Effectiveness of Leg Ergometric Exercise on Level of Fatigue among Patients with Chronic Kidney Disease Undergoing Haemodialysis

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Abstract

The study was to evaluate the effectiveness of leg ergometric exercise on level of fatigue among patients with Chronic Kidney Disease undergoing Haemodialysis.Quasi experimental non randomized control group design was utilized to perform the study. The samples were selected by purposive sampling technique. Data were collected from the patients with Chronic Kidney Disease undergoing Haemodialysis who fulfilled the inclusion criteria. The tool used in this study consists of demographic data and modified FACIT (Functional Assessment of Chronic Illness Therapy) scale. The findings revealed that unpaired "t" test value was 5.60, which was significant at $p<0.05$. It shows that leg ergometric exercise is effective in reducing the level of fatigue among patients with Chronic Kidney Disease undergoing Haemodialysis. There was a significant association between age and duration of illness with level of fatigue. The study concluded that providing leg ergometric exercise was very effective in reducing the level of fatigue among patients with chronic kidney disease undergoing haemodialysis.

Keywords: *Effectiveness, Leg Ergometric Exercise, Level of Fatigue, Chronic Kidney Disease, Haemodialysis.*

Introduction

Kidney is one among the vital organs and its main function is removing the waste products and excess water from the blood. The kidney purifies about 200 litres of blood and also has the substantial function of producing two litres of urine everyday[1]. Many adults have unhealthy diet pattern, lack of physical activity, substance abuse, unprotected sexual activity and unsafe driving. The current generation of adults are obese and more vulnerable to many illness. Chronic kidney disease involves progressive, irreversible loss of kidney function. It is defined as either the presence of kidney damage or GFR <60ml/min for 3 months or larger. (Normal GFR is about 125ml/min and is reflected by urine creatinine clearance measurements)[2]. Dialysis is a technique in which the metabolic waste move from the blood into a dialysis solution (dialysis) through a semipermeable membrane, an artificial membrane, usually made of cellulose – based or synthetic materials, which stays in contact with the patients blood in haemodialysis and helps to correct the imbalances between fluid and electrolytes and removes the waste products from the blood[7]. Fatigue is one of the most common and frequent complaint of haemodialysis patients, where documentation of fatigue is looked upon as anegative symptom, on patients diagnosed with End Stage Renal Disease[6]. Ergometric exercise is considered as an simple physical exercise, safe and effective in clinical practice modality among patients undergoing haemodialysis. Ergometric exercise helps to decrease the level of fatigue and increase the activities of daily living[10].

Statement of the problem: A quasi experimental study to evaluate the effectiveness of leg ergometric exercise on level of fatigue among patients with Chronic Kidney Disease undergoing Haemodialysis in selected hospitals at Kanyakumari district.

Objectives:

- To assess the pre test and the post test level of fatigue among patients with Chronic Kidney

Disease undergoing Haemodialysis in study group and control group.

- To evaluate the effectiveness of leg ergometric exercise on level of fatigue among patients with Chronic Kidney Disease undergoing Haemodialysis in study group and control group.
- To associate the pre test level of fatigue on leg ergometric exercise among patients with Chronic Kidney Disease undergoing Haemodialysis with their selected demographic and clinical variables in study group and control group.

Hypotheses:

H_1: There is a significant difference between the pre test and post test level of fatigue among patients with Chronic Kidney Disease undergoing Haemodialysis in study group and control group.

H_2: There is a significant difference between the post test level of fatigue among patients with Chronic Kidney Disease undergoing Haemodialysis in study group and control group.

H_3: There is a significant association between pre-test level of fatigue among patients with Chronic Kidney Disease undergoing Haemodialysis with their selected demographic and clinical variables in study group and control group.

Research Methodology

Research approach: The researcher utilized Quantitative research approach.

Research design: Quasi experimental non randomized control group design was utilized to perform the study

Research setting: The study was conducted at 2 hospitals, Kanyakumari District.

Population: Patients with Chronic Kidney Disease undergoing Haemodialysis.

Sample: Patients with Chronic Kidney Disease undergoing Haemodialysis at the age group of 18-60 years.

Sample size: 60 samples were selected for this study. 30 samples were in study group and 30 samples were incontrol group.

Sample technique: Purposive sampling technique.

Description of Tool: The tool used in this study consists of two parts.

Part-I: In this part, structured questionnaire was used to collect the demographic and clinical variables. The demographic variables consist of age, gender, religion, marital status, occupation, hours of working, residence, educational status, family income, type of diet and clinical variables consist of number of haemodialysis per week, duration of illness and associated illness.

Part-II: This part of the tool consists of Modified FACIT (Functional Assessment Of Chronic Illness Therapy)scale to assess the level of fatigue.

Table 1: The scoring was categorized as follows,

S.No.	Score	Level of Fatigue
1.	>30	Severe fatigue
2.	≤30	Better quality of life

Method of data collection

Phase 1 Selection of patients with Chronic Kidney Disease undergoing Haemodialysis: After obtaining formal permission from the Principal of St.Xavier's Catholic College of Nursing, Chunkankadai and Administrator of both hospitals, participants were selected based on the needed criteria. The researcher obtained the oral consent from each patient with Chronic Kidney Disease undergoing Haemodialysis and proceeded with the data collection.

Phase 2 Pre test: The demographic data was collected from the selected participants and modified FACIT scale was used to assess the level of fatigue.

Phase 3 Intervention: The researcher explained the importance of leg ergometric exercise and demonstrated to the study group.

All patients were verbally encouraged and motivated at the onset of dialysis session regarding the exercise program, consisting of warm up (flexion, extension of the knee, and ankle), biking on the leg ergometer and cooling down (stretching).

The total length of exercise program was performed for 40 minutes divided as five minutes before the session of haemodialysis and thirty five minutes during the haemodialysis session.

Phase IV Post test: The post test was conducted on the following 4th week with modified FACIT scale.

Results

Table II: Comparison of mean, standard deviation and unpaired "t" test on post test level of fatigue among patients with Chronic Kidney Disease undergoing Haemodialysis in study group and control group. N=60

Variables	Group	Mean	SD	Unpaired "t" test
Level of fatigue	**Study group** n=30	21.83	6.06	5.60*
	Control group n=30	29.56	5.21	

*Significant at p≤0.05

Table III: Comparison of mean, standard deviation and unpaired "t" test on post test level of fatigue among patients with Chronic Kidney Disease undergoing Haemodialysis once, twice and thrice a week in study group and control group. N=60

S.No.	Number of Haemodialysis/week	Study Group		Control Group		df	Unpaired "t" test value
		Mean	SD	Mean	SD		
1.	Once	15.33	2.30	29.33	4.72	4	4.66*
2.	Twice	22.76	6.44	29.42	4.99	40	3.85*
3.	Thrice	21.83	4.01	30.16	6.96	10	4.60*

*Significant at p≤0.05

Discussion

The aim of the study was done to evaluate the effectiveness of Leg Ergometric Exercise on level of fatigue among patients with Chronic Kidney Disease undergoing Haemodialysis. Table II shows, In study group the mean score was 21.83 with the standard deviation 6.06. In control group the mean score was 29.56 and the standard deviation was 5.21. The estimated unpaired "t" test value was 5.60, which was significant at p≤0.05. It shows that leg ergometric exercise was effective in reducing the level of fatigue in study group patients with Chronic Kidney Disease undergoing Haemodialysis. Table III shows, In study group the mean score was 15.33 with the standard deviation 2.30 and in control group the mean score was 29.33 with the standard deviation 4.72 for patients undergoing haemodialysis once a week. The estimated unpaired"t" test value for once in a week was 4.66, which was significant at p≤0.05. The mean score of study group was 22.76 with the standard deviation 6.44 and in control group, the mean score was 29.42 with the standard deviation 4.99 for the patients undergoing haemodialysis twice in a week. The estimated unpaired"t" test value for twice in a week was 3.85, which was significant at p≤0.05. The mean score of study group was 21.83 with the standard deviation 4.01 and in control group the mean score was 6.96 with the standard deviation 10 for the patient undergoing haemodialysis thrice in a week. The estimated unpaired"t" test value for thrice in a week was 4.60, which was significant at p≤0.05. The association between the level of fatigue among patients with chronic kidney disease undergoing haemodialysis with selected demographic and clinical variables such as gender, religion, marital status, occupation, hours of working, residence, educational status, family income, type of diet, number of haemodialysis/week and associated illness indicated no significant association. Age and duration of illness showed a significant association with level of fatigue.

Conclusion

The study concluded that leg ergometric exercise was very effective in reducing the level of fatigue among patients with chronic kidney disease undergoing haemodialysis.

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Conflict of Interest: There was no conflict of interest

Source of Fund: Self funded

Ethical Clearance: The proposed study was conducted after the approval of the dissertation committee of St.Xavier's Catholic College of Nursing. Permission was obtained from Administrator of both hospitals. Oral consent was obtained from each participants before starting the data collection. Assurance was given to the study participants regarding the confidentiality of the data collected.

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