

Effectiveness of Intra-dialytic Stretching Exercises on Painful Muscle Cramps among Patients Undergoing Haemodialysis' in Selected Hospitals, Hyderabad, Telangana

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Abstract

Introduction: Chronic kidney disease (CKD) is an important non communicable disease epidemic that affects the world population including India. The prevalence of end stage renal disease (ESRD) is rising throughout the developed and developing countries. *Aim:* The present study was taken up in an effort to assess the effectiveness of intra-dialytic stretching exercises in reducing painful muscle cramps among patients undergoing dialysis at selected hospital, Hyderabad. *Methodology:* Research approach adopted in the present study is quantitative approach and the design was True Experimental (Pre test post - test only) design. The study setting was selected hospital in Hyderabad. Subjects of the study included 60 Hemodialysis patients. Data was collected by using structured questionnaire, Modified Penn Spasm Scale and Numerical Pain Rating Scale. The reliability was computed by using Karl Pearson's Formula and split half method which showed 'r' value is 0.808 which indicated that tool was highly reliable. *Results:* The study findings showed a positive view towards intradialytic stretching exercises among experimental group which indicated that intradialytic stretching exercises are effective in reducing painful muscle cramps in dialysis patients. The mean value in pre test is 7.43 and the post test is 3.80. The Standard deviation in pre test is 2.012 and post test is 2.310. The calculated t - value (15.638) which is greater than the table value (2.045) at the level of probability. *Conclusion:* The severity (intensity, duration, and frequency) of muscle pain during haemodialysis can be effectively reduced by performing stretching exercises.

Keywords: Assess; Effectiveness; Intra-Dialytic Stretching Exercises; Muscle Cramps; Patients Undergoing Haemodialysis.

Introduction

The humans are composed of organs that are part of different body systems and all the body systems work in groups to serve the needs of the human body. All the systems simultaneously work in a coordinated way and in full harmony for a definite purpose namely to keep the body alive.

The kidneys play a greater role for solute and

water removal. The role of the kidney is often underrated when we think about our health. In fact the kidneys play a vital role in the daily working of our body [1].

End stage renal disease (ESRD) is a progressive, devastating, chronic disease needing nursing and medical interventions. Chronic kidney disease is a widespread medical condition that is progressive in nature. As renal function declines the disease ultimately reaches the life threatening end stage renal disease (ESRD), which requires urgent replacement therapy, either by dialysis or transplantation [2].

Muscle cramps are among the most frequent complications that can be seen during haemodialysis (HD) and so painful. They may occur in 35-86%

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of HD patients. They are typically found in the lower extremities and may be severe enough to compromise haemodialysis treatment [3].

Chronic kidney disease (CKD) is an important non communicable disease epidemic that affects the world population including India. The prevalence of end stage renal disease (ESRD) is rising throughout the developed and developing countries. Worldwide statistics show that 9, 20,000 people are undergoing hemodialysis, per day, which constitutes about 7-8% of the total population.

C. G. Okwuonu et al. (2015) mentioned that 2010 global ranking of premature causes of death show that kidney diseases moved up from position 32 in 1990 to position 24 in 2010 [4].

Dialysis or renal replacement therapy is indicated when advanced uremia or serious electrolyte imbalances are present. Dialysis is a life saving measure for patients with chronic kidney disease. Dialysis removes many of the toxins responsible for uremic syndrome and prolongs survival. It is an ongoing process where patients experience complications such as hypotension, muscle cramps, disequilibrium syndrome and nausea during the procedure [5].

Non - pharmacological therapy forms the cornerstone of the management of muscle cramps. It is important to discuss non - pharmacological strategies to prevent and treat muscle cramps with patients in order to minimize pharmacotherapy. Research findings indicated that a trial of stretching program is a measure that can be done for hemodialysis related cramps triggered by the relaxation of the foot and ankle muscle from the prolonged reclining position for the dialysis treatment. In this regard Hallegraef et al. (2012) stated that stretching is usually a first-line treatment for cramps [6].

In this study, the investigator was interested to elicit the effect of intra-dialytic stretching exercises on muscle cramps experienced by the patients during hemodialysis.

Methodology

Research approach adopted in the present study was quantitative approach and the design was True Experimental (Pretest Post - test only) design. The study setting was selected hospital in Hyderabad. The sample consisted of 60 patients in the haemodialysis room. The sampling technique used was simple random sampling (lottery method).

Administrative approval to conduct the study was taken from the hospital authority. The tool consisted of two parts, in Part - A the demographic variables were collected with a structured questionnaire and in Part - B the pain was assessed with Modified Penn Spasm Scale (duration and frequency) and Numeric Pain Rating Scale (intensity) before and after administration of intra dialytic stretching exercises. The exercises were given during the second and third hour of haemodialysis. Patients from interventional group were administered intra dialytic stretching exercises for the gastrocnemius and soleus muscles of both the lower extremities for two times per sitting. Each time clients were administered fifteen stretches, that is fifteen stretches in the second hour during dialysis and fifteen stretches during the third hour of dialysis, which was on total 30 times in each sitting. Modified Penn Spasm scale and Numeric Pain Rating scales were administered before the intervention and after the intervention (that is after a span of six days).

The purpose of the study was explained and an informed consent was taken from all the respondents.

Results

The table 2 represents the mean value and standard deviation of the pre test and post test pain levels of the dialysis patients. The mean is 7.43, SD is 2.012 in pre test whereas in post test the mean is 3.80, SD is 2.310. This shows that there is reduction in pain which has a positive view towards the intervention (intradialytic stretching exercises) among patients in experimental group. In control group there is no difference in pre test and post test mean values of pain scores. The pre test mean is 5.80, SD is 2.156 and in post test mean is 5.00, SD is 2.197 which indicates no reduction in pain levels in control group. The Table 3 shows that mean's pre test scores were 7.43 and mean post test scores were 3.80. The paired 't' test value is 15.638 and the table value is 2.04 at df is 29 The table 4 shows that there is no significant association existing between pre test pain scores and post test pain scores in experimental and control group with their selected demographic variables.

Discussion

Pain is an inherent subjective multi factorial experience and should be assessed and treated as such. Pain is one of the most common adverse

Table 1: Frequency and percentage of the sample characteristics (N=30+30)

Background Variables	Control		Experimental	
	Frequency	Percentage (%)	Frequency	Percentage (%)
<i>1. Age in years</i>				
a) 20-3	2	6.7	4	13.3
b) 31-40	8	26.7	6	20.0
c) 41-50	7	23.3	7	23.3
d) 51-60	13	43.3	13	43.3
<i>2. Sex</i>				
a) Male	15	50	12	40
b) Female	15	50	18	60
<i>3. Educational status</i>				
a) School	0		0	
b) College	10	33.3	11	36.7
c) Graduate	11	36.7	16	53.3
d) Post Graduate & More	9	30.0	03	10.0
<i>4. Family income per month</i>				
a) Below 5000	1	3.3	1	3.3
b) 5001-10,000	5	16.7	5	16.7
c) 10001- 15000	16	53.3	19	63.3
d) 15001 And Above	8	26.7	5	16.7
<i>5. Duration of renal failure</i>				
a) Below one year	5	16.7	5	16.7
b) 1-4 years	14	46.7	17	56.7
c) 5-8 years	6	20.0	7	23.3
d) 9 years and above	5	16.7	1	3.3
<i>6. How long have you been on dialysis</i>				
a) Less than one year	6	20.0	6	20.0
b) 1-2 years	7	23.3	10	33.3
c) More than 2 years	17	56.7	14	46.7
<i>7. How often do you undergo dialysis?</i>				
a) One time in a week	0		0	
b) Two times in a week Three times in a week	8	26.7	2	6.7
c) Three times in a week	22	73.3	28	93.3
<i>8. Are you taking any calcium tablets?</i>				
a) Yes	14	46.7	6	20.0
b) No	16	53.3	24	80.0
<i>9. Do you practice any stretching exercises for legs during dialysis?</i>				
a) Yes	0	0	0	0
b) No	30	100	30	100

Table 2: Mean, mean difference, standard deviation of effectiveness of stretching exercises

(N=30+30)

Group	N	Mean	Mean difference	Std. Deviation
Control group	Pre test pain scores	30	5.80	2.156
	Post test pain scores	30	5.00	2.197
Experimental group	Pre test pain scores	30	7.43	2.012
	Post test pain scores	30	3.80	2.310

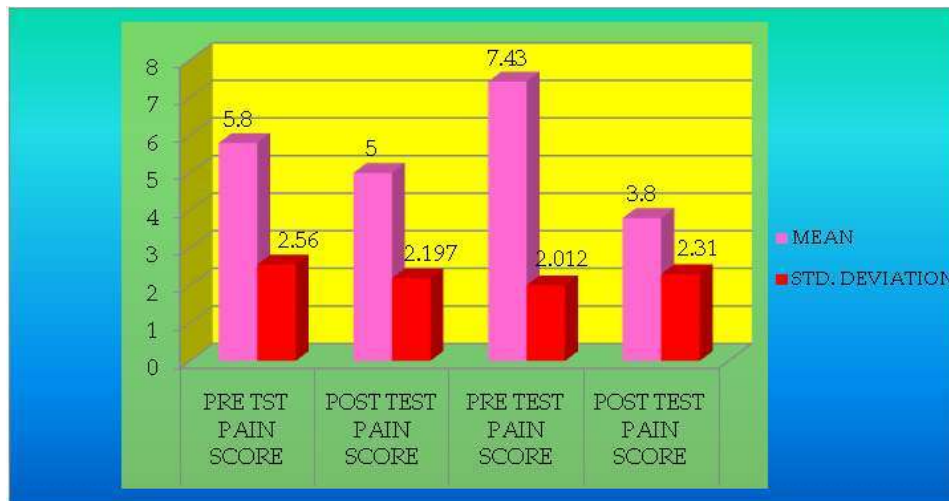


Fig. 1: Mean and standard deviation of pain levels among control and experimental group in pre test and post test.

Table 3: Effectiveness of stretching exercises on painful muscle spasms. N=(30)

Pre test mean	Post test mean	Paired "t" test	df	Table t value	P value
7.43	3.80	15.638	29	2.045	0.05

p <0.05

Table 4: Findings related to association between Post-test pain scores and selected demographic variables. (N = 30+30)

S.No	Demographic Variables	Control Group				Experimental Group			
		Chi-Square	Df	Table Value	Test of Signific-Ance	Chi-Square	Df	Table Value	Test of Significance
1.	Age	7.0	9	16.91	NS	13.695	9	16.919	NS
2.	Sex	9.59	3	7.81	S	7.260	3	7.815	NS
3.	duration of renal failure	15.1	9	16.91	NS	14.564	9	16.919	NS
4.	Duration of Dialysis	5.414	6	12.59	NS	2.323	6	12.592	NS

stimuli experienced by patients undergoing necessary medical procedure.

The present study is consistent with the works of Dr. Danasu who reported that in pre test level of muscle cramps the mean score was 11.57 with the standard deviation of 3.52, whereas in post test the mean score was 05.44 with the standard deviation of 2.96. which proved that the intra dialytic stretching exercise is an effective intervention to reduce muscle cramps during hemodialysis among hemodialysis patients. The present study was taken up in an effort to assess the effectiveness of intra-dialytic stretching exercises in reducing painful muscle cramps among patients undergoing hemodialysis. The mean value and standard deviation of the pre and post test pain levels of the dialysis patients showed the mean is 7.43, SD is 2.012 in pretest whereas in post test mean is 3.80, SD is 2.310 with the mean difference of 3.36 and the calculated t - value (15.638) is greater than

the table value (2.045) at the level of probability. Hence it can be stated that intra-dialytic stretching exercises are effective in reducing painful muscle cramps in dialysis patients.

Conclusion

To provide relief from the pain and making the patient comfortable is an important function of staff nurses. Making this aspect of care more efficient nurses need thorough knowledge regarding pain relief management (intra-dialytic stretching exercise) and its application. The findings of the study make it evident that nurses should periodically update their knowledge. It is also recommended to plan and perform intra dialytic stretching exercises as effective tools for alleviating muscle spasms during hemodialysis.

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