

Intradialytic Stretching Exercise for Muscle Cramps

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Abstract: this study is done to understand the effectiveness of intra dialytic stretching exercises for relief of muscle cramps which is the common problem faced by the patients undergoing hemodialysis. The aim of the study to assess the effectiveness of muscle stretching exercise during intradialytic period and to associate the muscle cramps with selected demographic variables.

Only post test control design was used with 120 samples (60 in each group). Simple random sampling was used to select the samples. The data was collected by interview method.

The results revealed that Maximum of the participants had moderate level (80%) of muscle cramps in first 2 days and 3rd day they had mild cramp (70%)s in experimental group in which intra dialytic stretching exercise was administered. The statistical significant association was found with demographic variables and the level of muscles cramps score. More weight of fluid i.e. 3 - 4 liters shows highly significant (P=0.01) and constant patterns of muscle cramps also shows highly significant (P=0.01).Duration of dialysis i.e. < 3 months shows significant (P=0.05).

Key Words: Muscle cramps, effectiveness, stretching exercise, intradialytic period

I. INTRODUCTION

Chronic kidney disease is one of the burning problems globally. If it is not identified in time and not treated it may end up with kidney failure. The first line treatment for kidney failure is hemodialysis. During the process of hemodialysis many patients experience few complications like hypotension, muscle cramps, disequilibrium syndrome and nausea during the procedure. It is estimated that 33 to 86% of patients experience muscle cramps during hemodialysis, so there is a need for special attention for diagnosis and management of muscle cramps during hemodialysis. Statistics shows that 9,20,000 people are undergoing hemodialysis per day which constitute 7-8% of the total population worldwide.¹

It is estimated that there are about 55,000 patients on dialysis in India and the dialysis population is growing at the rate of 10-20% annually. Almost all patients complain of muscle cramps during dialysis. They are managed with normal saline and dextrose 25% routinely in hospital. Prophylactic stretching exercises can prevent the muscle cramps. The patients can practice stretching exercises during the post dialysis period. So this study is undertaken to know the effect of intradialytic stretching exercise to reduce the muscle cramps. The aim was to evaluate the effectiveness of intradialytic stretching exercises and to associate the effectiveness of intradialytic stretching exercise with selected demographic variables and clinical variables.

II. RESEARCH METHODOLOGY

Study Design: Experimental study design (Post test only control design)

Study Location: B.T. Savani Kidney Hospital, Rajkot, Gujarat.

Study Duration: April 2019 to July 2019.

Sample size: 120 patients (60 in experimental group and 60 in control group)

Subjects & selection method: The study population was drawn from consecutive CKD patients who presented to B.T. Savani Kidney Hospital, Rajkot, Gujarat who were been diagnosed and CKD and undergoing hemodialysis

Sampling Technique: Simple random sampling (Lottery method) was used

Inclusion criteria:

- Patients with age group of 20-70 years
- Patients who are able to communicate in Gujarati/Hindi
- Patients who sustains stable dialysis treatment
- Patients with no musculoskeletal impairments

Exclusion criteria:

- Emergency haemodialysis patients
- Patients with femoral catheter
- Patients with lower limb pathology
- Patients who are hemodynamically unstable during dialysis treatment
- Patient with concurrent medical conditions that may contraindicate exercise

Data Collection Method: Observation and Interview technique

Tools and technique:

- Basic demographic information
- To assess the characteristics of muscle cramps 5 points scale was used which assess the frequency, intensity, quality, intensity and muscle tone
- To assess the intensity of pain: modified numerical intensity scale

III. RESULTS AND DISCUSSION

The data obtained was analysed by using descriptive and inferential statistics on the basis of the objectives and hypotheses of the study.

Section I: demographic information

- ❖ Present study reveals that More number of subjects i.e 24(40.0%) in experimental group and 23(38.3%) in control group were in the age group of 41-50 years.
- ❖ Nearly 39(65.0%) were male in the experimental group and 25(35.0%) male were in control group. Nearly 25(35.0%) were female in the experimental group and 24(40.0%) female were in control group.
- ❖ Above data shows that majority of subjects 52(86.7%) in experimental group and 51(85.0%) in control group were from Hindu religion.
- ❖ Nearly 30(50.0%) subjects in experimental group and 34(56.7%) in control group had sedentary life style. The data shows that majority of subjects 49(81.7%) both in experimental group and control group were having previous experience of muscle cramps throughout the haemodialysis session.
- ❖ Nearly 48(80.0%) in the experimental group and 53(88.3%) clients in the control group were undergoing haemodialysis twice a week. Nearly 35(58.3%) clients in the experimental group and 29(48.3%) clients in the control group were having constant muscle cramps during haemodialysis. Nearly 25(41.7%) clients in the experimental group and 31(51.7%) clients in the control group were having intermittent muscle cramps during haemodialysis.
- ❖ Nearly 11(18.3%) clients in the experimental group and 31(51.7%) clients in the control group were undergoing haemodialysis for more than three months. Nearly 49(81.7%) clients in the experimental group and 29(48.3%) clients in the control group were undergoing haemodialysis for less than three months.

Section II: Description of level of muscle cramps

Table 1 describes the level of muscle cramps among hemodialysis patients in experimental and control group
N=120

DAY	TIME DURATION	LEVEL OF MUSCLE CRAMPS	EXPERIMENTAL GROUP		CONTROL GROUP	
			N	%	N	%
Day1	2 hrs	Moderate	51	85.00%	44	73.30%
		Severe	9	15.00%	16	26.70%
	3 hrs	Moderate	53	88.30%	44	73.30%
		Severe	7	11.70%	16	26.70%
	4 hrs	Mild	3	5.00%	0	0.00%
		Moderate	54	90.00%	48	80.00%
Severe		3	5.00%	12	20.00%	
Day2	2 hrs	Moderate	58	96.70%	48	80.00%
		Severe	2	3.30%	12	20.00%
	3 hrs	Mild	9	15.00%	2	3.30%
		Moderate	51	85.00%	52	86.70%
		Severe	0	0.00%	6	10.00%
	4 hrs	Mild	18	30.00%	5	8.30%
Moderate		42	70.00%	55	91.70%	
Day3	2 hrs	Mild	12	20.00%	3	5.00%
		Moderate	48	80.00%	57	95.00%
	3 hrs	Mild	26	43.30%	3	5.00%
		Moderate	34	56.70%	49	81.70%
		Severe	0	0.0%	8	13.30%
	4 hrs	Mild	42	70.00%	6	10%
Moderate		18	30.00%	46	76.70%	
Severe		0	0.0%	8	13.30%	

Table 1 describes the level of muscle cramps among hemodialysis patients in experimental and control group. Maximum of the participants had moderate level (80%) of muscle cramps in first 2 days and 3rd day they had mild cramp (70%)s in experimental group in which intra dialytic stretching exercise was administered.

Section III: Comparison of Mean post test score in experimental and control group

Table 2 shows the comparison of Mean Post Test Level of Scores Between Experiment And Control Group

	Day1		Day3		Reduction Difference (day1-day3)	
	Mean	SD	Mean	SD	Mean	SD
Experiment	32.39	2.17	16.67	0.78	15.72	2.03
Control	30.82	4.14	27.77	2.29	3.05	3.16
Student's Independent t-test	t=1.92 P=0.72DF=118 not significant		t=12.61 P=0.001*** DF=98 significant		t=25.85 P=0.001*** DF=78 significant	

* significant at $P \leq 0.05$ ** highly significant at $P \leq 0.01$ *** very high significant at $P \leq 0.001$

Table 2 shows that there is statistically significant difference in the groups at 0.01 and 0.001 level of significance in students independent t test. The muscle cramps was reduced in the experimental group which practiced stretching exercises in experimental group

Section IV: Association between demographic variables and post test muscle cramp scores in experimental group

There is a statistically significant association between demographic variables, clinical variables and the level of muscles cramps score. More weight of fluid i.e. 3 - 4 liters shows highly significant ($P=0.01$) and constant patterns of muscle cramps also shows highly significant ($P=0.01$).Duration of dialysis i.e. < 3 months shows significant ($P=0.05$).

Discussion

The present study results shows the effectiveness of intradialytic stretching exercises on prevention and reduction of muscle cramps during haemodialysis. The current study findings revealed that among 60 patients in intervention group, majority of the patients (85.00%) patients experienced moderate muscle cramps after 1 days of intervention. More than half of the patients (70.00%) patients experienced moderate cramps after 2 days of intervention. Majority of the patients (70.00%) patients experienced mild muscle cramps after 3 days of intervention. This result describes the effect of intradialytic stretching exercises in reducing the muscle cramps during haemodialysis. A study conducted by Lekha et al (2017) ² coincides with the present study. The stretching exercises will help in reducing muscle cramps.

The present study shows that there is a statistically significant association between demographic variables, clinical variables and the level of muscles cramps score. More weight of fluid i.e. 3 - 4 liters shows highly significant ($P=0.01$) and constant patterns of muscle cramps also shows highly significant ($P=0.01$).Duration of dialysis i.e. < 3 months shows significant ($P=0.05$).

A study conducted by Lekha et al (2017) ² contradict with the present study. There was no association found with demographic variables.

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