

## **Effectiveness Of Intradialytic Stretching Exercises On Muscle Cramps Among Patients Undergoing Haemodialysis At Dhanalakshmi Srinivasan Medical College And Hospital, Perambalur.**

**Running Title:** -Effectiveness Of Intradialytic Stretching Exercises

**Dhanalakshmi .J<sup>1\*</sup>, Malathi.S<sup>2</sup>, kowsalya,N.<sup>3</sup>**

<sup>\*1</sup> Research Scholar in Nursing, Vinayaka Missions Research Foundation, Salem.

<sup>2</sup> Professor & HOD, Department of Community Health Nursing, Vinayaka Missions Research Foundation, Salem

<sup>3</sup>. Kowsalya,N.M.Sc N.

**\*Corresponding Author: -J.Dhanalakshmi, M.Sc (N)**

Research Scholar, Vinayaka Missions Research Foundation, Email id: [j.sridhana@gmail.com](mailto:j.sridhana@gmail.com)

### **Abstract**

Muscle cramp is a wide spread problem in the dialysis population and it primarily affects the lower limbs of the Haemodialysis patients. Patients undergoing haemodialysis are susceptible to sudden painful, involuntary contractions of skeletal muscle, commonly known as cramps. It is one of the most frequent complications of Hemodialysis. Exercise may have a beneficial effect on a number of factors implicated in the aetiology of haemodialysis associated cramping. Exercise can attenuate vasoconstriction in muscle caused by activation of the sympathetic nerves, and it is also known to improve oxygen delivery and utilisation. A study conducted to evaluate the effectiveness of intradialytic stretching exercise among patients undergoing haemodialysis. Research design was pre experimental research design. 50 Samples were selected using Purposive sampling technique at Dhanalakshmi Srinivasan Medical College and Hospital, Perambalur. Findings of the study were in pre-test, 13(26%) had moderate muscle cramps, 37(74%) of had severe muscle cramps. In post-test, 3(6%) had no muscle cramps, 39(78) had mild muscle cramps, 8(16%) had moderate muscle cramps. The result shows that the comparison of pre-test mean level of muscle cramps regarding intradialytic stretching exercise among patients undergoing haemodialysis. The mean and standard deviation for level of muscle cramps in pre-test was 12.4 and post-test value was 1.8 and respectively the paired 't' value was 28.5 for haemodialysis patients, when compared the table value it was high. The study revealed that the Intradialytic stretching exercises help to reduce the muscle cramps during dialysis.

### **INTRODUCTION**

Health is the level of functional or metabolic efficiency of a living organism. In humans, it is the general condition of a person's mind and body, usually meaning to be free from illness, injury or pain (as in "good health" or "healthy"). (WHO, 2014). Renal failure is an important non-communicable disease that affects the world population including India. Renal failure is characterized by progressive destruction of renal mass with irreversible sclerosis and loss of nephrons over a period of at least few months to years, depending upon the underlying aetiology. Renal failure is classified into two; they are acute and chronic renal failure. (Guyton & Hall, 2016). CRF is a common clinical syndrome characterized by decline in glomerular filtration, perturbation of extracellular fluid volume, electrolyte and acid base homeostasis and retention of nitrogenous waste from protein catabolism. Haemodialysis is the choice of renal replacement therapy for patients who need dialysis acutely and for many patients as maintenance therapy. It provides excellent, rapid clearance of solutes and the same time presence of some complications during haemodialysis such as fluid shifts, access-related venous needle dislodgement, anticoagulation-related, first-uses syndrome, and cardiovascular system related symptoms, vitamin deficiency, muscle cramps and electrolyte imbalances. Muscle Cramps can involve the legs, most commonly in the feet, but can also involve arms, hands as well as abdominal muscles. Muscle stretching exercises for the cramped muscle is the most effective treatment. There are different therapies like flexibility exercises and strengthening exercises to improve the physical functioning of the patient. Leg stretch exercises done during the dialysis procedure like quadriceps knee strengthening exercise, hamstring exercise and gluteal strengthening exercise will improve the muscle protein synthesis and break down, which helps in determining both strength and overall function of the body.

### **STATEMENT OF THE PROBLEM**

A study to assess the effectiveness of intradialytic stretching exercises on muscle cramps among patients undergoing haemodialysis at dhanalakshmi srinivasan medical college and hospital, perambalur.

### **OBJECTIVES**

- To assess the level of muscle cramps among patients undergoing haemodialysis.

- To evaluate the effectiveness of intradialytic stretching exercises on muscle cramps among patients undergoing haemodialysis.
- To find out the association between the pre-test level of muscle cramps among patients undergoing haemodialysis with their selected demographic variables.

### **HYPOTHESIS**

- **H<sub>1</sub>** – There is a significant difference between pre and post-test level of muscle cramps before and after intradialytic stretching exercises among patients undergoing haemodialysis.
- **H<sub>2</sub>** - There is a significant association between the pre-test levels of muscle cramps with their demographic variables among patients undergoing Haemodialysis.

### **METHODOLOGY:**

The research approach used in the study was Quantitative approach and pre experimental (one group pre-test and post-test) research design was chosen for analysing the effectiveness of intradialytic stretching exercise on muscle cramps among patients undergoing haemodialysis. The conceptual framework adopted for the present study is based on Lydia.E.Hall's Core, Care and Cure model (1994). The independent variable of this study was intradialytic stretching exercises. The dependent variable of this study was reduction of muscle cramps. This study was conducted in dialysis unit of Dhanalakshmi Srinivasan Medical College and Hospital, Perambalur. The hospital is a multispecialty hospital with bed strength of 1100. The dialysis department of this hospital which has bed strength of 15. The number of patients undergoing haemodialysis for each month is 150 and each day they have four shifts with the population of 15 patients. 50 samples were selected by using purposive Sampling Technique. The Sample of the study was patients undergoing haemodialysis who met the inclusion criteria

#### **Inclusion criteria**

The patients who were

- Undergone haemodialysis
- Age between 20-60 years
- Alert and cooperative.
- Both male and female
- Understand Tamil or English
- Willing to participate

#### **Exclusion criteria**

The patients were

- Undergoing emergency and first haemodialysis
- Having femoral catheter
- With any lower limb disability
- Undergoing peritoneal dialysis.
- Have intellectual or mental impairment.
- Receive haemodialysis for non-renal conditions.
- Critically ill patients.
- With concurrent medical conditions that may contraindicate exercise.
- with musculoskeletal deformities, fracture of the lower extremities, etc.,

#### **Description of the tool**

It consists of two sections:

**Section A:** Demographic variables include age, gender, marital status, religion, education, occupation, family monthly income, locality, food habit, co-morbidities, duration of dialysis, types of asses, frequency of dialysis, and medical services.

**Section B:** Modified ash worth muscle cramp scale was designed to assess the level of muscle cramps during haemodialysis, before and after intervention. It contains various features of muscle cramps such as the nature of cramp, frequency of cramp, duration of cramp, level of pain which was comprehensively scored as level of muscle cramps ranging from (0-16).

Reliability of the tool was established by test-retest method the "r" value for level of muscle cramps was  $r=0.93$ . Pilot study was conducted for 5 haemodialysis patients who fulfilled the inclusion criteria for sample selection by using purposive sampling technique.

The researchers first introduced themselves to patients and the purpose of the study explained to them those who agreed to participate were recruited. After a brief introduction about the study oral consent was obtained from the patients. Pre-test was done on the first day using ashworth muscle cramps scale and the muscle cramps was graded. After the pre-test investigator administered intradialytic stretching exercise such as ankle dorsiflexion, gastrocnemius -passive and soleus-passive stretching exercise to the subjects for 20 minutes for 6 consecutive cycles of haemodialysis. Post-test was carried out after 6 consecutive days of intervention by using modified ashworth muscle cramps scale. Same procedure followed for 4 weeks until the fulfillment of required samples.

**RESULTS:**

The frequency and percentage distribution of demographic variables among patients undergoing The demographic variables revealed that majority of the patient age were between 51-60 years 24(40%), regarding gender 43(86%) of them were male, 46(92%) of them were married 46(92), in religion 46(92%) were Hindu, 19 (38%) of them were primary education, 17(34%) were self-employee, in monthly income 26(52%) were earning Rs.50001/--Rs.10000/, 41(82%) of them were living in rural area, 43(86%) were eat mixed diet in food habit, were in co morbidities 25(50%) were diagnosed as diabetes mellitus, regarding the duration of dialysis 34(68%) had less than 3 years of dialysis, 38(76%) of them were in AV fistula, regarding medical service 50(100%) of them were obtained insurance scheme, frequency of dialysis 50(100%) of them were undergoing dialysis three times a week.

**TABLE 1.** Frequency and percentage of pre-test and post test score of intradialytic stretching exercise among patients undergoing haemodialysis. (N=50)

S.No	Levels of muscle cramps	Pre Test		Post Test	
		Frequency (N)	Percentage (%)	Frequency (N)	Percentage (%)
1	No muscle Cramps (0)	0	0	3	6
2	Mild muscle Cramps (1-4)	0	0	39	78
3	Moderate muscle Cramps (5-10)	13	26	8	16
4	Severe muscle Cramps (11-16)	37	74	0	0

The above table 1 shows the level of muscle cramps before and after the intradialytic stretching exercise. It shows that majority of the patients undergoing haemodialysis had severe 37(74%) were in 13(26%) patients had moderate muscle cramps and none of them have no muscle cramps and mild muscle cramps. In post test 39(78%) had mild muscle cramps, 8 (16%) had moderate muscle cramps and 3(6%) had no muscle cramps. This value shows there is a significant improvement in the reduction of muscle cramps after the intervention of intradialytic stretching exercise.

**TABLE: 2** Comparison of mean, SD and mean percentage and paired 't' value of intra dialytic stretching exercise among patients undergoing haemodialysis. (n =50)

S.NO	Test	Mean	SD	Paired 'T' Value	Mean Difference	Table value
1.	PRE TEST	12.4	2.3	28.5	8.46	2.02
	POST TET	3.94	1.8			

\*Significant at P<0.05.

Table-2 reveals that post-test means core of muscle cramps among patients undergoing hemodialysis in pre-test was 12.4 which is higher than the post-test mean score of 3.94. The standard deviation of pre-test score was 2.3 and the standard deviation of post test score was 1.8. The obtained 't' value was 28.5 which is highly significant at p<0.05 level. The 't' value 28.5 is greater than table value. Hence the stated hypothesis (H1) was accepted. There was no significant association was found between the pretest levels of muscle cramps among patients undergoing haemodialysis with their demographic variables, (p>0.05).

**CONCLUSION**

Stretching exercise is the best essential care given to the patients who are all affected from muscle cramp. The nurse plays an important role in establishing an effective technique in stretching exercise. The patients undergoing hemodialysis treatment face problems with Muscle cramping. They require some interventions to avoid the muscle cramping. Based on the findings of the study the following conclusions were drawn.

- ❖ The paired 't' test value was 28.5 ( $P < 0.05$  Significant)
- ❖ The above finding proved significant difference in the level of muscle cramps before and after intradialytic stretching exercises among patients undergoing hemodialysis.
- ❖ Further the study indicates more than 90% of patients from hemodialysis are feel muscle cramping. They require appropriate interventions and health education to promote successful establishment and relief from muscle cramping.

#### REFERENCE

1. Allen.R.N, &Richard.N.F, 2005, "HandbookofClinicalDialysis"FourthEdition, New York, McGrawHillCompany, p57-87.
2. Arlene.L.Polaski, 2010, "Luckmanns core principals of medical surgical nursing" First edition, New Delhi, Elsevier publishers, p967-969.
3. 3.Brunner&Suddarth's, 2014, "Textbook ofMedicalSurgicalNursing"13<sup>th</sup> Edition, NewDelhi, The Lippincott William and Wilkins publication, p1548-1551.
4. Davidson, 2010,"PrinciplesandPracticeofMedicine" 21<sup>st</sup>edition, Newyork, Churchill livingstoneElsevier, Print, p491-498
5. Gutch CF. Martha, H.S, "Review of Haemodialysis for Nurses &DialysisPersonnel" Fifthedition,Missori Mosbypublications, p75-91.
6. Basemath S.S.Morris, (2014), "Effect of intradialytic stretching Exercise on Muscle cramps among patients undergoing haemodialysis", journal of Tamil Nadu Nurses and midwives council journal of Medical and surgical Nursing, Volume 2, 8-11.
7. Sheng K, (2014), "Intradialytic Exercise in hemodialysis patient, A systematic Review and Meta-Analysis, American journal of nephrology, volume40 (5),,