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A Study to Assess the Effectiveness of Diabetic Education on Knowledge and Knowledge on Practice of Self-Care Management of Patients Diabetes Mellitus patients at HSK Hospital, Bagalkot

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Abstract **Original Research Article**

***Background*:** Diabetes Mellitus is a Major Public Health Concern World-wide. There will be an a Alarming Increase in the Population with Type 2 Diabetes in Developed and Developing Countries Over the next two Decades. The Global Prevalence of DM was estimated to increase from 4% in 1995 to 5.4% by the year 2025. In 2011, 366 million People (8.3%) World-wide were Affected by DM. Numbers are Expected to rise to 552 million (9.9%) for DM by 2030. Poor Awareness and Practices among Diabetic Patients are some of the Important Variables Influencing the Progression of Diabetes and Its Complications which are Largely Preventable through Education and Involvement of the Patient. Method**:** One group pre-test post-test experimental design. The sample for this study consists of 30 subjects with diabetes mellitus are selected by convenient sampling method. A questionnaire was used to assess the knowledge and knowledge on practice was assessed by using chek list. ***Results*:** The mean post-tests core after the diabetic teaching was higher than the mean pre-test score, the post-test knowledge and practice score was 21. The obtained 't' value for the comparison of knowledge score was 33.55 at 29 (df) significant at ($p<0.05$) level. The calculated 't' value for the comparison of knowledge on practice score was 36.49 at 29 (df) significant at ($p<0.05$) level. The educational status has influenced on the post-test knowledge on person with diabetes mellitus. ***Conclusion*:** The knowledge and practice has significant effect in management of diabetes mellitus after the diabetic education programme which improved the knowledge and knowledge on practice among patients with diabetes mellitus.

Keywords: Diabetes Mellitus, Knowledge, Pre-test, Post test, Self-care management.

INTRODUCTION

Diabetes mellitus (DM) is a common chronic disease and is a public health problem that affects all level of society, regardless of age, gender, ethnicity or race. Diabetes mellitus is characterized as chronic metabolic syndrome of glucose intolerance generally involving absolute or relative insulin deficiency, insulin resistance, or both. The hallmark of diabetes mellitus is hyperglycemia. The deranged metabolism of carbohydrates, fats, and proteins may eventually lead to development of chronic micro vascular and macro vascular complications including organ specific degenerative processes [1].

DM virtually affects every system of the body mainly due to metabolic disturbances caused by hyperglycaemia, especially if diabetes control over a period of time proves to be sub optimal. Until recently it was believed to be a disease occurring mainly in developed countries, but recent findings reveal a rise in number of new cases of type 2 DM with an earlier onset and associated complications in developing countries [2].

Diabetes is associated with complications such as cardiovascular diseases, nephropathy, retinopathy and neuropathy, which can lead to chronic morbidities and mortality. World Health Organization (WHO) estimates

that more than 346 million people worldwide have DM. This number is likely to more than double by 2030 without any intervention. Almost 80% of diabetes deaths occur in low and middle-income countries [2].

According to WHO 2016 in India, 31.7 million people were affected by diabetes mellitus. This figure is estimated to rise around 79.4 million by 2030 [3].

Diabetes mellitus (DM) can be defined as a group of metabolic diseases characterized by hyperglycaemia with disturbance of carbohydrate, fat, and protein metabolism resulting from defects in insulin secretion, insulin action or both [4].

India has been dubbed as the "Diabetes Capital of the World" as it is home to largest number of patients with Type 2 Diabetes Mellitus in the world. The direct cost related to management of Diabetes in India has almost doubled between the years 1998–2005. Studies have shown that awareness about Diabetes Mellitus and following the recommended self-care practices for it, are the mainstay of controlling Diabetes Mellitus and its complications. Furthermore, research has shown that non-adherence to prescribed self-care practices for Diabetes is associated with adverse outcomes like decreased quality of life and reduced life expectancy. Considering the above, present study was conducted to assess the knowledge and self-care practices about Diabetes Mellitus among patients with Type 2 Diabetes Mellitus attending selected tertiary healthcare facilities in Udupi taluka of Karnataka state [5].

Diabetes is a lifestyle disease which requires a multipronged approach for its management, wherein patient has an important role to play in terms of self-care practices, which can be taught to them by educational programs. To develop such an educational program, a baseline assessment of knowledge and self-care practices of patients, need be made. The two objectives of the study were to estimate the knowledge of diabetic patients regarding the disease and its complications, and to estimate the knowledge and adherence to self-care practices concerned with Type 2 diabetes mellitus [6].

DM management focuses on several aspects, namely education, meal planning, changes in lifestyle, physical activity, habits. One study explained that educational interventions influence knowledge, physical activity, food intake, self-efficacy, and health literacy. Diabetes self-management education (DSME) plays a key role in empowering people with diabetes to engage and sustain lifestyle changes, which have been shown to improve health outcomes [7].

The disease can be prevented and controlled by engaging in certain behaviors and lifestyles such as regular exercise, healthy eating patterns, avoiding smoking, and controlling fat and glucose in the blood. There are seven major behaviors related to diabetes self-care management, they include diet, physical activity, monitoring blood glucose levels, adherence to proper medication consumption, good problem solving, coping skills, and risk reduction behavior. Continuous selfcare will reduce the incidence of DM complications. However, most DM sufferers do not practice adequate self-care techniques such as controlling fasting blood glucose levels [8].

The dynamic nature of diabetes and its impact on multiple aspects of one's life requires individuals to make frequent and ongoing self-management decisions. Therefore, the title of this chapter has been modified to include self-management education (SME) and self-management support (SMS), in recognition of the growing evidence and benefit of SMS for individuals living with diabetes, particularly when combined with SME [9].

Self-care in diabetes has been defined as an evolutionary process of development of knowledge or awareness by learning to survive with the complex nature of the diabetes in a social context. Because the vast majority of day-to-day care in diabetes is handled by patients and/or families, there is an important need for reliable and valid measures for self-management of diabetes [10].

There are many positive contributing factors, such as social factors, demographic factors, and various socio-economic factors, but the role of physicians in increasing the practices associated with personal care for people with this disease is crucial and most important for the desired outcome [11].

Some of the symptoms of type 1 diabetes and type 2 diabetes are Feeling more thirsty than usual, Urinating often, Losing weight without trying, Presence of ketones in the urine. Ketones are a byproduct of the breakdown of muscle and fat that happens when there's not enough available insulin, Feeling tired and weak, Feeling irritable or having other mood changes, Having blurry vision, Having slow-healing sores, Getting a lot of infections, such as gum, skin and vaginal infections [12].

MATERIALS AND METHODS

Study design

The research design adopted for this study was one group pre test and post test design

Q1 - Pre-test

X - Diabetic education on self - care management of patients with diabetes mellitus

Q2 - Post test

Study Population:

The population of the study includes all the patients who were coming for check up and diagnosed as diabetes mellitus at HSK Hospital during the data collection period of four weeks.

Data Collection:

Formal permission was obtained from the managing director of the HSK hospital, to conduct the study, the study was carried out for a period from 26/10/2024 to 15/12/2024. The purpose and duration of the study was explained to the samples to get co-operation and informed consent was obtained from them. The sample was selected on the basis of selection criteria.

First demographic data collected, in the pre- test the knowledge and knowledge on practice regarding the self-care management among patients with diabetes mellitus was assessed by structured questionnaire.

After pre-test, diabetic education was given with the help of power point presentation. At the end of the session pamphlet was distributed for the patient those who have participated and non-participated in this group. The patients were encouraged to clarify their doubts. Post test was conducted on 7thday by using the same questionnaire to find out the effectiveness of diabetic education regarding self-care management of patients with diabetes mellitus

Statistical Analysis

To statistically analyze a study assessing the effectiveness of diabetes education on patients' knowledge and practice of self-care management, researchers would typically use paired t-tests to compare the pre-intervention knowledge and practice scores with post-intervention scores for each individual participant, allowing for analysis of within-subject changes following education.

Ethical Consideration

Ethical clearance certificate was obtained from shri B. V. V. S sajjalashree institute of nursing sciences, the ethical institutional committe. Written consent was obtianed from each participant.

Table 1: Description of Demographic Variables of Patients with Diabetes Mellitus, (n=30)

S. No	Demographic Variables	Frequency (f)	Percentage (%)
1.	**Age in years**		
	30–40	2	7
	41–50	10	33
	51–60	12	40
	61andabove	6	20
2.	**Sex**		
	Male	17	57
	Female	13	43
3.	**Types of family**		
	Joint family	17	57
	Nuclear family	13	43
4.	**Education**		
	Illiterate	2	7
	Primary and Secondary	11	37
	Higher secondary	9	30
	Graduate/diploma	8	26
5.	**Occupation**		
	Agriculture	4	13
	Business	7	23
	Self employment	5	17
	Teacher	5	17
	Others	9	30
6.	**Income**		
	₹.2000–4000	13	43
	₹.4000–6000	14	47
	₹.6001–8000	2	7
	Above₹.8000	1	3
7.	**Source of information**		
	Family members	3	10
	Neighbour	19	63
	Telecommunication	8	27
	Health education	0	0
8.	**Types of food habits**		
	Vegetarian	0	0
	Non Vegetarian	30	100
9.	**Types of diabetes mellitus**		
	Insulin dependent	12	40
	Non insulin dependent	18	60

Table 1 show the distribution of demographic variables

- Regarding age group 30–40(7%) were between41–50(33%) were between 51–60 years (40%)were between above61 (20%)
- Regarding type of family 17 (57%) were males and 13(43%) were females.
- Regarding the gender 17 (57%) were joint family and remaining 13 (43%) nuclear family
- Regarding education 2(7%) were with illiterate, 11(37%) were primary and secondary education,9 (30%) were of higher secondary and 8 (26%) were graduate / diploma.
- Regarding occupation 4(13%) were agriculture,7(24%) were business,5(17%) were self employment, 5(17%) were teacher, 9(30%) were others.
- Regarding income 13(43%) were earning ₹.2001–4000,14(47%) were earning ₹.4001–6000,2(7%)were earning ₹.6000–8000 and 1(3%) were earning above₹.8000
- With regard to information obtained, 3(10%) from family members, 19(63%) from neighbours, 8(26.6%) from telecommunication.
- Regarding type of food habits 30(100%) were non vegetarian
- With regarding to the type of diabetes mellitus 18(60%) were non insulin dependent and 12 (40%) were non insulin dependent diabetes mellitus.

Table 2: Distribution of Statistical Value of Pre test and Post Test Knowledge Score of Patients with Diabetes Mellitus, (n=30)

S. No	Knowledge	Mean	S.D	't' Value	Level of Significance
1.	Pre test	13	1.94	33.55*	0.05
2.	Post-test	21	1.41		

*significant

Table 2 shows that the mean score of knowledge in pretest was 13 and in post test was 21 and the calculated 't' value was 33.55 at df (29) was significant at 0.05 levels. It reveals that there was significant difference between the pre and post knowledge. So the diabetic education has a significant effect in improving the knowledge of the patients with diabetes mellitus.

Table 3: Distribution of Statistical Value of Pre test and Post Test Knowledge on Practice Score of Patients with Diabetes Mellitus, (n=30)

S. No	Knowledge on Practice	Mean	S.D	't' Value	Level of Significance
1.	Pre test	12	1.32	36.49*	0.05
2.	Post-test	21	1.42		

*significant

Table 3 shows that the mean score of knowledge on practice in pretest was 12and in post test was 21 and the calculated 't' value was 36.49 at df (29) was significant at 0.05 levels. It reveals that there was significant difference between the pre test and post test knowledge. So the diabetic education has a significant effect in improving the knowledge on practice of the patients with diabetes mellitus.

DISCUSSION

This is a quasi-experimental study intended to assess the effectiveness of the teaching on knowledge and knowledge on practice of patients with diabetes mellitus. The result of major study were discussed according to objectives.

The First Objective of the Study was to Assess the Knowledge and Knowledge on Practice of Self-care Management of Patients with Diabetes Mellitus

The pre test mean score of knowledge is 13 and mean post-test 21. The knowledge on practice score in pre test is 12 and post-test 21. It shows significant difference in pre test and post-test values. It implies that there is inadequate knowledge and knowledge on practice of self-care management among persons with diabetes mellitus before diabetic education.

Study findings consistent with the study of Kishor Kumar (2010) result shown that persons with diabetes 58.6% had inadequate knowledge and knowledge on practice regarding self-care management.

The Second Objective of to Deliver Diabetic Education Regarding Self-care Management of Patients with Diabetes Mellitus

The diabetic education for diabetes mellitus was delivered to the patients with the help of power point presentation and pamphlet distribution. The diabetic education consists of the areas of causes, medications, diet, exercises follow up and alternative therapy. The subjects communicated their ideas actively and clarified their doubts

A similar type of study was conducted by Studer. S. P (2011) on education program for diabetic patients regarding the risk factors, healthy diet, exercise in diabetes, management and common source of diabetic

health education program. The results showed that 76% have improve their knowledge after the health teaching section.

The Third Objective was to Evaluate the Effectiveness of Diabetic Education on Knowledge and Knowledge on Practice Regarding Self-care Management of Patients with Diabetes Mellitus

The obtained 't' value for knowledge 33.55 and knowledge on practice 36.39 at df (29) significant at 0.05 level. It reveals that there is a improvement in the knowledge and knowledge on practice on self-care management among patients with diabetes mellitus.

Manik. V (2013) conducted a similar study to assess the impact of IEC intervention on diabetes mellitus management. The subjects were provided with repeated health education sessions and information about diabetes mellitus. After the intervention, it was found that the knowledge and practice of the patient on diabetes was improved significantly.

The Fourth Objective of the Study was to Associate the Findings with Selected Demographic Variables with Knowledge on Self-care Management of Patients with Diabetes Mellitus

The demographic character namely the age, sex, occupation, monthly income, type of family and source of information were associated with knowledge by using X^2 test. It shows that their educational status has a significant relationship between the pre test knowledge score among patients with diabetes mellitus.

Khan Amar (2102) conducted a study to develop a scale to measure knowledge about diabetes. The questionnaire was generated based on content, face and construct validity procedure. Significant relationships were found between knowledge on diabetes mellitus and age, gender, educational status. No significant relation between income and dietary pattern.

The Fifth Objective of the Study was to Associate the Findings with Selected Demographic Variables with Knowledge and Knowledge on Practice on Self-care Management of Patients with Diabetes Mellitus.

The demographic character namely the age, sex, education, occupation, monthly income, type of family and source of information were associated with knowledge by using X^2 test. It shows that there is no significant relationship between the pre test knowledge among patients with diabetes mellitus.

A similar type of study conducted by Shalini (2012) to find the effectiveness of structured teaching program on home care management of diabetes mellitus it reveals that there was no significant association between the selected demographic variables and level of knowledge on home care management in pre test as well as in post-test.

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