

**THE EFFECT OF INTRADIALYTIC LOW INTENSITY
STRETCHING EXERCISE ON MUSCLE CRAMPS AMONG
PATIENTS UNDERGOING HAEMODIALYSIS IN SELECTED
HOSPITAL AT KALLAKURICHI**



Dissertation submitted to

**THE TAMILNADU DR. M.G.R MEDICAL UNIVERSITY
CHENNAI**

IN PARTIAL FULFILLMENT OF REQUIREMENT
FOR THE AWARD OF DEGREE OF

MASTER OF SCIENCE IN NURSING

APRIL 2016

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INTERNAL EXAMINER

EXTERNAL EXAMINER

DECLARATION

I, **301411701** hereby declare that this dissertation entitled **THE EFFECT OF INTRADIALYTIC LOW INTENSITY STRETCHING EXERCISE ON MUSCLE CRAMPS AMONG PATIENTS UNDERGOING HAEMODIALYSIS INSELECTED HOSPITAL AT KALLAKURICHI** has been prepared by me under the guidance and direct supervision of **Prof.V.J.ELIZABETH, M.Sc(N)**, Vice Principal, Thanthai Roever College of Nursing, Perambalur, as requirement for partial fulfillment of **M.Sc Nursing** degree course under **The Tamilnadu Dr. M.G.R. Medical University, Chennai** . This dissertation had not been previously formed and this will not be used in future for award of any other degree or diploma. This dissertation represents independent original work on the part of the candidate.

Place : Perambalur,
Date : April – 2016.

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II Year M.Sc (N) Student,
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“I shall give thanks to you, Lord and King, and Praise to you, God and Saviour For you have been my guard and support. I shall Praise your name unceasingly and gratefully with all my heart sing your praises.”

– Ecclesiastics 51:1- 2

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THE EFFECT OF INTRADIALYTIC LOW INTENSITY STRETCHING EXERCISE ON MUSCLE CRAMPS AMONG PATIENTS UNDERGOING HAEMODIALYSIS IN SELECTED HOSPITAL ATKALLAKURICHI

ABSTRACT

INTRODUCTION:End stage renal disease is always fatal unless recognized and treated appropriately. The incidence rate per million population of treated end stage renal disease has been increasing at similar rates in most of the countries that record counts of new end stage renal disease patients.

OBJECTIVE: To evaluate the effectiveness of intra dialytic low intensity stretching exercise on muscle cramps among patients undergoing haemodialysis.

METHOD: True experimental design – post test only control group design was adopted for this study. Sixty participants were recruited by simple random sampling technique. The study was conducted in dialysis unit government hospital kallakurichi. Intra dialytic low intensity stretching exercise on muscle cramps was taught and implement to the participants.Post test muscle cramps were assessed through Muscle cramp assessment tool.

RESULTS: Statistical findings revealed that the post test mean score of muscle cramps in experimental group was 33.40 with SD 6.48. whereas in the control group it was 44.20 with SD 5.99. The calculated ‘t’ value 6.698 was found to be statistically significant at $p < 0.001$ level.

DISCUSSION: This study proved that the Intra dialytic low intensity stretching exercise is effective on reducing muscle cramps among patients undergoing haemodialysis.

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CHAPTER I

INTRODUCTION

End stage renal disease is always fatal unless recognized and treated appropriately. The incidence rate per million population of treated end stage renal disease has been increasing at similar rates in most of the countries that record counts of new end stage renal disease patients.

The incidence of chronic kidney disease will rise to 36 million people by end of 2015 World Wide [World health organization 2010].

Indian population study determined crude end stage renal disease incidence rate as 151 per million population.

It has been presumed that nearly 1 lakhs new patients with end stage renal disease require renal replacement therapy every year based on data from tertiary referral centres.

Patients on chronic maintenance haemodialysis are confronted with several complications. Muscle cramp being among the most common complaint is estimated to occur in 20% haemodialysis sessions.

Muscle cramps are more commonly associated with low blood pressure , decreased body fluid volume , fluid and electrolyte imbalance, hypoxaemia and amino acid deficiency. The severe muscle cramping experienced near the end of the dialysis treatment and persisting for a time after dialysis often is due to dehydration.

Interrupting the muscle cramps and even preventing them is very important and it is predominantly the responsibility of the nurses. **Hansen (2005)** proposed that to relieve an established cramp one must passively stretch the contracting muscle. Prophylactic stretching of the particular muscle can also prevent further attacks.

Electromyography recorded average muscle cramps were 10 minutes in duration. It takes 7 minutes to develop and 3 minutes to dissipate. The muscle may remain tender for up to 24 hours.

In passive stretching the anti stretch reflex is induced by efferent from the golgi organs in tendons, mediating an inhibitory reflex designed to prevent rupture of contracted muscle. Active stretching involves contraction of the antagonist muscle, leading to a spinal cord reflex evoking reciprocal inhibitions of the cramping muscle.

NEED FOR STUDY

The demand for dialysis and transplantation is increasing constantly. The Indian government has included care for kidney disease in its 12th five year plan cycle and is currently in the process of developing a framework for dialysis and transplantation. Dialysis centres will be set up across the country. The training needs a new program to train dialysis physician's and dialysis team has been designed.

Lee (1999) quoted in dialysis translation. Journal that in specific study involving 14,000 haemodialysis treatment on 703 patients the cumulative incidence of cramps was estimated to be 86%.

The university of Virginia renal service incorporated a program and has found success with adherence to the program from patients with proper commitment from the staff, an exercise program end stage renal disease patients can become a reality and a standard treatment of care for dialysis patients.

Non pharmacological therapies are ways to reduce muscle cramps in addition to medicine. Each person may respond to therapies differently. Massage, local heat or ice and leg elevation are to reduce muscle cramps. In pharmacological treatment quinine, carnitine supplementation, vitamin E, hypertonic saline versus dextrose, mannitol and biotin ameliorates are used to reduce the muscle cramps.

Intradialytic exercise programs are important to enhance patient physical functioning, exercise capacity, and improve overall health. Passive stretching of the shortened muscle is one of the treatment. Alternately squeezing and releasing the cramped muscle may help to reduce muscle cramps. This mechanical kneading restores blood flow and generally helps relax the spasm and tightness.

Since cramps are common intra dialytic event, the discomfort leads to premature termination of the treatment, non compliance with the prescription. Taking care of haemodialysis patients it becomes predominantly the nurses' role.

The investigator during her experience observed that the patients were report muscle cramps as a common complaints. Hence the researcher interested in evaluating the effect of intra dialytic low intensity stretching exercise for reduction of muscle cramps.

STATEMENT OF THE PROBLEM

A study to assess the effectiveness of intra dialytic low intensity stretching exercise on muscle cramps among patients undergoing haemodialysis in selected hospital at Kallakurichi.

OBJECTIVES

1. To assess the level of muscle cramps among patients undergoing haemodialysis.
2. To evaluate the effectiveness of intradialytic low intensity stretching exercise on muscle cramps among patients undergoing haemodialysis.
3. To find the association between post test level of muscle cramps among patients undergoing haemodialysis and their selected demographic variables.

HYPOTHESES

H1: There will be a significant reduction in muscle cramps among patients undergoing haemodialysis who receive low intensity stretching exercise.

H2: There will be a significant association between the post test level of muscle cramps among patients undergoing haemodialysis and their selected demographic variables.

OPERATIONAL DEFINITIONS

Effectiveness:

It refers to the extent to which intradialytic low intensity stretching exercise becomes successful in reducing muscle cramps.

Intradialytic:

Pertaining to the end of first hour of a four hour haemodialysis session.

Low intensity stretching exercise:

It is the passive exercise done by researcher. Flexing the knee joint of the patient and pulling the heel down slowly and simultaneously flex the foot until the patient report a feeling of stretch in the calf region. The stretch will be maintained for 30 seconds and slowly released. This will be repeated three times in between rest for both legs.

Muscle cramps:

Painful involuntary spasms of the calf muscle of patients undergoing haemodialysis. Which will be measured by muscle cramps assessment tool.

Haemodialysis:

The treatment that involves removing the waste products and excess fluid from the blood by passing it through a machine [dialyser] with a semi permeable filter for patients with chronic kidney disease.

ASSUMPTION

1. Patient receiving haemodialysis develop muscle cramps.
2. Intradialytic low intensity stretching exercise reduces the occurrence of muscle cramps.
3. Stretching exercise improves perfusion.

DELIMITATION

1. The study is delimited for 60 samples only.
2. Study is limited to the patients who are undergoing haemodialysis.
3. Study period is limited to four weeks only.
4. Study setting is limited to one dialysis unit.

PROJECTED OUTCOME

The findings of the study was determine the effectiveness of intradialytic low intensity stretching exercise on muscle cramps among patients undergoing haemodialysis.

It found to be effective this intervention could be incorporated as one of the nursing measures and reduce the muscle cramps among patients undergoing haemodialysis.

CHAPTER II

REVIEW OF LITERATURE

Review of literature is the crucial element of research process aim to review the critical points of knowledge including substance finding as well as theoretical and methodological contribution on particular topic.

This chapter consists of review of literature fewer than three headings.

PART- I

SECTION-A studies related to muscle cramps during haemodialysis sessions

SECTION-B studies related to stretching exercise

SECTION-C studies related to the effectiveness of Intradialytic exercise during haemodialysis sessions.

STUDIES RELATED TO MUSCLE CRAMPS DURING HAEMODIALYSIS SESSIONS

Ozdemir G, et al. (2013) evaluated a effect of foot reflexology on fatigue, pain and cramps in haemodialysis patients. The sample consisted of 80 patients in total, 40 intervention and 40 control patients, receiving treatment in the haemodialysis units of two institutions. Data were collected by using a questionnaire, piper fatigue scale and visual analogue scale for

measuring the severity of cramp and pain. It was determined that reflexology reduced the fatigue as well as pain and cramp mean scores in the intervention group.

Oguma S, et al .(2012) conducted a prospective trial. Patients with renal failure undergoing haemodialysis often have muscle cramps during and after the dialysis therapy. We have hypothesized that water soluble vitamins are deficient in haemodialysis patients. Accordingly we administered biotin to 14 patients who had frequent muscle cramps during haemodialysis sessions. Oral administration of 1mg per day biotin promptly reduced the onset and the severity of cramps in 12 patients both during after haemodialysis. Biotin administration is one choice to relieve haemodialysis patients from muscle cramps regardless of their elevated plasma biotin levels.

EI- hennawy AS, et al. (2010) evaluated a supplementary vitamin E for treatment of muscle cramps in haemodialysis sessions. In this study, 19 Haemodialysis patients were randomly selected of different age groups and ethnicity. All selected patients received vitamin E at a dose of 400 international units daily 12 weeks, and the number of attacks of muscle cramps was recorded. It showed statistically positive correlation $p(0.0001)$ with vitamin E therapy. Short term treatment with vitamin E is safe and effective in reducing number of attacks of muscle cramps in haemodialysis patients.

Harold I. Feldman, et al. (2009) evaluated a Effect of L- Carnitine on Dialysis-Related Hypotension and Muscle Cramps. A Meta-analysis was done for the adult patients with end-stage renal disease receiving long-term haemodialysis. Random-effects pooled odds ratio for intradialytic cramping or hypotension in L- carnitine-treated participants. Of 317 potentially relevant patients, (total enrollment of 193 patients) met criteria for inclusion, 90% of

patient reported results for both hypotension and cramps, 46% had results for only hypotension, and 44% reported results for only cramps. Using data from all relevant trials, the pooled odds ratio for cramping after L-carnitine supplementation was 0.30(P = 0.05). Analysis of examining the response of intradialytic hypotension to L-carnitine supplementation yielded a pooled odds ratio of 0.28(P = 0.2). Although suggestive in the case of muscle cramping, the available evidence does not confirm a beneficial effect of L-carnitine supplementation on dialysis-related muscle cramping or intradialytic hypotension.

Hung CY,et al.(2009) conducted a cross sectional study association of leptin with haemodialysis related muscle cramps. A total of 79 patients were enrolled. The episodes of hemodialysis related muscle cramps were recorded over a 28 day period. Serum levels of leptin were measured on the 15th day, a mid week dialysis session. Leptin levels are associated with frequent hemodialysis related cramps.

Hyodo T, et al. (2006) evaluated a effect of shakuyaku-kanzo-to on muscle cramp in haemodialysis patients. we administered 2.5 g of shakuyaku-kanzo- to granule to 61 patients who had muscle cramp during haemodialysis sessions and examined immediate effects .In the study during HD sessions. Muscle cramp and its associated pain disappeared in 5.3+/- 3.9 minutes on average in 54 out of 61 cases. In the study of patients who took the drug at home, cramp disappeared within 10 minutes in all cases.

STUDIES RELATED TO STRETCHING EXERCISES

Bessa B, et al .(2015) conducted a study reviews the literature about resistance exercise for patients on haemodialysis and describes protocols and clinical outcomes. Regarding the period of exercise training, 14 studies

applied intradialytic exercise. This reviews demonstrates that resistance training improves muscle strength, some biochemical parameters, and quality of life of the haemodialysis patients.

Momenia, et al .(2014) evaluated a effect of intradialytic exercise on echo cardiographic findings in haemodialysis patients. Forty patients were enrolled in the study from shahreord haemodialysis center. They were randomly assigned into the exercise and control groups. In exercise group, the patients had a 30 minutes exercise program per dialysis session, 3 times a week,3 months. Electrocardiography and echocardiography were done at the beginning of the study and 3 months later. The results showed the improvement of cardiac systolic and diastolic function in patients who had physical exercise during dialysis sessions. Regular intradialysis exercise can be suggested for haemodialysis patients to prevent cardiac disease.

Resic H, et al. (2014) evaluated a effect of intradialytic exercise program on the quality of life and physical performance in haemodialysis patients. A convenience sample of 52 Haemodialysis patients, who had on Haemodialysis for a minimum of 6 months, were included. Quality of life level of depression and anxiety (questionnaires: SF6,Back depression inventory (BDI) and back anxiety inventory (BAI) and physical performance (modified visual analogue scale(VAS) and manual muscle testing (MMT)) were assessed at baseline and after 4 month exercise program. Exercise program improves some aspects of quality of life and physical performance and decreases the level of depression and anxiety in haemodialysis patients.

Sheng K, et al. (2014) conducted a meta- analysis of the published randomized controlled trials.24 studies of 997 patients were included. Compared with control, intradialytic exercise significantly improve Kt/V (SMD=0,27,95% CI 0.01-0.53), peak oxygen consumption (VO(2peak))

(SMD=0.53,95% CI 0.04-0.55). Intradialytic exercise can improve Kt/V, VO₂ Peak), and the physical quality of life and Intradialytic exercise is safer for haemodialysis patients.

RiberioR, et al. (2013) evaluated a effect of resistance exercise intradialytic in chronic renal patients with haemodialysis. 15 patients in each group: 1: Diabetes Mellitus with Chronic Kidney Disease and Resistance Exercise; 2: Diabetes Mellitus+Chronic Kidney Disease sedentary; 3: Chronic Kidney Disease + Resistance Exercise and 4: DRC sedentary. They were evaluated during eight weeks, RE three times a week. RE improved in glucose and muscle strength testing(FM) with subtle but significant changes in urea, or even the k ($p<0.0001$). It was an improvement in the impact assessment of quality of life parameters ($p<0.001$) with the RE, such as functional capacity, physical aspect, reduction of pain (in general), general health, vitality, social function, emotional state and mental health.

Makhlough A, et al .(2012) evaluated a effect of intradialytic aerobic exercise on serum electrolytes levels in haemodialysis patients. In a randomized controlled trial of in an outpatient haemodialysis unit, clinically stable haemodialysis patients (n=47) were included and assigned into the aerobic exercise group and the control group (n=23). Aerobic exercise were done in groups, 15min/d, 3 times a week, for 2 months. The main outcome measures were biochemical variables including serum levels of calcium, phosphate, and potassium levels and haemoglobin level. A simplified aerobic exercise program is a complementary, safe and effective clinical treatment modality in patients with end stage renal disease on dialysis.

Turney. (2006) published that the severe muscle cramps are experienced near end of the dialysis treatment. He suggested to try a program

of gentle stretching and toning exercises, targeted at the muscles which tend to cramp during dialysis.

Coppin.(2005) quoted an uncontrolled study with suggested that calf stretching exercises could prevent nocturnal leg cramps.

Kannan.(2005) recommended a non pharmacologic approach of stretching and massaging as the first line treatment for idiopathic nocturnal leg cramps.

STUDIES RELATED TO THE EFFECTIVENESS OF INTRADIALYTIC EXERCISES DURING HAEMODIALYSIS SESSIONS

Basemath.ss.morris. (2014) evaluated a effect of intradialytic stretching exercise on muscle cramps among patients undergoing haemodialysis. Pre experimental or one group pre testpost test design was adopted. The sample size was 45. This study was conducted in three hospitals the Chennai Meenakshi Multispeciality hospital, R.S.R trinity acute care centre and St. Thomas hospital. Results now that there was a significant difference in the mean level of muscle cramps before and after intervention. It was found that in the pre test 53.3% had severe muscle cramps ,46.7% had a moderate muscle cramps and after performing the intra dialytic stretching exercise it was found that 40% had no muscle cramps, 24.4% mild and 35.6% had moderate muscle cramps.

Fabrice A Giordano. (2010) conducted a randomized controlled trials in testing the effects of exercise in dialysis patients. They tested the feasibility of a supervised intradialytic resistance band exercise training program, and its

effects on physical function. Thirty-six exercise sessions of moderate intensity (twice a week, mean duration 40 minutes each) mainly involving leg muscles against an elastic resistance, were performed. The exercise program was well tolerated and all patients completed it. Statistically significant improvements were observed in the following test ($P = .022$).the result revealed improvements in the six minute walk distance and in the one-leg balance tests reached statistical significance.

Joline LT Chen. (2010) conducted a performance testing on the effects of exercise during haemodialysis on physical performance and nutritional assessment. Each intervention given for 60 seconds. Patients chart were reviewed for episodes of intradialytic cramping. The result shows that all the patients showed improvement of physical performance at 3 months ($p=0.05$) , at ($p=0.02$). Thus, they concluded that a formal intradialytic exercise regimen can improve the physical performance.

Sue-Yueh Cheng. (2010) conducted a quasi-experimental study to evaluate the effect of intradialytic leg ergometry exercise for improving fatigue and daily physical activity levels among chronic kidney disease patients. The experimental group demonstrated an increase in activity levels. Intradialytic leg ergometry is a safe exercise that is effective to reduce fatigue and improve physical fitness in already active chronic kidney disease patients and it also reduces fatigue in sedentary patients.

KirstenPKoh. (2009) performed a randomized, controlled clinical trial to compare the effect of supervised intradialytic with unsupervised home-based exercise training on physical function. The outcome measures were made at baseline, three and six months. The results of this study determined the efficacy of intradialytic exercise training in haemodialysis patients.

Dan Bayliss. (2009) performed a systemic review in starting and managing an intradialytic exercise program for end stage renal disease patients can become a reality and a standard treatment of care for dialysis patients. The goal of this article is to define the components needed to begin and manage an effective intradialytic exercise program. This article describes how the University of Virginia Renal Services incorporated an exercise program and has found success with adherence to the program from staff and patients. Intradialytic exercise programs are important to enhance patient physical functioning, exercise capacity, and improve overall health. Finally this became a standard treatment for all dialysis units in University of Virginia Renal Services.

Samuele M Marcora. (2009) performed a new approach on haemodialysis patients who are characterized by muscle wasting and consequently decreased physical functioning and poor outcome. The 12 weeks of intradialytic exercise programme was beneficiary for the patients treated in a community-based hospital,Taipei . The result revealed that exercising patients have shown improvements in physical fitness and psychological function.

Maria Takhreem. (2008) evaluated a effect of exercise prescription in reducing the physical and psychological limitations encountered by dialysis patients. Four studies were selected and critically appraised using specific inclusion criteria. The results of all studies suggest a causal relationship between exercise intervention and quality of life in renal patients. Exercising patients have shown improvements in physical fitness, psychological function, manual dexterity, reaction times, and lower-extremity muscle strength.

Susan Godfrey, et al. (2007) conducted a randomized pilot trial on 50 participants receiving long term haemodialysis. Intra dialytic low-intensity strength training or stretching exercise given twice weekly for a total of 48 exercise session. The result showed that 57% participants experienced effective of the intervention and showed significant improvement from baseline score ($P=0.02$). The result was concluded that intradialytic low-intensity progressive strength training was safe and effective among maintenance of haemodialysis patients.

The reviewed literatures showed the promising effect of intradialytic low intensity stretching exercise on muscle cramps and this study proposes to evaluate the effect of intradialytic low intensity stretching exercise on reduction of muscle cramps.

PART- II

CONCEPTUAL FRAME WORK

The conceptual frame work for the study based on general system theory developed by **Ludwig von Bertalanffy's** in 1968. This system theory explains dividing the whole thing in two parts and working together of these parts in system. According to this model, a system set of objects which are related between themselves and their attributes. The object contributing to the system behaves together as a whole. Changes in any part will affect whole system. All living system or open systems which mean that they exchange energy matter and information across their boundaries with environment general system theory consist of scientific explanation whole or wholeness; it has its sub system. The main concepts of sub system or input, throughput, output. Input and output are the process by which a system is able to communicate and react with its environment.

INPUT

Refers to matter energy and information enters in to the system its boundary. In this study, input consists of demographic variables. The researcher observes the patient and identifies the need for help by selecting the samples based on criteria for sample selection. She determines the cause of the discomfort identifies the risk for muscle cramps and ascertains from patient's experience and it is evidenced through nurse-patient interaction. The researcher notices the patient behaviour like verbal expression of previous experience of muscle cramps, his frequent position changes in bed and worried facial expressions during haemodialysis. The researcher also identifies possible risk factors for developing muscle cramps as high amount of fluid removal, increase duration of haemodialysis, repeated use of dialysis, frequency of dialysis. Finally, she validates with the patient that the health is needed.

THROUGHPUT

Is a process that occurs some point between the input and output process. It enables the input to be transformed in such a way that it can be readily by the system. In this study throughput was considered planning and implementing intradialytic low intensity stretching exercises to reduce muscle cramps. The intrdialytic low-intensity stretching exercise for the experimental group whereas the control group receives the routine care.

OUTPUT

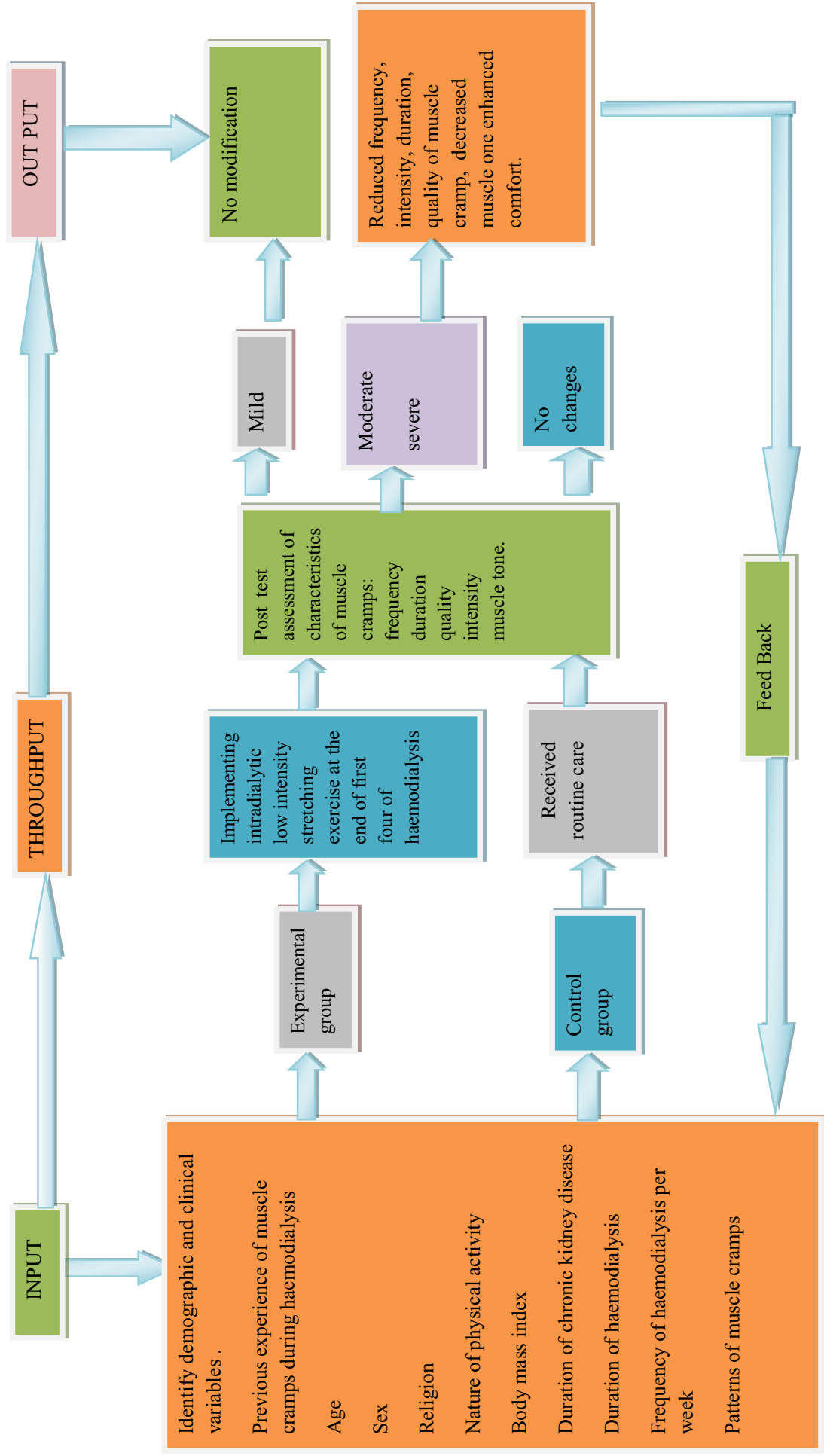
Is an energy, information or matter that is transformed to the environment. After help has been administered, the researcher evaluate that the action were indeed helpful. Evidence must come from the patient from the

purpose of the nursing actions has been fulfilled. In evaluating the need for help, it was met. The researcher evaluate the administered help by comparing the frequency, duration, quality, intensity and muscle tone in both the experimental and control group.

FEEDBACK

Refers to analysis of the post test in this study, It refers to the evaluation of planned intervention regarding intradialytic low intensity stretching exercise is reduce the muscle cramps.

FIGURE 1: MODIFIED CONCEPTUAL FRAMEWORK OF LUDWIG VON BERTALANFFY'S



CHAPTER: III

METHODOLOGY

This chapter deals with the brief distribution of different steps undertaken by the investigator for the study. It includes the research approach, research design, variables of the study, population, sample, sampling technique, development and distribution of tool, content validity, reliability, pilot study, data collection procedure and plan for data analysis.

RESEARCH APPROACH

Evaluative approach.

RESEARCH DESIGN

True experimental design – post test only control group design.

GROUP	INTERVENTION	POST TEST
Experimental Group	X	01
Control Group	-	01

X - Low intensity stretching exercise

01 - post test.

VARIABLES

Independent variable- Intradialytic low intensity stretching exercise

Dependent variable - Muscle cramps

SETTING OF THE STUDY

The study was conducted in dialysis unit government hospital kallakurichi, villupuram district.

POPULATION

Patients with chronic kidney disease undergoing haemodialysis.

SAMPLE

The patient with the age group of 21-70 years who are undergoing haemodialysis.

SAMPLE SIZE

The sample size 60. (30 patients in control group and 30 patients in experimental group)

SAMPLING TECHNIQUE

Simple random sampling technique (lottery method) .

CRITERIA FOR SAMPLE SELECTION

INCLUSION CRITERIA

1. Patient in age group of 21-70 years
2. Patients who are able to communicate in Tamil and English
3. Patient who is on regular haemodialysis.
4. Patients who are willing to participate.

EXCLUSION CRITERIA

1. Patients who receive haemodialysis for non renal conditions
2. Patients with femoral catheter
3. Patients with low limb pathology
4. Patients who are critically ill
5. Patients with concurrent medical conditions that may contraindicate exercise
6. Patients who are not willing.

DESCRIPTION OF TOOLS

The tool was developed after an extensive review and considering the opinions given by medical and nursing experts.

It consists of the following sections,

Part - A Questionnaire to elicit Demographic and clinical variables

It reveals the information about the demographic variables of haemodialysis patients like age, sex, religion, nature of physical activity, body mass index and clinical variables like duration of chronic kidney disease, duration of haemodialysis, frequency of haemodialysis per week, previous experience of muscle cramps during haemodialysis, patterns of muscle cramps

Part - B Muscle cramp assessment tool

It reveals the characteristics of muscle cramps which include frequency, duration, quality, perception of pain intensity and muscle tone assessment.

GRADING PROCEDURE

MUSCLE CRAMPS GRADING

SCORE	GRADE
15-30	Mild cramps
31-45	Moderate cramps
46-60	Severe cramps

INTERVENTION

Step 1 Active flexion and extension of both leg by patient

Step 2 Support flexed knee and pull the heel of the patient to extension. Slowly and maintain foot flexion throughout.

Step 3 Maintain flexion of the foot is till the patient reports feeling of stretch in the calf muscle region.

Step 4 Release the support of knee joint

Step 5 The procedure will be repeated for three times with rest in between. The exercise will be employed for both leg alternatively.

CONTENTVALIDITY

The content validity of the tool was obtained on the opinions of one in the field of medical specialist and four nursing experts. Tool was modified as per the consensus of all the experts and the tool was finalized.

PROCEDURE FOR DATA COLLECTION:

Data collection was done from 1-10-2015 to 27-10-2015 at government hospital kallakurichi. The objectives of the study were explained to the joint director and the nursing superintendent. The samples were selected by simple random sampling technique. Data was collected all the days except Sunday. The purpose of the study was explained and written consent was obtained from all the patients before the study.

On the day 1 the demographic variables data were collected, no pre test obtained. The study intervention intradialytic low intensity stretching exercise was given to the experimental group at the end of first hour of haemodialysis and post test level of muscle cramps was assessed for both experimental and control group by using Muscle Cramps Assessment Tool, at the end of 2,3 and 4th hour of the same day.

PLAN FOR DATA ANALYSIS

It was planned to analyze the collected data by using both descriptive and inferential statistics.

DESCRIPTIVE STATISTICS

Frequency and percentage distribution will be used to analyze the demographic, clinical variables and level of muscle cramp among patients undergoing haemodialysis.

Mean and standard deviation will be used to assess the post test scores.

INFERENCEAL STSTISTICS

The unpaired t test will be used to compare the post test level of muscle cramps. Chi square will be used to find out the association of post test level muscle cramps with their selected demographic and clinical variables.

PILOT STUDY

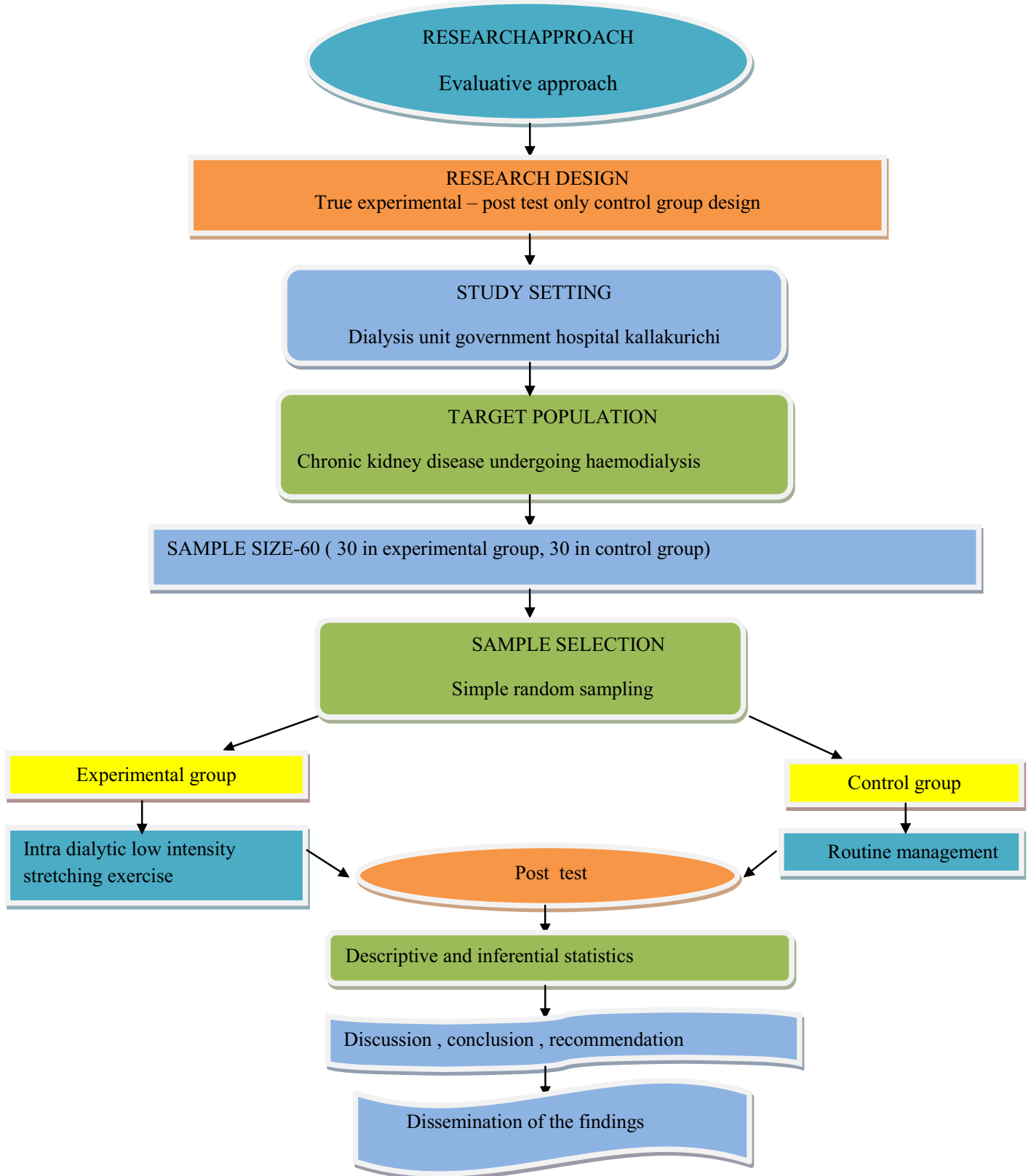
The pilot study was done at government hospital kallakurichi between 06.07.2015 to 12.07.2015 to test the feasibility , relevance and practicability . Permission was sought from the Joint Director , government Hospital kallakurichi . The objectives of the study were explained to the Joint Director and the Nursing superintendent. The consent was obtained from all the patients after explaining the purpose of the study .The pilot study was conducted among patients.

ETHICAL CONSIDERATION

The proposal was conducted after the approval of research committee of the college. Permission was sought from the joint director of government hospital kallakurichi. The written consent of each individual was obtained before data collection. Assurance was given to the study participants regarding the confidentiality of the data collection.

SCHMATIC REPRESENTATION OF RESEARCH

METHODOLOGY



CHAPTER – IV

DATA ANALYSIS AND INTERPRETATION

This chapter deals with the analysis and interpretation of data collected from 60 patients with chronic kidney disease undergoing haemodialysis, to assess the effectiveness of intradialytic low intensity stretching exercise on muscle cramps among patients undergoing haemodialysis. The data collected for the study were grouped and analyzed as per the objectives set for the study. The findings based on the descriptive and inferential statistical analysis are presented under the following sections.

ORGANIZATION OF DATA

The findings of the study were grouped and analyzed under the following sessions.

Section A : Description of the demographic variables.

Section B : Post test level of muscle cramps among patients undergoing haemodialysis in experimental and control group.

Section C : Effectiveness of intradialytic low intensity stretching exercise on muscle cramps among patients undergoing haemodialysis in the experimental and control group.

Section D : Association of post test level of muscle cramps among patients undergoing haemodialysis with their selected demographic variables in the experimental and control group.

SECTION-A

Table 1: Frequency and percentage distribution of demographic variables among patients undergoing haemodialysis.

N = 60(30+30)

Demographic Variables	Experimental Group		Control Group	
	No.	%	No.	%
Age in years				
21 – 30	1	3.33	0	0.00
31 – 40	7	23.33	8	26.67
41 – 50	6	20.00	11	36.67
51- 60	0	0	0	0
61 – 70	16	53.33	11	36.67
Sex				
Male	23	76.67	25	83.33
Female	7	23.33	5	16.67
Religion				
Hindu	27	90.00	28	93.33
Muslim	3	10.00	0	0.00
Christian	0	0.00	2	6.67
Others	0	0.00	0	0.00
Nature of physical activity				
Sedentary	22	73.33	23	76.67
Moderate worker	8	26.67	7	23.33
Hard physical worker	0	0.00	0	0.00
Body Mass Index				
Underweight	3	10.00	8	26.67
Normal	15	50.00	13	43.33
Overweight	12	40.00	9	30.00

Demographic Variables	Experimental Group		Control Group	
	No.	%	No.	%
Duration of chronic kidney disease				
<2 years	7	23.33	10	33.33
2 - 4 years	15	50.00	13	43.33
>5 years	8	26.67	7	23.33
Duration of haemodialysis				
<1 year	7	23.33	11	36.67
1 - 2 years	16	53.33	10	33.33
>2years	7	23.33	9	30.00
Frequency of haemodialysis per week				
Once	2	6.67	0	0.00
Twice	24	80.00	30	100.00
Thrice	4	13.33	0	0.00
Previous experience of muscle cramps				
Yes	30	100.00	30	100.00
No	0	0.00	0	0.00
Patterns of muscle cramps				
Constant	19	63.33	24	80.00
Intermittent	11	36.67	6	20.00

The table 1 shows that in the experimental group majority 16(53.33%) were in the age group of 61 – 70 years, 23(76.67%) were male, 27(90%) were Hindus, 22(73.33%) were sedentary workers, 15(50%) were of normal BMI, 15(50%) had been suffering from chronic kidney disease for 2 – 4 years, 16(53.33%) were undergoing haemodialysis for 1 – 2 years, 24(80%) were undergoing haemodialysis twice a week, almost all 30(100%) had the previous experience of muscle cramps during haemodialysis and 19(63.33%) had constant patterns of muscle cramps.

Whereas in the control group, majority 11(36.67%) were in the age group of 41 – 50 and 61– 70 years respectively. Regarding the gender majority, 25(83.33%) were male, 28(93.33%) were Hindus, 23(76.67%) were sedentary workers, 13(43.33%) were of normal BMI, 13(43.33%) had been suffering from chronic kidney disease for 2 – 4 years, 11(36.67%) were undergoing haemodialysis for <1 year, 30(100%) were undergoing haemodialysis twice a week, almost all 30(100%) had the previous experience of muscle cramps during haemodialysis and 24(80%) had constant patterns of muscle cramps.

Figure 2 Percentage distribution of age among patients undergoing haemodialysis

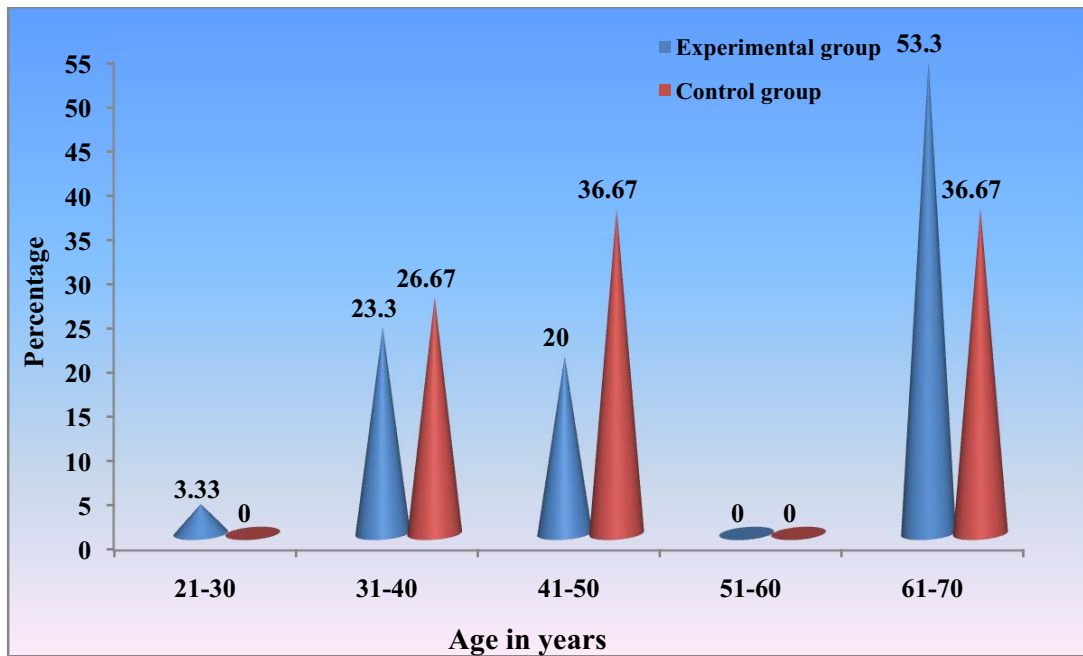


Figure 3 percentage distribution of gender among patients undergoing haemodialysis

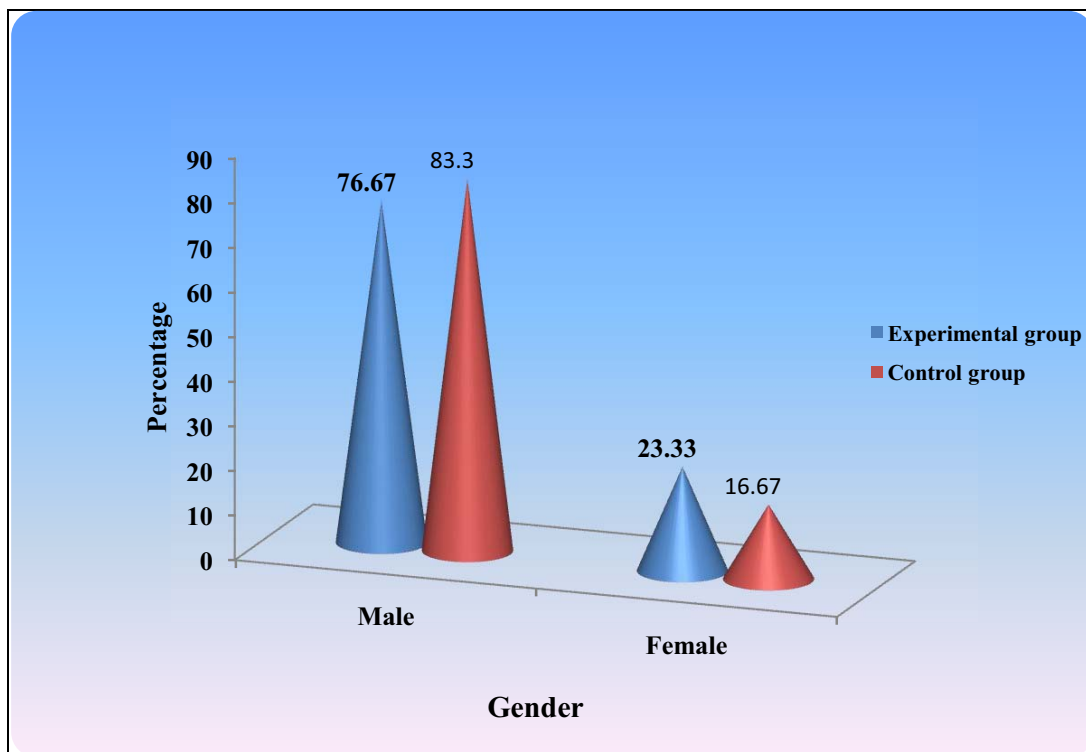


Figure 4 percentage distribution of duration of chronic kidney disease among patients undergoing haemodialysis

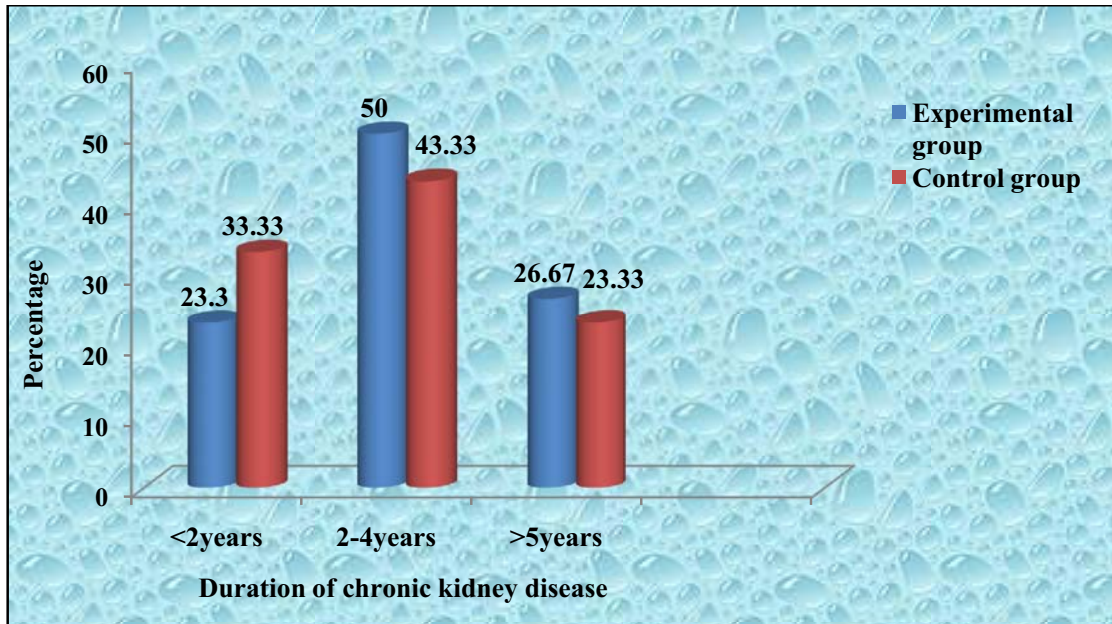
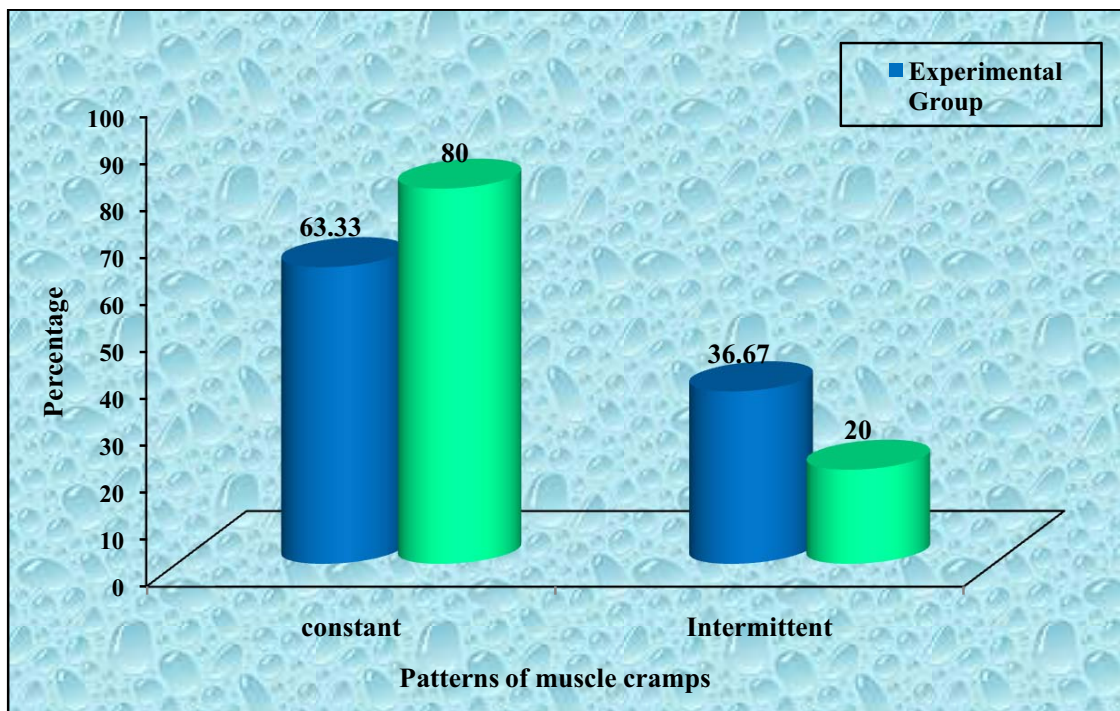


Figure 5 Percentage distribution of patterns of muscle cramps among patients undergoing haemodialysis



SECTION-B

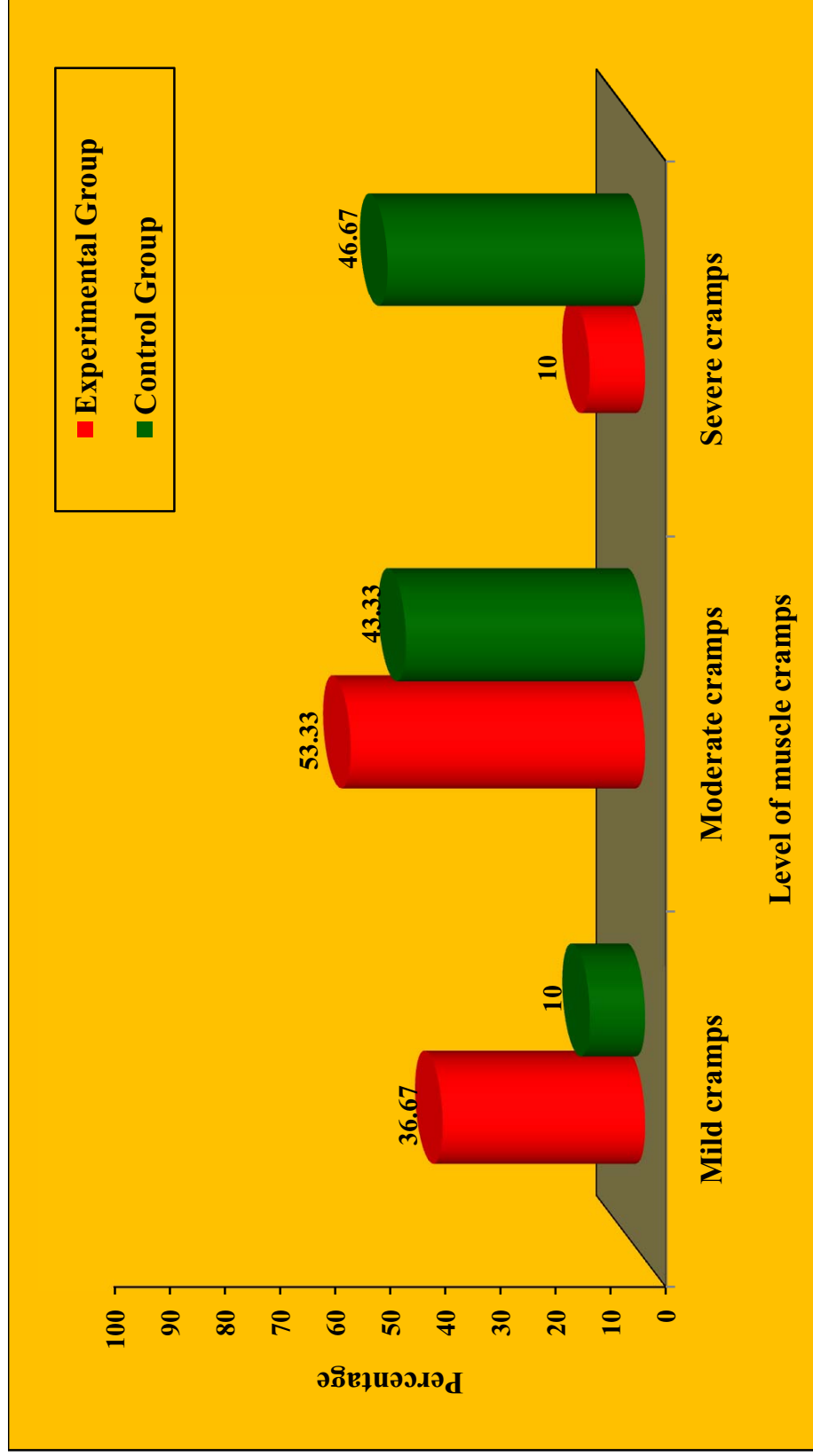
Table 2: Frequency and percentage distribution of post test level of muscle cramps among patients undergoing haemodialysis in experimental group.

N = 60(30+30)

Level of muscle cramps	Mild (15 – 30)		Moderate (31 – 45)		Severe (46 – 60)	
	No.	%	No.	%	No.	%
Experimental Group	11	36.67	16	53.33	3	10.0
Control Group	3	10.0	13	43.33	14	46.67

The table 2 shows that in experimental group, majority 16(53.33%) had moderate level of muscle cramps, 11(36.67%) had mild level of muscle cramps and 3(10%) had severe level of muscle cramps. In control group, majority 14(46.67%) had severe level of muscle cramps, 13(43.33%) had moderate level of muscle cramps and 3(10%) had mild level of muscle cramps.

Figure 6 Percentage distribution of post test level of muscle cramps in experimental and control group



SECTION-C

Table 3: Comparison of mean score post test muscle cramps among patients undergoing haemodialysis between the experimental and control group.

N = 60(30+30)

Group	Total score	Mean	Standard deviation	Mean difference	Unpaired 't' Value
Experimental group	60	33.40	6.48	10.8	t=6.698 p=0.000,s***
Control group	60	44.20	5.99		

***p<0.001, S – Significant

The table 3 shows that in the experimental group, the post test mean score of muscle cramps was 33.40 ± 6.48 and the post test mean score of muscle cramp in the control group was 44.20 ± 5.99 . The calculated unpaired 't' value of $t = 6.698$ was found to be statistically significant at $p < 0.001$ level.

SECTION-D

Table 4: Association of post test level of muscle cramps among patients undergoing haemodialysis with their selected demographic variables in the experimental group.

n = 30

Demographic Variables	Mild (15 – 30)		Moderate (31 – 45)		Severe (46 – 60)		Chi-Square Value
	No.	%	No.	%	No.	%	
Age in years							
21 – 30	0	0	1	3.33	0	0	$\chi^2=2.378$ d.f=6 p=0.882 N.S
31 – 40	3	10.0	3	10.0	1	3.33	
41 – 50	3	10.0	3	10.0	0	0	
51 - 60	0	0	0	0	0	0	
61 – 70	5	16.7	9	30.0	2	6.67	
Sex							
Male	9	30.0	12	40.0	2	6.7	$\chi^2=0.356$ d.f=2 p=0.837 N.S
Female	2	6.7	4	13.3	1	3.3	
Religion							
Hindu	10	33.3	15	50.0	2	6.7	$\chi^2=2.075$ d.f=2 p=0.354 N.S
Muslim	1	3.3	1	3.3	1	3.3	
Christian	-	-	-	-	-	-	
Others	-	-	-	-	-	-	
Nature of physical activity							
Sedentary	8	26.7	12	40.0	2	6.7	$\chi^2=0.093$ d.f=2 p=0.955 N.S
Moderate worker	3	10.0	4	13.3	1	3.3	
Hard physical worker	-	-	-	-	-	-	

Demographic Variables	Mild (15 – 30)		Moderate (31 – 45)		Severe (46 – 60)		Chi-Square Value
	No.	%	No.	%	No.	%	
Body Mass Index							
Underweight	1	3.3	2	6.7	0	0	$\chi^2=1.668$ d.f=4 p=0.797 N.S
Normal	5	16.7	9	30.0	1	3.3	
Overweight	5	16.7	5	16.7	2	6.7	
Duration of chronic kidney disease							
<2 years	1	3.3	5	16.7	1	3.3	$\chi^2=2.284$ d.f=4 p=0.684 N.S
2 - 4 years	7	23.3	7	23.3	1	3.3	
>5 years	3	10.0	4	13.3	1	3.3	
Duration of haemodialysis							
<1 year	1	3.3	5	16.7	1	3.3	$\chi^2=8.453$ d.f=4 p=0.076 N.S
1 - 2 years	9	30.0	7	23.3	0	0	
>2 years	1	3.3	4	13.3	2	6.7	
Frequency of haemodialysis per week							
Once	1	3.3	1	3.3	0	0	$\chi^2=1.129$ d.f=4 p=0.890 N.S
Twice	8	26.7	13	43.3	3	10.0	
Thrice	2	6.7	2	6.7	0	0	
Previous experience of muscle cramps							
Yes	11	36.7	16	53.3	3	10.0	-
No	-	-	-	-	-	-	
Patterns of muscle cramps							
Constant	10	33.3	7	23.3	2	6.7	$\chi^2=6.259$ d.f=2 p=0.044S*
Intermittent	1	3.3	9	30.0	1	3.3	

*p<0.05, S – Significant, N.S – Not Significant

The table 4 shows that the demographic variables patterns of muscle cramp had shown statistically significant association with level of muscle cramps among patients undergoing haemodialysis in the experimental group and the other demographic variables had not shown statistically significant association with level of muscle cramps among patients undergoing haemodialysis.

Table 5: Association of post test level of muscle cramps among patients undergoing haemodialysis with their selected demographic variables in the control group.

n = 30

Demographic Variables	Mild (15 – 30)		Moderate (31 – 45)		Severe (46 – 60)		Chi-Square Value
	No.	%	No.	%	No.	%	
Age in years							
21 – 30	-	-	-	-	-	-	$\chi^2=6.621$ d.f=4 p=0.157 N.S
31 – 40	2	6.7	4	13.3	2	6.7	
41 – 50	1	3.3	6	20.0	4	13.3	
51 - 60	0	0	0	0	0	0	
61 – 70	0	0	3	10.0	8	26.7	
Sex							
Male	3	10.0	12	40.0	10	33.3	$\chi^2=2.782$ d.f=2 p=0.249 N.S
Female	0	0	1	3.3	4	13.3	
Religion							
Hindu	3	10.0	12	40.0	13	43.3	$\chi^2=0.241$ d.f=2 p=0.886 N.S
Muslim	-	-	-	-	-	-	
Christian	0	0	1	3.3	1	3.3	
Others	-	-	-	-	-	-	
Nature of physical activity							
Sedentary	1	3.3	9	30.0	13	43.3	$\chi^2=5.602$ d.f=2 p=0.061 N.S
Moderate worker	2	6.7	4	13.3	1	3.3	
Hard physical worker	-	-	-	-	-	-	
Body Mass Index							
Underweight	1	3.3	3	10.0	4	13.3	$\chi^2=1.091$ d.f=4 p=0.896 N.S
Normal	1	3.3	7	23.3	5	16.7	
Overweight	1	13.3	3	3.3	5	16.7	

Demographic Variables	Mild (15 – 30)		Moderate (31 – 45)		Severe (46 – 60)		Chi-Square Value
	No.	%	No.	%	No.	%	
Duration of chronic kidney disease							
<2 years	1	3.3	5	16.7	4	13.3	$\chi^2=1.512$ d.f=4 p=0.825 N.S
2 - 4 years	2	6.7	5	16.7	6	20.0	
>5 years	0	0	3	10.0	4	13.3	
Duration of haemodialysis							
<1 year	2	6.7	5	16.7	4	13.3	$\chi^2=2.102$ d.f=4 p=0.717 N.S
1 - 2 years	1	3.3	4	13.3	5	16.7	
>2 years	0	0	4	13.3	5	16.7	
Frequency of haemodialysis per week							
Once	-	-	-	-	-	-	-
Twice	3	10.0	13	43.3	14	46.7	
Thrice	-	-	-	-	-	-	
Previous experience of muscle cramps							
Yes	3	10.0	13	43.3	14	46.7	-
No	-	-	-	-	-	-	
Patterns of muscle cramps							
Constant	2	6.7	11	36.7	11	36.7	$\chi^2=0.524$ d.f=2 p=0.769 N.S
Intermittent	1	3.3	2	6.7	3	10.0	

N.S – Not Significant

The table 5 shows that there was no significant association between the demographic variables and level of muscle cramps among patients undergoing haemodialysis in the control group.

CHAPTER – V

DISCUSSION

This chapter highlights the discussion of the data analysed based on the objectives and hypotheses of the study. The problem stated is “A study to assess the effectiveness of intradialytic low intensity stretching exercise on muscle cramps among patients undergoing haemodialysis in selected hospital at kallakurichi”. The discussion based on the objectives of the study and hypotheses specified in this study.

The first objective of the study was to assess the level of muscle cramps among patients undergoing haemodialysis.

In experimental group post test assessment, the majority of the subjects 53.33% had moderate, 36.67% had mild and 10% had severe level of muscle cramps.

In control group post test assessment, majority 46.67% had severe, 43.33% had moderate and 10% had mild level of muscle cramps.

The second objective of the study was to evaluate the effectiveness of intradialytic low intensity stretching exercises on muscle cramps among patients undergoing haemodialysis.

The calculated mean muscle cramps score was 33.40 ± 6.48 in the experimental group and the calculated mean muscle cramps was 44.20 ± 5.99 in the control group. The mean difference was 10.8 and the calculated t value 6.698 was significant at $p < 0.001$. Hence the stated hypothesis H1: There will be a significant reduction in muscle cramps among patients undergoing haemodialysis who receive low intensity stretching exercise is accepted.

The same significant study findings was reported by **Basemath.ss.morris, Joline LT Chen, Susan Godfrey.**

The third objective of the study was to find the association between post test level of muscle cramps among patients undergoing haemodialysis and their selected demographic variables of both groups.

The association of the post test level of muscle cramps among patients undergoing haemodialysis with their selected demographic variables findings revealed that there was no significant association found between the post test level of muscle cramps and Age, Sex, Religion, Nature of physical activity, Body mass index, Duration of chronic kidney disease, Duration of haemodialysis, Frequency of haemodialysis per week, previous experience of muscle cramp during haemodialysis, Patterns of muscle cramps at $p < 0.001$ level. Hence the stated hypothesis H2: There will be a significant association between the post test level of muscle cramps among patients undergoing haemodialysis and their selected demographic variables. Who receive intradialytic low intensity stretching exercise is not accepted.

CHAPTER-VI

SUMMARY, CONCLUSION, IMPLICATIONS, AND RECOMMENDATIONS

This chapter is divided into two sections. **Section I** deals with summary of the study, findings, and conclusion. **Section II** deals with implications in various areas of nursing practice, nursing education, nursing administration, and nursing research, limitations and recommendations.

SUMMARY OF THE STUDY

The main objective of the study was to assess the effectiveness of intradialytic low intensity stretching exercise on muscle cramps among patients undergoing haemodialysis in selected hospital at kallakurichi.

Conceptual framework based on Ludwig von bertalanffy's. This model was used this study. A quantitative evaluative approach, **True experimental design – post test only control group design was adopted for this study.** **Simple random sampling technique** was used to select the samples and the sample size was 60, 30 in experimental group and 30 in control group.

The tool selected for the present study included interview questions for demographic and clinical variables and muscle cramps assessment tool for the assessment of muscle cramps among patients undergoing haemodialysis.

The data collection was done for a period of four weeks. Intradialytic low intensity stretching exercise in experimental group, for the control group in routine management. Then the post test assessment done through muscle

cramps assessment tool for both experimental and control group. Both inferential and descriptive statistics were used to analysis the data, interpreted in terms of objectives and hypotheses of the study.

The study findings shows that the Intradialytic low intensity stretching exercise is effective on muscle cramps among patients undergoing haemodialysis.

MAJOR FINDINGS OF THE STUDY

I Demographic and clinical variables

Majority of the participants

- 53.33% were in the age group of 61 – 70 years in experimental group, and 36.67% were in the age group of 41-50 and 61-70 years in control group.
- 76.67% were male in experimental group, and 83.33% were male in control group.
- 90% were Hindus in experimental group, and 93.33% were Hindus in control group.
- 73.33% were sedentary workers in experimental group, and 76.67% were in sedentary workers in control group.
- 50% were normal BMI in experimental group, and 43.33% were normal BMI in control group.

- 50% had suffering from chronic kidney disease for 2 – 4 years in experimental group, and 43.33% had suffering from chronic kidney disease for 2-4 years in control group.
- 53.33% were undergoing haemodialysis for 1 – 2 years in experimental group, and 36.67% were undergoing haemodialysis for <1 year in control group.
- 80% were undergoing haemodialysis twice a week in experimental group, and 100% were undergoing haemodialysis twice a week in control group.
- 100% in both groups had the previous experience of muscle cramps during haemodialysis.
- 63.33% had constant patterns of muscle cramps in experimental group, and 80% had constant patterns of muscle cramps in control group.

II Findings related to effectiveness of intradialytic low intensity stretching exercise on muscle cramps among patients undergoing haemodialysis.

In experimental group, the post test mean score of muscle cramps was 33.40 ± 6.48 and the post test mean score of muscle cramps in the control group was 44.20 ± 5.99 . The calculated 't' value of $t = 6.698$ was found to be statistically significant at $p < 0.001$ level.

III Findings related to association between post test level of muscle cramps among patients undergoing haemodialysis and their selected demographic variables of both groups.

The demographic variables patterns of muscle cramps had shown statistically significant association with level of muscle cramps among patients undergoing haemodialysis in the experimental group and the other demographic variables had not shown statistically significant association with level of muscle cramps among patients undergoing haemodialysis.

There was no significant association between the demographic variables and level of muscle cramps among patients undergoing haemodialysis in the control group.

IMPLICATIONS OF THE STUDY

The findings of the study have implications in various areas of nursing practice, nursing education, nursing administration, and nursing research and recommendations for further study are present.

Implications for nursing practice

- Nurses have a vital role in caring patients who undergo haemodialysis. By doing this intradialytic low-intensity stretching exercise as a routine care during the cycle will reduce the occurrence of muscle cramps.
- Develop skill in providing efficient nursing care for reduction of muscle cramps.

- This can be followed as a routine care during the haemodialysis cycle. It has to establish as a evidence based nursing practice.
- Teach the patients during haemodialysis period about the effectiveness of various non pharmacological measures for reduction of muscle cramps.

Implication for nursing education

- As nursing educator, we must strengthen the evidence based nursing practices among the undergraduate and postgraduate nursing students.
- The nursing education curriculum must provide adequate clinical exposure of students in needed clinical areas.
- Educate the students about various complementary and alternative therapies for reduction of muscle cramps.
- By conducting work shop, seminars and conferences the knowledge can be updated.

Implications for nursing administration

- The nursing administrator should take initiative in organizing the continuing nursing education programmes and in-service education programme on newly devised strategies such as intradialytic low-intensity stretching exercise.

- Collaborate with governing bodies to formulate standard policies and protocol to emphasize nursing care during haemodialysis
- Patient and family awareness and training sessions can be conducted.
- The nursing administrator should supervise the intervention done for the patients by nurses and also monitor the standards of practice to promote excellence in nursing care.

Implications for nursing research

- Nursing researcher should encourage clinical nurses to apply the research findings in their daily nursing care activities and can bring out new innovative procedures to reduce the muscle cramps.
- Encourage the non- pharmacological interventions. Nurse researcher can promote many studies on this topic.
- The researcher should conduct periodic review of research findings and disseminate the findings through conferences, seminars, publications in journals, and in the World Wide Web.

LIMITATIONS

- The investigator could get more of abroad reviews than Indian reviews to support the present study.
- Generalization will be better if large sample included.
- The investigator found difficulty to stick over the time schedule due to doctor rounds.

RECOMMENDATIONS

The study recommends the following for further research,

- The study can be replicated with larger samples for better generalization
- The study can be done for peritoneal dialysis patients
- The study can be done conducted in different settings with similar facilities
- A comparative study can be conducted between pharmacological and non- pharmacological intervention

CONCLUSION

The purpose of this study was used to assess the effectiveness of intradialytic low intensity stretching exercise on muscle cramps among patient undergoing haemodialysis. From the above findings it is evident that intradialytic low intensity stretching exercise is very effective in reduction of muscle cramps among patient undergoing haemodialysis.

On the whole, carrying out the present study was really an enriching experience to the investigator. It also helped a great deal to explore improve the knowledge of the researcher and the respondents.

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ANNEXURE I

PERMISSION LETTER FOR RESEARCH PURPOSE

From

301411701,
II Year M.Sc. Nursing,
Thanthai Roever College of Nursing,
Perambalur.

To

The Joint Director,
Government Hospital,
Kallakurichi.

Respected madam/Sir,

I am doing M.Sc., (Nursing) II year in Thanthai Roever College Of Nursing Perambalur. Under the TAMILNADU Dr.M.G.R MEDICAL UNIVERSITY CHENNAI. As a partial fulfillment of my M.Sc., (NURSING) Degree Programme, I am going to conduct **“A Study to assess the effectiveness of Intradialytic low intensity stretching exercise on muscle cramps among patients undergoing haemodialysis” in selected hospital at kallakurichi.** I would like to conduct the data collection at your esteemed institution. Hence, I request you to kindly grant me permission to conduct my study in your Hospital.

Thanking you

Place:

Yours sincerely,

Date:

(301411701).

ANNEXURE II

LETTER SEEKING EXPERT'S OPINION FOR CONTENT VALIDITY

From

301411701
M.Sc., (Nursing) II Year,
Thanthai Roever College of Nursing,
Perambalur.

To

Respected Madam/Sir,

Sub: Requisition for content validity of tool .

I am doing M.Sc., (Nursing) II year in Thanthai Roever College Of Nursing Perambalur. Under the TAMILNADU Dr.M.G.R MEDICAL UNIVERSITY CHENNAI. As a partial fulfillment of my M.Sc., (NURSING) Degree Programme, I am going to conducting a research on **“A Study to assess the effectiveness of intradialytic low intensity stretching exercise on muscle cramps among patients undergoing haemodialysis” in selected hospital at kallakurichi** . A tool has been developed for the research study. I am submitting tool of description the above stated for your expert and valuable opinion, I will be thankful for your kind consideration .Kindly return it to the undersigned.

Thanking you

Place:

Yours Sincerely,

Date:

301411701.

ANNEXURE III

CRITERIA CHECK LIST FOR VALIDATION OF THE TOOL

Respected madam,

Kindly review the item in the tool and if agree the criteria make a tick in relevant column otherwise, place a tick need modification column, or make not relevant and kindly give your valuable comment in the remarks column.

PART-I DEMOGRAPHIC DATA

S.NO	RELEVANT	MODIFY	IRRELEVANT	REMARKS
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

PART-II MUSCLE CRAMP ASSESSMENT TOOL

S.NO	TOPIC	RELEVANT	MODIFY	IRRELEVANT	REMARKS
1.	Frequency				
2.	Duration				
3.	Quality				
4.	Perception of pain				
5.	Muscle tone assessment				

ANNEXURE IV

CONTENT VALIDITY CERTIFICATE

This is to certify that the tool for **A STUDY TO ASSESS THE EFFECTIVENESS OF INTRADIALYTIC LOW INTENSITY STRETCHING EXERCISE ON MUSCLE CRAMPS AMONG PATIENTS UNDERGOING HAEMODIALYSIS IN SELECTED HOSPITAL ATKALLAKURICHI** prepared by 301411701 II year M.sc. nursing, student of Thanthai Roever college of nursing, Perambalur found to be valid and up to date.

Name :

Signature of the expert

Place :

Date :

Designation and address

ANNEXURE V

LIST OF EXPERT'S OPINIAN FOR CONTENT VALIDITY

1. **Prof.R.punithavathi.M.sc.(N)**
Principal,
Thanthai Roever College of Nursing,
Perambalur.
2. **Prof.V.J.Elizabeth.M.sc.(N)**
Vice principal,
Thanthai Roever College of Nursing,
Perambalur.
3. **Dr .S.Rajina Rani.M.sc.(N),ph.D**
Principal,
Rassacademy college of nursing,
Poovanthi,
Sivaganga district.
4. **Prof.M.Shanthi.M.sc.(N)**
Dr.G.Sakunthala college of nursing ,
Trichy.
5. **Prof.K.S.Pushpalatha.M.sc.(N)**
Shanmugacollege of nursing,
Salem .

ANNEXURE VI

CERTIFICATE OF ENGLISH EDITING TO WHOMSOEVER IT MAY CONCERN

This is to certify that the dissertation work **A STUDY TO ASSESS THE EFFECTIVENESS OF INTRADIALYTIC LOW INTENSITY STRETCHING EXERCISE ON MUSCLE CRAMPS AMONG PATIENTS UNDERGOING HAEMODIALYSIS IN SELECTED HOSPITAL AT KALLAKURICHI** done by **301411701** II year M.Sc. Nursing, in Thanthai Roever College of Nursing, Perambalur is edited for English language appropriateness.

Signature

ANNEXURE VII

ஓப்புதல் படிவம்

தந்தை ரோவர் செவிலியர் கல்லூரியில் முதுகலை செவிலிய பட்டப்படிப்பு பயிலும் 301411701 அவர்களால் நடத்தப்படுகின்ற ஆராய்ச்சி நோக்கத்தினைப் பற்றியும், சிகச்சை பற்றிய விளக்கமும் தெளிவாக தெரிவிக்கப்பட்டது. இதில் பங்கேற்பதற்கு எனக்கு எந்த ஆட்சேபணையும் இல்லை. மேலும் இந்த விவரங்களை வெளியிடுவதற்கும், அச்சிடுவதற்கும் முழு சம்மதம் அளிக்கிறேன்.

கையெழுத்து

பெயர்:

தேதி:

இடம்:

ANNEXURE VIII

DATA COLLECTION TOOL

PART-A Questionnaire regarding demographic variables

Kindly furnish the following details by placing a tick () mark in the appropriate choice.

1. Age in years

- a. 21-30
- b. 31-40
- c. 41-50
- d. 51-60
- e. 61-70

2. Sex

- a. Male
- b. Female

3. Religion

- a. Hindu
- b. Muslim
- c. Christian
- d. Others

4. Nature of physical activity

- a. Sedentary
- b. Moderate worker
- c. Hard physical worker

5. Body mass index

a. under weight

b. normal

c. over weight

Clinical variables

6. Duration of chronic kidney disease

a.<2 year

b.2-4 years

c.>5 years

7. Duration of haemodialysis

a.<1year

b.1-2years

c.>2years

8. Frequency of haemodialysis per week

a. Once

b. Twice

c. Thrice

9. Previous experience of muscle cramps during haemodialysis

a.Yes

b.No

10.patterns of muscle cramps

a. Constant

b.Intermittent.

PART-B MUSCLE CRAMPS ASSESSMENT TOOL

Choose the level of muscle cramps

S.No	Characteristics	Post intervention			
		Score	2Hour	3hour	4hour
1	Frequency of muscle cramps				
	a. <2 time	1			
	b. 2-3 times	2			
	c. 4-5 times	3			
	d. >5 times	4			
2	Duration of muscle cramps(minutes)				
	a. 1-3	1			
	b. 4-5	2			
	c. 6-7	3			
	d. >8	4			
3	Quality of muscle cramps				
	a. Mild aching	1			
	b. Tingling	2			
	c. Burning	3			
	d. Throbbing	4			
4	Perception of pain intensity				
	a. No pain	1			
	b. Mild pain	2			
	c. Moderate pain	3			
	d. Severe pain	4			
5	Muscle tone assessment				
	a. No resistance	1			
	b. Mild resistance	2			
	c. Moderate resistance	3			
	d. Considered increase tone, passive movement difficult	4			

MUSCLE CRAMPS GRADING

GRADE SCORE

Mild cramps - (15-30)

Moderate cramps - (31-45)

Severe cramps - (46-60)