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A study to assess the effect of intra-dialytic stretching exercises on muscle cramp (pain) among patients undergoing hemodialysis in east coast hospitals at Puducherry

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Abstract
Chronic Hemodialysis was first introduced in 1960s to extend the lives of patient with end stage renal disease and by 1982, almost 1,00,000 patents throughout the world were being alive by some form of dialysis therapy. Dialysis removes many of the toxins responsible for the uremic syndrome and prolongs survival. However the dialysis treatment thus not fully correct the uremia and may be associated with treatment related complication mainly muscle cramps pain. The complication prevent patients from attaining a state of full health and interfere with many aspects of life. The degree to which an individual patient can adapt to their medical and psychological stresses is reflected in the quality of life of that individual.
A world perspective on renal care, the challenges of prevention and treatment) says cramps are a common intra-dialytic event, the discomfort leads to premature termination of the treatment, noncompliance with the prescription and therefore under dialysis. This interfering with the muscle cramps and even preventing the occurrence become a major responsibility of the personal in charge of the patients. Since nurses are taking care of Hemodialysis patients almost everywhere it becomes predominantly the nurse's role Muscle cramps are prolonged involuntary muscle contraction. To relieve an established cramp on must passively stretch the contracting muscle. Prophylactic stretching of the particular muscle can also prevent attacks.

Keywords: Assess, effectiveness, intra-dialytic stretching exercises, muscle cramp

Introduction

"In the midway of every difficulty lies an opportunity"
Albert Einstein

The crucial areas of human life are physical wellbeing social activities, personal development, recreation & economic circumstances and these factors largely influence the person's relationship with environment. To a greater extent, the quality led by a human being is influenced by his physical well-being. Physical wellbeing depends upon the accurate balance of components like fluids, solutes and even some waste materials. Hemodialysis is by far the most common method of treatment employed for renal failure. Dialysis removes many of the toxins responsible for the uremic syndrome and prolongs survival. However the dialysis treatment thus not fully correct the uremia and may be associated with treatment related complications. These complications prevent patients from attaining a state of full health and interfere with many aspects of life. The degree to which an individual patient can adapt to their medical and psychological stresses is reflected in the quality of life of that individual. The six most important symptoms of Hemodialysis patients are tiredness, muscle cramps, Pruritus, dyspnoea, headaches and joint paints. Nurses, Patients family and other health care providers share the interest in maximizing positive outcome of this can be achieved by intervening the patient's problems during the procedure. In this study, the investigator is interested to elicit the effect of intra-dialytic stretching exercise on muscle cramps experienced by the patients during Hemodialysis.

Problem Statement

A Study To Assess The Effect of Intra-Dialytic Stretching Exercises On Muscle Cramp (Pain) Among Patients Undergoing Hemodialysis In East Coast Hospitals At Puducherry.

Objectives

- To assess the level of muscle cramps (pain) among patients undergoing hemodialysis during pre-test.
- To evaluate the effectiveness of intra-dialytic stretching exercise on muscle cramps (pain) among patients undergoing hemodialysis during pre-test and post-test.
- To find out the association between level of muscle cramps (pain) with selected demographic variables of patient undergoing hemodialysis.

Methodology

Research Approach: Quantitative approach
Research Design: Quasi experimental one group pre-test posttest design
Sample Size: The sample size for this study was 40 patients.
Sampling Technique: Non-probability convenient sampling method.
Data Collection Tool: Interview Schedule, Modified Muscle Cramps Scale Tool

Findings

Section 1: Frequency and percentage distribution of patients undergoing hemodialysis by their demographic variables

N=40

S. No	Demographic variables	Frequency	Percentage
1.	**Age in years**		
	20-30	-	-
	31-40	5	12.5
	41-50	17	42.5
	51-60	14	35
	Above 60	4	10
2.	**Sex**		
	Male	26	65
	Female	14	35
3.	**Religion**		
	Hindu	23	57.5
	Muslim	10	25
	Christian	5	12.5
	Any other	2	5
4.	**Residential area**		
	Rural	25	62.5
	Urban	15	37.5
5.	**Educational status**		
	Illiterate	8	20
	Primary education	5	12.5
	Secondary education	10	25
	Higher secondary	11	27.5
	Collegiate	6	15
6.	**Type of work**		
	Sedentary work	2	5
	Moderate work	14	35
	Heavy work	24	60
7.	**Family income per month in rupees**		
	Below 5000	8	20
	5001-10000	17	42.5
	10001-15000	13	32.5
	15001 and above	2	5
8.	**Do you have any associated illness?**		
	Yes (specify)	34	85
	No	6	15
9.	**Duration of renal failure** Below 1 year	4	10
	1-4 years	16	40
	5-8 years	17	42.5
	9 years and above	3	7.5
10.	**How long have you been in dialysis?**		
	Less than 1 year	4	10
	1-2 year	6	15
	More than 2 years	30	75
11.	**How often do you undergo hemodialysis?**		
	One time in a week	2	5
	Two times in a week	14	35
	Three times in a week	24	60
14.	**Are you taking tablet calcium?**		
	Yes	20	50
	No	20	50
15.	**In which part of the leg often do you get cramps?** Calf muscle	26	65
	Toes	12	30
	Thigh	2	5
16.	**Do you practice any of stretch exercise to reduce muscle cramps while undergoing hemodialysis?**		
	Yes	-	-
	No	40	00

Section-II: Assessment of pretest and post-test level of muscle cramp (pain) among patients undergoing hemodialysis

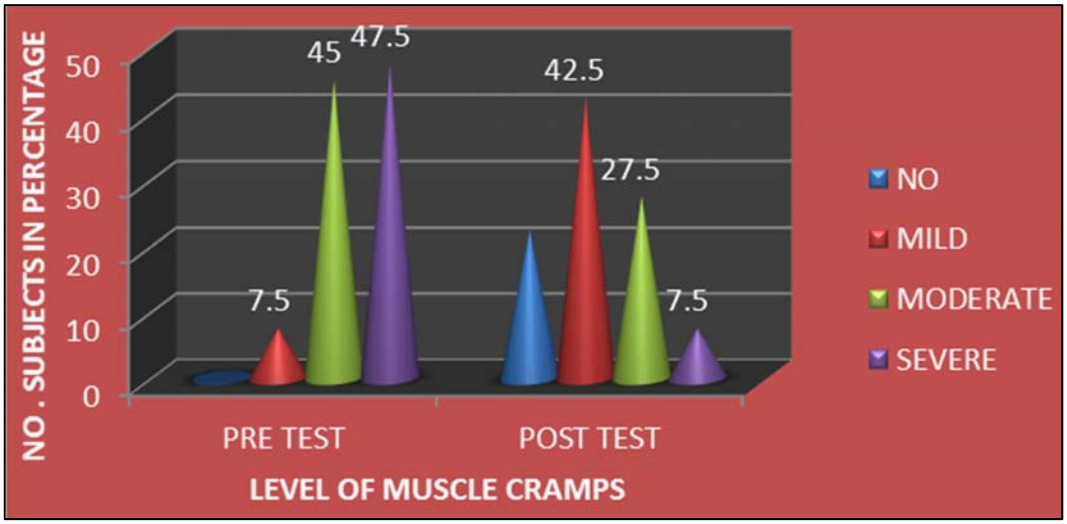

Fig 1: Distribution of pretest and post test level of muscle cramp (pain) score among patients undergoing hemodialysis shows that in pre-test 19(47.5%) having severe, 18(45%) moderate, 3(7.5%) mild muscle cramp respectively whereas in post test 3(7.5%) having severe, 11(27.5%) moderate, 17(42.5%) mild and 9(22.5%) having no level of muscle cramp.

Section III: Effectiveness of Intra dialytic stretching exercise on muscle cramp (pain) and muscle strength among patients undergoing hemodialysis

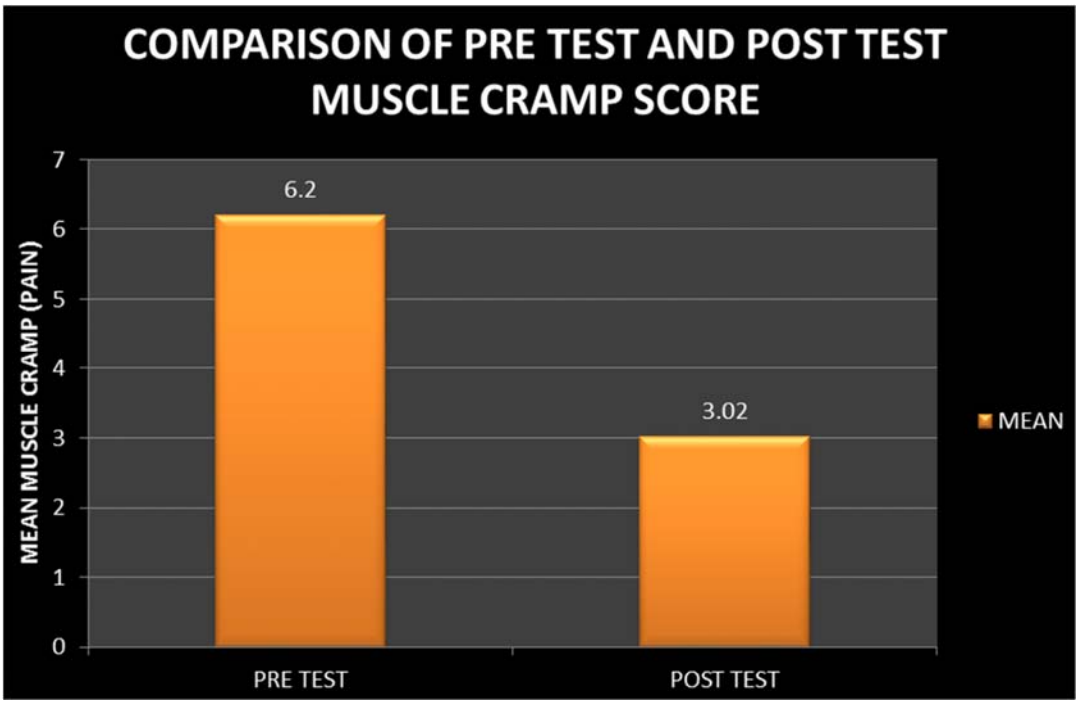

Fig 2: Comparison of Pretest and Post Test Muscle Cramp (Pain) Score among Patients Undergoing Hemodialysis

Fig 2: Comparison of pretest and posttest muscle cramp (pain) score among patients undergoing hemodialysis shows that the mean, standard deviation, mean difference and paired t value of the effectiveness of intra dialytic stretching exercise on muscle cramp among patients undergoing hemodialysis**.** The mean value of 6.20 with standard deviation of 1.74 in the pretest was decreased to 3.02 in the posttest after giving intra dialytic stretching exercise.

The difference was found statistically significant at p value is <0.001 level and can be attributed to the effectiveness of intra dialytic stretching exercise on muscle cramp (pain) among patients undergoing hemodialysis. So stated null hypotheses H_o1 was rejected.

Section IV: Association between level of muscle cramps (pain), muscle strength and selected demographic variables of patient undergoing hemodialysis.

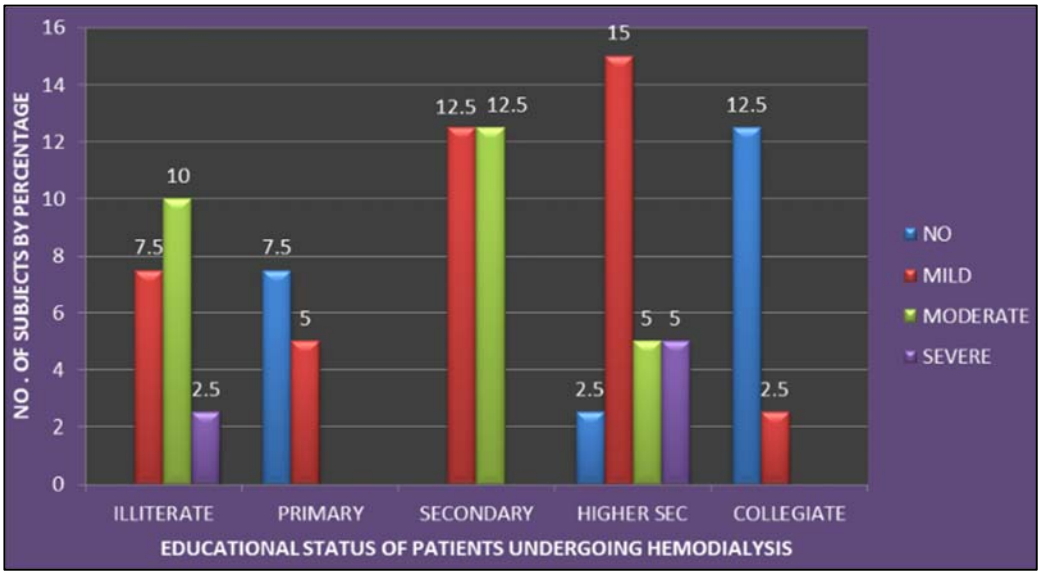

Fig 3: Association between Levels of Muscle Cramps (Pain) With Educational Status

Fig 3: Association between levels of muscle cramps (pain) with educational status reveal the association between the muscle cramps and educational status of the clients. Majority of samples 6(15%) having muscle cramp had studied upto higher secondary school. The reason may be most of them were elderly samples. The high educational status of the patients helps them for better understanding of the exercises and following them for better quality of life.

It infers that there was highly significant at P Value < 0.01. Hence stated null hypothesis was rejected.

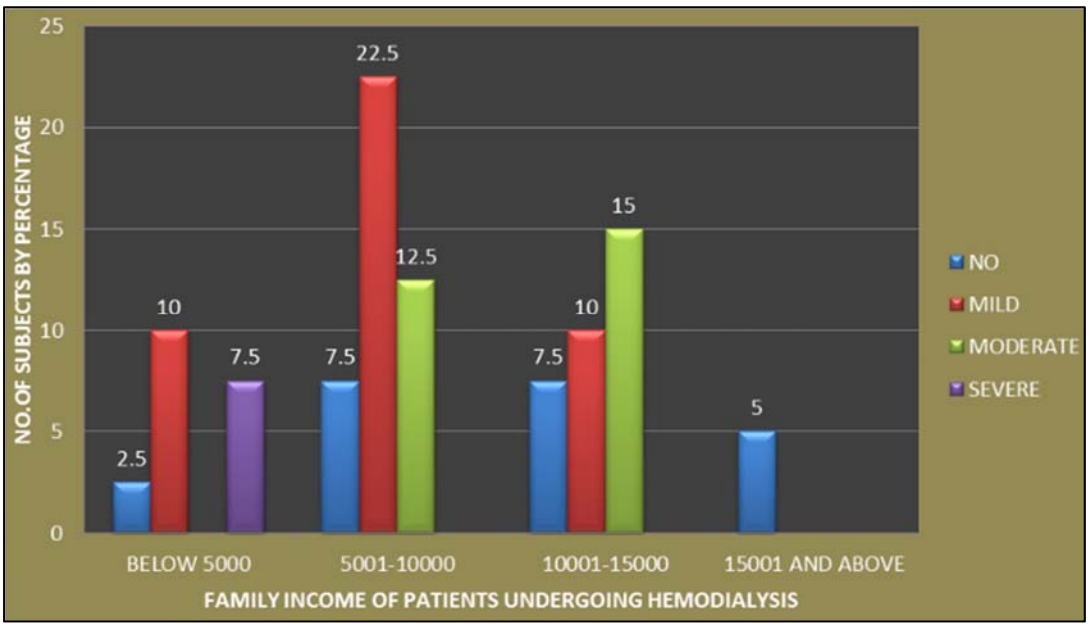

Fig 4: Association between Levels of Muscle Cramps (Pain) With Family Income per Month

Fig 4: Association between levels of muscle cramps (pain) with family income per month show the association of level of muscle cramp (pain) with family income per month The majority of the sample 9(22.5%) having muscle cramp during hemodialysis. 5(12.5%) had family income ranging between Rs 5001-10,000 and 3(7.5%) samples did not have muscle cramps. 2(5%) were having family income above Rs 15,000. This shows people whose family income per month was high showed no muscle cramps. The reason may be they were very much health conscious and had taken calcium supplement to prevent muscle cramp.

It infers that there was highly significant at P Value < 0.01. Hence stated null hypothesis was rejected.

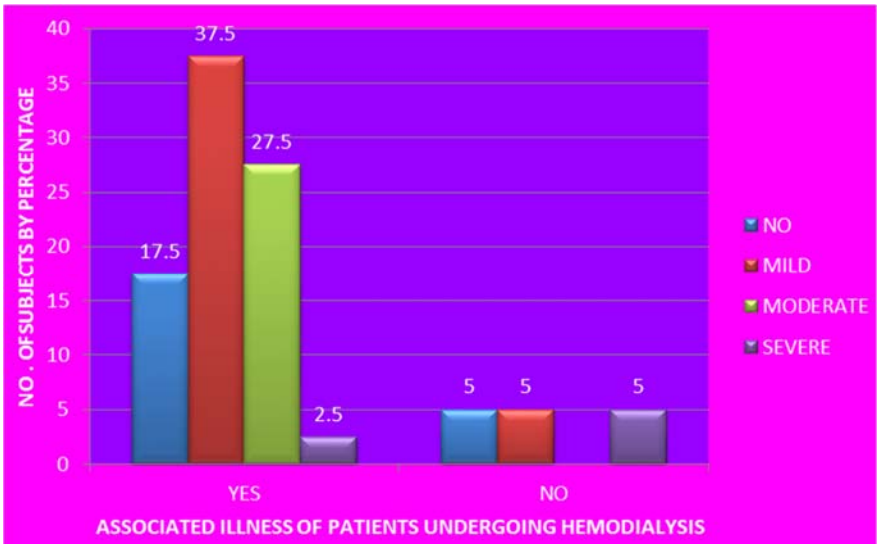

Fig 5: Association between Levels of Muscle Cramps (Pain) With Associated Illness

Fig 5: Association between levels of muscle cramps (pain) with associated illness represent Majority of the sample 15(37.5%) having mild associated illness, 11(27.5%) patients having moderate associated illness, 7(17.5%) not having associated illness and 1(2.55%) having severe associated illness. This shows that people who were having associated illness mainly diabetes mellitus are under risk of kidney disease.

It infers that there was significant at P Value< 0.05. Hence stated null hypothesis was rejected.

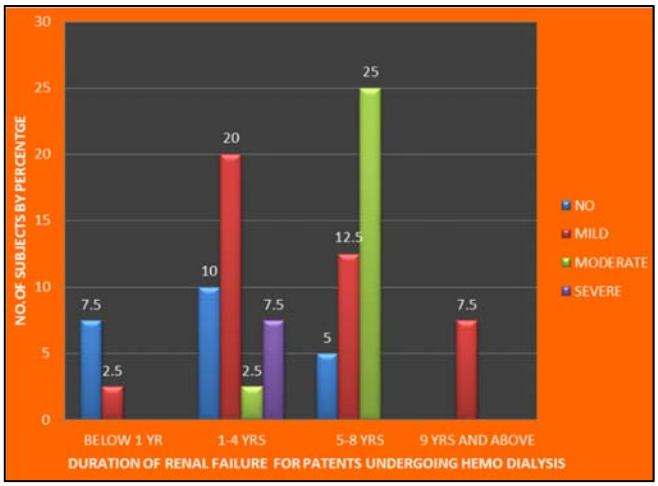

Fig 6: Association between Levels of Muscle Cramps (Pain) With Duration of Renal Failure

Fig 6: Association between levels of muscle cramps (pain) with duration of renal failure represents the duration of hemodialysis. Out of which 13(32.5%) undergoing dialysis more than 2 years, where them having moderate muscle cramps. 3(7.5%) who are having severe muscle cramps were undergoing hemodialysis also more than 2 years. 1(2.55) patients having no muscle cramps were they are undergoing dialysis less than 1 year. This indicates that the duration of dialysis co relate with the level of muscle cramp. The higher the duration, higher the chance of occurring muscle cramps (pain).

It infers that there was significant at P Value < 0.01. Hence stated null hypothesis was rejected

The demographic variables such as age in years**,** sex, religion, residential area, type of work, how long have you been in dialysis, how often do you undergo hemodialysis, tablet calcium intake, mostly affected part (muscle cramp) had no association with muscle cramp (pain).

Result

In assessment of pre-test and post-test level of muscle cramp(pain) among patients undergoing hemodialysis revealed that in pre-test 19(47.5%) having severe, 18(45%) moderate, 3(7.5%) mild muscle cramp respectively whereas in post test 3(7.5%) having severe, 11(27.5%) moderate,17(42.5%) mild and 9(22.5%) having no level of muscle cramp.

Effectiveness of intra Dialytic stretching exercise on muscle cramp (pain) among patients undergoing were the mean value of 6.20 with standard deviation of 1.74 in the pre test was decreased to 3.02 in the post test after giving intra dialytic stretching exercise.

The difference was found statistically significant at p value is <0.001 level and can be attributed to the effectiveness of intra dialytic stretching exercise on muscle cramp (pain) among patients undergoing hemodialysis.

The demographic variables such as educational status, family income per month, associated illness and duration of renal failure had association with muscle cramp (pain).

Conclusion

Kidneys are the organs of life; that is why we call it as "*Amazing Kidneys*". The past one decade had seen increase rate of renal failure cases. This is because renal failure is the end stage of associated illness like Diabetic mellitus, Hypertension and Coronary Artery Disease. The renal replacement therapy is the mode of treatment needed in order to maintain the quality of life of a chronic renal failure patient Even though dialysis is needed to improve the quality of life of the patient, the associated problems of dialysis is indeed a huge obstacle for these patients to carry out the activities of their daily living. Among these muscle cramps (pain) is the major problem of these patients and most of the patient needs dialysis two to

three times per week. So the pain associated with this dialysis will be affecting this patients throughout the week. *Intra-dialytic stretching* is the form of physical exercise that prevents stiffness, relieves tendon shortening, and relaxes the muscle. Through this study the investigator demonstrated Intra-dialytic stretching exercise were, to the patients before starting the hemodialysis. During Pretest the duration, occurrence and intensity of the muscle cramps (pain) was assessed during hemodialysis and intra-dialytic stretching exercises were given to the patients for about 15 minutes in both the lower extremities and the patients were reinforced to do the stretch exercises in the 1st and 2nd hour of hemodialysis. The result shows that there was an significant reduction in muscle cramps of patients who had done stretching exercise.

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