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A Study To Assess The Effectiveness Of Structured Teaching Programme On Self Care Management Among Patients With Uncontrolled Diabetes Mellitus

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Abstract
Rising rates of uncontrolled diabetes mellitus highlight the urgent need for effective patient education strategies that strengthen self-care practices and prevent complications. Structured teaching interventions have emerged as a practical approach for enhancing patient knowledge, particularly in settings where awareness levels remain low. The present investigation evaluated the effectiveness of a structured teaching programme on self-care management among adults with uncontrolled diabetes attending the Endocrinology Outpatient Department of NRI General Hospital, Chinakakani, Guntur District, Andhra Pradesh. Employing a pre-experimental onegroup pretest–posttest design, the study included 60 participants aged 31 years and above, selected through non-probability convenient sampling. Data were gathered using a structured questionnaire that assessed sociodemographic characteristics, general diabetes-related information, and knowledge across 45 self-care items. Following the pretest, participants received a structured teaching programme that addressed diet, physical activity, medication adherence, healthcare follow-up, lifestyle modifications, and management of complications through visual and interactive teaching aids. A posttest administered after 15 days demonstrated a substantial improvement in knowledge, with adequate knowledge increasing from 0% in the pretest to 61.6% in the posttest. Mean knowledge scores rose from 18.8±11.45 to 37.8±7.24, and the paired t-test ($t=3.465$, $p<0.05$) confirmed statistically significant improvement. Chi-square analysis showed meaningful associations between posttest knowledge and age, gender, and education. The findings affirm the value of structured teaching programmes in strengthening diabetes self-care knowledge and support their integration into routine outpatient services.

Keywords: Diabetes mellitus, uncontrolled diabetes, self-care, structured teaching programme, patient education.

1. Introduction

Diabetes mellitus is a long-lasting metabolic syndrome caused by the malfunction of insulin secretion or its impact on the body, which leads to the uncontrolled hyperglycemia, which negatively impacts the functioning of multiple organs and the body as a whole. Without insulin, glucose, which is the main source of energy of the body, cannot penetrate into the cells and the glucose builds up in the blood creating the clinical disorder of diabetes mellitus. Uncontrolled diabetes, which is the condition of continuously high levels of glucose, is the gradual destruction of the heart, kidneys, nerves, gums, and skin, finally leading to neuropathy, nephropathy, retinopathy, cardiovascular disease, infections, and fatal metabolic crises. Currently, diabetes is on the increase all over the world, and more individuals are moving to uncontrolled phases because of poor compliance, and the absence of awareness, stress, and failure to change the lifestyles and lack of access to systematic education about the disease management (American Diabetes Association, 2022). Pharmacological therapy is very

crucial, but the management of diabetes in the long term is greatly reliant on non-pharmacological management, particularly self-care management.

Self-management involves frequent blood sugar levels, diet, exercise and drugs, avoidance of complications and lifestyle change. Appropriate self-management enhances the symptoms, maximizes health, and the implications of diabetes on everyday functioning. It has been demonstrated that well-organized diabetes selfmanagement and education programmes can be used to a great extent to improve patient self-management of diabetes and decrease its complications, particularly within resource-constrained environments (Lamptey et al., 2022). Self-management programmes with digital and smartphones capabilities have also proven to have higher patient engagement, and continuity of support (Boels et al., 2018). Moreover, patient-centered and telehealth educational strategies are also considered effective to enhance behavioral and clinical outcomes of diabetes patients (Shiferaw et al., 2021).

The number of persons affected by diabetes is increasing drastically and India has one of the highest diabetes burdens. A large percentage of the patients exhibit unmanaged diabetes, which is explained by the influences of changing lifestyle, urbanization, sedentary lifestyle, stress, lack of knowledge, and financial limitations. The findings of the researcher in the endocrinology outpatient department also demonstrated that there existed considerable gaps in knowledge regarding self-care in patients with uncontrolled diabetes. Poor inclination of diet/exercise, medication, foot management, post-discharge follow-up, and complication prevention lead to unstable blood glucose and poor health. These divides underscore the necessity of organized educational interventions that would be able to enhance the awareness of patients and facilitate the positive behavioral change. The structured and long-term education is also the important aspect of diabetes care supported by international and regional evidence, showing the improvement of health behaviors and confidence, as well as disease management outcomes (Coppell et al., 2022). The role of lifestyle guidance and continuous support, as well as communication between a patient and a healthcare provider, is also highlighted as an essential factor in diabetes self-care (Fong, 2021).

The current study is inspired by these observations whereby it aims at enhancing patient education towards self-management of diabetes mellitus. Organized teaching regimes are meant to boost the knowledge on key elements related to diet, physical activity, medication adherence, health monitoring, complications management, and lifestyle change. Guided instruction instills patients with practical information in structured programmes that can enhance personal responsibility, normalcy of daily functioning, minimise complications and empower long-term health outcomes. Considering the increased cases of uncontrolled diabetes and its complications, the concept of structured teaching is of particular importance in hospitals and community-based settings, where patients need constant guidance to attain successful glycemic control. The study therefore aims to address existing knowledge deficits and strengthen self-care practices among patients attending a selected hospital in Chinakakani, Guntur District. The Objectives of this study are:

- To assess the existing knowledge regarding self-care management of diabetes mellitus among patients with uncontrolled diabetes mellitus.
- To plan and implement a structured teaching programme on self-care management of diabetes mellitus among patients with uncontrolled diabetes mellitus.
- To evaluate the effectiveness of the structured teaching programme on self-care management of diabetes mellitus among patients with uncontrolled diabetes mellitus.
- To determine the association between pre-test and post-test knowledge scores on self-care management among patients with uncontrolled diabetes mellitus with selected variables.

The study is significant because enhancing patient awareness through structured education is a practical, costeffective, and essential strategy for improving diabetic control, reducing complications, and enhancing quality of life. For nursing practice, the findings emphasize the necessity of integrating patient education as a routine component of outpatient and inpatient diabetic care. For families and communities, increased knowledge fosters healthier behaviors and reduces the long-term burden of diabetes on individuals and the healthcare system. Structured teaching therefore represents a critical tool in addressing the growing challenge of uncontrolled diabetes mellitus.

2. Review of literature

A cross-sectional study with a sample of 1,982 community members in Kenya found that the majority of the participants had poor knowledge of diabetes with 71 and 59 per cent of them showing poor knowledge of diabetes symptoms and preventive measures, respectively and the self-care practices reported poor self care practices including poor diet, physical inactivity and lack of regular weight checks. The same results were observed in researches carried out in the Saurastra region of Gujarat and in Malaysia, where most of the

respondents showed a lack of awareness regarding diabetes and poor compliance to the recommended lifestyle behaviors. These trends can be related to the larger issues in the world as a whole where lifestyle and low levels of awareness and insufficient preventive practices play a significant role in explaining the poor glycemic control of people with diabetes (Pan et al., 2021). Existence of lapses in eating habits, compliance with medication and constant self-observation were all found in a number of global environments with studies repeatedly confirming this fact and the significance of patient education and awareness.

A quasi-experimental study in Bangkok that compared an intervention group to a control group with respect to self-efficacy indicated significantly good self-efficacy and a better level of fasting blood glucose and HbA1c levels of people who were subjected to structured diabetes education. The application of motivation interviewing to rural elderly in the United States led to increase in diabetes knowledge, self-efficacy, and great decrease in HbA1c in those participants who were highly engaged. There is evidence that structured selfmanagement education programmes can be effective in terms of glycemic control and overall cardiometabolic outcomes (Shiferaw et al., 2021). A number of interventions that had been culturally modified also yielded positive results. An examination of the low-income Latino populations in the United States revealed that the follow-up programmes of diabetes self-management based on literacy enhanced the level of glycemia and addressed gaps related to education and income. A Denmark trial conducted to evaluate motivational interviewing revealed that perceived competence increased in the intervention participants although glycemic results were no different.

The studies assessing the use of interactive behavioral technologies suggested that a very small percentage of research integrated behavioral theory, but these interventions helped to achieve small changes in glycemic parameters. The qualitative results of digital health interventions focused on patient views of usability, confidence, and support requirements of diabetes self-management (Sharma et al., 2024). Further evidence in Germany had shown that a structured self-management training created more medium-term glycemic control change than didactic education. A multicenter trial in France showed that self-management of blood glucose was correlated with improved metabolic performance as compared to the conventional care. The study was a cluster-randomized trial in the United Kingdom that measured the effects of a diabetes education manual, which found that it decreased diabetes-related distress and increased confidence regarding self-care behaviors, which align with the recommendations of using a patient-centered and technology-assisted method in managing diabetes (Asmat et al., 2022; Deo and Singh, 2021). The Indian studies also reported several studies in which the structured education was shown to be a significant part of the improvement of the diabetes knowledge and attitudes. A study conducted in Tumkur and Chennai recorded significant gains to post-test knowledge and attitude after structured teaching programmes. The application of a community-based programme that was conducted in Washington and utilized the educational sites in the form of public libraries led to a better level of post-intervention knowledge and the importance of making available and community-oriented platforms. Research made in Nigeria and Karimnagar also found that demographic variables (age, education and years since diagnosis) had an effect on self-care knowledge about diabetes which proves that despite the general necessity of carrying out special education, the results will be dependant on the personal traits of a patient.

3. Materials and Methods

3.1 Research Approach & Design

The study adopted a quantitative experimental research approach, which determines the relationship between variables in a population and uses structured instruments to collect numerical data. This approach was selected because all aspects of the study could be carefully designed before data collection, and the results could be statistically analyzed. A pre-experimental one-group pretest–posttest design was used to assess the effectiveness of the structured teaching programme on self-care management of diabetes mellitus. The design involved administering a pretest (O_1), delivering the structured teaching programme (X), and conducting a posttest (O_2) to evaluate knowledge gain among patients with uncontrolled diabetes mellitus.

3.2 Study Setting & Participants

The study was conducted in the Endocrinology Outpatient Department of NRI General Hospital, Chinakakani, Mangalagiri, Guntur District. The setting included consultation rooms, examination rooms, treatment areas, a counseling room, a dietician's room, and a student demonstration room where the structured teaching programme was administered. The target population consisted of patients aged 31 years and above diagnosed with uncontrolled diabetes mellitus, and the accessible population included those attending the outpatient department during the study period. Non-probability convenient sampling was used to select patients who met

the inclusion criteria: diagnosed with uncontrolled diabetes mellitus, aged 31 years or above, able to read and write, available during data collection, and willing to participate. Patients not meeting these criteria were excluded.

3.3 Instrument & Tool Development

Data were collected using a structured questionnaire that was clear, organized, simple, and free from technical jargon. The questionnaire consisted of two sections. Section I collected demographic and general information such as age, gender, religion, education, occupation, income, residence, diet pattern, family history of diabetes, duration of diabetes, exercise habits, physical activity, stress history, treatment regimen, comorbid conditions, and source of information. Section II contained 45 multiple-choice questions assessing knowledge related to diabetes mellitus and self-care management. Each correct response received one point, and total scores were categorized as adequate, moderately adequate, or inadequate knowledge. The tool was developed based on the conceptual framework and hypotheses of the study.

3.4 Structured Teaching Programme

The structured teaching programme was developed using a lesson plan and included meaning, incidence, risk factors, signs and symptoms, complications, meaning of uncontrolled diabetes mellitus, and the components of self-care management such as diet, physical activity, health care, medications, management of complications, and lifestyle modifications. Visual aids such as flashcards, charts, models, and pamphlets were used during the teaching session.

3.5 Validity, Reliability & Pilot Study

Content and concurrent validity of the tool were established by seven experts, including five nursing experts in medical–surgical nursing and two diabetologists. Their suggestions were incorporated into the final version of the questionnaire. Reliability was tested using the split-half method, and Brown Prophecy's formula yielded a correlation coefficient of 0.88, indicating high reliability. A pilot study was conducted with six inpatients aged 31 years and above to evaluate feasibility, reliability, and practicability. The structured teaching programme was delivered for 30–45 minutes using visual aids, and a posttest administered one week later demonstrated that the study process was feasible.

3.6 Data Collection & Analysis

Data collection occurred in two phases. The pretest was conducted from 24-04-2014 to 30-04-2014, followed by administration of the structured teaching programme on the same day using flashcards, pamphlets, charts, and models. The posttest was conducted from 15-05-2014 to 21-05-2014, with a 15-day gap between the pretest and posttest. Data were collected using the structured questionnaire. Descriptive statistics such as frequency, percentage, mean, and standard deviation were used to summarize demographic characteristics and knowledge scores. Inferential statistics, including paired t-tests, were applied to determine differences between pretest and posttest scores, with significance levels set at 0.01 and 0.05. Chi-square tests were used to examine associations between knowledge scores and selected demographic variables including age, sex, religion, education, occupation, income, and place of residence.

4. Results

4.1 Participant Profile

A total of 60 adults with uncontrolled diabetes mellitus participated in the study. Their demographic characteristics are summarized in Table 1. Most participants were between 51–60 years (41.6%), with an additional 25% aged above 60 years, indicating that the sample was predominantly middle-aged or older. Males accounted for 55%, and females constituted 45%. The majority identified as Hindu (40%), followed closely by Muslim (31.6%) and Christian (28.3%) respondents. Educational backgrounds varied, with 13.3% being illiterate and 26.6% having primary-level education, while 21.6% held a degree or higher qualification. The occupational distribution showed a high proportion of agricultural laborers (36.6%), followed by individuals engaged in self-business activities (28.3%). Income levels were generally low, with more than half earning Rs. 5,001–10,000 per month, and most participants resided in rural areas (68.3%). Together, these characteristics reflect a population with diverse educational backgrounds but limited economic resources, which is important in interpreting their baseline self-care knowledge and post-intervention improvements.

Table 1. Demographic characteristics of adults with uncontrolled diabetes mellitus (N = 60).

S. No	Sample Characteristics	Category	Frequency (f)	Percentage (%)
1	Age (years)	31–40	8	13.3
		41–50	12	20.0
		51–60	25	41.6
		Above 60	15	25.0
2	Gender	Male	33	55.0
		Female	27	45.0
3	Religion	Hindu	24	40.0
		Christian	17	28.3
		Muslim	19	31.6
		Others	–	–
4	Education	Illiterate	8	13.3
		Primary	16	26.6
		Secondary	12	20.0
		Intermediate	12	20.0
		Degree and Above	13	21.6
5	Occupation	Government Job	2	3.3
		Private Job	7	11.6
		Self Business	17	28.3
		Agricultural Labor	22	36.6
		Others	12	20.0
6	Monthly Income (Rs.)	< 5,000	23	38.3
		5,001–10,000	32	53.3
		10,001–15,000	4	6.6
		> 15,000	1	1.6
7	Place of Residence	Rural	41	68.3
		Urban	9	15.0
		Semi-Urban	10	16.6

4.2 General Self-Care Characteristics

General information related to participants' lifestyle and clinical background is presented in Table 2. Dietary habits showed that more than half followed a lacto-ovo vegetarian diet (51.6%), while 26.6% were nonvegetarian. A considerable proportion (58.4%) reported a family history of diabetes, predominantly from parents. Most participants (76.6%) had been diagnosed within the past five years, indicating a relatively recent onset for the majority. Exercise habits were reported by the same proportion (76.6%), with walking and jogging being the most commonly practiced activities. Light physical activity dominated (71.6%), reflecting limited engagement in moderate or strenuous work. Stress was reported by 76.6%, with health-related stress being the most common reason. Regular treatment and follow-up were reported by 81.6%, and 35% were on a combined regimen of oral hypoglycemics and insulin. Only 3.3% reported any chronic disease, and health-care professionals (66.6%) were cited as the primary source of diabetes-related information.

Table 2. General Information Related to Self-Care Management of Diabetes Mellitus (N = 60).

S. No.	Sample Characteristics	Category	Frequency (f)	Percentage (%)
1	Diet Pattern	Vegetarian	13	21.6
		Non-vegetarian	16	26.6
		Lacto-ovo vegetarian	31	51.6
2	Family History of Diabetes Mellitus	Yes	35	58.4
		No	25	41.6
3	If Yes, Relationship	Father/Mother	12	25.0
		Maternal History	8	13.3
		Paternal History	12	20.0

		Siblings	–	–
		Others	–	–
4	Duration of Diabetes Mellitus	< 5 years	46	76.6
		6–10 years	13	21.7
		11–15 years	1	1.7
		> 15 years	–	–
5	Habit of Exercising	Yes	41	76.6
		No	14	23.4
6	Type of Exercise	Walking	20	33.3
		Cycling	11	18.3
		Swimming	–	–
		Jogging	15	25.0
7	Physical Activity Level	Light Work	43	71.6
		Moderate Work	5	8.8
		Heavy Work	2	2.4
		Strenuous Work	13	21.6
8	Experience of Stress	Yes	46	76.6
		No	14	23.4
9	Cause of Stress	Family Problems	11	18.3
		Work Problems	15	25.0
		Health Problems	20	33.3
		Others	10	16.6
10	Regular Treatment & Follow-up	Yes	49	81.6
		No	11	18.3
11	Type of Treatment	Oral Hypoglycemic Agents	12	20.0
		Insulin	16	26.6
		Both	21	35.0
12	History of Chronic Diseases	Yes	2	3.3
		No	58	96.6
13	Type of Chronic Disease	Acute Pancreatitis	2	3.3
		Chronic Pancreatitis	–	–
		Cystic Fibrosis	–	–
		Pancreatic Cancer	–	–
14	Source of Information	Health-Care Members	40	66.6
		Friends/Peer Group	19	31.6
		Magazines/Newspapers	1	1.6
		Television/Radio	–	–

4.3. Knowledge Improvement After Intervention

A clear improvement in knowledge regarding self-care management of diabetes mellitus emerged following the structured teaching programme, as reflected in Table 3. In the pre-test assessment, 68.3% of participants demonstrated inadequate knowledge, while the remaining 31.6% had only moderate knowledge, with none reaching adequate levels. After the intervention, there was a marked shift: 61.6% attained adequate knowledge, 28.3% had moderate knowledge, and only 10% remained in the inadequate category. Mean knowledge scores rose sharply from 18.8 ± 11.45 in the pre-test to 37.8 ± 7.24 in the post-test, nearly doubling following the educational programme. The paired t-test confirmed that this improvement was statistically significant ($t = 3.465$, $p < 0.05$) (Figure 4). This substantial shift, also depicted in Figure 1, demonstrates the effectiveness of the structured teaching programme in enhancing participants' understanding of diabetes self-care practices.

Table 3. Pre-test and post-test knowledge levels and mean scores regarding diabetes self-care (N = 60).

Knowledge Scores	Pre-Test Frequency (f)	Pre-Test Percentage (%)	Post-Test Frequency (f)	Post-Test Percentage (%)
Adequate Knowledge (0–50%)	–	–	37	61.6
Moderate Knowledge (51–75%)	19	31.6	17	28.3
Inadequate Knowledge (Above 75%)	41	68.3	6	10
Mean ($\bar{X}$)	18.8		37.8	
Standard Deviation (SD)	11.45		7.24	

4.4. Associations With Demographic Variables

Associations between demographic variables and knowledge scores were examined using chi-square tests, and the consolidated findings are presented in Table 4 & 5. In the pre-test analysis, none of the demographic characteristics including age, gender, religion, education, occupation, income, or area of residence showed a statistically significant association with knowledge levels, indicating that low baseline knowledge was uniform across all groups. However, post-test associations revealed a different pattern. Significant associations were found with age ($\chi^2 = 18.305$), gender ($\chi^2 = 12.86$), and education level ($\chi^2 = 41.6$), all exceeding their respective chi-square table values at the 0.05 level. Participants who were younger, male, or had higher education levels showed greater improvement in knowledge after the intervention. No statistically significant relationship was observed between post-test knowledge and occupation, religion, income, or place of residence. These findings highlight that while the structured teaching programme was effective across groups, certain demographic factors facilitated greater knowledge gains.

Table 4. Chi-square association of demographic variables with pre-test knowledge scores.

S. No	Sample Characteristic	Inadequate (<50%)	Moderate (51–75%)	Adequate (>75%)	Total	χ^2 (df)	Significance
1	**Age (years)**					4.269 (df=6)	NS
	31–40	6 (10%)	2 (3.3%)	0	8		
	41–50	8 (13.3%)	4 (6.6%)	0	12		
	51–60	14 (23.3%)	11 (18.3%)	0	25		
	Above 60	13 (21.6%)	2 (3.3%)	0	15		
2	**Gender**					0.10 (df=2)	NS
	Male	22 (36.6%)	11 (18.3%)	0	33		
	Female	19 (31.6%)	8 (13.3%)	0	27		
3	**Religion**					2.22 (df=6)	NS
	Hindu	19 (31.6%)	5 (8.3%)	0	24		
	Christian	10 (16.6%)	7 (11.6%)	0	17		
	Muslim	12 (20%)	7 (11.6%)	0	19		
4	**Education**					10.92 (df=8)	NS
	Illiterate	8 (13.3%)	0	0	8		
	Primary	11 (18.8%)	2 (3.3%)	0	13		
	Secondary	9 (15%)	3 (5%)	0	12		
	Intermediate	6 (10%)	5 (8.3%)	0	11		
	Degree & Above	7 (11.6%)	9 (15%)	0	16		
5	**Occupation**					9.16 (df=8)	NS
	Government Job	0	2 (3.3%)	0	2		
	Private Job	4 (6.6%)	3 (5%)	0	7		
	Self-Business	12 (20%)	5 (8.3%)	0	17		

	Agricultural Labor	18 (30%)	4 (6.6%)	0	22		
	Others	7 (11.6%)	5 (8.3%)	0	12		
6	**Monthly Income**					3.93 (df=6)	NS
	< Rs. 5,000	18 (30%)	5 (8.3%)	0	23		
	Rs. 5,001–10,000	21 (35%)	11 (18.3%)	0	32		
	Rs. 10,001–15,000	2 (3.3%)	2 (3.3%)	0	4		
	> Rs. 15,000	0	1 (1.6%)	0	1		
7	**Place of Residence**					0.43 (df=4)	NS
	Rural	29 (48.3%)	12 (20%)	0	41		
	Urban	6 (10%)	3 (5%)	0	9		
	Semi-Urban	6 (10%)	4 (6.6%)	0	10		

Table 5. Chi-square association of demographic variables with post-test knowledge scores.

S. No	Sample Characteristics	Inadequate (<50%) f (%)	Moderate (51–75%) f (%)	Adequate (>75%) f (%)	Total	Calculated χ^2 value & df	χ^2 Table value & LOS
1	**Age in Years**					χ^2 = 18.305, d.f = 6	t = 12.59, **S**
	31–40 years	– (–)	2 (3.3)	6 (10)	8		
	41–50 years	– (–)	2 (3.3)	10 (16.6)	12		
	51–60 years	3 (5)	3 (5)	19 (31.6)	25		
	Above 60 years	3 (5)	9 (15)	3 (5)	15		
2	**Gender**					χ^2 = 12.86, d.f = 2	t = 5.99, **S**
	Male	1 (1.6)	5 (8.3)	27 (45)	33		
	Female	5 (8.3)	12 (20)	10 (16.6)	27		
3	**Religion**					χ^2 = 3.735, d.f = 6	t = 12.59, **NS**
	Hindus	2 (3.3)	10 (16.6)	12 (20)	24		
	Christian	2 (3.3)	4 (6.6)	11 (18.3)	17		
	Muslim	2 (3.3)	3 (5)	14 (23.3)	19		
	Others	–	–	–	–		
4	**Education**					χ^2 = 41.6, d.f = 8	t = 15.507, **S**
	Illiterate	5 (8.3)	3 (5)	0 (0)	8		
	Primary	0 (0)	6 (10)	6 (10)	12		
	Secondary	0 (0)	3 (5)	9 (15)	12		
	Intermediate	0 (0)	5 (8.3)	7 (11.6)	12		
	Degree & above	1 (1.6)	0 (0)	15 (25)	16		
5	**Occupation**					χ^2 = 6.74, d.f = 8	t = 15.507, **NS**
	Government job	–	–	2 (2)	2		
	Private job	–	1 (1.6)	6 (7)	7		
	Self business	1 (1.6)	3 (5)	13 (17)	17		
	Agricultural labor	3 (5)	8 (13.3)	11 (22)	22		
	Others	2 (3.3)	4 (6.6)	6 (12)	12		
6	**Income**					χ^2 = 4.21, d.f = 6	t = 12.59, **NS**
	< Rs. 5,000	4 (6.6)	8 (13.3)	11 (18.3)	23		
	Rs. 5,001–10,000	2 (3.3)	8 (18.3)	22 (36.6)	32		
	Rs. 10,001–15,000	–	1 (1.6)	3 (5)	4		
	> Rs. 15,000	–	–	1 (1.6)	1		
7	**Where do you live**					χ^2 = 2.47, d.f = 4	t = 9.48, **NS**
	Rural area	5 (8.3)	13 (21.6)	23 (38.3)	41		

	Urban area	1 (1.6)	2 (3.3)	6 (10)	9		
	Semi-urban area	–	2 (3.3)	8 (13.3)	10		

5. Discussion

The current research assessed the efficacy of a teaching programme with a structured approach to selfmanagement of diabetes mellitus in adults with uncontrolled diabetes. The results showed that knowledge of the participants increased significantly after the intervention, which proves the indispensability of structured nurse-led learning methodology in managing diabetes. The dramatic increase in the mean post-test scores which are approximately two times higher than the pre-test ones indicates the ability of the specific educational interventions to close the knowledge gap and enhance the self-management skills of the patients. This result is in line with previous findings that structured diabetes education has a significant positive effect on glycaemic control and patient outcomes, especially in low-resource groups (Chowdhury et al., 2024). The majority of the participants had demonstrated poor knowledge of the key areas of self-management in diabetes, which were diet, physical activity, medication compliance, and monitoring at the baseline. This finding is related to the literature that patients tend to join diabetes programmes with little awareness and misconceptions that prevent them to engage in self-management. The research has indicated that people often face problems when it comes to maintaining lifestyle changes without a systematic network of support or explicit and individual consultation (Pal et al., 2018). These gaps appear to have been filled with the structured teaching programme as evidenced by the improvement that came after the programme which indicated that the intervention was effective in terms of addressing these gaps through clear, accessible and context-appropriate instruction using visual materials and simplified explanations.

The findings of the current research are also seen as the findings of digital and in-person trials of selfmanagement education, including the TRIGGER study, in which smartphone-based education greatly improved self-care behaviour among patients under insulin treatment (Boels et al., 2019). The similar improvement, although not performed by the use of the technological platforms in the current study, highlights that effective education needs not be performed with the use of advanced tools, but it should be systematic, patient-centred and needs to be specific to the needs of the learner. The same enhancements were seen in underserved demographic changes in other countries where diabetic self-management education was structured, resulting in improved glycemic control and quality of life (Cunningham et al., 2018). Since the current sample was mostly rural, low-income, and included the subjects with minimum education, these results support the significance of easy and culturally sensitive educational interventions. Other recent investigations also confirm that behavioural based learning techniques play a major role in promoting the self-management of diabetes. The behavioural reasoning theory used as the basis of educational programmes has led to demonstrable enhancement in patient motivation and self-care behaviours (Jeihooni et al., 2019). The teaching programme employed in this study and focused on reasoning, decision-making, and application of knowledge to lifestyle probably contributed similarly to the study participants because they could transfer knowledge to practice. The high correlations between the knowledge after testing and the demographic characteristics like age, gender, and education are indicative of demographic factors that have been extensively recorded to affect learning results. It has been indicated that biological, cognitive, and psychosocial variables including the perception of disease and the ability to process information influence the internalization of diabetes knowledge by the individuals of population groups (Zhang et al., 2021). These results suggest that further interventions might have to be demographically modified and repeated to maintain learning benefits.

The study also had its limitations even though it was significant in its contributions. The sample was also limited to patients who would be able to read and write, belong to a single outpatient department and be available throughout the specified data collection period, which limited the generalizability of results. Selection bias could also have been brought about by the use of non-probability convenient sampling (Yu et al., 2022). Moreover, the evaluation was solely based on short-term post intervention knowledge, and no follow up was done to ascertain retention. However, the results of the study have significant implications on nursing practice, education, administration, and research. The outpatient nurses need to incorporate the structured teaching sessions as a part of routine care and use images and plain language to increase the understanding. When undertaking nursing education, learners need to be educated on how to design and administer diabetes teaching programmes based on the socio-cultural backgrounds of the patients. Administratively health facilities ought to facilitate the structured education by providing the adequate staffing, creating policies to facilitate patient education, and arranging periodic community-based activities on diabetes awareness. Further studies on bigger and varied samples and extended follow-ups should be conducted in future studies to test long-term behavioural outcomes in research.

In sum, the considerable advancement of the level of knowledge, which was seen post the structured teaching programme, confirms the importance of properly developed educational interventions in the control of uncontrolled diabetes. These results strongly suggest the need to incorporate the structured education into the regular practice of diabetes management, especially where the level of awareness and access to special counselling is low.

6. Conclusion

The present study examined the effectiveness of a structured teaching programme in improving the knowledge of adults with uncontrolled diabetes mellitus regarding essential self-care practices. The findings revealed a significant enhancement in post-test knowledge scores when compared with pre-test levels, demonstrating the clear impact of structured educational interventions. Before the intervention, the majority of participants exhibited inadequate awareness of critical aspects such as diet, physical activity, medication adherence, management of complications, and healthy lifestyle adjustments. Following the teaching programme, most participants achieved adequate knowledge, reflecting the strong potential of structured, systematic, and patientcentred education in improving diabetes self-management. The demographic profile of the participants primarily rural, middle-aged individuals with limited educational attainment further underscores the importance of accessible and context-appropriate teaching strategies. Since uncontrolled diabetes mellitus is influenced by multiple lifestyle and behavioural factors, equipping patients with accurate knowledge is essential for preventing complications and improving long-term outcomes. The educational intervention used in this study proved effective in bridging baseline knowledge gaps, particularly among individuals with limited health literacy. The results demonstrate that structured teaching is not only feasible but also highly beneficial in outpatient settings, where time and resource constraints often limit the extent of diabetes counselling. Incorporating regular educational programmes into routine diabetes care could significantly enhance patient empowerment and adherence. Overall, the study supports the use of structured teaching programmes as an essential approach in diabetes management, reinforcing the role of nurses as key educators in enhancing patient understanding, promoting self-care, and reducing the burden of uncontrolled diabetes in the community.

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