INDIAN ASSOCIATION OF EPIDEMIOLOGISTS

Epidemiology International
Volume 11, Issue 1 - 2026, Pg. No. 1-7
Peer Reviewed & Open Access Journal

Research Article

Self Care Practices and Glycemic Control Among Patients with Diabetes Mellitus Type-II Attending NCD Clinic of a Secondary Care Hospital

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DOI: https://doi.org/10.24321/2455.7048.202507

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How to cite this article:
Kaur R, Chaudhary K, Singh T, Self Care Practices and Glycemic Control Among Patients with Diabetes Mellitus Type-II Attending NCD Clinic of a Secondary Care Hospital.Epidem Int. 2026;11(1):1-7.

Date of Submission: 2025-10-10
Date of Acceptance: 2025-12-17

A B S T R A C T

Introduction: Diabetes mellitus is a major public health problem in India. Complications from diabetes result in increasing disability, reduced life expectancy, and enormous health costs. Self-care practices in diabetes are crucial in the control of diabetes and prevention of complications. This study was conducted to assess the anthropometric and biochemical profile of patients with diabetes, their glycemic control, and self-care practices.

Methods: In this cross-sectional study, 115 patients aged >18 years with diabetes were included. Self-care practices were assessed using a Hindi translation of the revised Summary of Diabetes Self-Care Activities (SDSCA) to assess practices related to diet, physical activity, blood glucose monitoring, foot care, and smoking over the preceding seven days. Anthropometry, fasting blood glucose, lipid profile and HbA1c were recorded. Satisfactory self-care was defined as SDSCA domain scores ≥5; glycemic control was defined as FBS <110 mg/dL or RBS <140 mg/dL, and HbA1c ≤7%.

Results: Participants had high rates of overweight and obesity (63.6%), and abnormal waist–hip ratios. Nearly 53% had comorbidities, most commonly hypertension. Biochemically, 96.4% had uncontrolled FBS and only 11.7% had HbA1c ≤7%. Satisfactory self-care was low across domains: general diet (9.5%), specific diet (23.8%), foot care (1.6%), medication adherence (46.1%) and exercise (47.6%), while 79.4% reported regular blood glucose monitoring

Conclusion: Self-care practices were inadequate and glycemic control poor among patients attending a secondary-care NCD clinic.

Keywords: Diabetes mellitus, Self-care practices, Diabetes complications, Glycemic control, Rural

Introduction

The World Health Organization defines diabetes as a metabolic disorder of multiple etiologies characterized by chronic hyperglycemia with disturbances of carbohydrate, fat and protein metabolism that results from defects in insulin secretion, insulin action or both.[3] Diabetes is now one of the most common non-communicable diseases globally. It is fifth leading cause of death in most developed countries and there is substantial evidence that it is epidemic in many developing and newly industrialized nations.[4]

Complications from diabetes such as coronary artery and peripheral vascular disease, stroke, diabetic neuropathy, amputations, renal failure and blindness are resulting in increasing disability, reduced life expectancy and enormous health costs for every society.[4] Self-care practices in diabetes are crucial in keeping the illness under control. Poor self care practices among diabetic patients are some of important variables influencing the progression of diabetes and its complications which are largely preventable.[5] Poor patient understanding of diabetes is believed to delay appropriate self-care management, thus accelerating cardiovascular complications, stroke and kidney failure.[6]

It has been demonstrated that people with type 2 diabetes have significantly lower productivity and participation rates. The costs for type 2 diabetes have been rising over recent years.[7] Diabetic self-management is among the most difficult of all chronic illness self management regimens. To effectively self manage diabetes; those with the disease must identify symptoms of emerging health crises, adhere to often complex medication schedule and modify long standing lifestyle behaviours such as their diet and physical activity levels.[8] The present study was planned to assess self care practices and glycemic control amongst patients with type II diabetes.

Objectives

To determine the activities of self-care among individuals with diabetes mellitus attending NCD clinic at CRHSP Ballabgarh and to determine the glycaemic control among individuals with diabetes mellitus attending NCD clinic at CRHSP Ballabgarh.

Methodology

Study design and Site

It was a cross-sectional study conducted among diabetic patients to identify the self-care activities.

The present study was conducted at Sub-District Hospital, (SDH) under the Comprehensive Rural Health Services Project (CRHSP) Ballabgarh. The CRHSP Ballabgarh was initiated to stand as a model for providing comprehensive services to the patients at primary level. It has one SDH and two Primary Health Centers under it, which cater to a population of approximately 1 lakh and has an Intensive field practice area of 28 villages divided under the two PHCs. Other relevant details are provided elsewhere.[9] In the Sdh, there are Specialty Opds on a Daily Basis Where Departments Such as Medicine, Surgery, Obstetrics and Gynaecology, Pediatrics, Ophthalmology, Etc. Provide Services. Along with these there is Ncd Clinic, Ante-Natal Clinic, and Nutrition Clinic which Provide Respective Services to the Patients. In the Current Study the Individuals Visiting Ncd Clinic at Sdh Ballabgarh were Recruited by Consecutive Sampling.

Sample size calculations were based on the study by Selvaraj K, taking the proportion of indivuals with adequate physical activity (50.6%).[10] An absolute precision of 10% was taken and a non-responder rate of 10% was included. A sample size of 121 was finally calculated.

Glycemic Control was defined as the FBS less than 110 mg/dl or RBS less than 140 mg/dl. Inadequate glycemic control was indicated when the parameters were beyond the criteria of adequate glycemic control.

All the newly diagnosed patients (Within one year) of type 2 diabetes with age more than 18 were included in the study. Individuals who were having conditions limiting their participations and severe disease were not included. For assessing self-care practices, the revised Summary Diabetes Self- Care Activities Questionnaire (SDSCA) was used.[11] The SDSCA questionnaire was translated in Hindi for use in this study. The questionnaire has been used previously in community-based surveys in India.[12] The revised SDSCA consists of five components (Diet, Exercise, Blood Sugar Testing, Foot care and Smoking). Under each component, the study participants were asked to respond about their self care practices in last seven days on an ordinal scale of 0-7.[13]

Prior to the onset of the study the Hindi translated questionnaire were pre-tested among a small group of patients with diabetes. We also collected information about socio-demographic characteristics of the participants such as age, gender, marital status, Religion, Education status and Co-existing diseases. Written consent was obtained from each participant after explaining the study in brief. A baseline clinical examination of the patients was conducted and the following and biochemical measurements were taken by the trained staff: Height, Weight, Waist Circumference was measured; Blood Pressure; Blood samples were collected under aseptic conditions and and tested for fasting Blood Glucose, Glycosylated Hb (HbA1C) and lipid profile.

Ethical Considerations

Ethical approval was obtained from the institute ethics committee (IEC) for the conduct of the study. Participants were informed about the relevant study details and a written consent was obtained.

Data Analysis

Statistical software SPSS (version17) was used for the analysis of data. Results were expressed in frequency, percentages and mean (±SD) values for the baseline characteristics.

Results

Out of the total 115 participants, 69 (60%) participants were women, while 46 (40%) were men. The mean age of the participants was 50.7± 12.1 years with 30.4% participants in the age group of 51-60 years. Most (92.2%) participants were Hindu by religion and 41.8% were illiterate. Out of all the female participants 82.6% were homemakers. Almost half of the patients were diagnosed with diabetes within the last six months. (Table 1) It was found that almost half (53%) of the participants had other existing co-morbidities along with diabetes such as hypertension (59%) and respiratory diseases (6%) such as COPD, Asthma. (Table 2)

*Others included skin conditions (skin allergy, itching, psoriasis) Osteoarthritis, Hypothyroidism, Cataract, Breast cancer, Hearing impairment, Piles, Benign Prostatic Hyperplasia, Chronic sinusitis.

Majority (63.6%) of the participants had an abnormal Body Mass Index (BMI) where more than 40% of the patients were overweight and 22.7% of the patients were obese. Most of the women (91.1%) had abnormal waist-hip ratio and majority (88.6%) of the men also had abnormal waist-hip ratio. (Table 3)

In biochemical assessment fasting blood glucose (FBS) was uncontrolled (>110 mg) among majority (96.4%), of participants. Lipid profile, total cholesterol, HDL (high density lipoprotein), and LDL (low density lipoprotein) were normal among majority of the participants. However, triglycerides were abnormal in more than half (56.3%) of the participants. Only twelve (11.7%) of the participants had HbA1C less than or equal to 7, while most of them (88.4%) had HbA1C more than 7. (Table 4)

For almost all the domains of self-care, majority of the participants had an unsatisfactory score on the SDSCA scale with the poorest being foot care (98.4%) followed by general diet (90.5%). Physical exercise was found to be satisfactory among 47.6% of the participants while almost 80% were regularly testing their blood glucose levels. (Table 5)

Table 1.Socio-demographic characteristics of the study participants

S. No.	Variable	Categories	Frequency (N=115)	Percentage
1	Age (years)	<30	6	5.22
		31-40	21	18.26
		41-50	30	26.09
		51-60	35	30.43
		>60	23	20.00
2.	Gender	Male	46	40.00
		Female	69	60.00
3.	Religion	Hindu	106	92.17
		Muslim	9	7.83
4.	Occupation	Skilled	57	49.56
		Unskilled	30	26.08
		Not working	12	10.43
		Homemaker	16	13.91
5.	Educational status	Literate	67	58.26
		Illiterate	48	41.79
6.	Duration since diagnosis	On the same day	29	25.21
		Less than one month	10	8.69
		1-6 months	55	47.82
		7-12 months	21	18.26
7.	Family H/o DM	Yes	25	21.74
		No	90	78.26
8.	Any other chronic disease	Yes	61	53.04
		No	54	46.96

Table 2.Co-existing diseases among the study participants.

Disease	Frequency (N=61)	Percentage
Hypertension	36	59.01
Heart Disease	4	3.47
Respiratory disease	7	6.08
Others*	14	12.17

*Others included skin conditions (skin allergy, itching, psoriasis) Osteoarthritis, Hypothyroidism, Cataract, Breast cancer, Hearing impairment, Piles, Benign Prostatic Hyperplasia, Chronic sinusitis.

Table 3.Anthropometric measurements of the study participants

Variable		Categories	Frequency (N=115)	Percentage
BMI (N=110)		<18.5 (under-weight)	6	5.45
		18.5-24.9 (Normal)	34	30.91
		25-29.9 (Over weight)	45	40.91
		30 and above (Obese)	25	22.73
Waist:hip ratio (N=112)	Male	Normal (≤0.9)	5	11.36
		Abnormal (>0.9)	39	88.63
	Female	Normal (≤0.85)	6	8.82
		Abnormal (>0.85)	62	91.18

Table 4.Biochemical Profile of the study participants

Biochemical variable	Categories	Frequency (%) N=103
Fasting Blood Sugar (n=112)	Controlled (60-110mg/dl)	4 (3.57)
	Uncontrolled (>110 mg/dl)	108 (96.43)
Total Cholesterol (n=103)	Normal (≤200 mg/dl)	96 (93.20)
	Abnormal (>200 mg/dl)	7 (6.80)
High Density Lipoprotein (n=103)	Normal (>40 mg/dl)	80 (77.67)
	Abnormal (<40 mg/dl)	23 (22.33)
Low Density Lipoprotein (n=103)	Normal (≤100 mg/dl)	85 (82.52)
	Abnormal (>100 mg/dl)	18 (17.48)
Triglycerides (n=103)	Normal (≤150 mg/dl)	45 (43.68)
	Abnormal (>150 mg/dl)	58 (56.31)
HbA1c (n=103)	≤ 7 %	12 (11.65)
	7.1-10 %	47 (45.64)
	10.1-15 %	41 (39.80)
	>15.1 %	3 (2.91)

Table 5.Self-care practices among the study participants *n=63

Self-care practices		Satisfactory (%) (Score 5 and above)	Not satisfactory (%) (Score below 5)
Diet	General diet	6 (9.52)	57 (90.48)
	Specific diet	15 (23.80)	48 (76.20)
Physical Exercise		30 (47.62)	33 (52.38)

Blood glucose testing (Once in a week)	50 (79.36)	13 (20.64)
Adherence to medication	29 (46.1)	34 (53.9)
Foot care	1 (1.59)	62 (98.41)

*Participants who were diagnosed for more than one month and gave complete information about all domains were included in the analysis

Discussion

This study aimed to find the self-care practices among individuals with diabetes in a rural Indian setting and it found that there is very less proportion of individuals who are practicing self-care for a chronic illness like diabetes such as consuming diet according to the requirements in diabetes mellitus, doing physical exercises, testing blood glucose, consuming medications timely and regularly, and foot care.

Self-care has been proven to be effective in reducing the complications due to diabetes, achieving glycemic control and improving the quality of life in different studies.[14,15] Its use has also been proven to be cost-effective from both societal and health system perspectives in diabetes.[16,17] Also, these interventions are easier to practice which could have long term benefits for the patients for both prevention and management of the complications and the disease, respectively.[18]

Glycemic control was found to be present only in four percent of the participants while majority did not have controlled FBS levels, while 11% had HbA1c levels less than 7%. This is slightly poor than the findings reported in other studies.[19] The lipid profile control levels were almost similar have been found in other studies as well.[19–21] The difference in glycemic control levels could be due to the fact that majority of the participants in our study have been diagnosed with diabetes in the last six months, and a limited sample where half of the participants had other co-existing chronic diseases such as hypertension, cardiovascular diseases, etc. which leads to increased pill burden and reduced compliance.[22]

In this study we found overall very less prevalence of selfcare practices among diabetic individuals, with the lowest being foot care and dietary modifications. Similar findings have been reported in others Indian studies as well, done by Jyotsana J et al,[23] and Chinnapan J et al,[24] where the findings reflect poor self-care practices among the diabetic patients. Other studies have also reported similar results except differences in some domains.[25,26] However, the study done by Thodika A et al reports higher scores in various domains of the SDSCA scale, which can be due to the different setting where that study has been conducted, i.e., tertiary care setting, while our study was conducted in a secondary level hospital with most patients belonging to rural areas.[27]

This study found good blood glucose monitoring practices among the diabetic individuals among a majority of the participants, i.e., 79.4% of the participants had satisfactory scores for regular blood glucose monitoring. Similar results were reported by Gopichandran et al,[28] where foot care has more participants with inadequate scores than other domains, which could be due to the fact that a lot of emphasis is given on foot care practices in diabetes and patients are more aware about foot ulcer as a complication but despite these facts they are unable to follow it.[29]

There are various factors which could be associated with poor self-care practices among diabetic individuals such as younger age group, existing comorbidities such as hypertension, and deranged lipid profile which were also present in our study.[30] However, this study did not aim to identify the factors associated with self-care practices.

This study had some limitations such as the limited sample from rural community which makes it less generalizable to the urban populations, and a secondary care setting which could lead to differences with studies done in tertiary level hospitals. However, in community-based studies there might be individuals who are unable to visit hospitals and have differing outcomes depending on their awareness and access to the services.

Conclusion and Recommendations

It is evident that the status of self-care practices among individuals with diabetes is very poor despite having a lot of benefits. These practices should be emphasized more among the patients with a guide to help them carry out the activities to help them out as most of the activities require no to very less financial inputs.

Conflict of Interest : None

Source of Funding : The study was supported by the Intramural Research Grant sanctioned to the corresponding author

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