e - ISSN – 2349-0683

Asian Pacific Journal of Nursing

Journal homepage: www.mcmed.us/journal/apjn

# AN EXPERIMENTAL STUDY TO ASSESS THE EFFECTIVENESS OF BURGER ALLEN EXERCISE ON IMPROVING LOWER EXTREMITY PERFUSION AND PAIN AMONG PATIENTS WITH TYPE 2 DIABETES MELLITUS IN SELECTED HOSPITAL AT TIRUNELVELI

**Dava Johnsy D[1]* & Dr.J.Lizy Merlin Lisha[2]**

[1]Vice Principal, Sardar Rajas college of Nursing, Tirunelveli, Tamilnadu, India.
[2]Principal, Sardar Rajas college of Nursing, Tirunelveli, Tamilnadu, India.

**ABSTRACT**

Diabetes mellitus is a common disease that Nurses frequently carry out which causes lower extremity perfusion and pain. Aim of the study: To determine the effectiveness of Burger Allen exercise upon reducing pain and improving lower extremity perfusion at the study setting. Methods: The research design used in Quasi experimental one group pretest and posttest only design. The study setting selected hospital in Tirunelveli District. 30 samples are selected by systematic random sampling technique in that 15 samples are experimental group by using Burger Allen exercise followed by routine technique that are corresponding to inclusion criteria. After the Burger Allen exercise the pain and lower extremity perfusion level was compared between the pretest and posttest level in the experimental group. The tool developed and used for data collection were demographic variables and assessment of pain level with Wong backer face pain assessment scale and Amplitude pulse scale. Conceptual frame work: Modified Roy's adaption model was adopted for the study. Result: Burger Allen exercise helps to reduce pain and improve the lower extremity perfusion. Conclusion: Burger Allen exercise was effective in reducing pain and improving lower extremity perfusion of patients. Thus, Burger Allen exercise can be used as an intervention to reduce pain and improved lower extremity perfusion associated with diabetes mellitus patient.

**Key words:** Burger Allen exercise, Pain, Type 2 Diabetes Mellitus.

Corresponding Author

**Dava Johnsy D**
Email:- djohnsy.d@gmail.com

Article Info

*Received 15/08/2023; Revised 18/09/2023*
*Accepted 11/10/2023*

## INTRODUCTION

Diabetes mellitus (DM) is a chronic metabolic disorder characterized by persistent hyperglycemia. It may be due to impaired insulin secretion, resistance to peripheral actions of insulin, or both. According to the International Diabetes Federation (IDF), approximately 415 million adults between the ages of 20 to 79 years had diabetes mellitus in 2015. DM is proving to be a global public health burden as this number is expected to rise to another 200 million by 2040. [1] DM is broadly classified into three types by etiology and clinical presentation, type 1 diabetes, type 2 diabetes, and gestational diabetes (GDM). Some other less common types of diabetes include monogenic diabetes and secondary diabetes. [2][3][4][5]

It is estimated that 366 million people had DM in 2011; by 2030 this would have risen to 552 million. The number of people with type 2 DM is increasing in every country with 80% of people with DM living in low- and middle-income countries. DM caused 4.6 million deaths in 2011. [6] Persons older than 40 years of age should be screened annually. More frequent screening is recommended for individuals with additional risk factors for diabetes.[7][8][9][10][11] It is estimated that every year 1.4 to 4.7% of middle-aged people with diabetes have a CVD event.[12][13]

Buerger-Allen Exercise (BAE) is one of the types of exercise performed to promote Lower Extremity Perfusion (LEP) whereby promoting the wound healing process and reduce Peripheral Neuropathy Symptoms (PNS) among Diabetes Mellitus (DM) patients. BAE is an active postural exercise in which gravity alternatively fills and empties the blood vessels for preventing Peripheral vascular diseases and promoting collateral circulation in lower extremities. [14,15] In this study, we aimed to identify the patients who are at risk and bring about the important changes in the health of the diabetic population, based on promoting healthy lifestyles.

**Statement of the problem**

"An experimental study to assess the effectiveness of Burger Allen exercise on improving lower extremity perfusion and pain among patients with type 2 diabetes mellitus in selected Hospital at Tirunelveli".

**Objectives**

- To assess the level of lower extremity perfusion and pain among type 2 diabetes mellitus patient.
- To determine the effectiveness of Burger Allen exercise on increase lower extremity perfusion and pain among diabetes mellitus patient.
- To assess the effectiveness of Burger Allen exercise among type 2 diabetes mellitus patient with their selected demographic variable.

**Hypothesis**

**H1:** There was a significance difference in the level of lower extremity perfusion and pain before and after administration of Burger Allen exercise among type 2 diabetes mellitus patients.

**H2:** There was a significance association the level of lower extremity perfusion and pain among type 2 diabetes mellitus patients with their selected demographic variables.

**Sample technique**

Sample random sampling technique is adopted to allot the samples to experimental group in this study.

**Data collection procedure**

Data collection was done for one week from 30 samples who satisfied the inclusive criteria by simple random sampling technique. Baseline investigation was collected from the client through structured interview schedule pretest was conducted using Wong Baker FACE pain assessment scale for the experimental group, the investigator was demonstrated Buerger Allen exercise 3 times/ day at 4 hours interval (8am to 12 noon and 4 pm) for the period of six days under supervision of investigator, post assessment was done on the seventh day by using the same scale

**Scoring Interpretation**

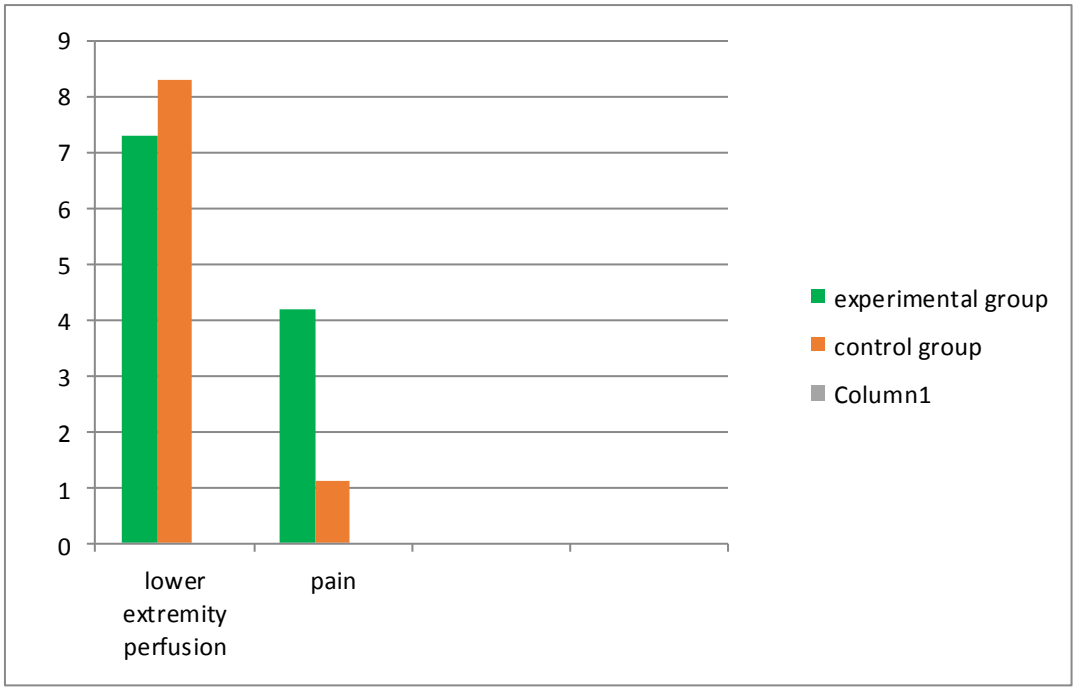
Reveals the frequency and percentage distribution of samples according to the level of pain and improved lower extremity perfusion among patients in the experimental group and control group. It is evident from the above table that in the pre test level of pain among experimental group 5 patients (33.3%) of them had hurt worst and hurt even more of pain. In the post level of pain among experimental group after giving intervention 4 patients (26.6%) hurt little more pain. It is evident from the above table in pre test level of pain among control group 7 patients (46.6%) of them hurts worst pain. In the post level of pain among patients in control group whom not giving intervention 8 patients (53.3%) hurts worst pain. It is evident from the above the table that in pre test level of lower extremity perfusion among experimental group 10 patients (66.6%) of them had absent, not palpable pulse. In the post test level of lower extremity perfusion in experimental group after giving intervention 12patients (80%) had diminished pulse. It is evident from the above table that in pre test level of lower extremity perfusion among control group 10 patients (66.6%) had diminished pulse. In the post level of lower extremity perfusion among patients in control group whom not giving intervention 12 patients (80%) of them had absent, not palpable pulse.

Mean value of the pretest level of improving lower extremity perfusion and reducing pain in the experimental group and control group.

**Table 1: Frequency & percentage distribution of sample on improving lower extremity perfusion and reduce pain before and after receiving Burger Allen exercise among experimental group and control group.**

| Level of pain and lower extremity perfusion | Experimental group | | | | Control group | | | |
|---|---|---|---|---|---|---|---|---|
| | Pre test | | Post test | | Pre test | | Post test | |
| | F | P (%) | F | P (%) | F | P (%) | F | P (%) |
| **Level of pain:** | | | | | | | | |
| No hurt | 0 | % | 4 | 26.6 | 0 | 0 | 0 | 0 |
| Hurt little bit | 0 | 0% | 4 | 26.6 | 0 | 0 | 0 | 0 |
| Hurt little more | 2 | 13.3 | 2 | 13.6 | 2 | 13.6 | 5 | 33.3 |
| Hurt even more | 5 | 33.3 | 5 | 33.3 | 5 | 33.3 | 2 | 13.3 |
| Hurt whole lot | 3 | 20 | 0 | 0 | 1 | 6.6 | 3 | 20 |
| Hurt worse | 5 | 33.3 | 0 | 0 | 7 | 46.6 | 5 | 33.3 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Lower extremity perfusion** | | | | | | | | |
| Bounding | | | | | | | | |
| Full increased | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Expected | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diminished | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 5 | 33.3 | 12 | 80 | 10 | 66.6 | 3 | 20 |
| | | | 3 | | 5 | | | |
| Absent no palpable | 10 | 66.6 | | 20 | | 33.3 | 12 | 80 |




**CONCLUSION:**

Diabetes mellitus is a "complex metabolic disease". Anon-pharmacological natural healing approach is needed to overcome that problem. Berger Allen exercise is simple, which is easy to do, has no side effects and most acceptable one to reduce Diabetes mellitus. The finding of the study showed that the post level of lower extremity perfusion on Berger Allen exercise was statistically significant at $p<0.05$ in the experimental group. Hence it could be concluded that there will be an association between diabetes mellitus and Berger Allen exercise.

**Conflict of Interest**: There is no conflict of interest

**Sources of Fund**: Self

**REFERENCE**

1. Zheng Y, Ley SH, Hu FB. (2018). Global aetiology and epidemiology of type 2 diabetes mellitus and its complications. *Nat Rev Endocrinol*. 14(2), 88-98.
2. Malek R, Hannat S, Nechadi A, Mekideche FZ, Kaabeche M. (2019). Diabetes and Ramadan: A multicenter study in Algerian population. *Diabetes Res Clin Pract*. 150, 322-330.
3. Choi YJ, Chung YS. Type 2 diabetes mellitus and bone fragility: Special focus on bone imaging. Osteoporos Sarcopenia. 2016 Mar;2(1):20-24.
4. Picke AK, Campbell G, Napoli N, Hofbauer LC, Rauner M. Update on the impact of type 2 diabetes mellitus on bone metabolism and material properties. Endocr Connect. 2019 Mar 01;8(3):R55-R70.

5. Carrillo-Larco RM, Barengo NC, Albitres-Flores L, Bernabe-Ortiz A. The risk of mortality among people with type 2 diabetes in Latin America: A systematic review and meta-analysis of population-based cohort studies. Diabetes Metab Res Rev. 2019 May;35(4):e3139.
6. Global burden of diabetes. International Diabetes federation. Diabetic atlas fifth edition 2011, Brussels.
7. Hussain S, Chowdhury TA. The Impact of Comorbidities on the Pharmacological Management of Type 2 Diabetes Mellitus. Drugs. 2019 Feb;79(3):231-242.
8. Kempegowda P, Chandan JS, Abdulrahman S, Chauhan A, Saeed MA. Managing hypertension in people of African origin with diabetes: Evaluation of adherence to NICE Guidelines. Prim Care Diabetes. 2019 Jun;13(3):266-271.
9. Martinez LC, Sherling D, Holley A. The Screening and Prevention of Diabetes Mellitus. Prim Care. 2019 Mar;46(1):41-52.
10. Thewjitcharoen Y, Chotwanvirat P, Jantawan A, Siwasaranond N, Saetung S, Nimitphong H, Himathongkam T, Reutrakul S. Evaluation of Dietary Intakes and Nutritional Knowledge in Thai Patients with type 2 Diabetes Mellitus. J Diabetes Res. 2018;2018:9152910.
11. Patoulias D, Papadopoulos C, Stavropoulos K, Zografou I, Doumas M, Karagiannis A. Prognostic value of arterial stiffness measurements in cardiovascular disease, diabetes, and its complications: The potential role of sodium-glucose co-transporter-2 inhibitors. J Clin Hypertens (Greenwich). 2020 Apr;22(4):562-571.
12. Liakopoulos V, Franzén S, Svensson AM, Miftaraj M, Ottosson J, Näslund I, Gudbjörnsdottir S, Eliasson B. Pros and cons of gastric bypass surgery in individuals with obesity and type 2 diabetes: nationwide, matched, observational cohort study. BMJ Open. 2019 Jan 15;9(1):e023882.
13. Willis M, Asseburg C, Neslusan C. Conducting and interpreting results of network meta-analyses in type 2 diabetes mellitus: A review of network meta-analyses that include sodium glucose co-transporter inhibitors. Diabetes Res Clin Pract. 2019 Feb;148:222-233.
14. Lapanantasin S, Songkhropol Y, Ritsamret N, Jamjuree S. (2016). Immediate effects of massage, Buerger-Allen exercise and weight bearing exercise on peripheral blood flow and skin temperature of foot in young adults. *Thai J Phys Ther.* 38, 14–22.
15. Jemcy John and A. Rathiga. (2015). Effectiveness of Buerger Allen exercise to improve the lower extremity perfusion among patients with type 2 diabetes mellitus. *Int J Curr Res Acad Rev.* 3, 358–66.