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THE EFFECT OF A SPECIFIC INTERVENTION ON FATIGUE AND PHYSICAL ACTIVITY AMONG PATIENTS UNDERGOING HEMODIALYSIS IN A SELECTED HOSPITAL, BANGALORE

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ABSTRACT

INTRODUCTION: End Stage Renal disease (ESRD) is a devastating medical, social and economic problem in which the kidneys no longer function well enough to meet the needs of daily life. Most of the patients showed fatigue and decrease in physical activity. Practice and follow-up of specific interventions can reduce fatigue and improve physical activity. (Prodjosudjadi W,2009)(Krucik G, 2016)

OBJECTIVE: To compare the fatigue among hemodialysis patients before and after intervention, To compare physical activity among hemodialysis patients before and after Intervention, To determine the correlation between fatigue and physical activity among hemodialysis patients, To determine the association of Fatigue and physical activity with selected baseline variables

METHOD: A quantitative approach was adopted for the study. The setting was Dialysisunit of St. John's Medical College Hospital. Fifty patients Fatigue and physicalactivity was assessed before and after intervention using Proforma to assess theDemographic variables, standardized multidimensional assessment of fatigue scaleand structured questionnaire on physical activity was used.

RESULTS: Out of 50 samples 39 samples had 90% & above compliance to the interventionswhose data were analyzed by using descriptive and inferential statistics. The studyfindings revealed that post-test fatigue has reduced & physical activity has improvedalso there was negative correlation between fatigue & physical activity.

CONCLUSION: The study findings had important implications in health field and need tofocus more on providing education and positive reinforcement to patients onhemodialysis.

KEY WORDS: End stage renal disease, fatigue, physical activity, interventions

INTRODUCTION

End Stage Renal Disease (ESRD) is a rapid growing health problem characterised by a gradual loss of kidney function. An estimated 2 million patients worldwide are affected by ESRD and India with 7852 per million populations. ESRD was the cause of 956,000 deaths globally in 2013.(Krucik G, 2016) (Varma P.P, 2015)

Patients with advanced kidney disease, especially those on long term dialysis often suffer from muscle wasting and excessive muscle fatigue. It is known that inactivity, muscle wasting and reduced physical functioning are associated with alteration in the calcium, phosphate and osmolar changes of the body fluids. Poor physical function is due to inactivity, functional and structural muscle abnormalities, inflammation, blood flow and anemia. (JhambManisha, 2008)

Physical inactivity is associated with higher levels of fatigue in ESRD patients. In addition, obesity which has been described as a chronic inflammatorystate may also mediate alterations in levels of certain cytokines leading to fatigue. Regular exercise has an anti-inflammatory response and reduces the level of pro-inflammatory cytokines. Endurance training has been shown to increase muscle strength, power, and improve the fatigue and physical function. In addition exercise rehabilitation programs may have morphological and metabolic benefits in the skeletal muscle and improve work capacity. (Neil S.A, 2012) (JhambManisha, 2008)

The nurse plays an important role in teaching the patient with ESRD and the nurse can provide on-going education and reinforcement. From the available literature reviewed it was found that fatigue is the most common problem in dialysis patientsand by giving exercise programmes and dietary modifications, the physical strength may increase thereby fatigue may decrease. In the present setting there are 250 out patients on hemodialysis. They are not given regular reinforcement sessions and also they are not taught any exercises as a routine. A routine reference to physiotherapy department for renal rehabilitation is also not a part of the care. Although dietary advices are provided once at the initiation of dialysis by the dietician of the

department there is no follow-up done or being monitored. Hence the investigator has felt the need to assess the effect of specific intervention on level of fatigue and physical activity of patients undergoing hemodialysis.

ASSUMPTIONS

- Hemodialysis patients may experience some fatigue
- Physical activity and fatigue may vary among patients
- Fatigue can be caused due to decreased physical activity
- Exercise may have an impact on physical activity

OPERATIONAL DEFINITIONS

Effect

In this study, effect referred to the extent to which there is a change in fatigue and physical activity after the implementation of a specific intervention as observed on the difference in the pre and post test scores of multidimensional assessment of fatigue scale and Structured questionnaire on physical activity.

Specific intervention

In this study, specific intervention refers to a combination of exercise anddietary advices. It consists of two parts:-

First part: - Teaching of exercise like flexibility exercises, strengthening exercises and endurance exercises that is to be followed for at least 4 weeks is taught to patients with the help of a video that is prepared in different languages, based on recommendations of life option rehabilitation council, and the patients are instructed to follow the same at home daily and maintain a log for the same. (Painter Patricia, 2000)

Second part: - Providing a dietary guideline as per National Kidney Foundation, in the form of a leaflet. (National kidney foundation, 2016)

Both the sessions will be administered to the patients in groups as they wait for their scheduled dialysis sessions. This will also be reminded and reinforced several times whenever they come for their regular dialysis.

Fatigue

In this study, fatigue referred to the tiredness experienced by chronic kidney disease patients on hemodialysis as measured using Multidimensional assessment of fatigue scale

Physical activity

In this study, physical activity referred to any bodily movement of the patient produced by skeletal muscles that requires energy expenditure which he/she initiates and performs on his/her behalf as using structured questionnaire on physical activity.

Hemodialysis patients

All patients diagnosed with End Stage Renal Disease undergoing hemodialysis in dialysis unit of St John's medical college hospital (SJMCH), Bangalore

Baseline variables

In this study, baseline variable referred to the age, gender, qualification, occupation, duration of diagnosis, duration of dialysis, anemia status, schedule of dialysis (twiceor thrice a week), timing slot of dialysis (morning, afternoon, evening), any teaching attended on exercise, practice of exercise, yoga or meditation.

METHODOLOGY

Ethical approval and administrative permission from St John's MedicalCollege Hospital, Bangalore was obtained. A sampling frame was made using inclusion and exclusion criteria with the help of a nephrologist. Out of 250 patients 97 patients who were found eligible were included in the study frame of which 50 samples were selected using simple random sampling lottery

method. Dialysis slot of these 50 patients were identified and they were approached while they were waiting for the dialysis.The purpose of the study was explained using Patient information sheet and informed consent was obtained. Demographic data was obtained using interview method. Fatigue assessment and physical activity was also done by interview method. After pre-test, the intervention was administered in two sessions which took approximately 30-45 minutes. The first session consisted of video assisted teaching of exercise which should be followed at home for 4 weeks and maintain an activity log and second session was providing and explaining a dietary guideline as per National kidney foundation in the form of a leaflet. Regular reinforcement was given during the 4 weeks through telephone and when they come for their regular dialysis. The subjects were asked to do the exercise twice a day. After 4 weeks it was found that 39 subjects had 90% compliance to the exercise and post test was administered by using MAF scale for Fatigue andstructured questionnaire on physical activity. The data obtained during pre-test and post-test were organized and analysed.

Tool:

The tool consist of:

Section 1:- Proforma to elicit the baseline variables

Section 2:- Multidimensional assessment of fatigue scale**.** The Multidimensional Assessment of Fatigue (MAF) scale contains 16 items and measures four dimensions of fatigue: severity (#1-2), distress (#3), degree of interference in activities of daily living (#4-14), and timing (#15-16). Fourteen items contain numerical rating scales (#1-14) and two items have multiple-choice responses (#15-16). To calculate the Global Fatigue Index (GFI), convert item 15 to a 0 to 10 scale by multiplying each score by 2.5 and then sum items 1, 2 and 3, and average 4 – 14, and newly scored items 15. Do not assign a score to items 4 – 14 if the respondent gave a response of "do not do any activity for reasons other than fatigue." If the respondent selects no fatigue on item 1 assign a zero to items 2 – 16. Item 16 is not included in the GFI. Maximum score is '50' which indicates severe fatigue and minimum score is '0' which indicates no fatigue.

Section 3:- Structured Questionnaire on physical activity prepared based on the findings from a focus group discussion among hemodialysis patients, which contains 16 items. First two questions was scored '1' for 'Yes' and '0' for 'No'. From questions 3 to 16 it was scored '0' for Yes and '1' for No.

RESULTS

Section 1:- Description of baseline variables

69.23% of samples are of the age less than 50, 76.92% of samples aremale, 35.89% of samples are graduates43.58% of samples are unemployed 51.28% of samples was havingincome more than 15,000, 53.84% of sample were cases of ESRD from 12 to 60 months, 46.15% of samples are on dialysis since 12 to 60 months, 38.46% of samples have moderate level of anemia, 58.97% comes twice weekly for dialysis 51.28% are coming for morning shift of hemodialysis, 94.87% have attended exercise training programme and 94.87% of samples don't practice any exercise

Section 2:- Comparison of pre-test and post-test scores of Fatigue

	Max score	Range	Mean	Mean %	Paired 't' test	p value
Pre test	50	25-42	34.0	68.1	18.5	<0.001
Post test	50	14-36	27.1	54.3		

Data showed there was a significant difference between mean pretest score (34.0) and mean post test score (27.1) which is statistically significant at 0.001. Therefore the hypothesis can be accepted.

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Section 3:- Comparison of pre-test and post-test scores ofPhysical activity

	Max score	Median	Quartiles	Negative rank test	p value
Pre test	16	2.00	(2.0, 4.0)		
Post test	16	15.00	(15.0, 16.0)	-5.472	<0.001

The data shows that there is statistically significant difference in physical activity at 0.001 level. Therefore hypothesis is accepted.

Section 4:- Correlation between fatigue and physical activity

Variables	Median	Quartiles	'r' value	P value
Pre-test				
Fatigue	33.86	(30.38, 38.05)		
Physical Activity	2.00	(2.0, 4.0)	-0.361	0.024
Post-test				
Fatigue	27.90	(24.30, 29.68)		
Physical activity	15.00	(15.0, 16.0)	-0.023	0.892

The data showedthere is negative correlation between fatigue and physical activity

Section 5:- Description of association of fatigue withSelected baseline variables

There is no statistically significant association between Fatigue with selected baseline variables at 0.05 level of significance

Section 6:- Description of association of physical activity with selected baseline variables

There is no statistically significant association between Physical activity with selected baseline variables at 0.05 level of significance

DISCUSSION

Findings related to baseline variables of the sample

Among 39 hemodialysis patients 27(69.23%) were of the age less than 50 and 12(30.80%) were of greater than 50 years of age with mean age 44.82. This is supporting the fact that people are prone to chronic diseases at a very early age due to their unhealthy lifestyle. This is supported by a study conducted in Egypt which revealed majority of the patients belong to age group of 41-55 years and a minimum of patients belong to age group more than 56 years (Mohamed Salwa A,2014).In the present study 30(76.92%) of samples were male and 9(23.07%) were females. In a similar study conducted in Turkey, the sample consisted of 78 (56.5%) males and 60 (43.5%) female patients. This may be due to the fact that certain habits like smoking, alcoholism and stress predisposes men to chronic illness than women (Mollaoglu Mukadder,2009) (Zeynab Motedayen,2014). Present study shows that 14 (35.89%) samples were graduates. The present study revealed that 17(43.58%) samples were unemployed. A study conducted in Kuala Lumpur, Malaysia revealed that majority ofhemodialysis patients (n = 41, 87.2%) were unemployed which shows a similarprevalence (Radha Maniam,2014). Present study shows majority of patients 20(51.28%) had family incomegreater than Rs15, 000.From the study it's evident that most of the samples that is 21(53.84%) werediagnosed with ESRD since 1-5 years, 10(25.64) were less than one year and the rest8(20.51%) diagnosed with ESRD more than 5 years. A

similar study done in Egyptshowed that patient affected with ESRD since 1-5 years was 55.9% which shows asimilar prevalence(Mohamed Salwa A,2014).It is seen that 18(46.15%) samples were on dialysis since 1 to 5years, 13(33.33%) were from 3months to 1 year and others 8(20.51%) were greaterthan 5 years whereas a study conducted in Egypt shows 61% of samples on dialysistreatment between 1-5 years(Mohamed Salwa A,2014).

Anemia status ranged from mild anemia to severe anemia. It was found that anemia status of majority of patients were moderate anemia 15(38.46%) and mild anemia 14(35.89%) and 10(25.64%) of them have severe anemia. A similar study conducted in Egypt shows 43.1% of patients had moderate anemia and it was the highest score(Mohamed Salwa A,2014).This may be because of regular erythropoietin administration which helps to keep anemia unworsened. Present study showed that all the 34 samples had permanent hemodialysis access. In the present study, it was seen that most of the patients 23(58.97%) had schedule of dialysis twice a week and rest of them 16(41.02%) thrice a week. A similar study conducted in New Delhi showed 35 (74.4%) of them were dialyzed twice a week and only 12 (25.6%) were dialyzed thrice a week.Present studyrevealed that 20(51.28%) were coming for dialysis at morning slot, 10(25.64%) were coming for night slot and rest of the 9(23.07%) came for afternoon slot (ThejaswiVeeram Reddy, 2016).

It was seen that 37 samples (94.87%) had attended teaching on exercise training programme and had no practice of exercise at home. This may be due to the fact that they needed regular reinforcements because factors like tiredness and other demands related to illness may demotivate them from adhering to exercise programme.

Findings related to effectiveness specific intervention on fatigue and physical activity

In the present study it showed that fatigue improved from 34.05 with a mean percentage of 68.10 during pre-test to 27.17 with a mean percentage of 54.34 during post-test which was statistically significant at 0.001. A similar study conducted in Iran, showed there was a significant difference between fatigue scores in the experimental group before and after intervention, which was due to intradialytic mental and physical exercises for two months. Another two similar study conducted

by Riahi et al and Yurtkuran et al. demonstrated a significant improvement in fatigue level after practicing exercises. These studies prove exercise therapy improves fatigue.

In the present study the maximum score of physical activity was 16 which indicate good physical activity. Median score before intervention was 2.00 and after intervention was 15.00 which indicates physical activity has improved due to specific intervention which was statistically significant at 0.001. Another study conducted in America showed that resistance training increased strength and functional capacity in 10 medically stable hemodialysis patients. These findings may be due to the fact that improvement of physical activity improves the muscle strength thereby the fatigue levels may become better. These are also supported by result obtained on correlation (Thangamani A Ramalingam,2013). The study shows there is a negative correlation between fatigue and physicalactivity with 'r' value -0.361 in pre-test and in post-test -0.023 which indicates as fatigue increases physical activity decreases and vice versa. This finding were supported by a study conducted in Egypt which shows there was a significant negative correlation between degree of fatigue and degree of daily living activities in the first week after interventions with p value of 0.0001(Mohamed Salwa A,2014).

Association of fatigue and physical activity with selected baseline variables

The present study findings revealed that there is no significant association of pre-test scores of fatigue and physical activity with baseline variables. A study conducted in Nellore, India on effectiveness of leg stretching exercises on fatigue and physical activity of hemodialysis patients showed there is no statistically significant association between leg stretching exercises with selected baseline variables (ThejaswiVeeram Reddy, 2016).

LIMITATIONS OF THE STUDY

- 90% compliance was based on activity log and patients statement. Investigator had no way of confirming it.
- Attrition of samples was a problem faced by the investigator (22% of attrition,11 samples had no compliance to interventions).
- Muscle strength could have been assessed to validate physical activity.

IMPLICATIONS FOR NURSING

The findings of the study will help:-

- In reinforcing the nurses in Dialysis unit to teach exercises and dietary therapy to patients to improve fatigue and physical activity
- Enable nurse educators to emphasize on health education for hemodialysis patients
- To integrate renal rehabilitation unit into dialysis set up to make such interventions on on-going basis.
- Nurses can be encouraged to conduct studies in different areas of care

CONCLUSION

The study was benefiting experience for investigator. It helped the investigator to improve the knowledge on the subject matter and to understand the difficulties faced by hemodialysis patients. Rehabilitation of the patients using different interventions improves their quality of life for that adequate motivation and reinforcement is necessary. The constant support, direction, timely corrections from guide and co-guide, co-operation from the dialysis unit, management and participants was an immense help for the completion of the study.

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