

A study to assess the effectiveness of Structured Teaching Programme on knowledge regarding self care activities among patients with diabetes mellitus in a selected PHC at Tumkur

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Abstract: *Diabetes mellitus is a chronic disease, with which the patient must live his life. To achieve a state of health and acceptable level of function, patient with diabetes mellitus needs to have adequate knowledge and attitude of self-care activities. They need to clear their doubts related to self care activities such as diet, exercise, medication, self administration of insulin, food care and follow-up. To lead an independent life, the individual diabetes should be a controller of his own life.¹¹ An increase in population in India has an increased susceptibility to diabetes mellitus. The prevalence of diabetes in adults was found to be 2.4% in rural and 4.0-11.6% in urban dwellers. High frequencies of impaired glucose tolerance, shown by those studies, ranging from 3.6-9.1% indicates the potential for further rise in prevalence of diabetes mellitus in the coming decades. It is estimated 30 millions people in India are affected by diabetes and India is the country with highest rate of diabetes. The WHO estimated that India would be the home for 57 million diabetes by 2025.¹² Self care is a crucial element in secondary prevention of diabetes. Diabetics had a poor level of knowledge about the disease and self-care and hence a very casual attitude towards the disease. This predisposes them to the risk of development of complications in later life. Health education is an area which needs to be addressed immediately to improve patients' knowledge and skills of diabetes self-care practices so that they can better contribute towards the management of their disease.²⁴ The investigator during his clinical experiences identified that the diagnosis of diabetes created anxiety and doubts among diabetics on how to adjust with the restrictions imposed on them to control diabetes, also the investigator identified lack of knowledge in Preventing complications of diabetes mellitus and to make the patient to adhere with right self care activities.*

I. Introduction

“No fasting: No feasting”

Diabetes mellitus is a multisystem disease related to abnormal insulin production, impaired insulin utilization or both. Diabetes mellitus is a serious health problem through out the world¹

Diabetes mellitus is not modern disease. In 1500 B.C. Papyreus of ancient Egyptians recorded a number of remedies for passing urine. In 1000 B.C. itself Indian physician sushurutha diagnosed diabetes. In 1798, J.Jhon, the Greek physician found diabetes is associated with excess of glucose in blood. Discovery of insulin by Banting and Best in 1921 is a land mark in diabetes history.²

The term diabetes, refers to diabetes mellitus, which roughly translates to excessive sweet urine (known as "glycosuria"). Several rare conditions are also named diabetes. The most common of these is diabetes insipidus in which large amounts of urine are produced (polyuria), which is not sweet (insipidus meaning "without taste" in Latin).The term "type 1 diabetes" has replaced several former terms, including childhood-onset diabetes, juvenile diabetes, and insulin-dependent diabetes mellitus (IDDM). Likewise, the term "type 2 diabetes" has replaced several former terms, including adult-onset diabetes, obesity-related diabetes, and non-insulin-dependent diabetes mellitus (NIDDM). Beyond these two types, there is no agreed-upon standard nomenclature. Various sources have defined "type 3 diabetes" as: gestational diabetes.³

World diabetes day is the major global awareness campaign for patient with diabetes mellitus through out the world. World diabetes day was introduced in 1991, celebrated on 14 November each year, to co-inside with the birthday of Fredrick Banting who, along with Charles best first conceived the idea that lead to the discovery of insulin.⁷

Diabetes is an “Iceberg” disease. All through increase in both the prevalence and incidence of type 2 diabetes have occurred globally, they have been especially dramatic in societies in economic transition, in newly industrialized countries and developing countries. Currently the number of diabetes Worldwide is estimated to be around 150 million. This number is predicted to double by 2025, with the greatest number of cases being expected in China and India. The racing prevalence of diabetes in developing countries is closely associated with industrialization and socio economic development. It is estimated that 20% of the current global diabetic population resides in the south East Asian region. The number of a diabetic person in the countries of the Region is likely to triple by the year 2025, increasing from the present estimates of about 30 million to 80

million.⁹ Currently in the United States 7.8% of the population or around 23.6 million people have diabetes with 5.7 million being undiagnosed. Most of those diagnosed have Type-2 diabetes and are usually 45 years of age or older. But this snapshot is changing as more children and adolescents are increasingly being diagnosed with this type of diabetes. Studies show that the most common complication of Type-2 diabetes is cardiovascular and it is also the most costly complication at a cost of approximately \$7 billion of the \$44 billion annual direct medical costs for diabetes. This figure is from 1997 and many estimate that these figures could have doubled by now.¹⁰

As of 2000 it was estimated that 171 million people globally suffered from diabetes or 2.8% of the population. Type-2 diabetes is the most common type worldwide. Figures for the year 2007 show that the 5 countries with the largest amount of people diagnosed with diabetes were **India (40.9 million)**, China (38.9 million), US (19.2 million), Russia (9.6 million), and Germany (7.4 million). Currently, India is the diabetes capital of the world. It is estimated that over 40 million of those with diabetes are currently in India and that by 2025 that number will grow to 70 million. In other words, 1 in every 5 diabetics in the world will live in India. Diabetes is the number one cause of kidney failure, is responsible for 5% of blindness in adults and 1 million limb amputations.¹⁰ Because of the chronic nature of diabetes, the relentlessness of its complications and the means required to control both diabetes and its complications; this disease is very costly, not only for affected individuals and families but also for the healthcare systems. Studies done in India estimate that for a low income family with an adult having diabetes, as much as 25% of the family's income may need to be devoted to diabetes care.

II. Statement of the problem

A study to assess the effectiveness of Structured Teaching Programme on knowledge regarding self care activities among patients with diabetes mellitus in a selected PHC at Tumkur. .

III. Objectives

- 3.1. To assess the pre-test knowledge regarding self care activities among patients with diabetes mellitus
- 3.2. To compare the mean score of pre- test and post test knowledge scores regarding self care activities in diabetes mellitus.
- 3.3. To evaluate the effectiveness of structured teaching programme regarding self care activities in diabetes mellitus.
- 3.4. To find the association between knowledge on self care activities regarding diabetes mellitus with selected demographic variables of diabetic patients.

IV. Hypothesis

- 4.1.H₁: There is a significant difference between the pre test and post test knowledge regarding self care activities among patients with diabetes mellitus.
- 4.2.H₂: There is a significant association between the knowledge on self care activities with selected demographic variables of patients with diabetes mellitus.

V. Conceptual Framework

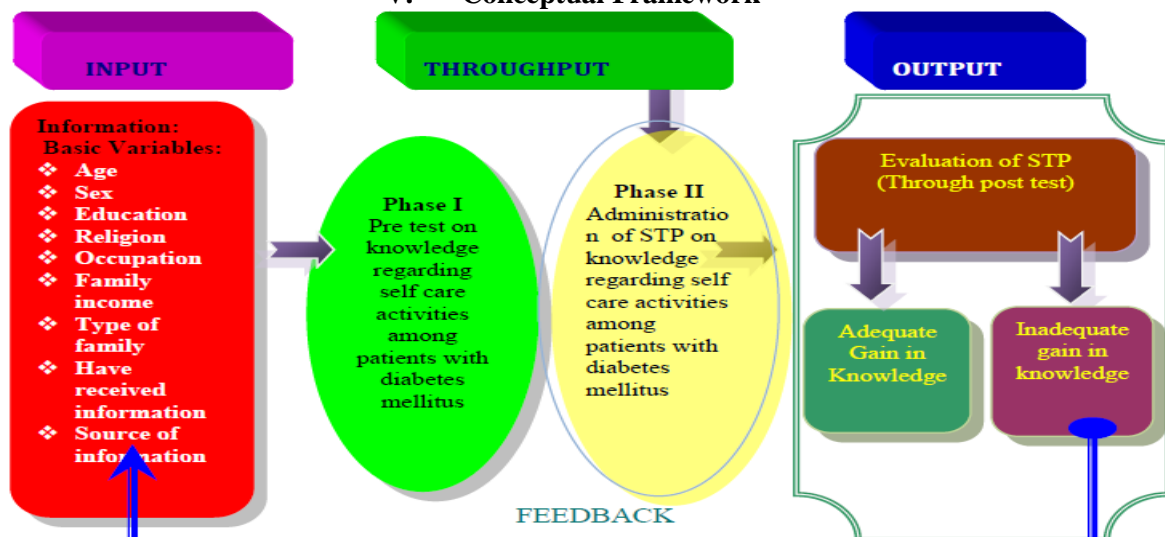


Fig: 1 Conceptual Framework of open system theory- By Bertalanffy and J.W Kenny.

Key Words:

Not Included In The Study
Included In The Study

VI. Methodology

6.1. Research Approach

An evaluative approach was considered the best to assess knowledge regarding prevention of iodine deficiency disorders (IDDs) in children among primary school teachers of selected schools, Bangalore.

6.2. Research Design

A research design selected for the present study was quasi experimental one group pre test post test design.

Group	Pre test (O ₁)	Nursing Intervention (X)	Post test (O ₂)
Patients with diabetes mellitus	Assessment of Knowledge on self care activities regarding diabetes mellitus	Structured Teaching Programme (STP)	Assessment of Knowledge on self care activities regarding diabetes mellitus

6.3. Dependent Variables

In the present study, the dependent variable is knowledge on self care activities regarding diabetes mellitus among the patients with diabetes mellitus.

6.4. Independent Variables

In this study it refers to the Structured Teaching Programme (STP) on knowledge regarding self care activities of diabetes mellitus among the patients with diabetes mellitus.

6.5. Demographic variables:

In this study demographic variables are age, gender, education, religion, occupation, family, income, type of family, Have they received any information regarding self care activities, sources of information.

6.6. Setting of the study: The present study was conducted in selected rural PHC in Tumkur.

6.7. Population: The target population for the present study consists of all the patients with diabetes mellitus attending the selected rural PHC, Tumkur.

6.8. Sample size: The sample for the present study was 60 patients with diabetes mellitus who fulfill inclusion criteria are considered as the sample.

6.9. Sample Technique: The non probability purposive sampling technique was used .

VII. Section- 1

Description of demographic variables of patients with diabetes

Table 1.1: Frequency and percentage distribution of patients with diabetes regarding to age, gender, education, religion and occupation.

n=60

SN.	Variables	Categories	Number(60)	Percentage(100)
1.	Age in years	35-40	4	6.7
		40-45	6	10.0
		45-50	16	26.7
		50-55	24	40.0
		55-60	10	16.7
2.	Gender	Male	32	53.3
		Female	28	46.7
3.	Educational status	Illiterate	8	13.3
		Primary	24	40.0
		Secondary	14	23.3
		Hr.Secondary	10	16.7
		Degree and above	4	6.7
4.	Religion	Hindu	47	78.3
		Muslim	4	6.7
		Christian	9	15.0
		Others	-	-
5.	Occupation	Unemployed	11	18.3
		Daily wager	27	45.0
		Self employed	13	21.7
		Employed	9	15.0

The data given in table 1.1 depicts the frequency and percentage distribution of patients with diabetes mellitus by age, gender, educational status, religion and occupation.

In the present study, the age wise distribution revealed that out of 60 patients with diabetes, 24 of the respondents (40.0%) belongs to age group between 50-55years, 16 of them (26.7%) belongs to age group above 45-50 years of age, 10 of them (16.7%) belongs to age group between 55-60 years, 6 of them (10.0%) belongs to age group between 40-45 years and 4 of them (6.7%) belongs to age group between 35-40 years of age.

In relation to gender, more than half 32 of the respondents (53.3%) were male and 28 (46.7%) of them were females.

According to education, 24(40.0%) of patients with diabetes had primary education, 14(23.3%) had secondary education,10(16.7%) had Higher secondary education, 8(13.3%) were illiterates and 4(6.7%) had the education of degree and above.

Religion wise distribution of the respondents indicated that 47 were Hindus (78.3%), 9 were Christians (15%) and 4 were Muslim (5%).

According to occupation, 27(45.0%) of patients with diabetes were daily wagers, 13(21.7%) were self employed, 11(18.3%) were unemployed, 9(15.0%) were employed.

Table 1.2: Frequency and percentage distribution of patients with diabetes according to family income, type of family, received information about self care activities and source of information. n=60

SN.	Variables	Categories	Number(60)	Percentage(100)
1	Income per month	Below 2501	17	28.3
		2501-5000	12	20.0
		5001-7500	27	45.0
		Above 7500	4	6.7
2	Type of family	Nuclear	38	63.3
		Joint	22	36.7
3	Have you received information about self care activities regarding diabetes?	Yes	53	88.3
		No	7	11.7
4	Source information (n=53)	Mass media	4	7.5
		Parents and Family	13	24.5
		Friends and relatives	11	20.7
		Health personnel	25	47.1

Table 1.2 depicts the frequency and percentage distribution of patients with diabetes according to family income, type of family, received information and source of information.

Considering the income in rupees, majority 27 (45%) of subjects had 5001-7500 as their monthly income, 17 (28.3%) had below 2501 as their monthly income, 12 (20.0%) had 2501-5000 and 4 (6.7%) had more than 7500 as monthly income.

With regard to the type of family, 38 (63.3%) of patients with diabetes belong to nuclear family and the rest 12(36.7%) belong to joint family.

Most of the respondents 53 (88.3%) had received from various sources and very information regarding self care activities and the rest 7 (11.7%) not received the information.

According to the source of information, most of the respondents 25(47.1%) had received the information through health personnel, 13 (24.5%) from parents and family, 11 (20.7%) from friends and relatives and the remaining 4(7.5%) from mass media.

Section-2

2.1: Assessment of knowledge before and after administering structured teaching programme(STP).

Table 2.1.1: Frequency and percentage distribution of patients with diabetes according to level of knowledge regarding on self care activities regarding diabetes. n=60

Level of knowledge	Classification of Respondents			
	Pre test		Post test	
	Number	Percentage	Number	Percentage
Inadequate knowledge (<50%)	48	80	-	-
Moderate knowledge (51-75%)	12	20	18	30.0
Adequate knowledge (>75%)	-	-	42	70.0
Total	60	100	60	100.0

Table 2.1.1 shows that in the pre test majority of the respondents 48 (80%) had inadequate knowledge and 12 (20%) had moderate knowledge on self care activities regarding diabetes. But, in post test, 42 (70%) subjects had adequate knowledge and 18 (30%) had moderate knowledge.

Table 2.1.2: Mean, Standard Deviation and Mean percentage of knowledge on self care activities regarding diabetes among patients with diabetes before and after STP.

Sno.	Aspects of Knowledge	Max. Score	Pre test			Post test		
			Mean	SD	Mean%	Mean	SD	Mean%
I.	General information	8	3.71	1.01	46.4	6.35	0.68	79.4
II.	Diabetes and diet	8	3.20	1.04	40.0	5.92	0.78	74.0
III.	Diabetes and exercise	8	2.88	1.48	36.0	5.64	1.41	70.6
IV.	Diabetes and leisure	5	1.53	0.69	30.7	3.47	0.64	69.5
V.	Diabetes and foot care	7	2.57	1.67	36.8	5.35	1.64	76.5
VI.	Diabetes and medication	4	1.36	0.94	34.2	2.98	1.04	74.7
VI.	Over all	40	15.12	3.92	37.8	29.72	3.62	74.3

The table 2.1.2 shows that in the pretest, with regard to general information about diabetes the mean was 3.71 with mean percentage 46.4, regarding diabetes and diet was 3.20 with mean percentage 40, in relation to diabetes and exercise the mean was 2.88 with mean percentage 36. Diabetes and leisure time rest and sleep the mean was 1.53 with mean percentage 30.7, diabetes and foot care the mean was 2.57 with mean percentage 36.8 and regarding diabetes and medication the mean was 1.36 with mean percentage of 34.2.

In the post test, with regard to general information about diabetes the mean was 6.35 with mean percentage 79.4, regarding diabetes and diet was 5.92 with mean percentage 74.0, in relation to diabetes and exercise the mean was 5.64 with mean percentage 70.6. Diabetes and leisure time rest and sleep the mean was 3.47 with mean percentage 69.5, diabetes and foot care the mean was 5.35 with mean percentage 76.5 and regarding diabetes and medication the mean was 2.98 with mean percentage of 74.7.

With regard to the overall knowledge the pre test mean was 15.12 with mean percentage 37.8 and the post test mean was 29.72 with mean percentage 74.3.

Section 2.2: Effectiveness of Structured Teaching Programme (STP)

Table 2.2.1: Mean, SD and mean percent of enhancement of knowledge before and after STP and statistical significance

SN.	Aspects of Knowledge	Maximum Score	Enhancement			Paired 't' value	P-value
			Mean	SD	Mean %		
I.	General information	8	2.64	0.86	33.0	14.85	p<0.05
II.	Diabetes and diet	8	2.72	0.94	34.0	13.94	p<0.05
III.	Diabetes and exercise	8	2.76	1.41	34.0	15.10	p<0.05
IV.	Diabetes and leisure	5	1.74	0.83	38.7	14.42	p<0.05
V.	Diabetes and foot care	7	2.78	2.15	39.7	17.17	p<0.05
VI.	Diabetes and medication	4	1.62	0.68	40.5	18.43	P<0.05
VI.	Over all	40	14.6	3.44	36.5	27.98	p<0.05

Note: * - Significant at p<0.05

The above table 2.2.1 represented the mean pre and post test knowledge on self care activities regarding diabetes among patients with diabetes. The paired t- test was carried out and it was found to be invariably significant at P<0.05 level in all aspects knowledge and also in over all aspects of knowledge, hence null hypothesis (H₀₁) is rejected and research hypothesis H₁ was accepted. It is evident that the structured teaching programme (STP) was significantly effective on improving the knowledge on self care activities regarding diabetes among patients with diabetes.

Section-3: Association between knowledge with selected demographic variables of patients with diabetes mellitus

Table 3.1: Association between knowledge and selected demographic variables of age, gender, educational status, religion and occupation of patients with diabetes mellitus

Sno.	Variables	Categories	Knowledge						Chi-square value	p-value
					≤Median		>Median			
			No. (60)	%	No. (32)	%	No. (28)	%		
1.	Age in years	35-40	4	6.7	3	9.3	1	3.6	20.854, df=4, S	p<0.05
		40-45	6	10.0	4	12.5	2	7.2		
		45-50	16	26.7	11	34.3	5	17.8		
		50-55	24	40.0	12	37.5	12	42.8		
2.	Gender	55-60	10	16.7	2	6.3	8	28.5	4.879, df=1, S	p<0.05
		Male	32	53.3	14	43.7	18	64.3		
3.	Educational status	Female	28	46.7	18	56.3	10	35.7	18.423, df=4, S	p<0.05
		Illiterate	8	13.3	6	18.7	2	7.1		
		Primary	24	40.0	18	56.3	6	21.4		
		Secondary	14	23.3	6	18.7	8	28.5		
		Hr.Secondary	10	16.7	2	6.3	8	28.6		
4.	Religion	Degree and above	4	6.7	0	0	4	14.3	1.204, df=2, NS	p>0.05
		Hindu	47	78.3	23	71.9	24	85.7		
		Muslim	4	6.7	3	9.3	1	3.6		
		Christian	9	15.0	6	18.7	3	10.7		
5.	Occupation	Others	-	-	-	-	-	-	2.361, df=3, NS	p>0.05
		Unemployed	11	18.3	5	15.6	6	21.4		
		Daily wager	27	45.0	15	46.8	12	42.8		
		Self employed	13	21.7	8	25.0	5	17.9		
		Employed	9	15.0	4	12.5	5	17.9		

Note: S- Significant at 5% level (p<0.05); NS- Not significant at 5% level (p>0.05)

Table 3.2: Association between knowledge and selected demographic variables of primary school teachers by income per month, years of experience, location of school, types of school, heard about IDD and sources of information

Sno.	Variables	Categories	No. (60)	%	Knowledge				Chi-square value	P-value
					≤median		>median			
					No. (32)	%	No. (28)	%		
1	Family income per month	Below 2501	17	28.3	10	31.3	7	25.0	8.444, df=3, S	p<0.05
		2501-5000	12	20.0	10	31.3	2	7.1		
		5001-7500	27	45.0	10	31.3	17	60.7		
		Above 7500	4	6.7	2	6.3	2	7.1		
2	Type of family	Nuclear	38	63.3	18	56.3	20	71.4	7.858, df=1, S	P<0.05
		Joint	22	36.7	14	43.7	8	28.6		
3	Have you received information about self care activities regarding diabetes?	Yes	53	88.3	26	81.3	27	96.4	4.338, df=1, S	P<0.05
		No	7	11.7	6	18.7	1	3.6		
4	Source information (n=53)	Mass media	4	7.5	2	6.3	2	7.2	9.134, df=3, S	P<0.05
		Parents and Family	13	24.5	10	31.3	3	10.7		
		Friends and relatives	11	20.7	8	25.0	3	10.7		
		Health personnel	25	47.1	12	37.5	13	46.4		

Note: S- Significant at 5% level (p<0.05); NS- Not significant at 5% level (p>0.05)

VIII. Conclusion

The present study was undertaken to assess the effectiveness of Structured Teaching Programme(STP) on knowledge regarding self care activities among patients with diabetes, Tumkur. The data was collected from sixty patients with diabetes by structured knowledge questionnaire before and after STP. Non Probability purposive sampling technique was used to select the sample of patients with diabetes. The findings of the study have been discussed with reference to the objectives, hypothesis and with the findings of other studies. The data is organized, analyzed through descriptive and inferential statistics. The study concluded with the following major findings.

- The findings revealed that 80.0% of them had inadequate knowledge and 20.0% had moderate knowledge before STP. The proportion has changed to be 30.0% of them had moderate knowledge and 70.0% had adequate knowledge after STP.

- The mean score percent of knowledge 37.8% was increased to the mean score percent of 74.3% with the enhancement in mean score percent of 36.5%.
- The post test mean score of knowledge (29.72) was comparably more than the pre test mean (15.12) and it was found to be statistically significant (t-value =27.98, df=59) at 0.05 level, ie., $p < 0.05$.
The hypothesis H_1 was accepted and hence the structured teaching programme was significantly effective in improving the knowledge on self care activities regarding diabetes among patients with diabetes.

The most important role of the nurse is to provide awareness to regarding knowledge on self care activities regarding diabetes among patients with diabetes. The nurse plays an important role in prevention and health promotion activities. Structured Teaching Programme(STP) was significantly effective in increasing the knowledge.

On the basis of the findings, the investigator concluded that the Structured Teaching Programme(STP) was prepared was effective. Hence the patients with diabetes should be encouraged to attend health education programme.

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