Original Research Article

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Effectiveness of educational intervention regarding foot care on knowledge among diabetes mellitus patients at selected health centers

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ABSTRACT

Background: Diabetes is one of the four major types of non-communicable diseases. It is considered as global epidemic. One of the most common, costly and severe complications of diabetes is diabetic foot. Aim of the present study was to assess the effectiveness of educational intervention regarding foot care on knowledge among diabetes mellitus patients at selected health centers.

Methods: In this study the research approach was quasi experimental one group pre-test post-test design was applied. Total 80 samples selected by non-probability convenient sampling technique. The educational Intervention was introduced to the group after the pretest. Knowledge was assessed by semi structured questionnaire.

Results: The result revealed that the mean pretest knowledge score regarding foot care was 5.21 which after post-test increased to 9.65. The standard deviation in pre-test 2.34 which after post- test increase 3.14. The obtained "t" value 4.765 was statistically highly significance p<0.05. The null hypothesis H0 is rejected and research hypothesis is accepted. There was significant association found with educational, status, income, knowledge about diabetic foot, and source of information

Conclusions: The study concluded that, the educational intervention administered by the researcher was effective to increase the knowledge regarding foot care among diabetes mellitus patients.

Keywords: Effectiveness, Educational intervention, Knowledge, Foot care, Diabetes mellitus

INTRODUCTION

According to WHO non communicable diseases (NCDs), commonly known as chronic or lifestyle-related diseases, and are not infectious to others. Diabetes is one of the four major types of non-communicable diseases (cardiovascular disease, diabetes, cancer and chronic respiratory diseases). According to 2005 international diabetic federation report 85% of diabetes related lower extremity amputations are preceded by a foot ulcer. One in every six peoples with diabetes in developed countries will have an ulcer during their lifetime and even worst in developing countries. One of the most common, costly and severe complications of diabetes is diabetic foot. Amputation is more common i.e., 10 to 20 times in

people with diabetes as compare to people without diabetes and it is estimated that consequence of diabetes every 30 seconds a lower limb or part of a lower limb is lost somewhere in the world. Diabetic foot can result in an important economic, social, and public health burden; especially in low-income communities, if there is neither an appropriate educational programme, nor adequate and suitable footwear.⁵

The most common cause of hospitalization in the person with diabetes are the foot complications and the development of diabetic foot complications is a multifactorial process and they result from a combination of micro vascular and macro vascular diseases that place the patient at risk for injury and serious infection that may

lead to amputation. Sensory neuropathy is the most common type of neuropathy affecting persons with diabetes and it leads to the loss of protective sensation in lower extremities and coupled with other factors, this significantly increases the risk for complication that result in lower limb amputation.¹¹

For early detection and prevention of complications it's important to practice diabetic foot care including daily foot examination and use of appropriate footwear. Higher incidence of diabetic foot ulcer occurs in people with poor knowledge and practice regarding diabetic foot care.⁶ Simple health education measures can improve both the knowledge and practice regarding foot care.⁷

METHODS

Study design

A quasi-experimental one group pre-test-post-test design carried out in selected health centers of Lucknow, during the period 4th November 2019 to 31st January 2020.

Study population

Diabetes mellitus patients in selected health centers of Lucknow i.e., Sarojini nagar CHC, PHC, Gudamba CHC, BKT CHC, Balrampur hospital, etc.

Sample size

The total sample size was calculated 80.

$$N=(Z_{\alpha}+Z_{\beta})^2/[In\ (1-e)]^2\ [1-p_1/p_1+1-p_2/p_2]$$

Where p_1 = 0.15 (15%) the % adequate pre-test knowledge and p_2 =1.0 (100%) the % adequate post-test knowledge under null hypothesis assumption (ref. Padma et al)

Coefficient difference 0.5, considered to be clinically significant type I error, α =5% type II error β =10% for setting power of study 90%.

Sampling method

Non-probability convenient sampling techniques was used.

Data collection tool

Tool 1: socio demographic variable

It includes Socio-demographic variables for diabetes mellitus patients consists of 15 items such as-age of the patients, gender, educational status, occupation, income, dietary pattern, marital status, type of family, residential area. habit, associated disease condition, knowledge about diabetic foot, source of information, family history of diabetes.

Tool 2: knowledge questionnaire regarding diabetes and foot care

The total consists of 20 items. Each correct answer carried out 'one' mark and wrong answer carried out 'zero' mark. The total maximum score is '20' and minimum score is '0'.

Table 1: Level of knowledge and scoring.

Score	Level of knowledge
1-6	Poor
7-13	Average
14-20	Good

Statistical analysis

Description of educational intervention

Education program is the combination of teaching regarding foot care that contains- introduction about diabetes, definition of diabetes mellitus, types of diabetes mellitus, causes of diabetes mellitus, complications, diabetic foot, causes of diabetic foot, risk factors for diabetic foot, symptoms of diabetic foot ulcer, referral symptoms of diabetic foot, special instructions regarding foot care, safety devices, exercises & demonstration on foot care. It designs to impart knowledge among diabetes mellitus patient.

Inclusion criteria

Inclusion criteria included patients who were diagnosed cases of diabetes mellitus minimum 3 months and patient who were willing to participate in the study.

Exclusion criteria

Exclusion criteria excluded those who had training about diabetic foot care, those who have diabetic foot ulcer, mental illness.

Statistical analysis

Data entered in Microsoft excel and analysis was carried out. The association between pre-test knowledge score of diabetes mellitus patients and their selected demographic variables was done by chi square test, effectiveness of educational intervention was done by paired t-test and the level of significance was set at p<0.05.

Ethical considerations

The study was carried out after obtaining approval from institutional ethical committee of King George's medical university Lucknow, and also permission was taken from chief medical officer of Lucknow. The participants were briefed about the study and informed consent obtained

from the participants prior to the data collection.

RESULTS

Level of knowledge among diabetes mellitus patients regarding foot care

It depicts that in pre-test 70% of the respondents were having poor level of knowledge, 30% were having average knowledge and no respondents were having good knowledge where as in post- test 12.5% respondents were having good knowledge, 76.3% were having average knowledge and remaining 11.3% were having poor knowledge (Table 2).

Table 2: Level of knowledge among diabetes mellitus patients regarding foot care.

Level of	Caomina	Pre-	test	Post	Post-test		
knowledge	Scoring	F	%	F	%		
Good	14-20	0	0	10	12.5		
Average	7-13	24	30	61	76.3		
Poor	1-6	56	70	9	11.3		

Effectiveness of educational intervention regarding foot care

It depicts that the mean pre- test score was 5.21 whereas the post- test score was 9.65. The standard deviation of pre-test score was 2.34 and the post-test score was 3.14. The enhancement of knowledge score that was the mean difference of 4.44 indicate that there was a significant improvement in the level of knowledge of respondents which indicate that educational intervention was effective

in improving the knowledge of diabetes mellitus patients regarding foot care. The calculated "t" value (4.765) with the tabulated value 1.65. The obtained "t" value on analysis of the data was found to be significant at p<0.05 level for the tabulated data. Since the calculated value greater than the tabulated value which revealed there was significant change in the post-test score of respondents. So, this is the evident that the educational intervention regarding foot care was very effective (Table 3).

Table 3: Effectiveness of educational intervention regarding foot care.

Foot are	N	Mean	Std dev.	df	Paired t value
Pre-test	80	5.21	2.34	- 79	4.765
Post-test	80	9.65	3.14	19	4.703

Association of pre-test knowledge score with socio demographic variables

Computed the chi square of each variable with the appropriate degree of freedom i.e., the variables age, gender, occupation, dietary pattern, marital status, type of family, residential area, personal habit, associated disease condition, family history of diabetes, treatment place have no association with the knowledge score of diabetes mellitus patient.

The educational, status, income, knowledge about diabetic foot, and source of information have association with the knowledge score of the diabetes mellitus (Table 4).

Table 4: Association of pre-test knowledge score with socio demographic variables.

¥7	Poor		Average		ъ.,	V 72
Variables	No	%	No	%	P value	X ² value
Age (year)						
25 -35	1	33.3	2	66.7		
36 -45	18	75.0	6	25.0		
46 -55	19	65.5	10	34.5	0.552	3.03
56 -65	14	77.8	4	22.2	df=4	NS
66 -75	4	66.7	2	33.3		
Gender						
Male	42	68.9	19	31.1	0.688	0.16
Female	14	73.7	5	26.3	df=1	NS
Educational status						
Illiterate	2	66.7	1	33.3		
Primary	41	85.4	7	14.6	د0.001	22.70
Secondary	11	61.1	7	38.9	<0.001 df=4	23.70 S
Senior secondary	1	10.0	9	90.0	u1–4	S
Graduate	1	100.	0	0.0		
Occupation						
Professional skilled	4	40.0	6	60.0		
Unskilled	1	33.3	2	66.7	0.059	7.43
Unemployed	30	76.9	9	23.1	df=3	NS
Retired	21	75.0	7	25.0		

Continued.

Variables	Poor Average			P value	X ² value	
	No	%	No	%	1 value	A value
Income (INR)						
Below 5000	18	75.0	6	25.0		10.82 S
50001-10000	28	82.4	6	17.6	0.029	
10001-15000	5	62.5	3	37.5	df=4	
15001-20000	4	36.4	7	63.6	u1—4	
20001 and above	1	33.3	2	66.7		
Dietary pattern						
Vegetarian	33	73.3	12	26.7	0.654	0.85 NS
Non-vegetarian	19	67.9	9	32.1	df=2	
Eggetarian	4	57.1	3	42.9	u1–2	149
Marital status						
Married	49	69.0	22	31.0	0.171	2.52
Unmarried	0	0.0	1	100.0	0.171	3.53
Widowed	7	87.5	1	12.5	Df=2	NS
Type of family					0.117	2.46
Joint family	34	77.3	10	22.7	0.117	2.46
Nuclear family	22	61.1	14	38.9	df=1	NS
Residential area					0.052	0.00
Rural	12	70.6	5	29.4	0.952	0.00
Urban	44	69.8	19	30.2	df=1	NS
Personal habit						
Smoking	1	33.3	2	66.7		
Tobacco	8	72.7	3	27.3	0.492	2.41 NS
Alcohol	1	100	0	0.0	df=3	
None	46	70.8	19	29.2		
Associated disease condition		, 0.0				
Hypertension	17	73.9	6	26.1		
Tuberculosis	1	100	0	0.0	0.698	0.72 NS
None	38	67.9	18	32.1	df=2	
Did you ever hear about dia		01.7	10	32.1		
Yes	9	50.0	9	50.0	0.035	4.42
No	47	75.8	15	24.2	df=1	5 S
If yes, then source of inform		13.0	13	24.2	ui-1	b
NA	47	77	14	23		
Community health worker	1	100	0	0.0		
			3		0.037	10.18 S
Relative	5 3	62.5		37.5	df=4	
Newspaper Padia/talavisian		33.3	6	66.7		
Radio/television	0	0.0	1	100		
Family history of diabetes	0	C4.2	-	25.7		
Mother/father	9	64.3	5	35.7	0.340 df=3	3.36 NS
Grandmother/grandfather	1	33.3	2	66.7		
Brother/sister	4	57.1	3	42.9		
Nil	42	75.0	14	25.0		
Where are you getting your						
Government hospital	45	75.0	15	25.0	0.091	2.86
Both government and	11	55.0	9	45.0	df=1	NS
private hospital		23.0		10.0	G1 -1	1,5

DISCUSSION

The present study was conducted among diabetes mellitus patients at selected health centers at Lucknow, i.e., Sarojini Nagar CHC, PHC, Gudamba CHC, BKT CHC, Balrampur hospital, etc. Among 80 diabetes mellitus patients 70% of the respondents were having poor

knowledge, 30% were scored average and no respondents were having good knowledge in pre-test where as in posttest 12.5% respondents were scored good. 76.3% were scored average and remaining 11.3% were scored poor. The similar study was conducted to assess the knowledge regarding diabetic foot ulcer among diabetic clients in a selected hospital, Kancheepuram district, Tamil Nadu.

The study revealed that 56% patients had inadequate level of knowledge.8 The researcher compared the calculated t value (4.765) with the tabulated value 1.65. The obtained "t" value on analysis of the data was found to be significant at p<0.05 level for the tabulated data. Since the calculated value lies beyond the tabulated value. A similar study was conducted to assess the effectiveness of foot care education among people with type 2 diabetes in rural Pondicherry, India. The study revealed that 53% and 41% of the patients had good diabetes awareness and good diabetes care respectively. There is a significant association in knowledge score regarding foot care among mellitus patients with education, income per month, knowledge about diabetic foot and source of information. There is no significant association with age, gender, occupation, dietary pattern, marital status, type of family, residential area, personal habit, associated disease condition, family history of diabetes, treatment place.

Limitations

The study is limited to the diabetes mellitus patients who are willing to understand and speak English and Hindi. The sample size was limited to only 80 diabetes mellitus patients and long-term follow-up could not be carried out due to time constraints. The assessment, intervention and implementation of educational intervention was done by same person.

CONCLUSION

Effectiveness of educational intervention regarding foot care on knowledge among diabetes mellitus patients at selected health centers. Based on the present study finding it was concluded that there was a significant improvement in the level of knowledge regarding foot care in post-test after administration of educational intervention. Thus, educational intervention was found to be effective in improving the knowledge regarding foot care among diabetes mellitus patients.

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