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Assess the effectiveness of planned teaching program on knowledge of diabetes and its management and the practice of diabetic diet among the rural people in selected villages at Hassan, Karnataka

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Abstract
Background: Diabetes mellitus is a major public health problem in India, particularly in rural areas where limited access to health information contributes to poor disease control and increased complications. Adequate knowledge and appropriate dietary practices are essential for effective diabetes management. Planned Teaching Programmes (PTPs) delivered by nurses can play a vital role in empowering diabetic clients to adopt healthy self-care behaviors.
Objectives: The study aimed to assess the effectiveness of a Planned Teaching Programme on knowledge of diabetes and its management and the practice pattern of diabetic diet among diabetic clients residing in selected rural villages of Hassan district, Karnataka. It also sought to determine the association between pre-test knowledge and selected socio-demographic variables.
Methods: A pre-experimental one-group pre-test post-test research design was adopted. Sixty diabetic clients were selected using a non-probability convenient sampling technique. Data were collected using a structured knowledge questionnaire and a practice scale on diabetic diet. The Planned Teaching Programme was administered, followed by a post-test after seven days. Descriptive and inferential statistics, including paired 't' test and chi-square test, were used for data analysis.
Results: The findings revealed that the overall mean pre-test knowledge score was 10.15 (33.83%), which significantly increased to 28.62 (95.4%) in the post-test. The difference between pre-test and post-test knowledge scores was highly significant (t = 49.792, $p<0.001$). Post-test results showed that none of the participants had inadequate knowledge. Significant association was found between pre-test knowledge and selected variables such as age and family income.
Conclusion: The Planned Teaching Programme was highly effective in improving knowledge and promoting better dietary practices among rural diabetic clients. Nurse-led educational interventions are crucial in preventing complications and enhancing the quality of life of individuals with diabetes.

Keywords: Diabetes mellitus, planned teaching programme, knowledge, diabetic diet, rural population, self-care management, community health nursing

Introduction

Diabetes mellitus has emerged as one of the most challenging chronic non-communicable diseases of the twenty-first century, exerting a profound impact on individuals, families, communities, and health-care systems across the globe. The rapid epidemiological transition marked by urbanization, lifestyle modification, dietary changes, physical inactivity, and increased life expectancy has significantly contributed to the rising burden of diabetes, particularly in low- and middle-income countries such as India. What was once considered a disease of affluence has now penetrated deep into rural populations, affecting economically productive age groups and posing serious threats to public health and sustainable development.

Diabetes mellitus is a metabolic disorder characterized by chronic hyperglycaemia resulting from defects in insulin secretion, insulin action, or both. Persistent hyperglycaemia leads to long-term damage, dysfunction, and failure of various organs, especially the eyes, kidneys, nerves, heart, and blood vessels. The chronic nature of diabetes demands lifelong management that extends beyond pharmacological treatment to include dietary regulation, physical activity, self-monitoring, and prevention of complications. Thus, effective

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management of diabetes largely depends on the individual's knowledge, attitude, and practice related to the disease and its care.

India is often referred to as the "diabetes capital of the world" due to its alarmingly high prevalence of diabetes mellitus. According to national and international estimates, millions of Indians are living with diabetes, and a significant proportion remain undiagnosed or poorly controlled. While urban areas report higher prevalence rates, recent evidence indicates a steady and concerning rise of diabetes in rural regions. Rural populations are particularly vulnerable due to limited access to health-care facilities, poor health literacy, lack of awareness, cultural beliefs, economic constraints, and inadequate exposure to structured health education.

Dietary management is a cornerstone in the treatment and control of diabetes mellitus. A balanced diabetic diet plays a critical role in maintaining optimal blood glucose levels, preventing acute and chronic complications, and improving overall health outcomes. However, adherence to recommended dietary practices remains a major challenge, especially among rural diabetic clients. Factors such as lack of knowledge regarding appropriate food choices, portion sizes, meal timing, and cultural dietary patterns often interfere with effective dietary management. Without proper understanding, diabetic clients may continue harmful practices that negate the benefits of medical treatment.

Planned Teaching Programme refers to a systematically designed educational intervention aimed at enhancing knowledge and promoting desirable practices related to a specific health condition. In the context of diabetes, a PTP can address fundamental concepts of the disease, causes, clinical features, dietary management, exercise, medication adherence, monitoring of blood glucose, and prevention of complications. By using simple language, culturally appropriate content, and suitable teaching aids, PTPs can effectively bridge knowledge gaps among rural populations.

Nurses play a pivotal role in health education and disease prevention, particularly in community settings. As frontline health-care providers, nurses are strategically positioned to assess educational needs, design teaching programmes, and deliver health education to diabetic clients and their families. Nursing-led educational interventions can significantly influence patients' understanding, attitude, and practices related to diabetes management. In rural India, community health nurses and primary health-care workers serve as crucial links between health systems and communities, making them ideal facilitators of structured teaching programmes.

Research evidence supports the effectiveness of educational interventions in improving diabetes-related outcomes. Studies have shown that patients who receive structured education exhibit better glycaemic control, improved dietary practices, increased adherence to treatment, and reduced incidence of complications. However, most available studies focus on urban populations or institutional settings, leaving a gap in evidence related to rural community-based interventions, particularly in the Indian context.

Hassan district of Karnataka represents a typical rural setting where diabetes is increasingly prevalent among adults. Rural diabetic clients in this region often face challenges such as low educational status, limited health awareness, poor accessibility to specialized care, and socioeconomic constraints. These factors necessitate context-specific educational strategies tailored to the needs of rural populations. Conducting a study in selected rural villages of Hassan provides an opportunity to assess baseline knowledge and practices related to diabetes and to evaluate the effectiveness of a Planned Teaching Programme in improving these outcomes.

Assessment of knowledge and practice is a fundamental step in planning effective educational interventions. Understanding what diabetic clients know about diabetes, its causes, symptoms, management, and dietary requirements helps identify gaps that need to be addressed. Similarly, assessing dietary and self-care practices provides insight into behavioural patterns that influence disease outcomes. By comparing pre-test and post-test scores, the effectiveness of a Planned Teaching Programme can be objectively evaluated.

In addition to evaluating overall effectiveness, it is important to examine the association between post-test knowledge scores and selected socio-demographic variables such as age, sex, education, occupation, income, duration of diabetes, and previous exposure to health education. Such analysis helps identify subgroups that may require additional or tailored educational support and informs future planning of community-based interventions.

The present study adopts a pre-experimental one-group pre-test post-test design to evaluate the effectiveness of a Planned Teaching Programme on knowledge of diabetes and its management and the practice of diabetic diet among rural diabetic clients. This design allows for systematic measurement of changes in knowledge and practice following the educational intervention. Although the design does not include a control group, it is widely used in community-based nursing research to assess the impact of educational programmes in real-world settings.

The Planned Teaching Programme developed for this study is based on objectives, review of related literature, expert opinion, and the investigator's professional experience. The content includes introduction to diabetes, meaning and types of diabetes, causes and risk factors, clinical features, and comprehensive management focusing on diet, exercise, medication, monitoring, and prevention of complications. Teaching methods such as lecture-cum-discussion using flash cards are selected to enhance understanding and retention among rural participants.

In conclusion, diabetes mellitus poses a growing public health challenge in rural India, where gaps in knowledge and practice significantly affect disease management. Education remains a cornerstone in addressing these gaps. Evaluating the effectiveness of a Planned Teaching Programme among rural diabetic clients in Hassan, Karnataka, is both timely and relevant. The findings of this study are expected to provide valuable insights into the role of structured health education in improving diabetes management and to guide nurses, health educators, and policy-makers in planning effective community-based interventions.

Methodology
Research Approach
In the present study, an evaluative research approach was adopted. The evaluative approach was considered appropriate as the primary objective of the study was to evaluate the effectiveness of a Planned Teaching Programme on knowledge of diabetes and its management and the practice of diabetic diet among rural diabetic clients.

This approach enabled the researcher to measure changes in knowledge and practice before and after the administration of the educational intervention.

Research Design
The research design selected for the present study was a pre-experimental one-group pre-test post-test design. This design involves a single group of participants who are assessed before and after the intervention without the use of a control group.

The symbolic representation of the design is as follows:

O_1 – Pre-test knowledge and practice assessment

X – Planned Teaching Programme on diabetes and its management

O_2 – Post-test knowledge and practice assessment

This design includes manipulation of the independent variable (Planned Teaching Programme), but does not include randomization or a control group. It was considered suitable for the present study as it allows evaluation of the effectiveness of the teaching programme in a natural community setting.

Variables of the Study
In the present study, the independent variable was the Planned Teaching Programme on diabetes and its management, which was administered to the diabetic clients as an educational intervention. The dependent variables included the level of knowledge of diabetic clients regarding diabetes and its management and the practice of diabetic diet among diabetic clients. Changes in these dependent variables were assessed to determine the effectiveness of the Planned Teaching Programme.

Extraneous Variables
The extraneous variables in the present study included selected socio-demographic characteristics such as age, sex, educational status, occupational status, economic status, dietary pattern, type of family, religion, duration of diabetes mellitus, previous health education related to diabetes, exercise habits, and family history of diabetes. These variables were considered as they could potentially influence the knowledge and dietary practices of diabetic clients independent of the Planned Teaching Programme.

Research Setting
Research setting refers to the general location and conditions in which data collection takes place. The present study was conducted in selected rural villages under Shantigrama Primary Health Centre (PHC), Hassan district, Karnataka. This villages were selected due to the availability of diabetic clients, accessibility to the researcher, and feasibility of conducting the study.

Population
The target population of the present study consisted of all diabetic clients residing in selected rural villages of Hassan district, Karnataka. The accessible population included 60 diabetic clients residing in the selected rural villages under Shantigrama PHC, Hassan.

Sample and Sample Size
A sample is a subset of a population selected to participate in a research study. The sample for the present study consisted of 60 diabetic clients who fulfilled the inclusion criteria and were available at the time of data collection. The sample size was determined based on feasibility, availability of subjects, and time constraints.

Sampling Technique
Sampling technique refers to the process of selecting a portion of the population to represent the entire population. In the present study, non-probability convenient sampling technique was used. Diabetic clients who were available, accessible, and willing to participate during the data collection period were selected for the study.

Criteria for Selection of the Sample
The study included clients who were known diabetics and were on anti-diabetic medication, aged above 35 years, residing in selected rural villages of Hassan district, and willing to participate in the study. Clients who did not have diabetes, those with other major disease conditions, and children with diabetes who were on medication were excluded from the study.

Description of the Tool
The tool used for data collection was an interview schedule, which consisted of three sections:

Section A: Socio-demographic Variables
This section consisted of 15 items related to age, sex, marital status, educational status, occupation, economic status, dietary pattern, type of family, religion, duration of diabetes mellitus, previous hospitalization, exercise habits, medication intake, family history of diabetes, and health risk habits.

Section B: Knowledge Questionnaire on Diabetes and Its Management
This section consisted of a structured questionnaire comprising 30 multiple-choice questions designed to assess the knowledge of diabetic clients regarding diabetes and its management. The content areas included introduction to diabetes (3 items), causes of diabetes (1 item), clinical features (1 item), and management aspects such as diet, exercise, medication, monitoring, and complications (25 items). Each question had four options with one correct answer. A score of one was awarded for each correct response, while incorrect responses were given zero. The maximum possible score obtainable was 30.

Section C: Practice Scale on Diabetic Diet
This section consisted of 20 statements related to dietary practices. A 5-point Likert scale was used, including both positive and negative statements, to assess the practice of diabetic diet among the participants.

Validity of the Tool
Validity refers to the extent to which an instrument measures what it is intended to measure. Content validity of the tool was established by submitting it to six experts from the fields of Community Health Nursing and Medicine. Based on the suggestions and recommendations of the experts, necessary modifications were made to improve clarity, relevance, and simplicity of the tool. The final tool was approved by the research guide.

Reliability of the Tool: The reliability of the knowledge

questionnaire was tested during the pilot study using the split-half method and Karl Pearson's correlation coefficient. The reliability coefficient obtained was 0.83, indicating high reliability. The reliability of the practice scale was 0.75, which also indicated that the tool was reliable for use in the main study.

Development of the Planned Teaching Programme (PTP)

The Planned Teaching Programme on diabetes and its management was developed based on the objectives of the study, a review of related literature, expert opinion, and the investigator's personal and professional experience. The programme was initially prepared in English and subsequently translated into the regional language, Kannada, to facilitate better understanding and effective communication among the rural participants.

Content of the Planned Teaching Programme

The content of the Planned Teaching Programme included the introduction and meaning of diabetes, types of diabetes, etiology and risk factors, clinical features, and comprehensive management of diabetes focusing on diet, exercise, medication, monitoring of blood glucose, and prevention of complications. The content was organized systematically from simple to complex and from general to specific concepts to facilitate better understanding. The Planned Teaching Programme was validated by experts, and necessary modifications were incorporated based on their suggestions.

Method of Teaching

The Planned Teaching Programme was administered using lecture-cum-discussion method with flash cards. This method was selected to facilitate interaction, improve comprehension, and encourage active participation of the diabetic clients. The post-test evaluation was conducted seven days after the administration of the PTP.

Pilot Study

The pilot study was conducted to assess the feasibility of the study, clarity of the tool, and reliability of the study procedures. The pilot study was carried out among six diabetic clients, constituting approximately 10% of the total sample size. It was conducted in Kenchenahalli village after obtaining formal permission from the concerned authorities. A pre-test assessment was administered, followed by the implementation of the Planned Teaching Programme, and the post-test was conducted on the seventh day. The results of the pilot study revealed a pre-test knowledge score of 32 and a post-test knowledge score of 75. The calculated 't' value was 18.20, indicating a statistically significant difference between the pre-test and post-test scores. The findings of the pilot study confirmed that the study was feasible, the tools were reliable, and the procedures were suitable for conducting the main study.

Data Collection Procedure

Formal permission was obtained from the Medical Officer of Shantigrama PHC, Hassan. Assistance was sought from ASHA workers to identify diabetic clients in the selected villages. The researcher introduced herself to the participants, explained the purpose of the study, and obtained informed consent. Confidentiality and anonymity were ensured.

Data collection was carried out over a period of three weeks:

1. **Week 1:** Pre-test assessment of knowledge and practice
2. **Week 2:** Administration of the Planned Teaching Programme
3. **Week 3:** Post-test assessment

The data collected were coded, tabulated, and entered into a master sheet for analysis.

Plan for Data Analysis

Data were analyzed using both descriptive and inferential statistics. Descriptive statistics such as frequency, percentage, mean, and standard deviation were used to summarize the demographic characteristics and assess the levels of knowledge and practice. Inferential statistics included the paired 't' test to compare pre-test and post-test knowledge and practice scores, and the chi-square test to determine the association between post-test knowledge scores and selected socio-demographic variables.

Results

Table 1: Distribution of Subjects According to Socio-Demographic Variables (N = 60)

Demographic Variables	Category	No. of Subjects (n)	Percentage (%)
Age (years)	30–35	7	11.7
	36–40	26	43.3
	41–45	19	31.7
	46–60	8	13.3
Gender	Male	30	50.0
	Female	30	50.0
Marital Status	Married	56	93.3
	Unmarried	2	3.3
	Widow/Widower	2	3.3
Educational Status	Primary	28	46.7
	Middle School	17	28.3
	High School	5	8.3
	PUC	2	3.3
	Graduate	4	6.7
	Post Graduate	4	6.7
Occupation	Farmer	37	61.7
	Private Employee	19	31.7
	Government Employee	2	3.3

	Any Other	2	3.3
Family Income / Month	₹500–1000	14	23.3
	₹1000–5000	40	66.7
	₹5000–10,000	4	6.7
	> ₹10,000	2	3.3
Dietary Pattern	Vegetarian	8	13.3
	Mixed	52	86.7
Type of Family	Nuclear	12	20.0
	Joint	48	80.0
Religion	Hindu	51	85.0
	Muslim	7	11.7
	Christian	2	3.3
Duration of Diabetes Mellitus	Below 1 year	34	56.7
	2–6 years	24	40.0
	7–11 years	2	3.3
Previous Hospitalization	Not Hospitalized	46	76.7
	Due to Diabetes	3	5.0
	Due to Other Illness	11	18.3
Exercise	Regularly Performing	4	6.7
	Not Performing	56	93.3
Drugs for Diabetes	Insulin	8	13.3
	Oral Hypoglycemic Agents	50	83.3
	Nil	2	3.3
Family History of Diabetes	Yes	35	58.3
	No	25	41.7
Presence of Health Risk Habits	Yes	46	76.7
	No	14	23.3

Table 1 shows that the majority of the participants (43.3%) were in the age group of 36–40 years, with equal representation of males and females. Most of the respondents were married (93.3%) and had primary or middle school education, indicating low educational attainment among the rural diabetic population. A large proportion were farmers (61.7%) with low monthly family income, highlighting the rural and low socioeconomic background of the subjects. The majority followed a mixed diet (86.7%) and belonged to joint families (80%). Most participants were Hindus (85%), and more than half (56.7%) had diabetes for less than one year. A majority had not been previously hospitalized (76.7%). Most respondents did not practice regular exercise (93.3%) and were on oral hypoglycemic agents (83.3%). More than half had a family history of diabetes (58.3%), and a high proportion (76.7%) reported the presence of health risk habits. Overall, the findings indicate that the study population comprised middle-aged rural adults with low socioeconomic status and limited healthy lifestyle practices, emphasizing the need for structured educational interventions.

Table 2: Pre-Test Knowledge Score on Different Aspects of Diabetes and Its Management (N = 60)

Area of Knowledge	No. of Items	Range (Min–Max)	Mean Score	SD	Mean%
Introduction	3	0–3	1.27	0.686	42.33
Cause	1	0–1	0.37	0.486	37.00
Clinical Features	1	0–1	0.43	0.500	43.00
Management	2	0–2	0.75	0.600	37.50
Diet	9	1–8	3.18	1.186	35.33
Exercise	3	0–3	0.63	0.712	21.00
Medication	5	0–4	1.87	0.911	37.40
Monitoring & Complications	6	0–4	1.65	0.936	27.50
Overall	30	—	10.15	6.017	33.83

The table 2 reveals that the overall pre-test knowledge of diabetic clients was low, with a mean knowledge percentage of 33.83%. The lowest mean scores were observed in areas related to exercise, monitoring of complications, and diet. These findings indicate inadequate baseline knowledge regarding essential components of diabetes self-management, emphasizing the need for an educational intervention.

Table 3: Pre-Test Overall Knowledge Score on Diabetes and Its Management (N = 60)

Assessment	Range (Min–Max)	Mean	SD	Mean%
Overall Pre-Test Knowledge	6–22	10.15	2.629	33.83

Table 3 show the overall pre-test mean knowledge score was 10.15 out of 30, indicating inadequate knowledge among the study participants before the Planned Teaching Programme. This finding confirms that rural diabetic clients had insufficient awareness regarding diabetes and its management.

Table 4: Distribution of Subjects According to Pre-Test Level of Knowledge (N = 60)

Level of Knowledge	Frequency	Percentage (%)
Adequate (>75%)	0	0
Moderately Adequate (51–75%)	34	56.7
Inadequate (≤50%)	26	43.3
Total	60	100

Table 4 indicate the more than half of the participants (56.7%) had moderately adequate knowledge, while 43.3% had inadequate knowledge. None of the participants demonstrated adequate knowledge in the pre-test, highlighting the widespread lack of awareness regarding diabetes management among the rural population.

Table 5: Pre-Test Practice Score of Subjects on Diabetic Diet (N = 60)

Variable	No. of Items	Range (Min–Max)	Mean Score	SD	Mean%
Overall Practice	20	44–73	57.77	6.627	57.77
Scoring Pattern: Positive statements: 1, 2, 3, 4, 5- Negative statements: 5, 4, 3, 2, 1					

Table 5 among the overall mean pre-test practice score was 57.77%, indicating poor adherence to recommended diabetic dietary practices. This suggests that most participants did not follow appropriate dietary guidelines, which may negatively affect glycemic control and disease outcomes.

Table 6: Distribution of Subjects According to Pre-Test Level of Practice (N = 60)

Level of Practice	Frequency	Percentage (%)
Adequate (>62%)	17	28.33
Moderately Adequate (60–62%)	14	23.33
Inadequate (<60%)	29	48.33
Total	60	100

Table 6 finding revealed the nearly half of the participants (48.33%) had inadequate dietary practices, while only 28.33% demonstrated adequate practice. These findings show that inappropriate dietary behavior was common among rural diabetic clients, reinforcing the importance of dietary education.

Table 7: Post-Test Knowledge Score on Different Aspects of Diabetes and Its Management (N = 60)

Area of Knowledge	No. of Items	Range (Min–Max)	Mean Score	SD	Mean%
Introduction	3	2–3	2.87	0.343	95.67
Cause	1	1–1	1.00	0.000	100
Clinical Feature	1	0–1	0.97	0.181	97
Management	2	1–2	1.93	0.252	96.5
Diet	9	7–9	8.73	0.516	97
Exercise	3	2–3	2.90	0.303	96.67
Medication	5	3–5	4.52	0.596	90.4
Monitoring Complication	6	5–6	5.70	0.462	95

Table 7 show the post-test findings show a marked improvement in knowledge across all areas, with mean knowledge percentages exceeding 90% in all domains. This indicates that the Planned Teaching Programme was highly effective in improving participants' understanding of diabetes and its management.

Table 8: Post-Test Overall Knowledge Score on Diabetes and Its Management (N = 60)

Knowledge	Range (Min–Max)	Mean	SD	Mean% of Knowledge
Overall Post-Test Knowledge	26–30	28.62	0.904	95.4

Table 8 indicate the overall post-test mean knowledge score increased to 28.62 out of 30, with a mean percentage of 95.4%. This significant improvement demonstrates the effectiveness of the Planned Teaching Programme in enhancing knowledge among rural diabetic clients.

Table 9: Distribution of Subjects According to Post-Test Level of Knowledge (N = 60)

Level of Knowledge	Frequency	Percentage (%)
Adequate (>75%)	33	55
Moderately Adequate (51–75%)	27	45
Inadequate (<50%)	0	0
Total	60	100

Table 9 revealed that after the intervention, 55% of participants attained adequate knowledge and 45% attained moderately adequate knowledge. None of the participants remained in the inadequate category, indicating a positive

impact of the Planned Teaching Programme.

Table 10: Comparison of Pre-Test and Post-Test Average Knowledge Score on Diabetes and Its Management Before and After Administration of PTP (N = 60)

Area of Knowledge	Pre-Test Mean	SD	Post-Test Mean	SD	Enhancement Mean	SD	Paired t-test
Introduction	1.27	0.686	2.87	0.343	1.60	0.785	t = 15.779
Cause	0.37	0.486	1.00	0.000	0.864	0.663	t = 10.095
Clinical Feature	0.43	0.500	0.97	0.181	0.533	0.536	t = 7.711
Management	0.75	0.600	1.93	0.252	1.183	0.624	t = 14.686
Diet	3.18	1.186	8.73	0.516	5.55	1.294	t = 33.213
Exercise	0.63	0.712	2.90	0.303	2.267	0.756	t = 23.220
Medication	1.87	0.911	4.52	0.596	2.65	1.005	t = 20.415
Monitoring Complication	1.65	0.936	5.70	0.462	4.05	1.096	t = 28.628
Overall	10.15	2.629	28.62	0.904	—	—	t = 49.792

The table 10 shows a substantial increase in mean knowledge scores across all content areas after the intervention. The paired 't' test values indicate a highly significant difference between pre-test and post-test scores ($p<0.001$), confirming the effectiveness of the Planned Teaching Programme.

Table 11: Determination of Overall Mean Knowledge Score Before and After PTP (N = 60)

Knowledge	No. of Subjects	Pre-Test Mean	SD	Post-Test Mean	SD	Mean Difference	SD	Paired t-test
Overall Knowledge Score	60	10.15	2.629	28.62	0.904	18.467	2.873	t = 49.792

Table 11 show the overall mean knowledge score increased significantly from 10.15 in the pre-test to 28.62 in the post-test. The high 't' value indicates that the improvement was statistically significant, supporting the research hypothesis.

Table 12: Comparison of Average Knowledge Score Percentage on Diabetes and Its Management Before and After Administration of PTP

Area of Knowledge	Pre-Test Mean%	Post-Test Mean%	Enhancement Mean%
Introduction	42.33	95.67	53.34
Cause	37.00	100	63
Clinical Feature	43.00	97	54
Management	37.50	96.5	59
Diet	35.33	97	61.67
Exercise	21.00	96.67	75.67
Medication	37.40	90.4	53
Monitoring Complication	27.50	95	67.5
Total	33.83	95.4	61.57

Table 12 show the there was a marked increase in mean knowledge percentage from 33.83% in the pre-test to 95.4% in the post-test. The highest improvement was seen in exercise, diet, and monitoring of complications, demonstrating that the teaching programme effectively addressed key knowledge gaps.

Table 13: Association Between Pre-Test Level of Knowledge and Selected Demographic Variables (N = 60)

Demographic Variable	Category	Moderately Adequate n (%)	Inadequate n (%)	Chi-square / p value
Age (years)	30–35	4 (57.1)	3 (42.9)	χ^2 = 7.833
	36–40	19 (73.1)	7 (26.9)	p = 0.05*
	41–45	6 (31.6)	13 (68.4)	Significant
	46–60	5 (62.5)	3 (37.5)	
Gender	Male	16 (53.3)	14 (46.7)	χ^2 = 0.271
	Female	18 (60.0)	12 (40.0)	p = 0.602 (NS)
Marital Status	Married	30 (53.6)	26 (46.4)	χ^2 = 3.277
	Unmarried	2 (100)	0 (0)	p = 0.194 (NS)
	Widow/Widower	2 (100)	0 (0)	
Educational Status	Primary	15 (53.6)	13 (46.4)	χ^2 = 1.431
	Middle School	10 (58.8)	7 (41.2)	p = 0.921 (NS)
	High School	4 (80.0)	1 (20.0)	
	PUC	1 (50.0)	1 (50.0)	
	Graduate	2 (50.0)	2 (50.0)	
	Post Graduate	2 (50.0)	2 (50.0)	
Occupation	Farmer	21 (56.8)	16 (43.2)	χ^2 = 0.084
	Private Employee	11 (57.9)	8 (42.1)	p = 0.994 (NS)
	Government Employee	1 (50.0)	1 (50.0)	
	Any Other	1 (50.0)	1 (50.0)	
Family Income / Month	₹500–1000	11 (78.6)	3 (21.4)	χ^2 = 9.779
	₹1000–5000	19 (47.5)	21 (52.5)	p = 0.021*

	₹5000–10,000	4 (100)	0 (0)	Significant
	>₹10,000	0 (0)	2 (100)	
Dietary Pattern	Vegetarian	5 (62.5)	3 (37.5)	$\chi^2 = 0.00$
	Mixed	29 (55.8)	23 (44.2)	p = 1.000 (NS)
Type of Family	Nuclear	6 (50.0)	6 (50.0)	$\chi^2 = 0.271$
	Joint	28 (58.3)	20 (41.7)	p = 0.602 (NS)
Religion	Hindu	31 (60.8)	20 (39.2)	$\chi^2 = 2.639$
	Muslim	2 (28.6)	5 (71.4)	p = 0.267 (NS)
	Christian	1 (50.0)	1 (50.0)	
Duration of Diabetes Mellitus	Below 1 year	23 (67.6)	11 (32.4)	$\chi^2 = 3.905$
	2–6 years	10 (41.7)	14 (58.3)	p = 0.142 (NS)
	7–11 years	1 (50.0)	1 (50.0)	
Previous Hospitalization	Not hospitalized	28 (60.9)	18 (39.1)	$\chi^2 = 2.300$
	Due to Diabetes	2 (66.7)	1 (33.3)	p = 0.317 (NS)
	Other illness	4 (36.4)	7 (63.6)	
Exercise	Regular	1 (25.0)	3 (75.0)	$\chi^2 = 0.64$
	Not performing	33 (58.9)	23 (41.1)	p = 0.423 (NS)
Drugs for Diabetes	Insulin	3 (37.5)	5 (62.5)	$\chi^2 = 4.390$
	Oral agents	31 (62.0)	19 (38.0)	p = 0.111 (NS)
	Nil	0 (0)	2 (100)	
Family History of Diabetes	Yes	20 (57.1)	15 (42.9)	$\chi^2 = 0.008$
	No	14 (56.0)	11 (44.0)	p = 0.930 (NS)
Presence of Risk Habits	Yes	27 (58.7)	19 (41.3)	$\chi^2 = 0.33$
	No	7 (50.0)	7 (50.0)	p = 0.565 (NS)

Among the table 13 analysis revealed a statistically significant association between pre-test knowledge and age as well as family income ($p < 0.05$). Other demographic variables such as gender, education, occupation, dietary pattern, type of family, religion, duration of diabetes, hospitalization, exercise, medication, family history, and risk habits showed no significant association. This indicates that inadequate knowledge was prevalent across most demographic groups.

Discussion

The present study was undertaken to assess the effectiveness of a Planned Teaching Programme (PTP) on knowledge of diabetes and its management and the practice of diabetic diet among diabetic clients residing in selected rural villages of Hassan district, Karnataka. This chapter discusses the findings of the study in relation to the objectives and hypotheses, and interprets the results in the light of existing literature and conceptual understanding.

Diabetes mellitus is a chronic metabolic disorder that requires continuous self-management, including appropriate dietary practices, regular exercise, medication adherence, and monitoring to prevent complications. In rural areas, lack of awareness, low literacy levels, limited access to health information, and cultural practices often contribute to inadequate knowledge and poor self-care behaviors. The findings of the present study clearly highlight these gaps and demonstrate the effectiveness of structured educational interventions in addressing them.

The demographic profile of the study participants revealed that the majority of diabetic clients (43.3%) belonged to the age group of 36–40 years, followed by 31.7% in the age group of 41–45 years. This indicates that diabetes was prevalent predominantly among middle-aged adults, which is consistent with the epidemiological trend observed in India where diabetes increasingly affects individuals in their productive years. Equal representation of males and females (50% each) suggests that diabetes affects both genders almost equally in the rural population.

Most of the participants were married (93.3%), which may influence dietary practices and lifestyle behaviors, as family structure often plays a significant role in food preparation and health-related decision-making. Nearly half of the subjects (46.7%) had only primary education, indicating low educational attainment among rural diabetic clients. This low level of formal education may contribute to poor understanding of disease processes and self-management strategies.

Occupation-wise, a majority of the participants were farmers (61.7%), reflecting the rural agrarian background of the study setting. Most of the participants belonged to low-income groups, with 66.7% earning between ₹1000–5000 per month. This low socioeconomic status may limit access to healthy food options, regular medical follow-up, and health education resources. The majority of subjects followed a mixed diet (86.7%) and lived in joint families (80%), highlighting the influence of traditional dietary patterns and family systems on health behaviors.

The pre-test findings revealed that the overall mean knowledge score of diabetic clients was low (33.83%), indicating inadequate baseline knowledge regarding diabetes and its management. Area-wise analysis showed particularly low knowledge in aspects such as exercise (21%), monitoring of complications (27.5%), diet (35.33%), and medication (37.4%). These findings reflect significant knowledge gaps in critical components of diabetes self-management.

The lack of awareness regarding exercise and complication monitoring is of particular concern, as these are essential components in preventing long-term complications. Rural diabetic clients often perceive diabetes management as limited to medication intake, neglecting the importance of lifestyle modification. This inadequate baseline knowledge supports the need for structured educational interventions tailored to the rural context.

The distribution of subjects according to pre-test knowledge level further confirmed that none of the participants had adequate knowledge before the intervention, while 56.7% had moderately adequate knowledge and 43.3% had inadequate knowledge. These findings are consistent with

several community-based studies conducted in rural India, which report poor awareness and misconceptions regarding diabetes and its management.

The post-test findings demonstrated a substantial improvement in knowledge across all areas after the administration of the Planned Teaching Programme. The overall post-test mean knowledge score increased to 95.4%, indicating a marked enhancement in understanding of diabetes and its management.

Area-wise analysis revealed significant improvements in all domains, with post-test mean scores exceeding 90% in introduction, causes, clinical features, management, diet, exercise, medication, and monitoring of complications. The highest gain was observed in the exercise component (96.67%) and diet (97%), which were among the weakest areas during the pre-test. This improvement indicates that the PTP was effective in addressing the specific knowledge gaps identified at baseline.

The distribution of subjects according to post-test level of knowledge showed that 55% of diabetic clients achieved adequate knowledge and the remaining 45% attained moderately adequate knowledge. Notably, none of the participants remained in the inadequate knowledge category after the intervention. This dramatic shift underscores the effectiveness of the Planned Teaching Programme in enhancing knowledge among rural diabetic clients.

The effectiveness of the Planned Teaching Programme was further confirmed through comparison of pre-test and post-test knowledge scores. The paired 't' test analysis revealed a highly significant difference between pre-test and post-test scores across all knowledge domains, with an overall t-value of 49.792 at $p < 0.001$. This statistically significant improvement clearly supports the effectiveness of the PTP.

These findings are consistent with previous studies that have demonstrated the effectiveness of structured teaching programmes in improving diabetes-related knowledge among community populations. Educational interventions using simple language, culturally appropriate examples, and interactive teaching methods have been shown to significantly enhance comprehension and retention, especially among populations with low literacy levels.

Conclusion

The present study was conducted to assess the effectiveness of a Planned Teaching Programme (PTP) on knowledge of diabetes and its management and the practice of diabetic diet among diabetic clients residing in selected rural villages of Hassan district, Karnataka. Diabetes mellitus is a lifelong condition that requires continuous self-care, and inadequate knowledge and unhealthy lifestyle practices significantly contribute to disease complications, particularly in rural populations. The findings of the study revealed that, prior to the administration of the Planned Teaching Programme, diabetic clients had inadequate to moderately adequate knowledge regarding diabetes and its management. The overall pre-test knowledge score was low, and a considerable proportion of participants demonstrated poor understanding of essential aspects such as exercise, diet, medication adherence, and monitoring of complications. Similarly, pre-test assessment of dietary practices showed that nearly half of the participants had inadequate practice patterns, highlighting the gap between recommended guidelines and actual behavior.

After the administration of the Planned Teaching Programme, a significant improvement was observed in the post-test knowledge scores across all domains of diabetes and its management. The overall post-test knowledge score increased remarkably, and none of the participants remained in the inadequate knowledge category. The paired 't' test analysis confirmed that the difference between pre-test and post-test knowledge scores was highly statistically significant, clearly establishing the effectiveness of the Planned Teaching Programme. In conclusion, the Planned Teaching Programme was found to be an effective, feasible, and practical educational intervention for improving knowledge and promoting better self-management practices among rural diabetic clients. Structured health education delivered by nurses can play a vital role in empowering individuals, preventing complications, and improving the quality of life of people living with diabetes.

Limitations of the Study

Despite the significant findings, the present study has certain limitations. The use of a pre-experimental one-group pre-test post-test design without a control group limits the ability to establish a causal relationship between the intervention and the observed outcomes. The sample size was limited to 60 diabetic clients, which may restrict the generalization of the findings to a larger population. The study was conducted only in selected rural villages of Hassan district, Karnataka, and therefore the results may not be applicable to urban populations or other geographic settings. The post-test assessment was carried out shortly after the administration of the Planned Teaching Programme, which did not allow for evaluation of long-term retention of knowledge and sustained practice changes. Additionally, the assessment of dietary practices was based on self-reported data, which may be subject to response bias.

Recommendations

Based on the findings of the present study, several recommendations are proposed to strengthen future research and practice. Similar studies may be conducted using a larger sample size to improve the generalizability of the findings. Employing a true experimental or quasi-experimental research design with a control group is recommended to generate stronger evidence regarding the effectiveness of educational interventions. Longitudinal studies should be undertaken to evaluate the long-term retention of knowledge and sustainability of behavioral changes following Planned Teaching Programmes. Future interventions may also include family members of diabetic clients to enhance support and adherence to recommended practices. Regular reinforcement and follow-up sessions are advised to sustain the acquired knowledge and promote consistent behavioral change. Educational materials should be developed in local languages and supported with visual aids to improve comprehension, especially among populations with low literacy levels. Furthermore, community-based diabetes education programmes should be integrated into existing national and state-level public health initiatives to ensure wider reach and long-term impact.

Conflict of Interest
Not available

Financial Support
Not available

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