

ORIGINAL

Relationship of muscle stretching exercise with reducing fatigue in renal failure patients chronic

Relación del ejercicio de estiramiento muscular con la reducción de la fatiga en pacientes con insuficiencia renal crónica

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Abstract

Introduction: Chronic kidney failure is a failure of kidney function to maintain metabolism and fluid and electrolyte balance. Fatigue is one of the most frequent complaints of hemodialysis patients.

Objective: The purpose of this study was to determine the relationship between muscle stretching exercises and decreased fatigue in chronic renal failure patients undergoing hemodialysis.

Methods: This type of research is quantitative with cross-sectional. The population in this study was 140 patients who were taken using the purposive sampling technique and 28 patients were obtained as the sample. Analysis of this study using the Pearson test.

Results: Pearson test results with a p-value of $0.000 < 0.05$ so that the conclusion is that there is a training relationship stretching of this muscle with decreased fatigue in chronic renal failure patients undergoing hemodialysis.

Conclusion: There is a relationship between muscle stretching exercises and decreased fatigue in chronic renal failure patients undergoing hemodialysis.

Key words: Fatigue, stretching, chronic kidney failure.

Resumen

Introducción: La insuficiencia renal crónica es un fallo de la función renal para mantener el metabolismo y el equilibrio de líquidos y electrolitos. La fatiga es una de las quejas más frecuentes de los pacientes en hemodiálisis.

Objetivo: El propósito de este estudio fue determinar la relación entre los ejercicios de estiramiento muscular y la disminución de la fatiga en pacientes con insuficiencia renal crónica sometidos a hemodiálisis.

Metodología: Este tipo de investigación es cuantitativa con corte transversal. La población de este estudio fue de 140 pacientes que se tomaron mediante la técnica de muestreo intencional y se obtuvieron 28 pacientes como muestra. El análisis de este estudio se realizó mediante el test de Pearson.

Resultados: Los resultados de la prueba de Pearson con un valor p de $0,000 < 0,05$ por lo que la conclusión es que existe una relación entre el entrenamiento de estiramiento de este músculo con la disminución de la fatiga en los pacientes con insuficiencia renal crónica en hemodiálisis.

Conclusión: Existe una relación entre los ejercicios de estiramiento de este músculo con la disminución de la fatiga en los pacientes con insuficiencia renal crónica sometidos a hemodiálisis.

Palabras clave: Fatiga, estiramiento, insuficiencia renal crónica.

Introduction

Kidney disease is a disorder that affects the kidney organs that arises due to various factors, such as infections, tumors, congenital abnormalities, metabolic or degenerative diseases. These abnormalities can affect the structure and function of the kidneys with varying degrees of severity. Patients may feel pain, have urinary problems, etc.¹.

According to Pernefri² stated that there were 17,193 new patients undergoing hemodialysis, an increase in 2015 of 21,050 new patients undergoing hemodialysis. The action of acute hemodialysis is not too much, only about 0.9%. In North Sumatera Province, of the 14 registered hemodialysis units, there were 1,075 new patients undergoing hemodialysis, and 1,236 patients actively undergoing hemodialysis.

Fatigue is one of the most frequent complaints of hemodialysis patients and is associated with health problems related to the quality of life. Fatigue is the most common symptom of hemodialysis and is associated with poor quality of life³. Study El and Bayumi⁴ stated a high frequency of fatigue in hemodialysis patients. Overall, men had more fatigue than women when treated with hemodialysis.

Hemodialysis nurses are expected to monitor fatigue, provide health education about physical exercise and provide holistic nursing care⁵. According to Seshadri et al⁶, interventions to increase physical activity should be considered as a possible approach to managing fatigue and insomnia.

This research has novelty from other research. This study suggests a cause-and-effect relationship between muscle stretching exercises with decreased fatigue in chronic renal failure patients. Stretches should be adapted to muscle structure, flexibility, and varying degrees of tension. The key is to be organized and relaxed. The goal is to reduce muscle tension, allowing movement to be freer than focusing on gaining extreme flexibility, which often results in overstrain and injury⁷.

Methods

This type of research is pre-experimental with a one-group pre-post test design, which is to reveal a causal relationship by involving one group of subjects. This research was conducted at the Royal Prima General Hospital, Medan.

The population in this study were all patients with kidney failure who underwent hemodialysis at the Royal Prima General Hospital Medan as many as 140 patients with kidney failure who underwent hemodialysis. The sampling technique in this research is purposive sampling. Thus the number of samples in this study was 28 people.

The data collection technique used a questionnaire prepared by researchers according to the needs of patients in the field. Guide to doing muscle stretching exercises based on Anderson and Anderson⁷. Ethical clearance from the Ethics Committee of Universitas Prima Indonesia.

The data analysis technique used univariate and bivariate analysis. Univariate analysis with a description of the frequency distribution of muscle stretching exercise activity and fatigue in patients. Bivariate analysis to determine the relationship between the independent variable and the dependent variable using the Pearson test. The measurement results are obtained with a significance degree (α) of 0.05, if χ^2 count $>$ χ^2 table then H_0 is rejected and H_a is accepted indicating that there is a relationship between the independent variable and the dependent variable.

Results

Univariate Analysis

1. Characteristics of Respondents

Table I: Distribution of frequency and percentage of respondents.

Characteristics			
No.	Characteristics of Respondents	Total (n)	Percentage (%)
1. Gender			
	Man	15	54
	Woman	13	46
	Total	28	100
2. Age			
	17-25 Years	5	18
	26-35 Years	3	11
	36-45 Years	12	43
	46-55 Years	8	28
	Total	28	100
3. Start HD			
	4 years	3	11
	3 years	4	14
	2 years	10	36
	1 year	11	39
	Total	28	100

Based on **table I** above, it is known that from the 28 respondents the majority were male as many as 15 people (54%), and the female minority as many as 13 people (46%). The majority were aged 36-45 years as many as 12 people (43%) and 26-35 years as many as 3 people (11%). The majority started hemodialysis for 1 year amounted to 11 people (39%) with the minority for 4 years amounted to 3 people (11%).

Exercise Muscle Stretch

Table II: Distribution of fatigue frequency in chronic kidney failure patients undergoing hemodialysis.

No.	Muscle Stretching Exercises	Amount	Percentage(%)
1.	Active	26	93
2.	Not active	2	7
	Total	28	100

Based on **table II**, it is known that after muscle stretching exercises, the majority of active exercises were 26 people (93%) while the minority of inactive exercises were 2 people (7%).

Patient Fatigue

Table III: Distribution of Fatigue Frequency in Chronic Kidney Failure Patients Undergoing Hemodialysis.

No.	Fatigue	Amount	Percentage(%)
1.	Acute	26	93
2.	Chronic	2	7
	Total	28	100

Based on **table III** above, it can be seen that after doing stretching exercises the majority of acute fatigue was 26 people (93%) while the minority of chronic fatigue was 2 people (7%).

Bivariate Analysis

Based on the results of research on the relationship between muscle stretching exercises and decreased fatigue in renal failure patients undergoing hemodialysis.

The relationship of muscle stretching with patient fatigue

Table IV: Frequency Distribution of Muscle Stretching Exercises with Reduction of Fatigue in Chronic Kidney Failure Patients Undergoing Hemodialysis.

Muscle Stretching Exercises	Fatigue						P-value
	Chronic		Acute		Total		
	f	%	f	%	N	%	
Not active	2	7.1	0	0.0	2	7.1	0.00
Active	0	0.0	26	92.9	26	92.9	
Total							

Based on **table IV** above, it can be seen that the results of the Pearson test when the p-value was obtained was $0.000 < 0.05$ so that the conclusion was H_0 was rejected and H_a was accepted, it was concluded that there was a relationship between muscle stretching exercises and decreased fatigue in chronic kidney failure patients undergoing hemodialysis at home Royal Prima Medan General Hospital.

Discussion

Based on the data after muscle stretching exercise, the majority of active exercises were 26 people (93%) while the minority of inactive exercises were 2 people (7%). This is indicated by the response of respondents who are willing to be given muscle stretching exercises after undergoing hemodialysis. Respondents wanted to do the muscle stretching exercises independently at home according to what had been taught by previous researchers.

Based on data previously obtained from respondents who felt their head felt heavy, yawned frequently, felt tired and drowsy. Respondents also often complain that the length of time undergoing hemodialysis makes them feel tired. According to research Jhamb et al⁸, patients with

advanced chronic kidney disease experience profound fatigue. Symptoms of depression, restless leg syndrome, excessive daytime sleepiness, and low albumin levels may provide targeted interventions to increase fatigue in patients.

The results of this study it can be seen that the results of the Pearson test when the p-value was obtained was $0.000 < 0.05$ so that the conclusion was H_0 was rejected and H_a was accepted, it was concluded that there was a relationship between muscle stretching exercises and decreased fatigue in patients with chronic kidney failure undergoing hemodialysis.

Exercise can help HD patients to reduce the severity of Restless legs syndrome (RLS) or restless legs syndrome, depression, and fatigue⁹. Stretching exercises are not only done to reduce fatigue but can also be useful for reducing the intensity of pain felt by the elderly¹⁰. Study Agisha Mol et al¹¹ showed that leg ergometric exercises were effective in reducing fatigue levels in Chronic Kidney Disease patients undergoing Hemodialysis. There is a significant relationship between age and duration of illness with the level of fatigue.

Muscle stretching exercises can help patients reduce fatigue. Fatigue is a common phenomenon among patients with kidney disease, but often goes unrecognized¹². Fatigue, anxiety, depression, and sleep quality are significant problems for patients undergoing hemodialysis¹³. Fatigue is an important symptom for patients with advanced chronic kidney disease⁸.

Muscle range of motion exercises can be an excellent alternative to reduce the patient's level of fatigue. If the movement is not done at all and the patient's fatigue is not identified and cannot be described, the patient can worsen the treatment process that is being undertaken. Nurses need to assess fatigue through nursing care, to assess and identify the possible impact on patients while being diagnosed with chronic kidney failure. Decreased quality of life and cardiovascular disorders are further impacts that must be prevented so that fatigue does not get worse and can be anticipated.

Conclusion

The results showed that the majority of muscle stretching exercises had active exercises, experienced acute fatigue. The results of the Pearson test showed that the p-value was 0.000 so that H_0 failed to be rejected. The conclusion is that there is a relationship between muscle stretching exercises and decreased fatigue in patients with chronic kidney failure undergoing hemodialysis.

Interests conflict

The authors declare that they have no conflict of interest.

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