



A Study To Assess The Effectiveness Of Intradialytic Stretching Exercises On Muscle Cramps Among Patients Undergoing Hemodialysis In The Selected Hospitals Of Guwahati, Assam

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ABSTRACT

Introduction: Muscle cramps are a common often painful complication experienced by many patients undergoing hemodialysis. These sudden, involuntary contractions of muscles can significantly disrupt the quality of life for individuals with kidney diseases. Several factors can contribute to muscle cramps in hemodialysis patients such as rapid fluid removal, intradialytic hypotension, electrolyte disturbances and also other factors like poor hydration, certain medications and underlying medical condition. **Objective:** To evaluate the effectiveness of intra-dialytic stretching exercises on muscle cramps among patients undergoing hemodialysis. **Methods:** For this study quantitative research approach was adapted using quasi experimental research design the study was conducted. Total sample 60 (30 for experimental group and 30 for control group) was selected by using Non-probability purposive sampling technique among patients undergoing hemodialysis in dialysis unit in Health City Hospital and Hayat Superspeciality Hospital, Guwahati, Assam. Modified Ashworth Scale was used to assess the pre-test level and post-test level of muscle cramps among patients undergoing hemodialysis. Intervention with intradialytic stretching exercises was given on the 1st, 2nd and 3rd day of the hemodialysis to the experimental group and result was evaluated on the last day of intervention in experimental group and as well as in the control group. **Result:** Findings showed that in experimental group median pre-test muscle cramps score was 7.5 ± 5.303 and in post-test median muscle cramps score was 4.0 ± 2.82 with median difference was 3.5. In control group median post-test muscle cramps score was 6 ± 4.24 and in experimental group median post-test muscle cramps score was 4 ± 2.82 with median difference 2. The comparison was tested using Mann-Whitney U test value with obtained ($U=1121.50$) was statistically significant at $p<0.05$ level. Result revealed that intradialytic stretching exercises was effective in reducing the muscle cramps among patients undergoing hemodialysis in experimental group as compared to control group. **Conclusion:** Intradialytic stretching exercises is effective in reducing muscle cramps among patients undergoing hemodialysis.

Key words: Hemodialysis, Muscle cramps, Intradialytic stretching exercises.

INTRODUCTION

Kidney failure (also called renal failure) is the partial or complete impairment of kidney function. It causes an inability to expel fluids and metabolic waste products, which in turn causes disruptions in every bodily function. Acute and chronic kidney failure are two different categories.

While chronic kidney disease is associated with the development of cardiovascular (CV) illnesses, acute kidney injury (AKI) develops quickly.

A decline in the glomerular filtration rate (GFR) or kidney injury that lasts three months or more is referred to as chronic kidney disease. Chronic kidney disease (CKD) has been linked to lower life expectancy, higher medical costs, and early mortality (Neyhart, McCoy, Rodegast, et al., 2010). End-stage kidney disease (ESKD) is the last stage of renal failure that can occur from untreated chronic kidney disease (CKD). Retention of uremic waste products is a consequence of ESKD, necessitating dialysis, kidney transplantation, or renal replacement therapy. Obesity, diabetes, hypertension, and cardiovascular disease are risk factors. 10% of Americans who are 20 years of age or older have CKD, according to recent studies (Centers for Disease Control and Prevention [CDC], 2010). Patients with diabetes are more likely to experience renal failure¹

A significant public health issue is chronic kidney disease (CKD), which has a high prevalence, morbidity, and mortality rate. India, with less than 3% of the planet's land area, is home to 17% of all people. Low GDP, a high proportion of patients living in poverty, and insufficient funding for healthcare have produced less than ideal results. Furthermore, CKD and other non-communicable diseases have frequently been disregarded in light of the rivalry for resources and ongoing threats posed by communicable diseases, as well as the high rates of child and maternal mortality²

NEED OF THE STUDY

India is not exempt from the global epidemic of non-communicable diseases including chronic kidney disease. End-stage renal disease (ESRD) is becoming more common in both industrialized and developing nations, primarily as a result of diabetes mellitus and hypertension. Our kidneys filter our blood when they are in good health. They also produce hormones that maintain the health of our blood and bones. When the kidneys are unable to function, we require medical intervention to replace their function. Dialysis is the treatment that one will require unless we receive a kidney transplant. Hemodialysis and peritoneal dialysis are the two primary forms of dialysis. Both kinds filter our blood to remove excess salt, water, and dangerous waste products from our bodies. Hemodialysis uses a machine to accomplish that.

The world health organization (WHO) has predicted that if this continues, India will By 2025 with over 57 million India will become the 'diabetes capital of the world'. Diabetes mellitus patients are 24 times more prone to heart diseases and 30 times more susceptible to renal diseases whereas a non-diabetic patients 30-40% of the cases are of chronic renal failure in which 15% are due to hypertension (Sankaranarayanan. G 2005).

During the dialysis session, nausea and vomiting may occur. Most cases are probably caused by hypotension, or low blood pressure. If the symptoms persist, medication for nausea and vomiting may be used. Certain people with kidney disease may experience neuropathy, a slowdown in nerve function. The illness may result in feeling of weakness in the arms and legs, tingling sensation or severe burning in the feet, and tremors in the legs. It is sometimes subjected as a painful feeling that is only relieved by leg and foot movement, particularly in the calf muscles. The hands, feet, and other muscles often cramp when the patient is asleep or otherwise at ease. (Shah, 2012).³

Exercise programs are therefore believed to be better integrated into dialysis sessions. However, the patient's bed posture during dialysis prevents self-stretching in the case of stretching activities. Therefore, the purpose of this study is to prevent or treat muscle cramps during hemodialysis by using stretching exercises as a preventative measure. In order to enhance the quality of life for patients with end-stage renal disease (ESRD), a researcher hopes to evaluate the impact of intra-dialytic stretching exercises on muscle cramps.⁴

RESEARCH METHODOLOGY

The present study was conducted to assess the effectiveness of intradialytic stretching exercises on muscle cramps among patients undergoing hemodialysis in the selected hospitals of Guwahati, Assam.

RESEARCH APPROACH: Quantitative research approach

RESEARCH DESIGN: Quasi Experimental Research Design

TARGET POPULATION: Patients complaining of muscle cramps during hemodialysis.

ACCESSIBLE POPULATION: Patients who meet the set of criteria's and who are available at the time of data collection.

SAMPLE SIZE: 60(Experimental group 30, Control group 30)

SAMPLING TECHNIQUE : Non-probability purposive sampling technique

THEORETICAL FRAMEWORK: The conceptual framework chosen for this study was modified Ernestine Wiedenbach's helping art clinical nursing theory (1964)

SETTING OF THE RESEARCH STUDY: the study was conducted in two hospitals i.e. Health City Hospital and Hayat Superspeciality Hospital, Guwahati, Assam.

TOOLS OF DATA COLLECTION: The tools for Data collection were into two section: section A: Demographic variables and clinical variables, section B: Modified Ashworth Scale.

PHASE 1: Pre-test-In this phase the level of muscle cramps was assessed with the help of Modified Ashworth Scale before intervention in both the Experimental group and Control group.

PHASE 2: INTERVENTION-Intradialytic stretching exercise (passive and active exercise) was given for 20 minutes three times in a week to the experimental group whereas the control group received the routine hospital treatment.

PHASE 3: Post-test:In this phase the investigator conducted the post test on the 3rd day of intervention using the Modified Ashworth scale in experimental group and control group.

Plan for analysis-

Descriptive statistic include

- Demographic variables and clinical variables was described by frequency and percentage distribution.

Inferential statistics include:

- Effectiveness of intradialytic stretching exercise was tested using Wilcoxon signed rank
- Comparison between post-test level of muscle cramps among experimental group and control group was tested using Mann-Whitney U test
- Chi square is used to associate the demographic variables with pre-test of both the groups

RESULT

Analysis of the collected data was done using SPSS 20 version.

Table 1: Frequency and percentage distribution of pre-test and post-test level of muscle cramps among patients undergoing hemodialysis in control group and experimental group.

n=60 (30+30)

Level of Muscle Cramp	Control Group				Experimental Group			
	Pre-Test		Post-Test		Pre-Test		Post-Test	
	f	%	f	%	f	%	f	%
Mild Muscle Cramp	8	26.67 %	12	40%	6	20%	21	70%
Moderate Muscle Cramp	18	60%	16	53.33 %	18	60%	9	30%
Severe Muscle Cramp	4	13.33 %	2	6.67%	6	20%	0	0%

n=60 (30+30)

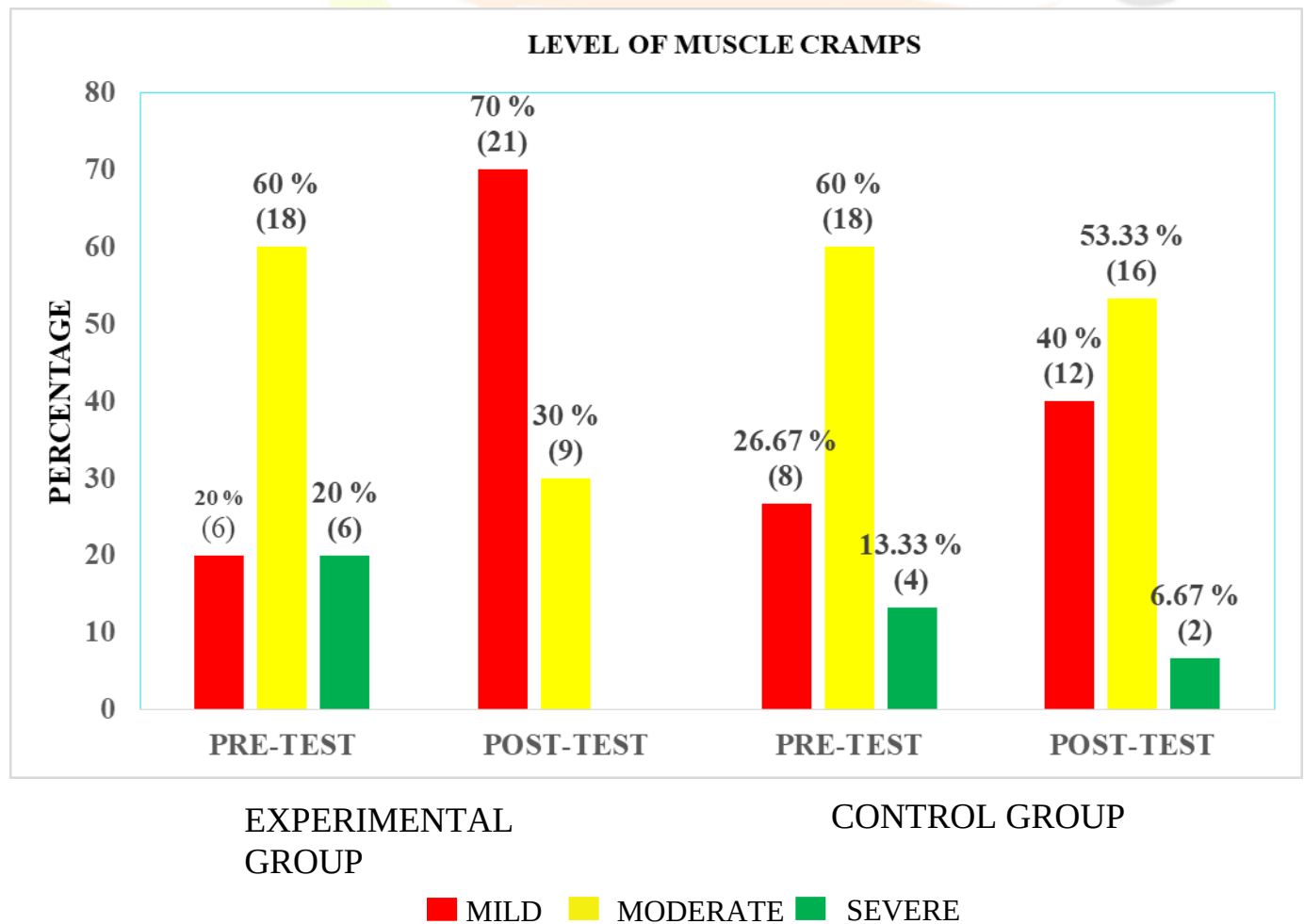


Fig 1: Frequency and percentage distribution of pre-test and post-test level of muscle cramp among patients undergoing hemodialysis in experimental and control group.

Table 1 and Fig 1 depicts the frequency and percentage distribution of pre-test and post-test level muscle cramps among patients undergoing hemodialysis in experimental group and control group.

Experimental group: Pre-test: The figure shows majority of participants 18(60%) belongs to moderate muscle cramp, 6(20%) belong to mild muscle cramp and 6(20%) belong to severe muscle cramp.

Post-test: The figure shows majority of participants 21(70%) belongs to mild muscle cramp, 9(30%) belongs to moderate muscle cramp and no one belongs to severe muscle cramp.

Control group: Pre-test: The figure shows majority of participants 18(60%) belongs to moderate muscle cramp, 8(26.67%) belongs to mild muscle cramp, 4(13.33%) belongs to severe muscle cramps.

Post-test: The figure shows majority of participants 16(53.33%) belongs to moderate muscle cramp, 12(40%) belongs to mild muscle cramp and 2(6.67%) belongs to severe muscle cramp.

Table 2: Effectiveness of intradialytic stretching exercises on muscle cramps among patients undergoing hemodialysis in experimental group.

n=60(30+30)					
Experimental group	Median	SD	Median difference	Wilcoxon signed rank value	p value
Pre-test	7.5	5.303	3.5	465.00	0*
Post-test	4.0	2.82			

****p<0.05 level of significance**

Table 2: Depicts the effectiveness of intradialytic stretching exercises on Muscle Cramps among patients undergoing hemodialysis in experimental group. Findings showed that median pre-test score was 7.5 ± 5.303 and in post-test median score was 4.0 ± 2.82 with median difference was 3.5. The effectiveness was tested using Wilcoxon signed rank with obtained value is 465.00 was statistically significant at $p < 0.05$ level. Result revealed that intradialytic stretching exercises was effective in reducing muscle cramps among patient undergoing hemodialysis in experimental group.

Findings concluded that there was significant difference between pre-test and post-test level of muscle cramps among patient undergoing hemodialysis after intradialytic stretching exercises in experimental group. Hence the research hypothesis is accepted.

Table 3: Comparison of post-test level of muscle cramps among patients undergoing hemodialysis in control group and experimental group.

n=60(30+30)

Comparison post-test	Median	SD	Median Difference	Mann-Whitney U test value 'U'	p-value
Control group	6	4.24	2	1121.50	0.002*
Experimental group	4	2.82			

****p<0.05 level of**

significance

Table 3: Depicts the Comparison of post-test level of muscle cramps of patients undergoing hemodialysis in experimental group and control group. Findings showed that median post-test score in control group was 6 ± 4.24 and in experimental group was 4 ± 2.82 with median difference was 2. The comparison was tested using Mann-Whitney U test with obtained U value is 1121.50 was statistically significant at $p < 0.05$ level.

Result revealed that intradialytic stretching exercises was effective in reducing the muscle cramps among patients undergoing hemodialysis in experimental group as compared to control group.

Findings concluded that there was significant difference between the median of effect of post-test for control group and experimental group. Hence the research hypothesis is accepted.

Association between the level of muscles cramps among patients undergoing hemodialysis with the demographic and clinical variable in experimental group and control group.

Result showed that the demographic and clinical variables such as age, gender, education, occupation, diet, co-morbid illness, serum calcium level, serum hemoglobin level, use of calcium tablets, duration of illness and duration of dialysis treatment were statistically Non-significant at $p < 0.05$ with pre-test level of muscle cramp among patients undergoing hemodialysis in experimental group and control group.

DISCUSSION

- Result revealed that the median pre-test score was 7.5 ± 5.303 and in post-test median score was 4.0 ± 2.82 with median difference was 3.5. The effectiveness was tested using Wilcoxon signed rank with obtained value is 465.00 was statistically significant at $p < 0.05$ level. Result revealed that intradialytic stretching exercises was effective in reducing muscle cramps among patient undergoing hemodialysis in experimental group.
- Result revealed that in control group median post-test muscle cramp score was 6 ± 4.24 and in experimental group median post-test muscle cramp score was 4 ± 2.82 with median difference was 2. The comparison was tested using Mann-Whitney U test with obtained (U=1121.50) was statistically significant at $p < 0.05$ level. Result revealed that intradialytic stretching exercise was effective in reducing level of muscle cramp among patients undergoing hemodialysis in experimental group as compared to control group.
- Chi square values were calculated in the experimental group and control group to find out the association. Result showed that the demographic and clinical variables such as age, gender, education, occupation, diet, co-morbid illness, serum calcium level, serum hemoglobin level, use of calcium tablets, duration of illness and duration of dialysis treatment were statistically Non-

significant at $p < 0.05$ with pre-test level of muscle cramp among patients undergoing hemodialysis in experimental group and control group.

- The present study was done to assess the effectiveness of intradialytic stretching exercise on muscle cramps among patients undergoing hemodialysis at selected hospitals of Guwahati, Assam. Findings concluded that intradialytic stretching exercise to reduce muscle cramp among patients undergoing hemodialysis is effective and can be implemented as non-pharmacological treatment.

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