

Research Article

Self Care Practices among Diabetic Patients in an Urban Tertiary Care Centre: A Hospital-based Observational Study

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A B S T R A C T

Background: Diabetes mellitus (DM) is a major global public health challenge, affecting over 69 million people in India. Despite its high burden, awareness, self-care, and treatment adherence remain suboptimal among Indian patients.

Objectives: To assess self-care practices and medication adherence among diabetic patients attending a tertiary care centre.

Methods: A hospital-based, cross-sectional observational study was conducted among 88 diabetic patients attending medical, surgical, and eye OPDs in a tertiary care center. Data were collected using a predesigned and pretested questionnaire that included assessments of self-care practices using the Summary of Diabetes Self-Care Activities (SDSCA) Measurement scale and a six-item medication adherence scale (Compliance Evaluation Test). Descriptive statistics were used for data analysis.

Results: Among 88 participants, 56.8% were females, and 68% were aged 50–70 years. One-third belonged to the lower-middle socio-economic class. Overweight (62.9%) and central obesity (65%) were common. Nearly 31% had a family history of diabetes. Common complications included eye (73.9%) and cardiovascular (54.5%) involvement. Only 11.4% reported satisfactory medication adherence, while forgetfulness (60.2%) and pill burden (45.5%) were frequent causes of poor adherence. Although 89.8% attended regular follow-ups, self-care practices like glucose monitoring (35.2%) and foot care (46.6%) were inadequate.

Conclusion: The study highlights poor self-care and low adherence to medication among diabetic patients, despite regular clinic visits. Strengthening patient-centred education, dietary counselling, and adherence monitoring are crucial for improving outcomes.

Keywords: Diabetes Mellitus, Adherence, Self-care, Risk Factors, Cross-sectional Study, India

Introduction

Diabetes mellitus represents a spectrum of metabolic disorders characterised by chronic hyperglycaemia resulting from defects in insulin secretion, insulin action, or both.¹ The World Health Organization (WHO) estimates that globally, high blood glucose is the third highest risk factor for premature mortality, after high blood pressure and tobacco use.² India is home to 69.2 million people with diabetes—nearly 15 per-cent of the global disease burden; and this number is predicted to rise to almost 123.5 million by 2040, by which every fifth diabetic subject in the world would be an Indian.² Diabetes is an iceberg disease. Prevalence of prediabetes constituting impaired fasting glucose (IFG) and impaired glucose tolerance (IGT) is also high in all parts of India¹. Due to the asymptomatic nature of disease and also due to the low disease awareness among the population, diagnosis of the disease is delayed by several years. Self-Care is an important part of Diabetes management. It enables diabetics to assume responsibility and be an active partner in disease management along with healthcare professionals.³ Self care components include blood glucose monitoring, foot-care, personal hygiene, healthy lifestyle/diet or physical activity, identifying targets for control, recognition of symptoms associated with glycosuria and hypoglycaemia, attending periodic check-ups.

Adherence to medication is a key contributor to diabetes treatment outcome. Inadequate adherence compromises safety and treatment effectiveness, leading to complications affecting various parts of the body like cardiovascular, renal, neurological, ocular and others such as intercurrent infections, which are a major cause of disability, reduced quality of life and premature death.¹ This study aims to describe the clinico-epidemiological characteristics of diabetic patients in a tertiary care hospital and, assess their treatment adherence and self-care practices.

Methods

This hospital-based, cross-sectional descriptive study, conducted among diabetic patients attending medicine, surgery and eye OPD, spanned over one month, at a tertiary care hospital (ESIC PGMSR, Joka) in Eastern India. Patients who aged 18 and above, had received a diagnosis of type 2 diabetes mellitus (T2DM) for at least one year were part of the study. A predesigned and pretested questionnaire was used to get patient's socio-demographic and clinical profiles. It also included a six item medication adherence questionnaire (Compliance Evaluation Test) by Girerd et al.,⁴ and revised version of Summary of Diabetes Self-Care Activities (SDSCA) Measurement scale.⁵ The "≥5 days/week" criterion is used for SDSCA scoring, representing adequate adherence. Complete Evaluation Test is a questionnaire with 6 questions previously validated to assess factors that could affect medication compliance. We defined good

adherence when "No" was answered to the 6 items, as medium adherence when 1- 2 "Yes" were answered, and as poor adherence when 3 or more "Yes" were answered. SDSCA is a brief 11 item questionnaire consisting of two items each of general diet, specific diet, physical activity, blood glucose testing, foot care, and one item for smoking measuring the number of days of the previous 7 days during which the patient has reported adequate adherence to self-care activities. For all items except smoking, the frequency of respondents was calculated with regard to number of days per week they practised self-care activities on a scale of 0–7. The scoring and analysis was performed according to details provided along with SDSCA questionnaire by the authors.⁵ Mean scores were calculated for each of the following five items.

The final sixth item pertained to smoking; it was dichotomized into smokers and non smokers and a score of 0 for non-smokers and 1 for smokers was given. Asians develop metabolic risks at lower levels of obesity; hence, waist circumference of ≥ 90 cm in men and ≥ 80 cm in women indicates increased health risk due to abdominal fat accumulation.⁶ Body Mass Index (BMI) was calculated as weight in kilograms divided by the square of height in meters (kg/m²) and categorised as per the WHO Asia-Pacific classification.⁷ Face to face interviews were conducted along with their general physical measurements and scrutiny of health records by medical undergraduates of phase 3.1 during their research methodology postings in Community Medicine. Ethical approval was sought from the institute where the study was conducted. Informed written consent was obtained from the study participants before conducting the study. Data were entered in MS Excel and analysed using descriptive statistics (frequency and percentage).

Results

Among 88 participants, 56.8% were female and 68% were aged 50–70 years. Most (92%) were Hindu and 80.7% resided in urban areas. Only 17.2% had higher secondary education or above, while 22.7% were illiterate. Males were mainly employed (41%), and 96% of females were homemakers. Socioeconomic distribution showed one-third in the lower-middle class (33%) and 6.8% in the lower class. Nearly 65% had increased waist circumference, and 62.9% were overweight. Increased waist circumference was seen in 65% of the study participants. A family history of diabetes was reported by 31%. Common symptoms included fatigue (22.8%), polyuria (22%), and polydipsia (12.3%). Hypertension was prevalent in 25.4%. Regarding management, 68% were on oral antidiabetic drugs, 29% on combination therapy, and 3% on insulin alone. Eye (73.9%) and cardiovascular (54.5%) complications were predominant, followed by CNS and respiratory complications (22.7% each). Kidney involvement was seen in 5.7% and diabetic foot in 3.4%.

Table 1. Self-Care practices among the study subjects (based on the revised SDSCA scale)

Domain	Self-care activity (past 7 days)	Mean $\pm$ SD	% of participants performing activity ≥ 5 Days/Week
Diet	Followed a healthful eating plan	3.6 $\pm$ 2.4	38 (43.2%)
	Eat five or more servings of fruits and vegetables in a day	4.4 $\pm$ 2.0	47 (53.4%)
	Eat high fat foods such as red meat or full-fat dairy products	4.8 $\pm$ 2.1	52 (59.1%)
Physical Activity	Practised ≥ 30 min of activity per day	3.1 $\pm$ 2.2	29 (32.9%)
	Participated in specific exercise session	3.5 $\pm$ 2.3	35 (39.8%)
Monitoring Blood Sugar	Tested blood sugar	2.9 $\pm$ 2.4	31 (35.2%)
Foot Care	Checked your feet	3.7 $\pm$ 2.3	41 (46.6%)
	Inspected inside of your shoes	3.0 $\pm$ 2.0	28 (31.8%)
Smoking*	Smoked a cigarette—even one puff	6.1 $\pm$ 1.5	61 (69.3%)

*Among the smokers (smoked a cigarette even one puff during the past seven days), Mean $\pm$ SD represents no. of cigarettes smoked on an average day.

Self-care practices showed 43.2% were following a healthful eating plan for ≥ 5 days in a week. However, 60% of participants were having high fat foods for ≥ 5 days in a week (mean 4.8 $\pm$ 2.1 days/week). Participants practised at least 30 minutes of physical activity on 3.1 $\pm$ 2.2 days/week. Only 35.2% reported monitoring blood glucose on ≥ 5 days in a week. About 46.6% of patients checked their feet ≥ 5 days in a week (3.7 $\pm$ 2.3 days/week). Around 70% had smoked during the past seven days and no. of cigarettes smoked by smokers on an average day was 6.1 $\pm$ 1.5.

Good adherence was seen in only 11.4% whereas 30.6% reported poor adherence. Common reasons for poor adherence were forgetfulness (60.2%), late intake of medication (55.7%), running out of medicine (51.1%), feeling that there is too much medication to take, pill burden (45.5%), not taking medicines if feeling better (27.3%), belief that the treatment causes more harm than good (14.8%).

Table 2. Medication adherence among the study participants (based on Compliance evaluation test)

Adherence Status	Number	Percentage
Good	10	11.4
Medium	51	58.0
Poor	27	30.6

Discussion

Selfcare practices among diabetics are a secondary level of prevention and are mostly behavioural interventions. The current study reported 43.2% of dietary compliance which was lower as compared to that reported by Chaudhuri S et al in their systematic review and meta analysis (51%).⁸ 59.1% of participants consumed high-fat foods (red meat, full-fat dairy) ≥ 5 days/week (mean 4.8 $\pm$ 2.1 days/week), which directly contradicts diabetes dietary recommendations. The presence of 62.9% overweight individuals and 65% with central obesity further validates the impact of poor dietary choices. This pattern may reflect cultural food preferences in Eastern India, economic constraints limiting access to fresh produce, or inadequate dietary counselling during clinic visits. Similarly physical activity >30 minutes per day for 5 days a week was reported by 32.9% and was lower than the pooled prevalence of 41% as reported by Chaudhuri et al.⁸ Diet and physical activity complement each other in a culturally diverse country like India. The study is being conducted in eastern part of country hence the season when study was conducted is important to note with the change of dietary practices and physical activity with festivals. With 96% of female participants being homemakers and 68% of the total cohort aged 50-70 years, factors such as household responsibilities, age-related mobility limitations, and cultural norms regarding women's outdoor activities may contribute to sedentary lifestyles. The presence of cardiovascular complications in 54.5% may also limit exercise capacity, creating a vicious cycle. Only 35.2% of participants monitored blood glucose ≥ 5

days/week (mean 2.9 ± 2.4 days/week), which is significantly lower than optimal recommendations. This is concerning given that regular glucose monitoring is essential for treatment adjustment and preventing complications. The pooled prevalence from Chaudhuri et al.'s meta-analysis reported 60% monitoring practices.⁸ This low adherence in the current study may be attributed to factors such as the cost of glucometers and test strips, lack of awareness about the importance of self-monitoring, or pain/discomfort associated with finger-prick testing. Given that 68% were on oral antidiabetic drugs alone, some patients may perceive less need for frequent monitoring compared to insulin users.

Good and medium medication adherence was found to be 69.4%. The pooled prevalence from systematic review was 71%.⁸ This was much lower as compared to that reported by Gupta et al., in their community based study from Bhopal (80.9%) and CS et al., from urban Mumbai (77.14%).^{9,10} Adherence to treatment is one of the cornerstones of self care which is needed at patient and family level both. Majority being in age group 50-70 years attending the hospital also with one or more complications shows adherence may have increased with emergence of complications. The high prevalence of "pill burden" (45.5%) as a barrier is particularly relevant given that 29% were on combination therapy. Late intake of medication (55.7%) and running out of medicine (51.1%) point to practical barriers that could be addressed through better pharmacy systems and patient education.

Foot care was reported among 46.6% for more than 5 days a week, which was only component which was higher than other studies conducted in urban India (5.97% in Bhopal and 11.43% in Mumbai).^{10, 11} This is particularly significant given that 3.4% already had diabetic foot complications. However, the gap between foot checking and shoe inspection indicates incomplete understanding of preventive foot care practices.

The finding that 69.3% had smoked during the past seven days, with smokers consuming an average of 6.1 ± 1.5 cigarettes daily, is alarming. This represents a major modifiable risk factor that significantly increases the risk of cardiovascular and microvascular complications. The high smoking rate may reflect inadequate smoking cessation counselling during diabetes care visits or indicates that smoking cessation has not been prioritised as part of diabetes management protocols at the facility. This was higher than other similar studies reported from Gujarat (27.2% tobacco users) and Mumbai (10.8% smokers).^{10, 12} With 22.7% being illiterate and only 17.2% having higher secondary education or above, health literacy likely plays a significant role in poor self-care practices. The concentration in lower-middle (33%) and lower (6.8%) socioeconomic

classes may limit access to nutritious foods, glucometers, and transportation for regular follow-ups. These structural barriers require systemic interventions beyond individual patient education. The use of validated tools like SDSCA and the compliance Evaluation Test in this study demonstrates feasibility for regular assessment of self-care and adherence in clinical settings, which could guide targeted interventions. However cross sectional hospital based analysis remains a limitation of the study.

Conclusion

This study reveals a critical gap between healthcare access and diabetes self-management among 88 tertiary care patients. Despite 89.8% clinic attendance, self-care practices remain poor: only 11.4% showed satisfactory medication adherence, while blood glucose monitoring (35.2%), physical activity (32.9%), and dietary compliance (43.2%) were inadequate. High complication rates, eye (73.9%) and cardiovascular (54.5%) reflect consequences of suboptimal self-care. Key barriers included forgetfulness (60.2%), pill burden (45.5%), and socioeconomic constraints. Structured patient-centred diabetes self-management education, culturally tailored counselling, medication reminder systems, and enhanced adherence monitoring integrated into routine care are essential to improve outcomes and reduce preventable complications in India's diabetic population.

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