

# A Study to Assess the Effectiveness of Planned Teaching Programme on Knowledge of Foot Care among Diabetic Patients at Selected Community Health Center in Bhopal (M.P.)

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## ABSTRACT

**Background:** Wounds may be caused in a variety of ways. Some wounds are difficult to heal, such as diabetic foot ulcers and venous leg ulcers. We conducted a health technology assessment of skin substitutes for adults with neuropathic diabetic foot ulcers and venous leg ulcers, which included an evaluation of effectiveness, safety, cost-effectiveness, the budget impact of publicly funding skin substitutes, and patient preferences and values. **Objectives:** The aim of this study was to assess the effectiveness of planned teaching programme on knowledge of foot care among diabetic patients. **Methods:** This study made use of an evaluative approach with a one group pre-test post-test design. The sample for the study sample comprised of 30 Diabetic Patient. Following the pre-test, Planned teaching programme was administered and post-test conducted 10 days after the administration of Planned teaching programme. **Result:** Reveals that most of them (80%) of the diabetic patients had good knowledge & 16.7% of them had average knowledge on prevention of diabetic foot care, only 3.3% of the subjects had poor knowledge regarding prevention of diabetic foot care in the post - test. It shows that Information Booklet was highly effective regarding knowledge on foot care. The mean post-test knowledge score (22.5) was higher than the mean pre-test knowledge score (13.6). The computed 't' value ( $t_{29}=15.12$ ) was higher than the table value ( $t_{29}=2.05$ ) at 0.05 level of significance. Hence the research hypothesis  $H_1$  is accepted and it was inferred that the mean difference between pre- and post-test knowledge score was statistically significant. **Conclusion:** The study concluded that Information Booklet was highly effective regarding knowledge on foot care.

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**KEYWORDS:** Effectiveness, Foot care, Diabetic patient

## INTRODUCTION

**Rajeshwari, G,** revealed that daily foot wash should be supplemented with a foot bath about once a week. After washing, it is important to moisturize the feet, but not between the toes, which can cause fungal infection. The patients have to cut their nails when needed. The nails should not be too long, which can cause wounds, neither too short, which makes the nail grow inwards. Cut the nails straight and file the edges. The diabetes patients have to change socks everyday to dry and clean socks that fit good not to elastic, thick or bulky.

**Meenaxi Massey, Kota** Diabetes mellitus is an endocrine disorder characterized by hyperglycemia that is high blood sugar level. This is caused due to a relative or absolute insulin deficiency. A hormone produced by the pancreas lack of insulin either relation or absolute affects metabolism or breaking down of carbohydrate, protein, fat, water and electrolyte leading to an accumulation of glucose in the blood.

Foot complications are common among diabetes type II patients. The disease can cause neuropathy, which

makes the patients unable to feel any blisters or stones in the shoes. The blood circulation can also be reduced to the foot (peripheral vascular disease), which can make it difficult for wounds or ulcers to heal. This complication of non-healing wound can lead to amputations of toes, foot or legs. It is also important to wash the feet daily in lukewarm water with a sponge or washcloth and dry the feet carefully, especially between the toes.

**Rita Thapa, SijoKoshy**, concludes that Diabetes mellitus (DM) is the fourth leading cause of death in most developed countries. Foot problems are important contributory factors to the high morbidity and mortality observed in diabetic patients. Therefore, an integrated management programme is needed in which optimal regulation of diabetes and associated co morbidity and regular communication and instruction of the patient will be enhanced.

Today's greatest world wide problem is diabetes mellitus. This is a challenge for health professionals as there is no effective cure for it. The prevalence of diabetes for all the age groups was estimated to be 2.85% in 2013 and this number is likely to increase to 4.4% in 2030.

#### Need of the study:

Diabetes is fast gaining the status of a potential epidemic in India with more than 62 million diabetic individuals currently diagnosed with the disease. In 2000, India (31.7 million) topped the world with the highest number of people with diabetes mellitus followed by China (20.8 million) with the United States (17.7 million) in second and third place respectively.

**Wild, et. al**, - The prevalence of diabetes is predicted to double globally from 171 million in 2000 to 366 million in 2030 with a maximum increase in India. It is predicted that by 2030 diabetes mellitus may afflict up to 79.4 million individuals in India, while China (42.3 million) and the United States (30.3 million) will also see significant increases in those affected by the disease. India currently faces an uncertain future in relation to the potential burden that diabetes may impose upon the country. Many influences affect the prevalence of disease throughout a country, and identification of those factors is necessary to facilitate change when facing health challenges. So what are the factors currently affecting diabetes in India that are making this problem so extreme.

**According to the International Journal of Diabetes**, India is diabetes capital of the world with as many as 50 million people suffering from type-2 diabetes, India has a challenge to face. However, medical experts feel that timely detection and right

management can go a long way in helping patients lead a normal life. Diabetes might be one of the most talked about diseases across the world and especially in India, but awareness about the same can well be estimated by the fact that India today has more people with type-2 diabetes (more than 50 million) than any other nation. With the country having the highest number of diabetic patients in the world, the sugar disease is posing an enormous health problem to our country today. Often known as the diabetes capital of the world, India has been witnessing an alarming rise in incidence of diabetes in Developing Countries.

**Joshi Abhijeet**, depicted that a diabetic foot surgeon, says when diabetes is not well controlled there is damage to the organs and the immune system is impaired. Foot problems occur in people with diabetes and can get serious very fast. Recent statistics show that approximately a quarter of all people with diabetes worldwide at some point during their lifetime will develop sores or breaks (ulcers) in the skin of their feet. Those with long standing diabetes are at the risk of developing diabetic neuropathy and complications of diabetic foot.

**Peter, B.** conducted a study to assess the influence of patient's knowledge on .of diabetic foot ulcers among diabetic patients in selected hospitals. A total of 150 samples and descriptive research design was chosen for the study. A structured questionnaire were used to collect data and descriptive influential statistics is used for the data analysis. Study results showed that the patients who had higher knowledge on .of diabetic foot ulcers had a less incidence of diabetic ulcer than the patients those who had lesser knowledge.

**Whittemore, A.** reported that nurses play a major role in the early detection, ongoing assessment of diabetic foot ulcers among diabetic patients. Nurses need to have a periodic assessment and health education on the .of diabetic foot ulcers.

**Sandeep Singh & Ashish Purohit**, Conduct the study on Clinical and biochemical profile of Indians with type 2 diabetes mellitus: A problem lurking for India. The body mass index (BMI) of the study subjects was - cases -  $23.94 \pm 1.83 \text{ kg/m}^2$ , controls -  $22.8 \pm 1.38 \text{ kg/m}^2$  ( $P < 0.001$ ). Prevalence of an abnormal value of waist-to-hip ratio (WHR) was found to be 46% in the cases. Of the cases, 58% had poor glycemic control. The dominating symptoms were polyuria 30% (15,  $P < 0.05$ ) and tingling and numbness 26% (13,  $P < 0.01$ ). The most prevailing complications were retinopathy 26% (13;  $P < 0.01$ ) and **neuropathy 26% (13;  $P < 0.01$ )**. Dyslipidemia was present in the 88% of the cases.

## PROBLEM STATEMENT:

“A study to assess the effectiveness of planned teaching programme on knowledge of foot care among diabetic patients at selected community Health center in Bhopal M.P.”

## OBJECTIVES:

1. To assess the pre-test knowledge level regarding of diabetic foot.
2. To assess the post-test knowledge level regarding of Diabetic foot.
3. To compare the pre-test and post-test knowledge score regarding of diabetic foot.
4. To determine the effectiveness of planned teaching programme on knowledge regarding Diabetic foot care among the Diabetic patients.
5. To find out the association between pre-test knowledge score of diabetic patient with selected demographic variables.

## HYPOTHESIS:

**H<sub>1</sub>** .There is a significant difference between mean pre-test and post-test level of knowledge score regarding foot care among diabetic patients.

**H<sub>2</sub>** .There is a significant association between the pre-test knowledge score of diabetic patients regarding foot care with selected demographic variables.

## OPERATIONAL DEFINITIONS:

**Assess-** In this study gathering the information on knowledge regarding of Diabetic foot among adults.

**Effectiveness-** It refers to the outcome of information booklet in improving the knowledge regarding of Diabetic foot.

**Planned teaching programme -**In this study planned teaching programme refers to a planned health education regarding knowledge on foot care which consists of definition of diabetes mellitus, causes, sign and symptoms and diabetic foot care.

**Knowledge-** Ability to give correct responses to the question asked by investigator as measured by structured knowledge questionnaire.

**Footcare-** *Foot care is basically the care of the feet. It involves all the preventive and corrective care of the foot and ankles.*

## MATERIAL AND METHODS:

**Research approach:** Evaluate research approach was used.

**Research design:** *Pre-experimental one group pre-test post-test design.*

## Variables:

**Independent variables:** Planned Teaching Programme

**Dependent variables:** Knowledge of diabetic patients regarding foot care.

## Research setting:

The study was conducted *in* community Health Centre Gandhi Nagar Bhopal.

**Population:** *In this study population consisted of diabetic patients at selected Health Center Gandhi Nagar Bhopal*

## Sample:

Diabetic patients

**Sample size:** 30

## Sample techniques:

Simple Random Sampling technique was used.

## Criteria for sample selection:

### Inclusion criteria:

- Subjects of selected present in OPD in community Health Center Gandhi Nagar at Bhopal.
- Subjects who are present during the time of data collection.
- Subjects who knew to read Hindi and English language.

### Exclusion criteria:

- Subjects who are not available during data collection.
- Who are not willing to participate in study.

## Tool and method of data collection:

### DEVELOPMENT OF TOOL

Selection and development of tool was done based on the objectives of the study. After the review of literature, the structured knowledge questionnaire was found appropriate. The developed tool was refined and validated by the experts and guide.

The tool consists of self-administered knowledge questionnaire which includes two sections:

Section A: Socio- demographic characteristics.

Section B: Knowledge regarding foot care.

### Section A: Socio- Demographic characteristics

The first part of the tool consist of 10 items for obtaining an information about the selected socio demographic characteristics such as age, sex, , education, income, living with diabetes mellitus, Dietary pattern, blood sugar level, previous history, amputation, any information regarding diabetic foot.

### Selection B: Knowledge questionnaire regarding prevention of Diabetic foot.

Questionnaire is to assess the knowledge of subjects regarding prevention of Diabetic foot. Which consists of 30 items of multiple-choice questions where total score is 30.

**Scoring technique**

The self-administered knowledge questionnaire consisted of 30 closed ended – multiple choice questions. Every correct answer was accorded a score of one (1) and every incorrect/unanswered item was accorded zero (0). The maximum score on self-administered knowledge questionnaire was forty (30). The different level of knowledge is categorized as follows:

The knowledge level has been arbitrarily divided in to three categories based on structured knowledge questionnaire

- Good knowledge : 21 to 30
- Average knowledge : 11 to 20
- Poor knowledge: 1 to 10

**Reliability of tool:** A pre-test was done to establish the reliability and to determine the language clarity and feasibility of the tool. The reliability of the tool is computed by using Spearman Brown's prophecy formula, where 'r' value obtained was 0.80 which showed that the tool was highly reliable and valid.

**Data collection procedure-**

- The data collection was carried out from to 02/07/2021 to 05/08/2021. Permission was obtained from the concerned authorities of the selected community health centre Gandhi Nagar Bhopal.

- The investigator started the study by introducing himself talking about the research study and purpose.
- After introducing and explaining the purpose of the study, from the 1<sup>st</sup> to 11<sup>th</sup> day, the pre- test knowledge questionnaire was given to the subjects regarding the foot care was assessed.
- Planned teaching programme regarding foot care was given after pre-test, used to facilitate easy understanding. From the 12<sup>th</sup> -23<sup>rd</sup> days, the investigator administered the post-test and assessed their knowledge on the foot care.

**Ethical consideration:**

After approval of the research committee in the R D Memorial College of Nursing Bhopal. Confidentiality was assured and written consent obtained from each sample. The sample was ensuring they have rights to withdraw from the study if they found any difficulties during the intervention.

**Plan for data analysis:**

The plan for data analysis includes-

- Demographic data was planned to analyze in terms of frequency and percentage.
- Paired 't' test was used to test the significant difference in the pre test and post test knowledge scores.
- Chi – square test was used to find the association between the level of knowledge and socio-demographic characteristics.

**RESULTS:****Table 1. Distribution of subjects according to their demographic variables****N=30**

Demographic characteristics	Frequency	Percentage	
<b>Age (in year)-</b>	41-50	9	30.0
	51-60	10	33.3
	≥ 61	5	16.7
<b>Gender-</b>	Male	23	76.7
	Female	7	23.3
<b>Educational status</b>	Primary	16	53.3
	High school	9	30.0
	Higher Secondary	3	10.0
	Graduation	2	6.7
<b>Income- (Per capita)</b>	≤ 3,000 Rs/-	15	50.0
	3,001-5,000 Rs/-	11	36.7
	5,001-10-000 Rs/-	3	10.0
	≥10,001 Rs/-	1	3.3
<b>Living with diabetes mellitus-</b>	≤ 5 years	10	33.3
	6-10 years	5	16.7
	11-15years	8	26.7
	≥ 16years	7	23.3
<b>Dietary pattern-</b>	Vegetarian	14	46.7
	Non-vegetarian	16	53.3
	Other	0	0.0

<b>Blood sugar level</b>	≤ 140mg/dl	10	33.3
	140-200mg/dl	16	53.3
	≥ 201mg/dl	4	13.3
<b>Previous history of diabetic foot</b>	No	25	83.3
	Yes	5	16.7
<b>Any amputation in your body part</b>	No	29	96.7
	Yes	1	3.3
<b>Information regarding Foot care</b>	No	25	83.3
	Yes	5	16.7

**Table 1:** Most of the Diabetic patients were in the age group of 41-50 Yrs (~30%), major age group were 51-60 yrs (33.3%) and above 61 years were (16.7%), like this ≤ 40 yrs age groups were (20%). Most of the Diabetic patients were male (76.7%) and 23.3% were females. It is reveals that most of the patients were male due to their life style pattern. Most of the Diabetic patients had primary education (53.3%), However, 30% of them had High school education and 10% & 6.7% of them had Graduation and Higher secondary school respectively. Most (50%), of the Diabetic patients were monthly income ≤ Rs. 3000/-, Major 50% of them were in Rs.3001-5000, However 36.7 and 10% were Rs.5001-10,000/ & ≤ Rs. 3000/- 3.3% respectively. Highest number (33.3%), of the Diabetic patients were had diabetes less than five years, higher number of (16.7%) of them were had diabetes 11-15 years and however, 26.7% and 23.3% of them were had diabetes mellitus ≤ 16 years and 6-10 years- respectively. Majority of them (53.3%), had Non vegetarian food habit & 46.7 % of them vegetarian food habits respectively. It shows that most of them were in Non vegetarian dietary pattern. Majority of them (53.3%), had blood sugar level 140-200mg/dl & 13.3% of them had ≥ 201mg/dl. It shows that related their dietary pattern. Less than 140 mg/dl blood sugar level were of them only 33.3%. Most of them (83.3%), diabetic patient does not have previous diabetic foot & 16.7% of them had previous diabetic foot history. Most of them (97%), diabetic patient does not have any amputation in their body part & only 3% of them had amputation in their body part. Highest of them (83%), have not received any information regarding diabetic foot care & 17 % of them had knowledge regarding diabetic foot care with the help of information booklet.

**Table: 2. Frequency and percentage distribution of Pre-test test knowledge of Diabetic patients regarding foot care** N=30

Knowledge score	Frequency	Percentage	Mean	S.D
0-10	8	26.7	13.6	4.75
11-20	18	60.0		
21-30	4	13.3		

**Table 2** reveals that more than half (60%) of the diabetic patients had average knowledge & 26.67% of them had poor knowledge on prevention of diabetic foot care, only 13.33% of the subjects had good knowledge regarding prevention of diabetic foot care in the pre - test.

**Table: 3. Frequency and percentage distribution of Post-test test knowledge of Diabetic patients regarding foot care** N=30

Knowledge score	Frequency	Percentage	Mean	S.D
0-10	1	3.3	22.5	3.66
11-20	5	16.7		
21-30	24	80.0		

**Table 3** reveals that most of them (80%) of the diabetic patients had Good knowledge & 16.7% of them had average knowledge on prevention of diabetic foot care, only 3.3% of the subjects had poor knowledge regarding prevention of diabetic foot care in the post - test. It shows that Information Booklet was highly effective regarding knowledge on foot care.

**Effectiveness of information booklet on knowledge regarding foot care**

**Table: 4 Mean, mean difference, standard deviation, and ‘t’ value of pre- and post-test knowledge score of Diabetic patients.** N = 30

Pre-test	Mean knowledge score		Mean difference	Standard deviation		t value
	Post-test	Post-test		Pre-test	Post-test	
Diabetic patients	13.6	22.5	8.9	4.75	3.66	15.12*

T<sub>39</sub> = 2.05, p < 0.05 \* Significant

**Table 4** shows that the mean post-test knowledge score (22.5) was higher than the mean pre-test knowledge score (13.6). The computed 't' value ( $t_{29}=15.12$ ) was higher than the table value ( $t_{29}=2.05$ ) at 0.05 level of significance. Hence the research hypothesis  $H_1$  is accepted and it was inferred that the mean difference between pre- and post-test knowledge score was statistically significant. This indicates that the information booklet was effective in increasing the knowledge of diabetic patient regarding foot care.

**Table: 5 Association of demographic variables and Pre-test knowledge of Diabetic patients regarding foot care**

Demographic characteristics		0-10	11-20	21-30	D. f	Tabel Value	$\chi^2$ value	Significance
Age (in year)-	≤ 40	1	2	3	6	p=12.6	13.27	s**
	41-50	3	6	0				
	51-60	1	8	1				
	≥ 61	3	2	0				
Gender-	Male	5	14	4	2	p=5.99	2.12	NS
	Female	3	4	0				
Educational status	Primary	6	9	1	6	p=12.6	15.44	S**
	High school	1	8	0				
	Higher Secondary	1	0	2				
	Graduation	0	1	1				
Income- (Per capita)	≤ 3,000 Rs/-	5	9	1	6	p=12.6	9.29	NS
	3,001-5,000 Rs/-	2	8	1				
	5,001-10-000 Rs/-	1	1	1				
	≥10,001 Rs/-	0	0	1				
Living with diabetes mellitus-	≤ 5 years	2	7	1	6	p=12.6	6.52	NS
	6-10 years	1	4	0				
	11-15years	1	5	2				
	≥ 16years	4	2	1				
Dietary pattern-	Vegetarian	3	10	1	4	p=9.49	1.52	NS
	Non-vegetarian	5	8	3				
	Other	0	0	0				
Blood sugar level	≤ 140mg/dl	1	8	1	4	p=9.49	3.73	NS
	140-200mg/dl	4	10	2				
	≥ 201mg/dl	3	2	1				
Previous history of diabetic foot	No	6	15	4	2	p=5.99	1.2	NS
	Yes	2	3	0				
Any amputation in your body part	No	8	18	3	2	p=5.99	6.7	NS
	Yes	0	0	1				
Information regarding Foot care	No	6	15	4	2	p=5.99	1.2	NS
	Yes	2	3	0				

**Table 5** shows that there was significant association between the pre-test knowledge score and **age** and **education status** of the diabetic patients at level of 0.05 hence research hypothesis  $H_2$  is accepted.

There was no significant association between the pre-test knowledge score and Gender, Income- (Per capita), Living with diabetes mellitus, Dietary pattern, Blood sugar level, Previous history of diabetic foot, any amputation in your body part, Information regarding Foot care, of the diabetic patients at level of 0.05 the calculated value Lesser than the table value, hence research hypothesis  $H_2$  is rejected.

## DISCUSSION:

### Knowledge of Diabetic Patients regarding prevention of foot care

The knowledge score of 60% respondents ranged average knowledge, 8 (26.7%) subjects have poor

knowledge, during the pre-test, however, during the post-test 24 (80%) subjects scored 20-30, more than half of the subjects had good knowledge regarding foot care. Only. This indicated that the Diabetic

Patients are in need for information regarding foot care with the aid of Planned teaching programme.

### **Effectiveness of Planned teaching programme regarding prevention of Diabetic foot**

The mean post-test knowledge score (22.5%) was higher than the mean pre-test knowledge score (13.6%). Further, to know the statistical significance the 't' value ( $t_{29}=15.12$ ) was computed which showed that there was a highly significant difference between pre-test and post-test knowledge score. These results proved that the Planned teaching programme prepared by the investigator has helped the Diabetic Patients to improve their knowledge on foot care. On the whole the study showed that Planned teaching programme is an effective teaching strategy.

The findings of other research studies are consistent with these findings which showed that Planned teaching programme in enhancing knowledge of Diabetic Patients. A study was conducted on effectiveness of Planned teaching programme module regarding knowledge of safe handling of anti-neoplastic drugs among 60 nursing students in Mangalore. Results showed that in the pre-test assessment majority (80%) of the respondents had an average level of knowledge on safe handling of antineoplastic drugs. The total mean percentage of pre-test knowledge score was 54.8% with mean and standard deviation  $14.59 \pm 4.75$  and mean post-test knowledge score was 85.8% with mean and standard deviation  $24.62 \pm 3.66$ . Significance of difference between the pre-test and post-test score was statistically tested using paired 't' test and it was found to be very highly significant ( $t=17.768$ ,  $p < 0.005$ ). (Smitha L. 2007)

**Conclusion:** The aim of this study was to assess the knowledge of Diabetic Patients on Prevention of Diabetic foot as well as to provide information to them about Foot care The information was given with the aid of Planned teaching programme which included various aspects such as introduction, causes, types, complication and management, which will help

the Diabetic Patients to improve their knowledge and to adopt a healthy lifestyle.

### **Recommendations:**

1. The study can be a replicated on a large sample with a control group.
2. A comparative study may be conducted to find out the effectiveness between PTP and STP, Information booklet regarding the same topic.
3. Planned teaching Programme similar study can be undertaken using other teaching strategies.
4. Similar study can be conducted using larger number of samples.
5. A study can be conducted to find the knowledge and attitude of Diabetic Patients regarding Prevention of Diabetic foot.

**Conflict of interest:** No

**Financial support:** Self

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