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EFFECTIVENESS OF INTRADIALYTIC STRETCHING EXERCISE ON BIO CHEMICAL VARIABLES AMONG PATIENT UNDERGOING HEMODIALYSIS IN SELECTED HOSPITAL

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ABSTRACT

Aim of the study: To assess the effectiveness of Intradialytic stretching exercise on selected parameters among hypertensive elderly in selected old age home.
Background: Chronic kidney disease (CKD) affects an increasing number of populations and 15% of adults in the United States are estimated to have CKD by the Modification of Diet in Renal Disease (MDRD) estimated glomerular filtration rate (EGFR) criteria. Chronic kidney disease (CKD) limits functional capacity, leading to cardiovascular complications, and endocrine metabolic, musculoskeletal, and other disorders that affect the quality of life (QOL). Exercise is one of the possible preventive manoeuvres to reduce muscle protein loss and maintain the electrolytes. Recently, many studies have shown the importance of exercise or regular physical activity to maintain the electrolytes in ESRD patients. Therefore, this review aimed to investigate the beneficial effects of exercise during haemodialysis (intradialytic exercise) and also to introduce various intradialytic exercise programs and their advantages.
Design: Pre experimental one group pre-test – post-test design.
Methods: Non - Probability sampling technique – Convenience sampling method was used. A total of 30 haemodialysis patients participated in the study. Blood routine was used to assess the level of bio chemical variables for data collection.
Result: The pre-test means score of Level of sodium was 210.56±26.28and the post-test mean score was 177.30±24.13among study group.
Conclusion: This study indicates that the Intradialytic stretching exercise is an effective exercise to maintaining the level of bio chemical variables.

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INTRODUCTION

Chronic kidney disease (CKD) affects an increasing number of populations and 15% of adults in the United States are estimated to have CKD by the Modification of Diet in Renal Disease (MDRD) estimated glomerular filtration rate (EGFR) criteria. In Korea, it is also a common disease and the prevalence of patients with end-stage renal disease (ESRD) ranks 12th in the world according to the data from the United States Renal Data System 2010. Chronic kidney disease (CKD) limits functional capacity, leading to cardiovascular complications, and endocrine metabolic, musculoskeletal, and other disorders that affect the quality of life (QOL). An exercise protocol could lead to improvements in many functions, such as blood pressure, heart function (especially ventricular function in haemodialysis [HD] patients), muscle strength, and respiratory capacity, and reduce muscle atrophy, with excellent results for the QOL. Exercise is one of the

possible preventive manoeuvres to reduce muscle protein loss and maintain the electrolytes. Recently, many studies have shown the importance of exercise or regular physical activity to maintain the electrolytes in ESRD patients. Therefore, this review aimed to investigate the beneficial effects of exercise during haemodialysis (intradialytic exercise) and also to introduce various intradialytic exercise programs and their advantages.

Background

Dialysis is one of the main replacement therapies in patients with renal failure. It removes many of the toxins responsible for the uremic syndrome and prolongs survival. However, dialysis treatment doesn't fully cure the uraemia. During Dialysis many complications may occur like tiredness, fatigue, hypotension and electrolyte variations. Patients with a GFR < 15 mL/min are classified as having end-stage renal disease (ESRD). Renal replacement therapies, in the form of life-long dialysis or transplantation, are the only means of treating such patients. Withdrawals of treatment results in death Statistical reports have shown that the incidence and prevalence of CKD seems to be increasing every year. Exercise is often difficult to incorporate in chronically ill patients because of limited electrolytes, physical strength, motivation, and pain. These factors can contribute to deteriorating health and loss of independence. It is important to understand this issue and address it in specific patients. Exercise prescription based on individual needs would be the most promising way to help achieve individual independence in chronically ill patients. Statistical reports have shown that the incidence and prevalence of CKD seems to be increasing every year. In the United States, "430,000 individuals currently live with CKD" and over "30,000 patients with CKD are under treatment in the U.K." By 2010, it is predicted that over half a million patients worldwide will require haemodialysis. Non- pharmacological therapy forms the cornerstone of the management of serum electrolytes. It is important to discuss non-pharmacologic strategies to prevent and treat abnormal electrolytes with patients in order to minimize pharmacotherapy. Research findings indicated that a trial of stretching program is a measure that can be done both for nocturnal leg cramps and for haemodialysis-related cramps triggered by the relaxation of the foot and ankle muscles from the prolonged recliner position for the dialysis treatment. In this regard Hallegraeff et al (2012) stated that stretching is usually a first-line treatment for bio chemical variables, and pre-bedtime stretching has been seen as an easy treatment to decrease or eliminate nocturnal cramps.

Aim of the study: To assess the effectiveness of Intradialytic stretching exercise among Haemodialysis patients in selected hospital, Chennai.

MATERIALS AND METHODS

Total 30 hypertensive elderly selected in Old age home participated in the study group. Pre experimental one group pre-test – post-test design was carried out and samples were selected with Non-Probability sampling technique – Convenience sampling method. Blood routine was used to assess the level of bio chemical variables for data collection.

Ethical consideration: The project has been approved by the ethics committee of the institution. Informed consent was obtained from the participants before initiating the study.

RESULTS

***Section 1*:** The results depicts that majority 14(46.67%) were in the age group of 51 – 60 years, 16(53.33%) were male, 17(56.67%) were non-vegetarian and 15(50%) were working and not working respectively.

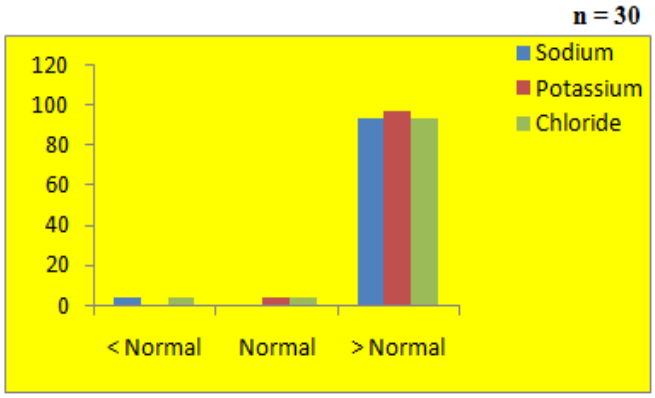

Figure 1. Frequency and percentage distribution of Pretest level of serum electrolytes among patients undergoing haemodialysis in study group

Section 2: The fig 1 shows that in the Pretest, almost all 30(100%) had above normal level of serum electrolyte sodium, potassium and chlorine respectively.

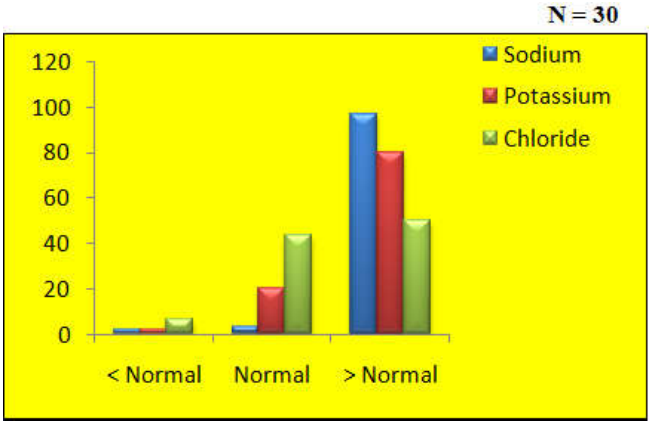

Figure 2. Frequency and percentage distribution of post-test level of serum electrolytes among patients undergoing haemodialysis in study group

The Fig 2 shows that in the post test, with respect to serum electrolyte majority 29(96.7%) were above normal level and only one (3.33%) had normal level. With respect to serum electrolyte potassium, majority 24(80%) were above normal and 6(20%) had normal level. With regard to serum electrolyte chlorine, majority 15(50%) were above normal level, 13(43.33%) had normal level and only 2(6.7%) were above normal.

***Section 3*:** The results depicts that the Pretest mean score of serum electrolyte sodium was 210.56±26.28 and the post-test mean score was 177.30±24.12. The calculated paired't' value of t = 9.540 was found to be statistically significant at p<0.001 level. The results also show that the Pretest mean score of serum electrolyte potassium was 11.91±3.17 and the post-test mean score was 6.95±2.15. The calculated paired't' value of t = 13.094 was found to be statistically significant at p<0.001 level. The results also portrays that the Pretest mean score of serum electrolyte chlorine was 150.30±27.02 and the post-test

mean score was 112.23±17.45. The calculated paired't' value of t = 10,231 was found to be statistically significant at p<0.001 level. This clearly indicates that after the administration of intradialytic stretching exercise on bio-chemical variables among patients undergoing haemodialysis had significant effect on their serum electrolytes level in the post test.

***Section 4*:** The result shows that the demographic variables age and the type of occupation had shown statistically significant association with post-test level of serum electrolytes (Potassium) among men and women.

DISCUSSION

The first objectives are to assess the pre-test level of bio chemical variables among patients undergoing haemodialysis

Acute Renal Failure (ARF) is a rapid decrease in kidney function leading to collection of metabolic wastes in the body. When the Glomerular Filtration Rate (GFR) decreases Blood Urea Nitrogen (BUN) level increases, waste products build up in the blood causing uraemia and azotaemia. This acute syndrome may be reversible with prompt intervention. ARF may lead to Chronic Renal Failure (CRF). A study conducted a clinical trial on the intradialytic stretching exercise. The trial was conducted on subjects with decreased electrolytes on undergoing haemodialysis patients aged 35 – 45 years for 3 weeks, the experimental group given during the haemodialysis especially 3rd and 4th hour for 10 – 15 minutes the control group continued their usual treatment regimen. After given the intradialytic stretching exercise was measured the bio chemical values like sodium, potassium, ad chloride. This study was supported by Lekha et al. (2017) reported that haemodialysis patients aged 35 – 45 years for 3 weeks. A total of 10 participants had decreased level of electrolytes. The experimental group showed that a significant improvement the balance score p>0.05. Hence it is concluded that in the present study, majority of the haemodialysis patients had decreased level of electrolytes. It is observed that various complementary therapies can be implemented to maintain level of electrolytes among haemodialysis patients.

The second objectives are to determine the effectiveness of Intradialytic stretching exercise on level of bio chemical variables patients undergoing haemodialysis.

Chronic kidney disease (CKD) affects an increase number of populations and 15% of adults in the United States are estimated to have CKD by the Modification of Diet in Renal Disease (MDRD) estimated glomerular filtration rate (EGFR) criteria. In Korea, it is also a common disease and the prevalence of patients with end-stage renal disease (ESRD) ranks 12th in the world according to the data from the United States Renal Data System 2010. Since the drugs have, as many as side effects and complications, the rate of non- compliance is high. The complementary and alternative treatment which are believed to be effective for maintaining the electrolytes. Among these complementary therapies, intradialytic exercise is considered to be most beneficial effect in maintaining the electrolytes among patient undergoing haemodialysis. Intradialytic exercise is a progressive muscle relaxation techniques and it can help for haemodialysis patients. It relaxes the body and lowers the heart rate, reduces the chronic stress and tension that raises the blood pressure. Various studies regarding the effect of intradialytic exercise on patients undergoing haemodialysis are conducted and it is found that there is a significant maintenance in the bio chemical variables after exercise. Since the researcher conducted a study in Dialysis unit at Saveetha Medical College and Hospital with 30 haemodialysis patients who met the inclusion criteria. The investigator assessed the Pretest level of bio chemical variables by using the blood culture. The investigator trained on Intradialytic exercises on the next day. After the Pretest, the investigator trained the subjects on Intradialytic exercises on the next day. Repetitive trails were given to the subjects 10-20 minutes twice a day, for 2 weeks. On the 14th day, the post-test level of bio chemical variables was assessed by blood culture. The study depicts that the Pretest mean score of serum electrolyte sodium was 210.56±26.28 and the post-test mean score was 177.30±24.12. The calculated paired't' value of t = 9.540 was found to be statistically significant at p<0.001 level. The Pretest means score of serum electrolyte potassium was 11.91±3.17 and the post-test mean score was 6.95±2.15. The calculated paired't' value of t = 13.094 was found to be statistically significant at p<0.001 level. That the Pretest means score of serum electrolyte chlorine was 150.30±27.02 and the post-test mean score was 112.23±17.45. The calculated paired't' value of t = 10,231 was found to be statistically significant at p<0.001 level.

This clearly indicates that after the administration of intradialytic stretching exercise on bio-chemical variables among patients undergoing haemodialysis had significant effect on their serum electrolytes level in the post test. This study was supported by Danusu, (2016) an experimental study was conducted to assess the effects of intradialytic stretching exercise on patients undergoing haemodialysis. A total of 70 haemodialysis patients were selected by using the purposively sampling technique. The study demonstrated that the people who are all doing intradialytic exercise more than 2 times per day. There was an improved in their physical activity, quality of life, exercise behaviour and the level of bio chemical variables. It was statistically significant. Finally based on the present study findings, it was concluded that intradialytic stretching exercises is an effective intervention in maintain the serum electrolytes among patients with haemodialysis. It can be implemented and practiced by haemodialysis patients in day to day live in order to maintain the serum electrolytes and promote healthy life style. Hence the hypothesis of the study was accepted.

The third objectives are to associate the demographic variables and post-test level of bio chemical variables among patients undergoing haemodialysis

The present findings showed that there was a significant association between age and types of occupation. There is a significant difference in the level of bio chemical variables. Hence the null hypothesis was accepted.

Conclusion

The main conclusion drawn from this present study was that most of the patients undergoing haemodialysis had significant level of bio chemical variables. After intradialytic stretching exercise session, it was found that there had been a significant level of bio chemical variables. Participants felt comfortable and also expressed high level of satisfaction towards

administration of intradialytic stretching exercise. It is thus concluded that, intradialytic stretching exercise is an effective and simple strategy to maintain the level of bio chemical variables among patients undergoing haemodialysis.

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