

Original Research Article

Assessment of self-care practises among patients with type 2 diabetes mellitus attending urban health training centre of a tertiary health care institute in Central India: a cross-sectional study

Anju George¹, Jyotsna Deshmukh¹, Parvati Nair^{1*}, Ebin Mathew²

¹Department of Community Medicine, Indira Gandhi Government Medical College, Nagpur, Maharashtra, India

²Medical officer, Ministry of Defence, Government of India

Received: 21 May 2025

Accepted: 11 August 2025

*Correspondence:

Dr. Parvati Nair,

E-mail: iparvatnr29@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Diabetes is a chronic, metabolic disease characterized by elevated levels of blood glucose. The most common is type-2 diabetes. Self-care is multidimensional and includes healthy diet, daily exercises, blood glucose monitoring, foot care and avoidance of smoking which have to be practiced in order to achieve an optimal glycemic control and avoid complications. Hence this study was conducted to assess self-care practices among type-2 diabetes patients.

Methods: A cross-sectional study was conducted among 100 known type 2 diabetes patients attending UHTC of a tertiary health care institute between January to April 2023 by interviewing them using structured-questionnaire assessing their self-care practices using summary of diabetes self-care activities (SDSCA) scale.

Results: Mean age of diabetic patients among study subjects was 61.52±9.9 years. 68% of the participants have poor self-care practices. A healthy eating plan on a daily basis was followed by 59% of the participants, daily exercises for 30 min were followed by 59%, and regular blood sugar monitoring was done by 80%. Regarding adherence to medications, 95% participants took recommended medicines on daily basis.

Conclusions: Self-care practices among diabetic patients were poor among 68% patients and there is a need for improving them across all assessed domains.

Keywords: Self-care practices, Summary diabetes self-care activities questionnaire, Type 2 diabetes

INTRODUCTION

Diabetes is a chronic, metabolic disease characterized by elevated levels of blood glucose (or blood sugar), which leads over time to serious damage to the heart, blood vessels, eyes, kidneys, and nerves. The most common is type 2 diabetes, usually in adults, which occurs when the body becomes resistant to insulin or doesn't make enough insulin. In the past 3 decades, the prevalence of type 2 diabetes has risen dramatically in countries of all income levels. For people living with diabetes, access to affordable treatment, including insulin, is critical to their survival. There is a globally agreed target to halt the rise in diabetes and obesity by 2025. About 422 million

people worldwide have diabetes, the majority living in low-and middle-income countries, and 1.5 million deaths are directly attributed to diabetes each year. Both the number of cases and the prevalence of diabetes have been steadily increasing over the past few decades.¹ In India, there are an estimated 77 million people above the age of 18 years suffering from diabetes (type 2) and nearly 25 million from prediabetics (at a higher risk of developing diabetes in near future). More than 50% of people are unaware of their diabetic status which leads to health complications if not detected and treated early.²

Effective diabetes management demands a multifaceted approach, of which self-care constitutes a fundamental

component. Self-care in diabetes encompasses a spectrum of activities individuals undertake to manage their condition, optimize health outcomes, and reduce the risk of complications. These activities include dietary modifications, regular physical activity, medication adherence, blood glucose monitoring, stress management, foot care, and regular medical evaluations.³ Because the vast majority of day-to-day care in diabetes is handled by patients and/or families, there is an important need for reliable and valid measures for self-management of diabetes. There are several essential self-care behaviours in people with diabetes that predict good outcomes. These are healthy eating, being physically active, monitoring blood sugar, adherence to medications, good problem-solving skills, healthy coping skills, and risk-reduction behaviors.⁴ Given the growing prevalence of diabetes and the critical role of self-care in managing the disease and preventing complications, it is essential to assess and strengthen self-care practices among individuals with diabetes. Hence this study aimed to assess the self-care practises among patients with type 2 diabetic mellitus.

METHODS

A cross-sectional study was conducted among type 2 diabetic patients aged 18 years and above at the urban health training centre of Indira Gandhi Government Medical College, Nagpur, from January to April 2023. Participants were included if they had a minimum of one-year disease duration and consented to participate. Pregnant women, newly diagnosed diabetic patients, and those declining participation were excluded. Informed consent was obtained from all participants.

Data collection

Data were collected through face-to-face interviews using a pre-tested structured questionnaire. This questionnaire included sociodemographic information and assessed self-care practices using the summary of diabetes self-care activities (SDSCA) scale. The SDSCA scale comprises six domains: diet, exercise, blood glucose monitoring, medication compliance, foot care, and smoking.

Although the SDSCA is a self-report instrument, in this study, the interviewer recorded responses for each item based on the number of days the participant engaged in a particular self-care activity during the previous week (on a scale of 0-7). Higher scores indicated better self-care practices. For participants who were sick during the previous week, data were collected for the preceding healthy week. More number of days reflected the better self-care practices and to allow for comparison in terms of percentages the given self-care activity was considered good if it was followed on most of days (≥ 5 days) in a week.

The number of items included for scoring in each domain was as follows: diet (4 items), exercise (2 items), blood glucose monitoring (3 items), medication compliance (1 item), foot care (4 items), and non-smoking behaviour (1 item). The total score for each domain was calculated by summing the responses for all items. For medication compliance and non-smoking behaviour, scores were either 0 or 7.

To obtain an overall self-care score, the total scores for each domain were added and divided by the total number of items, assigning equal weight to each domain. The final scores ranged from 0 to 7, with scores less than 5 considered indicative of poor self-care practices.⁵

Sample size estimation and data analysis

The sample size for this study was determined based on a previous study by Goyal et al which reported a 44% prevalence of good self-care practices among type 2 diabetics.⁵ Using a suitable sample size formula, $n = z^2 pq / e^2$, with a 10% absolute error and 95% confidence interval, a sample size of 95 was calculated, and a total of 100 patients were consecutively recruited. Data entry was performed using Microsoft Excel. Statistical analysis was conducted using SPSS Statistics version 20.0. Results were presented as proportions and percentages. Chi-square tests were employed to assess the association between various factors and their influence on self-care practices. A p value of less than 0.05 was considered statistically significant.

RESULTS

Table 1 shows the socio-demographic factors of the study participants. The majority (82%) of the participants were more than 50 years and females were 67%. Almost all the participants (89%) were married and belonged to a nuclear family (68%). About religion, participants following Hindu religion were 66% followed by Buddha (19%). Occupations of the respondents were varied like homemaker (35%) followed by retired (21%) and unemployed (15%). One-fourth (28%) of the respondents were educated up to high school. Three-fourths (74%) of the participants had no family history of diabetes while 86% had been living with the condition for less than 10 years. For 61% of the participants, the diagnosis of diabetes was made based on symptomatic presentation.

Table 2 illustrates the self-care practices of study participants. The majority (80%) of the participants tested blood sugar at least once in three months. Almost all the participants (95%) had adherence to oral hypoglycemic agents on most of the days of the week. However, fewer participants included fruits/vegetables (42%) in their diet, dried between toes (36%), examined feet (40%), or inspected shoes (31%). A very few (3%) smoked in the past seven days.

Table 1: Sociodemographic characteristics and some factors related to diabetes of the study participants.

Socio-demographic characteristics	Number	Socio-demographic characteristics	Number
Age (in years)		Occupation	
≤50	18	Professional	01
>50	82	Semi-professional	04
Gender		Skilled	11
Male	33	Semi-skilled	02
Female	67	Unskilled	11
Marital status		Retired	21
Married	89	Homemaker	35
Never married	01	Unemployed	15
Widow/widower	10	Education	
Type of family		Professional degree	06
Nuclear	68	Graduate	08
Three generation	16	Intermediate	14
Joint	16	High school	28
Religion		Middle school	13
Hindu	66	Primary school	10
Muslim	10	Illiterate	21
Buddha	19	Family history of diabetes	
Christian	01	Yes	26
Sikhs	04	No	74
Socio economic status*		Duration of illness	
Upper	04	≤10 years	86
Upper middle	16	>10 years	14
Lower middle	32	Mode of diagnosis	
Upper lower	37	Incidental	39
Lower	11	Symptomatic	61

*Modified Kuppuswamy scale

Table 2: Self-care practices of study participants.

Self-care component	Number (n=100)
Following healthy eating plan on most of the days of the week	59
Incorporating fruits/vegetables in the diet on most of the days of the week	42
Avoid consumption of high fat diet on most of the days of the week	47
At least 30 minutes of physical activity on a daily basis on most of the days of the week (example-walking)	59
Specific exercise sessions apart from the routine physical activity on a daily basis on most of the days of the week	52
Blood sugar testing at least once in 3 months	80
Adherence to oral hypoglycemic agents on most of the days of the week	95
Washing feet on most of the days of the week	57
Drying in between the toes on most of the days of the week	36
Examining feet on most of the days of the week	40
Inspecting the inner surface of shoes on most of the days of the week	31
Smoking (even one puff) in the past seven days	03

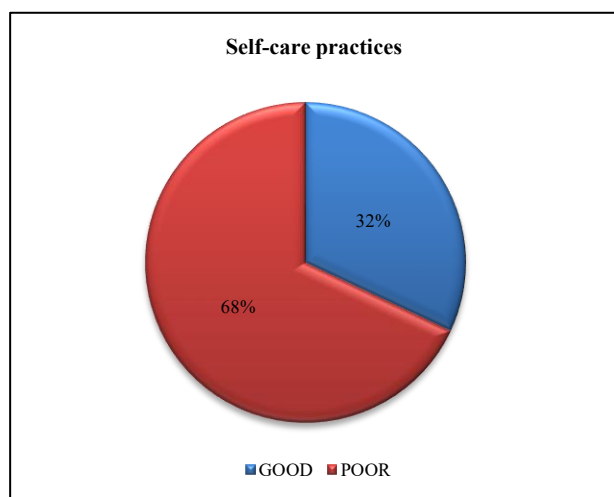
Figure 1 illustrates that 68% of the participants had poor self-care practices while 32% had good self-care practices.

Table 3 shows the association between various socio-demographic factors and self-care practices. Gender

($p=0.04$) and education ($p=0.013$) had a significant association with good self-care with males and literate individuals practiced better self-care. In contrast, other factors like age, occupation, duration of illness, and family history of diabetes showed no significant relationship with self-care behavior.

Table 3: Association of self-care practice with various factors of study participants.

Characteristics	Self-care practice		Total No. (%)	χ^2 , df, p value
	Good N (%)	Poor N (%)		
Age (years)				
≤50	04 (22.22)	14 (77.78)	18 (100)	0.964, 1, 0.326
>50	28 (34.15)	54 (65.85)	82 (100)	
Gender				
Male	15 (45.45)	18 (54.55)	33 (100)	4.097, 1, 0.04
Female	17 (25.37)	50 (74.63)	67 (100)	
Education				
Illiterate	02 (09.50)	19 (90.50)	21 (100)	6.17, 1, 0.013
Literate	30 (38.00)	49 (62.00)	79 (100)	
Occupation				
Employed	07 (24.14)	22 (75.86)	29 (100)	1.97, 3, 0.577
Unemployed	05 (33.33)	10 (66.67)	15 (100)	
Retired	09 (42.86)	12 (57.14)	21 (100)	
Homemaker	11 (31.43)	24 (68.57)	35 (100)	
Duration				
≤10 years	26 (30.23)	60 (69.77)	86 (100)	0.882, 1, 0.348
>10 years	06 (42.86)	08 (57.14)	14 (100)	
Family history of diabetes				
Yes	08 (30.77)	18 (69.23)	26 (100)	0.024, 1, 0.876
No	24 (32.43)	50 (67.57)	74 (100)	

**Figure 1: Self-care practice among study participants.**

DISCUSSION

The present study was undertaken to assess self-care practices among type 2 diabetes mellitus patients. Various studies have revealed that good self-care practices can prevent the complications in diabetic patients like cardiovascular disorders, nephropathy, neuropathy and retinopathy to a certain extent. With this background our study mainly focussed to assess self-care practices among type 2 diabetic patients using SDSCA scale.

Most of the participants in the current study were more than 50 years similar to the findings of Shah et al ⁹ and

Suguna et al.⁷ Self-care practices were poorer among 65.85% of patients aged more than 50 years but was not found to be significant which is in contrast to the findings of Goyal et al study wherein self-care practices were significantly poorer among younger generation.⁵

In the present study, 67% patients were females which is consistent to the findings of Dasappa et al and Selvaraj et al studies.^{8,10} Also, there was significant association between gender and self-care practices. On the contrary Veerakumar et al study showed no significant relation.¹²

Most of the patients were literate in our study as in various other Indian studies by Dinesh et al and Kartik et al.^{6,11} A significant association was observed between education and self-care practices similar to the findings of Goyal et al study.⁵ Education plays a major role in inculcating good self-care practices among individuals.

In this study, duration and family history of diabetes failed to show a significant association with self-care practices similar to the finding of Karthik et al.¹¹ Veerakumar et al found no significant association between self-care practices and occupation and family history of diabetes supporting our findings.¹²

Six domains were checked like diet, exercise, blood glucose monitoring, medication compliance, foot care and non-smoking behaviour according to SDSCA scale and overall, 68% patients were found to have poor self-care practices. Similar findings were observed in Goyal et al study with 43.45% patients with poor self-care practices.⁵

Many Indian studies were conducted with similar tool assessment.⁶⁻⁸

For an effective glycaemic control, patients often tend to follow a diet similar to their family's daily meals with the exclusion of fatty and sweet foods. In the present study, 42% of the participants had incorporated fruits or vegetables in the diet on most of days of the week similar to Chittoor et al study.¹³ At least 30 minutes of daily physical activity is necessary to attain glycaemic control by reducing insulin resistance. In the present study 59% of patients performed 30min of daily physical activity on most of days of the week. Many studies conducted in India support our findings.^{14,15}

Being affected by a life long illness like diabetes, individuals tends to underestimate the severity of the condition and often neglect their anti-diabetic medications in the long run. However, the findings from our study shows a promising shift, suggesting that individuals are becoming more informed and aware of their condition. More than three fourth of the patients tested blood sugar once in every three months in our study which was similar to study done by Maheshwari et al study.¹⁴ Very few patients gave history of smoking in the past one week in our study. Heterogenous findings could be observed in various Indian studies.^{5,14} This could be due to the unwillingness from the side of patients to reveal their personal habits like smoking.

There were certain limitations to the present study. Patients were purely assessed based on recall method and glycemic control was not evaluated. Our study was cross sectional and was purely hospital based and hence cannot be generalised.

CONCLUSION

Self-care practices among diabetic patients were found to be poor in 68% of the participants. Among the various domains assessed, foot care was the least practiced, primarily due to a lack of awareness. There is a clear need for improvement across all areas of self-care, which may be achieved through regular training sessions and behaviour change communication strategies. Emphasis should be placed on educating patients about the importance of self-care, especially since good self-care practices were found to be significantly associated with factors such as gender and education level.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. World Health Organization. Diabetes. Available from: <https://www.who.int/health-topics/diabetes>. Accessed on 14 February 2024.
2. Diabetes- India. Available from: <https://www.who.int/india/health-topics/mobile-technology-for-preventing-ncds>. Accessed on 14 February 2024.
3. American Diabetes Association. Standards of Medical Care in Diabetes- 2022. *Diabetes Care*. 2022;45(1):S1-253.
4. Shrivastava SR, Shrivastava PS, Ramasamy J. Role of self-care in management of diabetes mellitus. *J Diabetes Metab Disord*. 2013;12:14.
5. 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(4):1740.
6. 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 Fam Med Prim Care*. 2016;5:847-52.
7. Suguna A, Magal AS, Stany A, Sulekha T, Prethesh K. Evaluation of self-care practices among diabetic patients in a rural area of Bangalore district, India. *Int J Curr Res Acad Rev*. 2015;3(6):415-22.
8. Dasappa H, Prasad S, Sirisha M, Prasanna RSV, Naik S. Prevalence of self-care practices and assessment of their sociodemographic risk factors among diabetes in the urban slums of Bengaluru. *J Fam Med Prim Care*. 2017;6:218-21.
9. Shah VN, Kamdar PK, Shah N. Assessing the knowledge, attitudes and practice of type 2 diabetes among patients of Saurashtra region, Gujarat. *Int J Diabetes Dev Countries*. 2009;29:118-22.
10. Selvaraj K, Ramaswamy G, Radhakrishnan S, Thekkur P, Chinnakali P, Roy G. Self-care practices among diabetes patients registered in a chronic disease clinic in Puducherry, South India. *J Soc Health Diabetes*. 2016;4:25-9.
11. Karthik RC, Radhakrishnan A, Vikram A, Arumugam B, Jagadeesh S. Self-care practices among type II diabetics in rural area of Kancheepuram district, Tamil Nadu. *J Fam Med Prim Care*. 2020;9:2912-8.
12. Veerakumar AM, Shanmugapriya D, Shanmugapriya J, Soorya Narayanan B, Subashini S. Self-care Activities among diabetic patients in rural areas of Trichy District, Tamil Nadu. *Nat J Res Community Med*. 2017;6(2):120-3.
13. Chittoor CS, Ananda KG, Panati D, Chaudhuri S, Prahalad H. Self-care practices and its determinants among diabetic population in rural Andhra Pradesh, India: a cross-sectional study. *Clin Epidemiol Glob Health*. 2022;16:101102.
14. Uma Maheshwari R, Sowmiya KR, Kavin S. Self-care practices among type II diabetics attending primary health centre, Thiruvallur district, Tamil Nadu. *Int J Community Med Public Health*. 2017;4:2745-9.
15. 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(1):59-64.

Cite this article as: George A, Deshmukh J, Nair P, Mathew E. Assessment of self-care practises among patients with type 2 diabetes mellitus attending urban health training centre of a tertiary health care institute in Central India: a cross-sectional study. *Int J Community Med Public Health* 2025;12:3968-73.