



EFFECTIVENESS OF STRUCTURED EXERCISE PROGRAMME ON MUSCLE CRAMPS AMONG PATIENTS UNDERGOING MAINTENANCE HAEMODIALYSIS

Nursing

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ABSTRACT

The present study investigated the effectiveness of structured exercise programme on muscle cramps among patients undergoing maintenance haemodialysis at Govt. Medical College Hospital, Kottayam. A quantitative research approach was used for the study. The study was theoretically supported by Betty Neuman's system model. A total of 60 patients, 30 each in control and experimental group, were selected for the study using simple random sampling technique. The data were collected using socio personal and clinical data sheet, urea reduction ratio assessment chart, fatigue assessment scale and muscle cramp assessment scale. Pre test was conducted by assessing muscle cramps on the day of dialysis prior to first day of intervention. After pre test, on the 1st day of intervention the investigator provides sufficient explanation and demonstrated the method of exercises before dialysis to the experimental group and thereafter the patients were instructed to perform it during haemodialysis with the help of an audio under the supervision of the investigator. Each of the movements were repeated for 10 times for a period of 10 minutes every 20 minutes during the first 2 hours of dialysis, twice in a week for four weeks. The post test for muscle cramps was done on 8th dialysis in both control and experimental group. The results of the study revealed that structured exercise programme had significant effect muscle cramps ($p < 0.001$) among patients undergoing maintenance haemodialysis.

KEYWORDS

Structured exercise programme; muscle cramps; maintenance haemodialysis

1. INTRODUCTION

Chronic Kidney Disease (CKD) is an enormous public health issue. According to Global Burden of Disease Study 2015, kidney disease was the 12th most common cause of death, accounting for 1.1 million deaths worldwide.¹ The Kidney Disease Outcomes Quality Initiative of the National Kidney Foundation defines chronic kidney disease as the presence of kidney damage or a decreased Glomerular Filtration Rate (GFR) less than 60 ml/min/1.73 m² for longer than three months. The last stage of kidney failure, End Stage Kidney Disease (ESKD) occurs when the GFR is less than 15 ml/min. At this point, renal replacement therapy (dialysis or transplantation) is required to maintain life.² According to Indian society of nephrology statistics in 2017, one in 10 persons in the general population are estimated to have some form of chronic kidney disorder. About 175,000 new people have kidney failure (stage V CKD) every year in India and require dialysis and or kidney transplantation.³ Maintenance haemodialysis is a well recognised modality of treating patients having end stage renal disease.⁴ It is the process of purifying the blood. Because of its complexity and underlying metabolic abnormalities haemodialysis is associated with potential for multiple complications.⁵ Rapid removal of fluid and electrolytes from the extra cellular space can cause complications like muscle cramps.⁶ The four most important predisposing factors are hypotension, hypovolemia, high ultra filtration rate and use of low sodium dialysis solution. All these factor tend to favour vasoconstriction, resulting in muscle hypoperfusion, leading to secondary impairment of muscle relaxation. Since cramps are common intradialysis event, the discomfort leads to premature termination of the treatment, non-compliance with the prescription. Stretching exercises targeted at the affected muscle groups may be useful and should be the first line treatment for both dialysis related cramps and nocturnal cramps.⁷

2. Objectives

1. To assess the muscle cramps among patients undergoing maintenance haemodialysis.
2. To evaluate the effectiveness of structured exercise programme on muscle cramps among patients undergoing maintenance haemodialysis.

3. Materials and Methods

Quantitative research approach was used for the study. And the study design was true experimental pre test post test control group design. Simple random sampling technique was used to select 30 samples in

control and 30 samples in experimental group among patients undergoing maintenance haemodialysis in Govt. Medical College Hospital, Kottayam. Patients undergoing MHD twice in a week who are between the age of 21-60 years, able to comprehend and communicate Malayalam, willing to participate in the study and having muscle cramps during the past 4 weeks were included in the study and patients with femoral dialysis catheter, who had musculoskeletal deformities and who are critically ill and unstable were excluded from the study. Pre test was conducted by assessing muscle cramps on the day before first day of intervention. On the first day of intervention, the investigator demonstrated the exercises and provided sufficient explanation about the method of exercises before dialysis to the experimental group, thereafter the patient performed it during haemodialysis with the help of an audio under the supervision of the investigator. Each of the exercises were repeated for 10 times for a period of 10 minutes in every 20 minutes during the first 2 hours of haemodialysis, twice in a week for 4 weeks. In addition, the patients were instructed to stop the exercises and to notify the researcher if they felt dizziness, headache, palpitations, nausea, anxiety, exhaustion or any other adverse effects and the patients vital signs were examined hourly during exercise. Routine care was given to control group. Post test was done on 8th dialysis using Muscle cramp assessment scale. The obtained data was tabulated and analyzed using inferential and descriptive statistics.

4. RESULTS

4.1 Findings related to sample characteristics

In control group and experimental group 33.3% of patients were in the age group of 41-50 years. Most of the patients (73.3%) in control group and (76.7%) in experimental group were males. The data shows that majority of the patients in had high school education. Most of the patients (80%) in control group and (76.7%) in experimental group had no occupation. With regard to marital status most of the patients (83.3%) in control group and (70%) in experimental group were married. Majority of the patients in control group and in experimental group had no pre illness unhealthy habits. Most of the patients were supported by the spouse. Majority of patients in control group (40%) and in experimental group (23.3%) had diabetic nephropathy as primary illness. Majority of the patients in control group and in experimental group had hypertension as co-morbidity. Majority of patients in control group (33.3%) and in experimental group (56.6%) had the illness for 3 to <5 years. Most of the patients in control group (46.7%) and in experimental group (40.0%) underwent haemodialysis

for 100 times. Most of the patients in both control group (63.3%) and experimental group (53.3%) had muscle cramps during dialysis.

4.2 Findings related to muscle cramps among patients undergoing maintenance haemodialysis

Table 1 Frequency distribution and percentage of patients undergoing maintenance haemodialysis in control and experimental group with respect to muscle cramps

n=60

Muscle cramps	Control group n=30		Experimental group n=30	
	f	%	f	%
Mild (1-10)	13	50.0	8	26.7
Moderate (11-20)	15	53.3	19	63.3
Severe (21-30)	2	6.7	3	10.0

Table 1 depicts that, in control group 50.0% of patients in control group and 26.7% in experimental group had mild muscle cramps. Majority of the patients in both control group (53.3%) and in experimental group (63.3%) had moderate muscle cramps. In control group 6.7% and in experimental group 10.0% had severe muscle cramps.

4.3 Finding s related to effectiveness of structured exercise programme on muscle cramps among patients undergoing maintenance haemodialysis

Table 2

Mean, standard deviation and t value of post test muscle cramps among patients undergoing maintenance haemodialysis in control and experimental group

n=60

Group	Muscle cramps		
	Mean	SD	t
Control group (n=30)	10.7	5.4	5.9***
Experimental group (n=30)	3.0	4.5	

***significant at 0.001 level

Table 2 depicts that the mean value of control group is 10.7 and the experimental group is 3.0. The t value is 5.9 which shows statistically significant difference between control and experimental group. Thus it was inferred that structured exercise programme is effective in reducing the muscle cramps among patients undergoing maintenance haemodialysis.

1. DISCUSSION

In present study most of the patients belonged to 51-60 years of age. Most of the patients in control and in experimental group were males. The findings were in agreement with a study conducted among patients undergoing maintenance haemodialysis which showed that majority of patients in control (50%) and in experimental group (45%) were between the age group of 51-65 years. Gender of patients revealed that, majority of patients were males.⁸ While considering occupation most of the patients (80%) in control and (76.7%) in experimental group had no occupation. A similar study on effectiveness of intradialytic leg exercise on dialysis efficacy among chronic kidney disease patients in Saudi Arabia shows that majority 80% and 73.4% of the population were not working.⁹ In present study most of the patients (83.3%) in control and (70%) in experimental group were married. The findings of the study is consistent with another study result which shows that 77.8% in control and 91.1% in experimental group were married.¹⁰ With regard to period of haemodialysis in present study 56.7% in control and 60% in experimental group were on haemodialysis for 1-5 years. The study results are parallel with a similar study, which showed that 75% of patients in control and 38.9% in experimental group were on haemodialysis for one to five years.¹⁰ Majority of the patients in control (33.3%) and in experimental group (60.0%) had hypertension as co morbidity. Similar study reported that more than half of patients (66.7%) in both groups were having hypertension.⁹

The study was supported by a similar study on effectiveness of intradialytic stretching exercises on prevention and reduction of muscle cramps among patients undergoing haemodialysis showed that all patients from the intervention group had reduction in the level of muscle cramps after performing the intradialytic stretching exercises. There is a significant ($p < 0.05$) improvement in the level of muscle cramps after 6 days of therapy.¹¹

2. CONCLUSION

Based on the study findings it can be concluded that there is evident reduction in muscle cramps among patients undergoing maintenance haemodialysis.

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