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EFFECTIVENESS OF STRUCTURED TEACHING PROGRAM ON KNOWLEDGE REGARDING DIABETES DIET AMONG PATIENTS WITH DIABETES MELLITUS.

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ABSTRACT

Introduction: Diabetes is a chronic medical condition that affects millions of people worldwide, leading to a significant burden on healthcare systems and individuals' quality of life. Managing diabetes requires careful monitoring of blood glucose levels, physical activity, and dietary intake. Diet plays a crucial role in managing diabetes and preventing complications. Many diabetes patients struggle to understand and follow a diet plan that effectively controls their blood sugar levels. Aim of the study: The study aims to evaluate the effectiveness of a Structured Teaching Program on the Diabetes Diet among patients with Diabetes Mellitus. Methodology: This study used a quantitative approach with quasi-experimental design, specifically a one-group pre-test post-test design, to assess the impact of a structured teaching program on diabetes diet knowledge among 100 diabetes patients in a Vadodara hospital. Participants were selected through convenience sampling. Data were collected using structured questionnaires on socio-demographic and clinical details, and self-structured questionnaires to assess knowledge on dietary recommendations, glycaemic index, portion control, and meal planning. Result: The pre-test knowledge mean score was 12.50, the standard deviation was 3.20, the Post-test knowledge mean score was 21.80, and the standard deviation was 2.90. The t – t-value was found to be 30.49, and the significance level was 0.0001. There was an association between the pre-test level of the knowledge and the socio-demographic variables, Refrain from Oily or fried food (p value = 0.035). There was an association between the pre-test level of the knowledge and the clinical variables, family History (p value = 0.003), currently talking Medicine (p value = 0.016), and Knowledge about the consumption of sugar (p value = 0.0003) Conclusion: In conclusion, the study highlights that structured teaching programs improve diabetes diet knowledge. Key factors like family history and medication use affect pre-test knowledge.

Keywords: Effectiveness, Structured Teaching Program, Diabetes Diet, Diabetes Patients.

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INTRODUCTION

Diabetes mellitus is a chronic medical condition that affects millions of people worldwide, leading to a significant burden on healthcare systems and individuals' quality of life.[1] One of the most critical aspects of managing diabetes is controlling blood glucose levels, which requires careful attention to diet, physical activity, and medication.[2] Among these, dietary management plays a pivotal role in regulating blood sugar levels and preventing or delaying complications related to diabetes.[3] However, many diabetes patients struggle with understanding and adhering to an appropriate diet plan that can control their blood sugar levels effectively.[4] A Structured Teaching Program (STP) offers a systematic approach to educating diabetes patients about dietary guidelines, food choices, portion control, and the impact of nutrition on blood glucose regulation.[5] Such programs aim to equip individuals with the necessary knowledge and skills to make informed dietary decisions and effectively manage their condition.[6] By providing clear, evidence-based information in a structured format, an STP can address gaps in understanding and empower patients to take a more active role in their diabetes management.[7]

MATERIAL AND METHODOLOGY

This study used a quantitative research approach to assess the effectiveness of a structured teaching program on improving diabetes patients' knowledge about their diet. The study followed a quasi-experimental design, using a one-group pre-test and post-test to measure the program's impact. It was conducted in the medical wards and OPD of a hospital in Vadodara, where diabetes patients received treatment and dietary counselling. The study included 100 patients diagnosed with Diabetes Mellitus, selected using convenience sampling based on their availability and willingness to participate. Data was collected through two questionnaires: one to gather basic demographic and health information, and another to assess the patients' knowledge about the diabetes diet, including topics like dietary recommendations, glycemic index, portion control, and meal planning.

RESULT

Section A: Distribution of patients according to their socio-demographic data in patients with diabetes mellitus.

Table 1 presents the socio-demographic characteristics of 100 diabetes patients. Most patients are aged between 61-70 years (30%) and 41-50 years (25%), with a higher proportion of males (55%) compared to females (40%). In terms of education, most patients have secondary (30%) or primary education (25%), with a smaller percentage being illiterate (5%) or holding a Master's degree (5%). Occupation-wise, 30% are employed, and 15% are unemployed or working in private jobs. The majority of patients follow Hinduism (70%), with 20% Muslim and 5% Christian. Regarding dietary habits, 60% follow a

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mixed diet, while 40% are vegetarian. Most patients are married (70%). Dietary habits show that 50% avoid oily foods, 40% consume sugary drinks, and 60% eat three meals a day. Water intake varies, with 50% consuming 3-4 liters daily. Most patients avoid fast food (70%) and consume milk (60%) and curd/buttermilk (55%), indicating a generally balanced diet.

Section B: Distribution of patients according to their clinical data in patients with diabetes.

Table 2 provides a detailed overview of the clinical data of 100 diabetes patients. The majority of patients have Type 2 diabetes (70%), with 25% having Type 1 diabetes and 5% gestational diabetes. The duration of diabetes varies, with 30% having it for 2 to 5 years, 30% for more than 5 years, and 25% for 6 months to 2 years. A majority (60%) have a family history of diabetes. Most patients (90%) are taking medication for diabetes, and 35% suffer from hypertension as a comorbidity. Regarding knowledge of sugar consumption, 80% are aware of its impact on diabetes management. In terms of physical activity, 40% engage in daily exercise, while 20% report no physical activity. The majority (65%) attend regular follow-up visits with their physician, and 85% take their prescribed medications regularly. This data highlights key factors, such as medication adherence, physical activity, and knowledge of dietary restrictions, that influence diabetes management.

Section C: Distribution of pre-test and post-test level of knowledge among patients with diabetes mellitus.

Table 3 shows the pre-test knowledge levels of diabetes patients regarding their diet; most patients had average scores (45%) or poor scores (40%), with only 15% Good scores and in post-test, poor scores decreased to 10%, and those with average scores decreased to 25% and 60% have good scores, reflecting a substantial improvement in their knowledge about diabetes diet. This indicates the effectiveness of the structured teaching program in enhancing patients' understanding of diabetes management.

Section D: Assessment of the effectiveness of the Structured Teaching Program on the Diabetes Diet among patients with Diabetes Mellitus.

Table 4 shows pre-test mean score was 12.50, indicating moderate knowledge, while the post-test mean increased to 21.80, showing improved knowledge. The "t" value of 30.49, much higher than the tabulated value of 2.00, indicates a statistically significant improvement in knowledge, with a p-value of 0.0001 confirming the effectiveness of the structured teaching program.

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Section E: Association between the pre-test level of knowledge of diabetes diet with selected socio-demographic variables.

Table 5 shows a significant association between pre-test knowledge and the avoidance of oily or fried foods ($\chi 2 = 8.50$, $p = 0.035$). The type of drinks consumed also showed a marginally significant association ($\chi 2 = 9.30$, $p = 0.054$). Other socio-demographic factors did not show significant associations with knowledge levels.

Section F: Association between the pre-test level of knowledge of diabetes diet with selected clinical variables.

Table 6 highlights significant associations between pre-test knowledge of diabetes diet and certain clinical variables. A family history of diabetes showed a significant association ($\chi 2 = 9.00$, $p = 0.003$), with patients having a family history demonstrating better knowledge. Similarly, patients taking medication for diabetes also had better knowledge ($\chi 2 = 5.85$, $p = 0.016$). Knowledge about sugar consumption was highly significant ($\chi 2 = 12.90$, $p = 0.0003$). Other factors, including type of diabetes, duration, comorbid conditions, physical activity, and medication adherence, did not significantly correlate with pre-test knowledge.

Table 1: Frequency and Percentage distribution of patients according to their socio-demographic data in patients with diabetes mellitus.

n=100

Socio-Demographic Data		Frequency (f)	Percentage (%)
Age	20 – 30	10	10%
	31 – 40	15	15%
	41 – 50	25	25%
	51 – 60	20	20%
	61 – 70	30	30%
Gender	Male	55	55%
	Female	40	40%
	Trance gender	2	2%
	Other	3	3%
Level of education	Illiterate	5	5%
	No formal education	15	15%
	Primary	25	25%
	Secondary	30	30%
	High secondary or diploma	10	10%
	Degree	10	10%
	Master degree or above	5	5%

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Occupation	Unemployed	15	15%
	Daily work / Labor work	10	10%
	Employment	30	30%
	Self-employed	10	10%
	Private	15	15%
	Government job	10	10%
	Student	10	10%
Religious	Hindu	70	70%
	Muslim	20	20%
	Christian	5	5%
	Other	5	5%
Dietary Habit	Vegetarian	40	40%
	Mixed Diet	60	60%
Marital status	Married	70	70%
	Unmarried	20	20%
	Divorced	10	10%
Refrain from Oily or fried food (intake of butter, ghee, fried foods, and sugar-rich food like ice cream, chocolate, candy, etc.)	Used to avoid	15	15%
	Strictly avoid	50	50%
	In very small quantity	20	20%
	Yes, occasionally very much	15	15%
Type of Drinks used	Coffee and Tea with sugar	40	40%
	Coffee and Tea without sugar	20	20%
	Lemon Tea	10	10%
	Juice of fresh fruits	25	25%
	Any other beverage	5	5%
No. of times meal taken	Two times	10	10%
	Three times	60	60%
	More than 3 times	30	30%
Daily water intake	1-2 lit.	25	25%
	3-4 lit.	50	50%
	5-6 lit.	25	25%
Fast food use	Yes	30	30%
	No	70	70%
Intake of milk	Yes	60	60%
	No	40	40%
Curd/Buttermilk	Yes	55	55%
	No	45	45%

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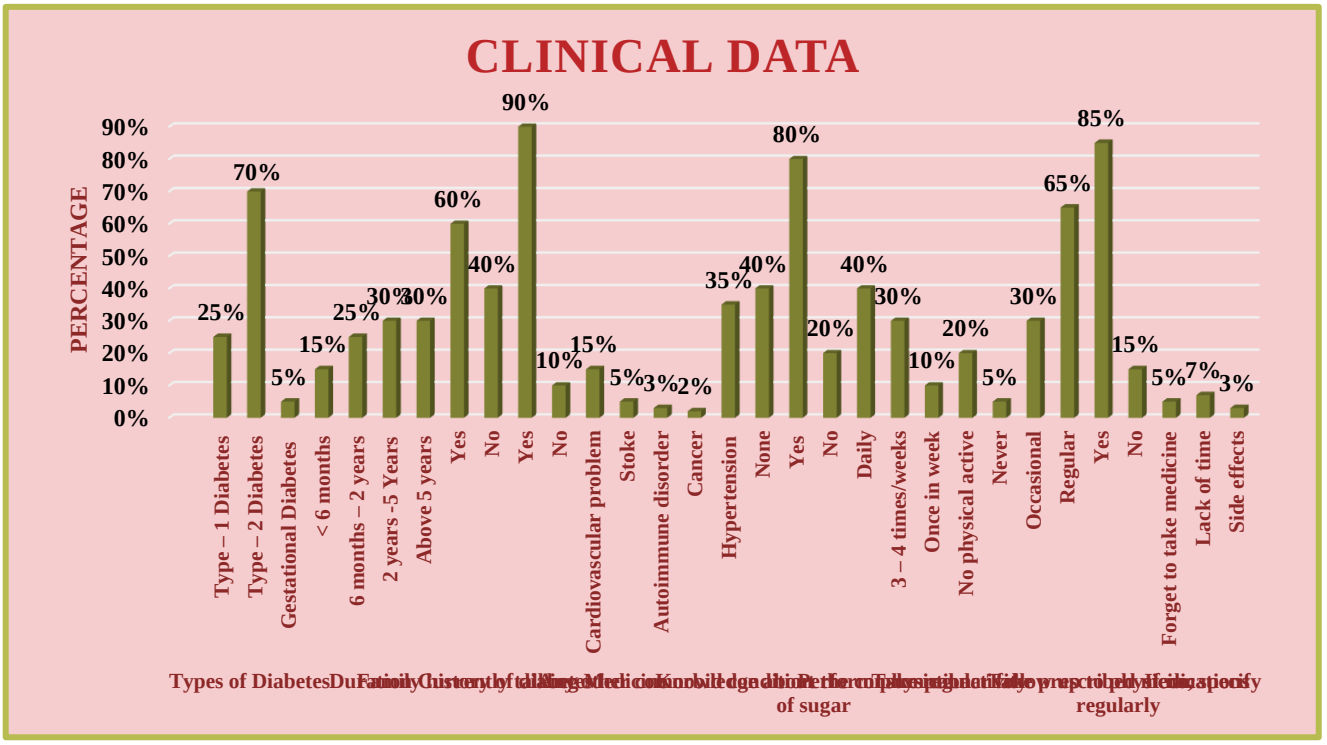
2. Bar Graph shows the distribution of patients according to their clinical data in patients with diabetes Mellitus.

n=100



3. Bar graph shows the distribution of pre-test and post-test level of knowledge among patients with diabetes mellitus.

n=100

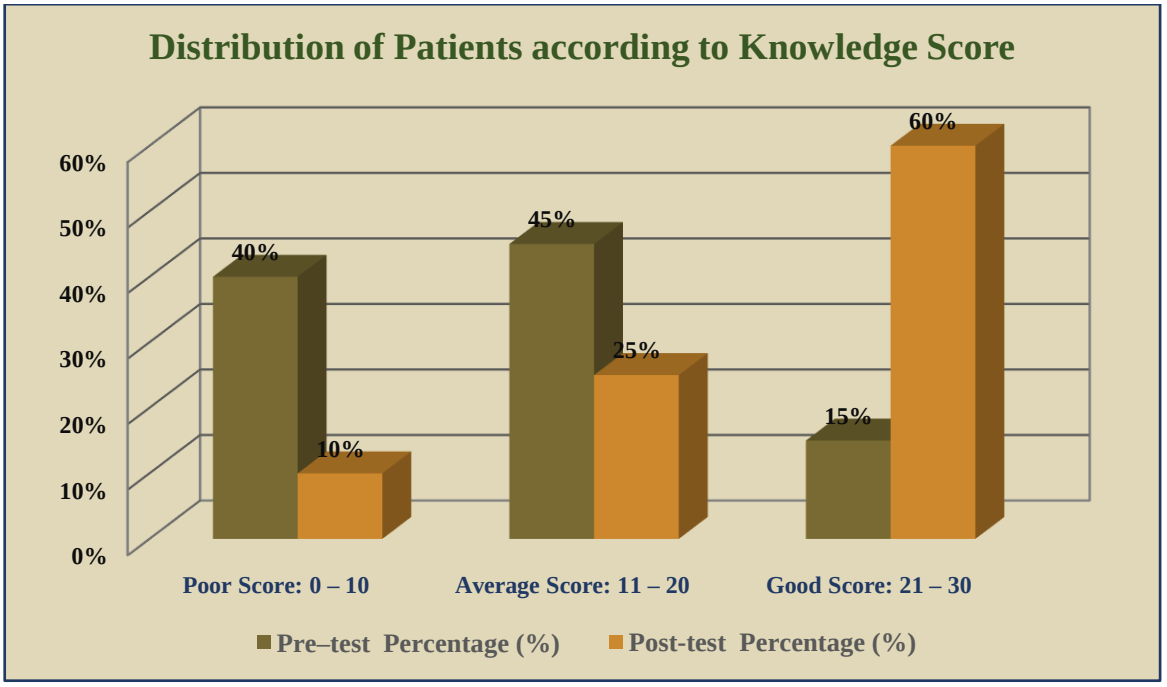


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Table 4: Mean, Standard deviation, and "t" value of pre-test and post–test level of knowledge among patients with diabetes.

n=100

	Number of patients	Mean	SD	Calculated "t" value	't' value tabulated	df	p= value
Pre–test	100	12.50	3.20	30.49	2.00	99	0.0001
Post–test	100	21.80	2.90				

Table 5: Association between the pre-test level of knowledge of diabetes diet with selected socio-demographic variables.

n=100

Socio-Demographic Data		Frequency (f)	χ^2Value	df Value	Level Of Significance (P Value)
Age	20 – 30	10	$\chi^2 = 6.25$	4	0.180
	31 – 40	15			
	41 – 50	25			
	51 – 60	20			
	61 – 70	30			
Gender	Male	55	$\chi^2 = 7.50$	3	0.052
	Female	40			
	Trance gender	2			
	Other	3			
Level of education	Illiterate	5	$\chi^2 = 12.30$	6	0.055
	No formal education	15			
	Primary	25			
	Secondary	30			
	High secondary or diploma	10			
	Degree	10			
	Master degree or above	5			
Occupation	Unemployed	15	$\chi^2 = 4.80$	5	0.436
	Daily work / Labor work	10			
	Employment	30			
	Self-employed	10			
	Private	15			
	Government job	10			
	Student	10			
Religious	Hindu	70	$\chi^2 = 5.00$	3	0.170
	Muslim	20			
	Christian	5			
	Other	5			
Dietary Habit	Vegetarian	40	$\chi^2 = 3.15$	1	0.076
	Mixed Diet	60			
Marital status	Married	70	$\chi^2 = 2.56$	2	0.280
	Unmarried	20			

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	Divorced	10			
Refrain from Oily or fried food (intake of butter, ghee, fried foods, and sugar-rich food like ice cream, chocolate, candy, etc.)	Used to avoid	15	$\chi^2 = 8.50$	3	0.035*
	Strictly avoid	50			
	In very small quantity	20			
	Yes, occasionally very much	15			
Type of Drinks used	Coffee and Tea with sugar	40	$\chi^2 = 9.30$	4	0.054*
	Coffee and Tea without sugar	20			
	Lemon Tea	10			
	Juice of fresh fruits	25			
	Any other beverage	5			
No. of times meal taken	Two times	10	$\chi^2 = 3.60$	2	0.168
	Three times	60			
	More than 3 times	30			
Daily water intake	1-2 lit.	25	$\chi^2 = 2.25$	2	0.322
	3-4 lit.	50			
	5-6 lit.	25			
Fast food use	Yes	30	$\chi^2 = 1.12$	1	0.291
	No	70			
Intake of milk	Yes	60	$\chi^2 = 0.50$	1	0.479
	No	40			
Curd/Buttermilk	Yes	55	$\chi^2 = 1.25$	1	0.263
	No	45			

Table 6: Association between the pre-test level of knowledge of diabetes diet with selected clinical variables.

n=100

Clinical Data		Frequency (f)	χ^2Value	df Value	Level Of Significance (P Value)
Types of Diabetes	Type – 1 Diabetes	25	$\chi^2 = 4.12$	2	0.128
	Type – 2 Diabetes	70			
	Gestational Diabetes	5			
Duration	< 6 months	15	$\chi^2 = 6.35$	3	0.095
	6 months – 2 years	25			
	2 years -5 Years	30			
	Above 5 years	30			
Family history of diabetes	Yes	60	$\chi^2 = 9.00$	1	0.003*
	No	40			
Currently talking Medicine	Yes	90	$\chi^2 = 5.85$	1	0.016*
	No	10			
Any other comorbid condition	Cardiovascular problem	15	$\chi^2 = 6.25$	5	0.285
	Stoke	5			
	Autoimmune disorder	3			
	Cancer	2			

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	Hypertension	35			
	None	40			
Knowledge about the consumption of sugar	Yes	80	χ^2 = 12.90	1	0.0003*
	No	20			
Perform physical activity	Daily	40	χ^2 = 3.30	1	0.349

DISCUSSION

This study demonstrated the effectiveness of a structured teaching program (STP) in improving diabetes diet knowledge among patients, as evidenced by significant improvements in knowledge scores from pre-test to post-test. Before the intervention, a large proportion of patients had poor knowledge about the diabetes diet, but post-test results showed a substantial increase in those with good knowledge. Socio-demographic factors such as education level, occupation, and gender showed varying influences on pre-test knowledge, with higher education and employment associated with better knowledge. Clinical variables like a family history of diabetes and medication use were also linked to better knowledge, highlighting the importance of proactive health management. Interestingly, knowledge of sugar consumption was strongly correlated with improved diet knowledge, while physical activity had a lesser impact. These findings underscore the value of structured educational programs tailored to improve dietary understanding, promote medication adherence, and address key factors like family history, which can significantly enhance diabetes self-management and overall patient outcomes.

CONCLUSION

Based on this study demonstrates the significant impact of structured teaching programs in enhancing patients' knowledge about the diabetes diet in individuals with diabetes mellitus. The findings emphasize the importance of socio-demographic and clinical factors, such as family history of diabetes and medication use, and knowledge about sugar consumption in shaping the participants' pre-test knowledge levels. This research was conducted to enhance patients' knowledge of the diabetes diet and evaluate the efficacy of structured teaching programs, so that such programs can be used in the future to improve dietary awareness and health management among diabetes patients for better long-term outcomes.

LIMITATIONS OF THE STUDY

1. The study was conducted with a sample of 100 patients, which may not fully represent the broader diabetic population.
2. The study only assessed immediate changes in knowledge (post-test), without a long-term follow-up to determine whether the improvement in knowledge was sustained over time.

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3. The study focused mainly on diet-related knowledge. While this is crucial for diabetes management, other factors like exercise, medication adherence, and mental health also play significant roles in diabetes care. These aspects were not included in the intervention.

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