)
Good (0-1)	283 (77)		
No consumption of sweets in the last 7 days		Foot care -cleaning and drying of webbed space of feet	
Bad (6-7)	11 (3)	Yes	200 (54.5)
Unsatisfactory (2-5)	84 (23)	No	167 (45.5)
Satisfactory (0-1)	272 (74)		
Exercise for at least 30 min in last 7 days		Tobacco use	
Unsatisfactory (0-5)	86 (23.5)	Yes	75 (20.5)
Satisfactory (6-7)	281 (76.5)	No	292 (79.5)

Table 4: Factors associated with unsatisfactory self-care activities among study participants (n=367)

Characteristics	Unsatisfactory	Satisfactory	Total	OR (95% CI); P
Gender				
Female	115 (67)	57 (33)	172 (46.8)	1
Male	132 (67.9)	63 (32.1)	195 (53.2)	1.03 (0.6-1.6); 0.86
Age in yrs				
>50	83 (45.92)	97 (55.38)	180 (49)	1
≤50	101 (54.07)	86 (44.61)	187 (51)	1.3 (0.9-2); 0.13
Type of family				
Nuclear	101 (63.2)	59 (36.8)	160 (43.5)	1
Joint	147 (70.8)	60 (29.2)	207 (56.5)	1.4 (0.9-2.2); 0.11
Marital status				
Widow, separated	107 (62.4)	64 (37.6)	171 (46.5)	1
Currently married	141 (72)	55 (28)	196 (53.5)	1.5 (0.9-2.2); 0.05
Educational level				
Above primary level	165 (58.8)	116 (41.2)	281 (76.5)	1
Upto primary level	82 (95.7)	4 (4.3)	86 (23.5)	14.4 (5.1-40.4); 0.01
Duration of diabetes (in yrs)				
≥5	125 (64.8)	68 (35.2)	193 (52.5)	1
<5	123 (70.5)	51 (29.5)	174 (47.5)	1.3 (0.8-2); 0.22
Family history of diabetes				
No	128 (53.8)	112 (46.2)	240 (65.3)	1
Yes	85 (67)	42 (33)	127 (34.7)	1.7 (1.1-2.7); 0.01
History of Hypertension				
No	83 (37.5)	137 (62.5)	220 (59.9)	1
Yes	81 (55)	66 (45)	147 (40.1)	2 (1.3-3); 0.01
Advised by health personnel				
Satisfactory	130 (61.2)	83 (38.8)	213 (58)	1
Unsatisfactory	117 (76.2)	37 (23.8)	154 (42)	2 (1.2-3.2); 0.01
Diabetes Distress				
No	44 (46.2)	51 (53.8)	95 (25.8)	1
Yes	204 (75)	68 (25)	272 (74.2)	3.4 (2.1-5.6); 0.01

OR=odds ratio; CI=confidence interval; P<0.05 considered significant

about one third (33%) of the participants were not indulged in 30 minutes of physical activity even for a single day during the previous week.^[5,15,16]

A study done in Uttarakhand had study participants with mean age of 54 years similar to present study. 43.45% respondents have poor self-care practice score which is lower than the present study (67.5%) whereas both the studies found education

and duration of diabetes as significant predictors for self-care practices.^[20]

In west Bengal study being adequately advised (OR - 2.9) and having no diabetes distress (OR - 2.9) and glycemic control (OR - 4.0) were significant predictors of satisfactory self-care activities similar to the present study.^[15] In a Tamil Nadu study, being female and widow/separated significantly

avored unsatisfactorily self care practices whereas in current study gender and marital status were not significant predictors of self care.^[16] This study has certain limitations, not all the known self-care activities were investigated in this study. All the self-care activities in our study were self-reported.

A study done in Ethiopia found 40.3% of the participants had poor self-care. Majority of the study participants 82.9%, 69.4% and 63.5% had adequate foot care, adequate dietary plan and exercise management respectively which is similar to the present study except the foot care. However, only 15% had adequate blood glucose testing practices whereas in present study it is around 97% which emphasizes on the accessibility of health facility.^[21] Another study in Iran found 63.6% of patients had low self-care score similar to present study.^[22] The Ethiopian and Iranian study found Age, gender, locality, marital status, duration of diabetes and co-morbidities as significant predictors of self-care practices.^[21,22]

Self-care activities can be affected by diabetes distress levels, it is important to understand the feelings of patients towards the disease. As certain treatment options may increase the burden of diabetes self-management and increase the likelihood of diabetes distress, so the provider should frame advises considering the patient characteristics.

The study has certain limitations such as: as this is a clinic-based study done in cross-sectional design, it cannot be generalized to general population as only people in certain spectrum of disease can be available at clinic settings and causal associations cannot be made. Second, there are potential confounding factors that were not controlled for in the study such as knowledge about the disease and social support.

Conclusion

Self-care remains at the core of control and containment of the disease and essential for improving the quality of life. In this study, self-care activities were satisfactory in those diabetic patients adequately advised about self-management, had more education level and less distress level. Primary care physicians should be encouraged to give practical aspects of self-care practices such as how to care for their feet and by performing a thorough foot examination and simple exercise and diabetic plate demonstration using model. Screening for distress should be made mandatory for diabetic patients; it is important for primary care physicians to be aware of patient distress level and address it with patients during clinical encounters to improve outcomes. To perform self-care practices adequate, support from the family level and community level is imperative.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients

understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Atlas D. International Diabetes Federation. IDF Diabetes Atlas. Brussels: International Diabetes Federation; 2015.
2. Ayele K, Tesfa B, Abebe L, Tilahun T, Girma E. Self care behavior among patients with diabetes in Harari, Eastern Ethiopia: The health belief model perspective. *PLoS One* 2012;7:e35515.
3. Dinesh PV, Kulkarni AG, Gangadhar NK. Knowledge and self-care practices regarding diabetes among patients with Type 2 diabetes in Rural Sullia, Karnataka: A community-based, cross-sectional study. *J Family Med Prim Care* 2016;5:847-52.
4. American Diabetes Association. Standards of medical care in diabetes-2011. *Diabetes Care* 2011;34(Suppl 1):S11-61.
5. Kushwaha AS, Kumari S, Kushwaha N. Self care in diabetes: A study amongst diabetics in an urban community. *Int J Community Med Public Health* 2016;3:293-8.
6. Rajasekharan D, Kulkarni V, Unnikrishnan B, Kumar N, Holla R, Thapar R. Self-care activities among patients with diabetes attending a tertiary care hospital in Mangalore Karnataka, India. *Ann Med Health Sci Res* 2015;5:59-64.
7. Stoller EP. Dynamics and processes of self-care in old age. In: Ory MG, DeFries GH, editors. *Self-care in later life*. New York: Springer; 1998. p. 24-61.
8. Kart CS, Engler CA. Predisposition to self-health care: Who does what for themselves and why? *J Gerontol* 1994;49:S301-8.
9. American Diabetes Association. Evidence-based nutrition principles and recommendations for the treatment and prevention of diabetes and related complications. *Diabetes Care* 2002;25:202-12.
10. Deakin T, McShane CE, Cade JE, Williams RD. Group based training for self-management strategies in people with Type 2 diabetes mellitus. *Cochrane Database Syst Rev* 2005;2:CD003417.
11. Loganathan AC, John KR. Economic burden of diabetes in people living with the disease; A field study. *J Diabetol* 2013;4:5.
12. Diabetes UK. Chapter 3-Diabetes distress. Available from: <https://www.diabetes.org.uk/professionals/resources/shared-practice/psychological-care/emotional-health-professionals-guide/chapter-3-diabetes-distress>. [Last accessed on 2020 Aug 16].
13. Fisher L, Glasgow RE, Mullan JT, Skaff MM, Polonsky WH. Development of a brief diabetes distress screening instrument. *Ann Fam Med* 2008;6:246-52.
14. Toobert DJ, Hampson SE, Glasgow RE. The summary of diabetes self-care activities measure: Results from 7 studies and a revised scale. *Diabetes Care* 2000;23:943-50.
15. Garg S, Paul B, Dasgupta A, Maharana SP. Assessment of self-care activities: A study among type 2 diabetic patients

- in a rural area of West Bengal. *Int J Med Sci Public Health* 2017;6:1173-8.
16. Kalusivalingam N, Bobhate P, Kalaivani A, Karnaboopathy R. Self-reported, self-care activities among type 2 diabetic patients in rural areas of Kancheepuram district, Tamil Nadu: A cross-sectional study. *Int J Community Med Public Health* 2020;7:484-90.
 17. Sarada V, Madhavi S, Madhavi DB. Knowledge and self-care practices among type-2 diabetics attending tertiary care hospital, Visakhapatnam City. *RGUHS Nat J Public Health* 2016;1:6-9.
 18. Gopichandran V, Lyndon S, Angel MK, Manayalil BP, Blessy KR, Alex RG, *et al.* Diabetes self-care activities: A community-based survey in urban southern India. *Natl Med J India* 2012;25:14-7.
 19. Raithatha SJ, Shankar SU, Dinesh K. Self-care practices among diabetic patients in Anand district of Gujarat. *ISRN Family Med* 2014;2014:743791. doi: 10.1155/2014/743791.
 20. Goyal N, Gupta SK. Self-care practices among known type 2 diabetic patients in Haldwani, India: A community based cross-sectional study. *Int J Community Med Public Health* 2019;6:1740-6.
 21. Dedefo MG, Ejeta BM, Wakjira GB, Mekonen GF, Labata BG. Self-care practices regarding diabetes among diabetic patients in West Ethiopia. *BMC Res Notes* 2019;12:212.
 22. Nejaddadgar N, Solhi M, Jegarghosheh S, Abolfathi M, Ashtarian H. Self-care and related factors in patients with type 2 diabetes. *Asian J Biomed Pharm Sci* 2017;7:6-10.