EFFECTIVENESS OF BUERGER'S ALLEN EXERCISE ON IMPROVING THE LOWER EXTREMITY PERFUSION AMONG PATIENTS WITH TYPE II DIABETES MELLITUSADMITTED INTERTIARY CARE HOSPITAL, BELAGAVI.

Ms. Vaishali Patil[1*], Asst. Prof. Harish Deyannavar[2], Dr. Preeti Bhupali Dean & Hod.[3]

Abstract

Background: The type two Diabetes Mellitus is one of the Global Health problem in present situation. The complication related to lower limb extremity is most common and reducing the survival rate among diabetes patient. Burgers' Allen exercise is very simple and non- expensive measurement by which we can improve the lower limb circulation and thereby minimizing the amputation cases and also reduces mortality rate due to diabetes.

Objectives : To Assesses lower extremity perfusion in among type II DM Patients. To evaluate the effectiveness of burger's Allen exercise on improving the lower extremity perfusion in experimental group.

Material and Method: Qusi-experimental research design was conducted in medical ward of Dr. Prabhakar Kore Charitable hospital Belagavi. Took total 60 sample 30 in each experimental and control group by using non-probability purposive sampling technique & pre and posttest control group design was used. The lower extremity perfusion is assessed by the ABI score.

Result: There is significant difference between pre and post test (P<0.05) which shows that improved circulation rate of blood in the lower limb in interventional group. In experimental group the post test score of Rt limb is 0.789 and SD is 0.139, whereas control group the after-test mean is 0.660 and SD is 0.178 the paired t-test valueis2.594 and P value is 0.003 is highly significant. In Lt limb study group post test average is 0.784 & SD 0.143 and t-test is 2.55 and P value 0.008 which is significant at the level of 0.05; The association found between post-test value of LEP of right & left limb with age and duration of DM.

Keywords: Diabetes mellitus, Buerger's Allen Exercise, Lower extremity Perfusion.

[1*,2,3] Department Of Medical Surgical Nursing, Kaher Institute Of Nursing Sciences Belagavi

Corresponding Author: Asst. Prof. Harish Deyannavar
*Department Of Medical Surgical Nursing, Kaher Institute Of Nursing Sciences Belagavi

BACKGROUND

The type two Diabetes Mellitus is one of the Global Health problem in present situation. The complication related to lower limb extremity is most common and reducing the survival rate among diabetes patient. Having diabetes puts individuals at greater risk of foot problems, including diabetic peripheral neuropathy (DPN), which causes a lack of sensation in the foot due to elevated glucose levels; and peripheral arterial disease (PAD), symptoms of which can include foot ulcers and open sores that do not heal, leading to infections and even amputations.[4] Burgers' Allen exercise is very simple and non-expensive measurement by which we can improve the lower limb circulation and thereby minimizing the amputation cases and also reduces mortality rate due to diabetes.

OBJECTIVES

1) To assess the lower extremity perfusion among diabetes mellitus patient in experimental group and control group with ABI score
2) To evaluate the effectiveness of Buerger's-Allen exercise on improving the lower extremity perfusion in the experimental group.
3) To find out the association between post interventional scores with selected demographic and clinical variables.

HYPOTHESIS

H1–There will be statistically significant difference between pre and post test score of lower extremity perfusion in experimental group.
H2-There will be a statistically significant association between post interventional score of LEP with selected demographical and clinical variable

MATERIAL AND METHOD:

The study was a qusi-experimental research design was conducted in medical ward of Dr. Prabhakar Kore Charitable hospital Belagavi. Took total 60 sample 30 in each experimental and 30control group by using non- probability purposive sampling technique & pre and posttest control group design was used. The lower extremity perfusion is assessed by the ABI score.

Patients between the ages of 30 to 60 from both the genders diagnosed with DM, who can understand kannada, Hindi & English and willing to participate in the study, were included in this study. Patients suffering from grade – IV-foot ulcers and gangrene, severe cardiac diseases and DVT ,critically ill were not enrolled in the study,

Background Variables Part –A: Age, gender, religion, diet pattern, educational status, nature of work, specific habits.

Part –B: Duration of DM, associated illness, practice of exercise, use of peripheral vasodilators.

Part –C: lower extremity perfusion assessment: ankle brachial index (ABI). Calculated by dividing highest systolic pressure at the ankle (posterior tibial or dorsalis pedis) by highest systolic BP in the arm (brachial) by using sphygmomanometer and Doppler. The score was interpreted as above 0.9 (Normal perfusion), 0.71-0.90 (Mildly impaired perfusion), 0.41-0.70(Moderately impaired perfusion), 0.0 – 0.40 (Severely impaired perfusion), data were analyzed using statistical package for social science (SPSS) Program. The collected data were analyzed by descriptive statistics (frequency, Mean, Median, and standard deviation) and inferential statistics (paired t-test ,Chi- square test) were used to compare two sets of data (pre-intervention and post –intervention). The $p > 0.005$ level of significance was used for considering significant outcomes.

Result

There is significant difference between pre and post test ($P < 0.05$) which shows that improved circulation rate of blood in the lower limb in Interventional group. In experimental group the post test score of Rt limb is 0.789 and SD is 0.139, whereas control group the after-test mean is 0.660 and SD is 0.178 the paired t-test valueis2.594 and P value is 0.003 is highly significant. In Lt limb study group post test average is 0.784 & SD 0.143 and t-test is 2.55 and P value 0.008 which is significant at the level of 0.05; The association found between post-test value of LEP of right & left limb with age and duration of DM.

TABLE 1 Frequency and percentage distribution of demographic variable in bothgroup

Demographic variables	Experimental group		Control group	
	f	%	f	%
Age				
30-39	2	6.67	1	3.33
40-49	6	20	8	26.67
50-59	10	33.33	8	26.67
60 and above	12	40	13	43.33
Gender				
Male	14	46.67	12	40
Female	16	53.33	18	60
Other	0	0	0	0
Religion				
Hindu	22	73.33	21	70
Muslim	5	16.67	6	20
Christian	3	10	1	3.33
Others	0	0	2	6.67
Diet Pattern				
Vegetarian	12	53.33		40
Mixed	18	46.67	18	60
Education				
No Formal	12	40	15	50
Primary	2	6.67	7	23.33
Secondary	6	20	4	13.33
Graduation and above	10	33.33	4	13.33
Nature of work				
Sedentary	15	50	19	63.33
Non-Sedentary	15	50	11	36.67
Specific Habits				
Alcoholic	2	6.67	2	6.67
Cigarette Smoking	8	26.67	4	13.33
Tobacco Chewing	4	13.33	5	16.67
None	16	53.33	19	63.33

TABLE 2 Frequency and percentage distribution of clinical variable in both group

| S.No	Clinical Variables	Experimental Group		Control Group	
		f	%	f	%
1.	**Duration of DM**				
	<1 Year	0	0	0	0
	1 – 5 Year	8	26.67	9	30.33
	6 – 10 Year	11	36.67	14	43.33
	>10 Year	11	36.67	7	23.33
2.	**Other Associated Diseases**				
	Hypertension	8	26.67	9	30
	Heart Diseases	4	13.33	5	16.67
	Other Diseases	18	60	16	53.33
3.	**Practice of Exercise**				
	Yes	3	10	0	0
	No	27	90	30	100
4.	**Uses of Peripheral Vasodilators**				
	Yes	12	40	10	33.33
	No	18	60	20	66.67
5.	**Family history of PAD**				
	YES	5	16.7	6	20
	NO	25	83.3	24	80

Comparison of posttest level of LEP scores of Right Limb among patient with type 2 DM in Experimental and Control group.

GROUP	MEAN	SD	t Value	p Value
Experimental Group	0.789	0.139	-2.954	0.003*
Control Group	0.660	0.178		

*Significant at 0.05 level

The above table shows that, in experimental group post mean is 0.789 and SD is 0.139 where as in control group the post mean is 0.660 and SD is 0.178 and paired t test value is 2.954 which issignificant at the level of 0.05.

Comparison of posttest level of LEP score of Right Limb among patient with type 2 DM in Experimental and Control group.
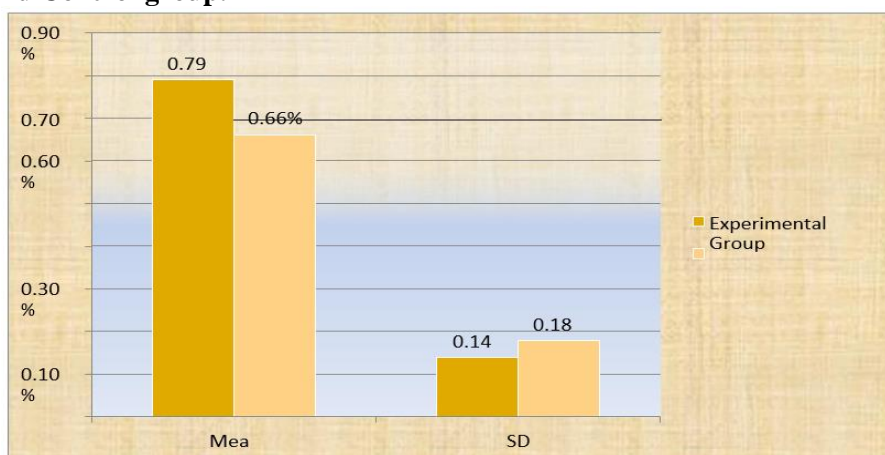

Comparison of posttest level of LEP scores of Left Limb among patient with DM in Experimental andControl group.

GROUP	MEAN	SD	t Value	p Value
Experimental Group	0.784	0.143	-2.55	0.008*
Control Group	0.670	0.172		

*Significant at 0.05 level

The above table shows that, in experimental group post mean is 0.784 and SD is 0.143 where as in control group the post mean is 0.670 and SD is 0.172 and paired t test value is 2.55 which issignificant at the level of 0.05.

Comparison of posttest level of LEP scores of Left Limb among patient with DM in Experimental andControl group.
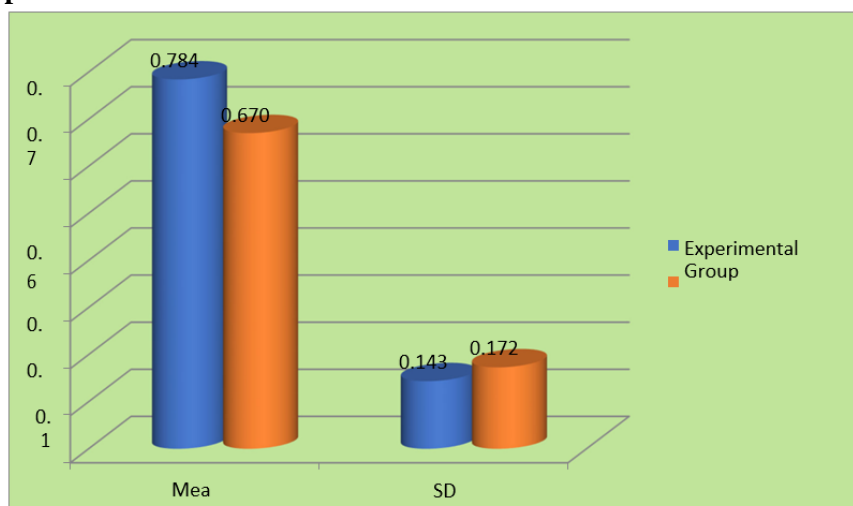
Association of socio demographic & clinical variable with post test score of right & left limb in experimental group

For age table value is 0.043 and chi-square is 13 religion table value is 0.049 and chi-square is 9.521 and for duration of dm table value is 0.033 and chi-square value is 10.49 which shows that there is association between Age, religion ,duration of diabetes mellitus with post test score of LEP of right limb.

The association between post test score of LEP of left limb with age, education, specific habits, and duration of DM as its table value are 0.030, 0.043, 0.043, and 0.006 respectively which lies below the 0.05 level.

CONCLUSION

This study concluded that BAE is effective measure to increase the lower limb perfusion among type 2 Diabetes Mellitus patients.

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