Effect Of Structured Teaching Module (Stm) On Buerger Allen Exercise Among Diabetic Patients

Mr. Shubham Dadarao Manwar[1], Mr. Prabhudas A. Raiborde[2],
[1.] *MSC Nursing II-year Dr. Panjab Rao Deshmukh Nursing Institute, Shivaji Nagar, Amravati, Maharashtra*
[2.] *Prof. cum vice Principal. Panjab Rao Deshmukh Nursing Institute, Shivaji Nagar, Amravati, Maharashtra*

Abstract— **Background of the study: Diabetes is a chronic condition that leads to various complications, with diabetic foot disease being one of the most significant concerns.[1] An estimated 537 million persons globally, aged 20 to 79, have diabetes (10.5% of all adults in this age range). Globally, the number of persons with diabetes will rise from 643 million in 2030 to 783 million in 2045.Among the strategies available for managing these complications, Buerger Allen Exercise (BAE) has shown potential in improving circulation and alleviating symptoms like pain and neuropathy in diabetic patients.[2] The purpose of this study was to assess the effect of structured teaching module (STM) on BAE among diabetic patients residing at selected urban region by using specially designed questionnaire. Objective: The objective of the study was to assess the effect of structured teaching module (STM) on BAE among diabetic patients. A quantitative approach and quasi experimental design were used to carry out this study. The diabetic patients were selected by purposive sampling technique where data was collected by using Structured Interview Schedule (SIS). The analysis was done by using descriptive and inferential statistics. Results: The majority of diabetic patients in the age group of 25-38 years were 44% in experimental group and 45.3% in control group whereas ≥49 years 12% in the experimental group and 8% in the control group. The majority of male 50.7% in experimental group and 53.3% in control group whereas 49.3% female in the experimental group and 46.7% in the control group. The majority of 58.7% were married in experimental group and 65.3% in the control group. Whereas 0% were unmarried in experimental group and 2.7% were in control group. The majority 40% were taken secondary education in experimental group and 33.3% in the control group. Whereas 2.7% were illiterate in experimental group and 10.7% were in control group. The majority 50.7% were employment in experimental group and 60% in the control group. Whereas 2.7% were private employee in experimental group and 2.7% were in control group. The majority 44% were belongs to nuclear family in experimental group and 41.3% in control group whereas 18.7% belongs to extended family in experimental group and 20% in the control group. The majority of 30.7% having family income below 10000 Rs in experimental group and 26.7% in control group whereas 17.3% having family income 15001-20000 Rs in experimental group and 20% in the control group. There was a significant difference between pre-test knowledge score and post-test knowledge score of diabetic patients regarding buerger allen exercise as a value of t =22.77 p=0.045 where <005. It reveals that the self-interview module what effective in enhancing the knowledge of diabetic patients regarding BAE. also, there was no significant association between the knowledge score and demographical variables Conclusion: Analysis of data showed that there is significant difference between pre-test and post-test knowledge. Hence, structured teaching module has significantly brought out their improvement in the knowledge on BAE among diabetic patients.**

Index Terms— **Buerger Allen Exercise (BAE), Diabetes mellites, Structured teaching module, Diabetic patients, Urban region.**

I. INTRODUCTION

Diabetes mellitus is a chronic metabolic disorder characterized by elevated blood glucose levels, which, over time, can lead to various complications affecting multiple organ systems. One of the most concerning complications is peripheral vascular disease (PVD), which is more prevalent among diabetic individuals. Patients with diabetes not only have a higher risk of developing PVD, but the disease also manifests earlier, progresses more aggressively, and is often more severe and diffuse than in non-diabetic individuals.[3] An estimated 537 million persons globally, aged 20 to 79, have diabetes (10.5% of all adults in this age range). Globally, the number of persons with diabetes will rise from 643 million in 2030 to 783 million in 2045. One of the non-pharmacological approaches to improving peripheral

circulation in diabetic patients with PVD is the implementation of structured exercise regimens. Among these, Buerger-Allen exercises (BAE) have gained recognition for their beneficial impact on lower extremity perfusion. BAE consists of a series of limb movements, including elevation, dependency (lowering), and rest, designed to enhance blood flow to the extremities. This form of exercise helps improve arterial circulation, reduces pain intensity, and mitigates the risk of ischemic complications in diabetic patients.[4]Further research and awareness regarding the 2 efficacy of Buerger-Allen exercises in diabetic patients with PVD can lead to better clinical practices and improved patient care outcomes.[5]

II. OBJECTIVES

The objectives of study are;

1. To assess the knowledge regarding buerger allen exercise among diabetic patients in control and experimental group before intervention

2. To find out the effect of STM between pre-test and post-test knowledge scores on BAE among diabetic patients in control and experimental group

III. MATERIALS AND METHODS

A quantitative approach was adopted and non randomized control group design was used for this study. The study was carried out in the selected urban region of Maharashtra. The period of data collection was three weeks. The permission was obtained from authorities concerned of selected urban region. The purposive sampling technique was used to select 150 diabetic patients from different regions. Written consent was obtained from the samples and pre-test has been assessed for all the 150 diabetic patients using demographic and structured interview schedule questionnaire for assessing knowledge. Then the structured teaching module was given for all diabetic patients to whom the pre-test was conducted. After 7 days, the post test was taken and the data was analyzed.

Statistical Analysis The data was analyzed by descriptive and inferential statistics. Demographic data was analyzed using frequency and percentage, data from the questionnaire before and after structured teaching module administered was also analyzed using frequency, percentage and's' test. The association between knowledge findings and demographic variables was found by using t test and chi-square test.

IV. RESULTS:

Table 1: Percentage wise distribution of Diabetic Patients according to their demographic characteristics n=150

Demographic Variables	Experimental Group(n=75)	Control Group(n=75)
Age(yrs)		
19-28 yrs	14(18.7%)	11(14.7%)
25-38 yrs	33(44%)	34(45.3%)
35-48 yrs	19(25.3%)	24(32%)
≥49 yrs	9(12%)	6(8%)
Gender		
Male	38(50.7%)	40(53.3%)
Female	37(49.3%)	35(46.7%)
Marital Status		
Married	44(58.7%)	49(65.3%)
Unmarried	0(0%)	2(2.7%)
Divorce	10(13.3%)	6(8%)
Widow/Widower	21(28%)	18(24%)
Educational Status		
Illiterate	2(2.7%)	8(10.7%)
Primary	25(33.3%)	22(29.3%)

Secondary	30(40%)	25(33.3%)
Graduate and above	18(24%)	20(26.7%)
Occupation		
Employment	38(50.7%)	45(60%)
Labour	22(29.3%)	15(20%)
Govt Employee	13(17.3%)	13(17.3%)
Private Employee	2(2.7%)	2(2.7%)
Type of family		
Nuclear	33(44%)	31(41.3%)
Joint	28(37.3%)	29(38.7%)
Extended	14(18.7%)	15(20%)
Family Income(monthly)		
Below 10000 Rs	23(30.7%)	20(26.7%)
10001-15000 Rs	22(29.3%)	24(32%)
15001-20000 Rs	13(17.3%)	15(20%)
>20000 Rs	17(22.7%)	16(31.3%)

Table 2: Significance of difference between knowledge Score in Pre and post-test of Diabetic Patients -Experimental Group
n=75

Overall	Mean	SD	Mean Difference	t-value	p-value
Pre Test	12.52	2.23	7.46±3.11	20.77	0.045 S, p<0.05
Post Test	19.98	2.37			

This table shows the comparison of pretest and post-test knowledge score of diabetic patients from selected Urban Region. Mean, standard deviation and mean difference values are compared and student's paired 't' test is applied at 5% level of significance. The tabulated value for n=75-1 i.e. 74 degrees of freedom was 1.98. The calculated 't' value i.e. 20.77 are much higher than the tabulated value at 5% level of significance for overall knowledge score of Diabetic Patients which is statistically acceptable level of significance. Hence it is statistically interpreted that Structured Teaching Module (STM) on knowledge regarding Buerger Allen Exercise (BAE) among diabetic patients from selected urban region was effective. Thus, the H_1 is accepted

Table 3: Significance of difference between knowledge Score in Pre and post-test of Diabetic Patients - Control Group
n=75

Overall	Mean	SD	Mean Difference	t-value	p-value
Pre Test	8.65	1.84	0.05±0.27	1.65	0.10 NS, p>0.05
Post Test	8.70	1.85			

This table shows the comparison of pretest and post-test knowledge score of diabetic patients from selected Urban Region. Mean, standard deviation and mean difference values are compared and student's paired 't' test is applied at 5% level of significance. The tabulated value for n=75-1 i.e. 74 degrees of freedom was 1.98. The calculated 't' value i.e. 1.65 are much less than the tabulated value at 5% level of significance for overall knowledge score of Diabetic Patients which is statistically not acceptable level of significance. Hence it is statistically interpreted that Structured Teaching Module (STM) on knowledge regarding Buerger Allen Exercise (BAE) among diabetic patients from selected Urban Region was not effective. Thus, the H_0 is accepted.

Table 4: Comparison of mean difference in knowledge score of diabetic patients in experimental group and control group from selected urban region

n=150

Group	Mean	SD	t-value	p-value
Experimental Group	7.46	3.11	20.54	0.0001 S, p<0.05
Control Group	0.05	0.27		

This table shows the comparison of mean difference in knowledge score of Diabetic Patients from selected urban region. Mean and standard deviation values are compared and student's unpaired 't' test is applied at 5% level of significance. The tabulated value for n=75+75-2 i.e. 148 degrees of freedom was 1.98. The calculated 't' value i.e. 20.54 are higher than the tabulated value at 5% level of significance for mean difference in knowledge score of Diabetic Patients in experimental and control group which is statistically acceptable level of significance. Hence it is statistically interpreted that Structured Teaching Module (STM) on knowledge regarding Buerger Allen Exercise (BAE) among diabetic patients from selected. was effective. Thus, the H1 is accepted.

V. DISCUSSION

The present study was undertaken to assess the effect of structured teaching module (STM) on buerger Allen exercise (BAE) among diabetic patients residing at selected urban region of Maharashtra. The study concluded that in Pre-test in 0% had very poor knowledge, 46.67% had poor, 53.33 % had Average, 0% had good and 0% had very good knowledge in experimental group. The study concluded that in pre-test in 12% had very poor, 88% had poor, 0% had Average, 0% had good and 0% had very good knowledge in control group. Whereas in post test score 0% had very poor knowledge, 0% had poor, 28% had Average, 70.67% had good and 1.33% had very good knowledge in experimental group. The study concluded that in post-test in 12% had very poor, 88% had poor, 0% had Average, 0% had good and 0% had very good knowledge in control group. It reveals that the post-test mean score percentage of knowledge regarding buerger allen exercise among diabetic patients (66.62%) in experimental group and (29.02%) in control group was higher than the pretest mean score percentage (41.73%) in experimental group and (28.84) in control group. This difference was found to be significant. (t= 20.77***, p<0.05). Thus, it is considered that the Structured Teaching Module was effective to improve the knowledge scores among diabetic patients. The study also concluded that there was no significant association of knowledge score and selected demographic variables such as age (yrs), gender, marital status, education, occupation, type of family and monthly income among diabetic patients and present area of working because p value is >0.05.

VI. CONCLUSION

After the detailed analysis, this study leads to the following conclusion. The diabetic patients do not have 100% knowledge regarding buerger allen exercise. There was a significant increase in the knowledge of diabetic patients after the introduction of Structured Teaching Module. Thus, it was concluded that STM on buerger allen exercise was found effective as a teaching strategy. Demographic variables did not show a major role in influencing the pre-test and post-test knowledge score among diabetic patients. Hence based on the above cited findings, it was concluded undoubtedly that the written structured material by the investigator in the form of STM helped the diabetic patients to improve their knowledge on buerger allen exercise.

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REFERENCES

[1] Boulton AJM, Armstrong DG, Albert SF, Frykberg RG, Hellman R, Kirkman MS, et al. Comprehensive foot examination and risk assessment: a report of the task force of the foot care interest group of the American Diabetes Association. Diabetes Care. 2008;31(8):1679–85.
[2] International Diabetes Federation. IDF Diabetes Atlas. 10th ed. Brussels, Belgium: International Diabetes Federation; 2021.
[3] American Diabetes Association. Diagnosis and classification of diabetes mellitus. Diabetes Care. 2014 Jan;37(Suppl 1): S81-S90.
[4] Janisse DJ. The art and science of fitting diabetic foot ulcers. Clin Podiatr Med Surg. 1995 Apr;12(2):41-62.
[5] Reddy M, Gill SS, Kalkar SR, Wu W, Anderson PJ, Rochon PA. Treatment of pressure ulcers: a systematic review. JAMA. 2008 Aug 6;300(3):264-74.