

Research Article

Effectiveness of muscle stretching exercise on restless leg syndrome among patients undergoing haemodialysis

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ABSTRACT

Background: Restless leg syndrome is a common side effect of dialysis that causes people to keep moving their legs as a result of the leg nerves and muscles creating a crawly or prickly sensation. RLS often leads to severe sleep onset insomnia and seriously impaired quality of life. The study was aimed to find out the effectiveness of muscle stretching exercise in Restlessness leg syndrome among haemodialysis patients.

Method: A quantitative research approach with times series research design was used for the study to assess the effectiveness of muscle stretching exercise on restlessness leg syndrome. The study was conducted in dialysis unit of selected multi-speciality hospital. Simple random sampling technique was used to assign the samples in experimental and control group in the study. Data was collected from 86 chronic kidney disease patients undergoing haemodialysis. The restless legs syndrome rating scale was used measure the magnitude of the RLS.

Results: The result of the study shows that in baseline the RLS mean score was 0.59 and after a week of muscle stretching exercise program implementation the mean score was reduced to 0.34. Intervention was found to be effective in reduction of RLS symptoms of haemodialysis patients significantly ($p \leq 0.05$), whereas there was no significant change found in the control group.

Conclusion: The study showed that intervention was effective in Reduction of RLS symptoms whereas continuous reinforcement was needed to lessen the RLS symptoms in haemodialysis patients.

Keywords: Effectiveness, Haemodialysis, Muscles stretching exercises, Restlessness leg syndrome

INTRODUCTION

Rest is very important in everybody's life; it balances the stress and brings calmness to the mind.¹ The people who lack sleep are usually in poor health, but there are many factors that affect sleep and rest and one of such factor is Restless Leg Syndrome.²

The 2001 Sleep in America Poll found a prevalence of 13% in the adult population, but only 3% of those had actually been diagnosed with RLS.⁴ Factors associated with higher incidence of RLS include older age, multiparity, sedentary lifestyle, positive family history, and obesity.⁵ Secondary causes of RLS include iron deficiency, renal failure, neuropathy, pregnancy, and

certain medications. RLS is associated with depression, anxiety, and negative quality of life.⁶

RLS occurs as two forms, a primary disorder independent of any other disease, and secondary in which symptoms are triggered by another condition such as ESRD.⁷ Restless leg syndrome is one of the common symptoms in patients with ESRD, and the prevalence of the disorder has been estimated to be between 20 and 60% of ESRD.⁸

Objective of the study was to find the magnitude of restless leg syndrome among patients undergoing haemodialysis and to determine the effectiveness of structured muscles stretching exercise program on restless leg syndrome among patients undergoing haemodialysis.

METHODS

A quantitative research approach with times series research design was used for the study to assess the effectiveness of muscle stretching exercise in restlessness leg syndrome. The study was conducted in dialysis unit of selected multi specialist hospital. Eighty six patients undergoing haemo-dialysis were conveniently selected from the population. The haemo-dialysis patients those are critically ill and debilitated, history of orthopedic problem, history of psychological problem, taking medicine like dopamine receptor agonists, benzodiazepines, opioids and anticonvulsants were excluded from the study. The restless legs syndrome rating scale was used measure the magnitude of the RLS. Ethical committee and administrative permission was taken from the concerning authority. Informed consent was obtained from the study participants before commencement of the study.

RESULTS

Table 1 depicts that in experimental group majority (55.8%) of the study participants were in the age group of 41-60 years. Half (51.1 %) of the study participants were male and approximately two third (65.1 %) of the study participants belong to joint family. Half (53.4%) of had below secondary education and most (90.6%) of the study participants were married and 60.4% of study participants were working. Every second (53.4%) study participants having the family income less than 10,000 per month in experimental group, and most (90.6%) were from upper class. Majority (93%) of the study participants were Hindu in religion. Least (4.65%) of the study participants having history of smoking. Majority (60.4%) of the study participants were three time dialysis in a week. Almost half (46.5%) had less than 3 years of haemodialysis.

Table 2 showed that two third (66.27%) of the dialysis patients were reported Severe RLS symptoms, one fourth (24.41%) of the dialysis patients were reported moderate

RLS symptoms and 9.3% were reported severe RLS symptoms.

In control group two third (72.09%) of the study participants were aged between 41-60 years and least (9.3%) of study participants was aged above 60 years. Half (53.4%) of the study participants were male. Every second (51.1%) were belonging to joint family. More than half (53.4%) of the study participants had above secondary education. Majority (95.3%) of the study participants were married and (60.4%) were having the family income less than 10,000 per month in control group. Half (51.1%) of the study participants were from upper class. Most (93%) of the study participants were Hindu. Least (4.65%) of the study participants having history of smoking. Two third (72%) of the study participants were three time dialysis in a week. Half (51.1%) of the study participants had less then 3years of haemodialysis.

Homogeneity tested of the study participants between demographic variables of control and experimental group. Since all data were categorical in nature, chi square test was performed to find significant association. The result showed that there was no significant difference between control and experimental group in terms of age (0.9), gender (0.4), type of family (0.1), education (0.3), marital status(0.3), monthly income of the family (0.1), Socioeconomic status (0.3), Religion (0.9), Personal habits (0.064), Number of dialysis in a week (0.7), duration of haemodialysis (0.6). Only one variables Occupation (0.04) were significantly different at the significant level of $p < 0.005$. Hence it could be interpreted that control and experimental group were homogeneous in relation to their socio-demographic characteristic.

Table 2 showed that two third (66.27%) of the dialysis patients were reported Severe RLS symptoms, one fourth (24.41%) of the dialysis patients were reported moderate RLS symptoms and 9.3% were reported severe RLS symptoms .

The data presented in table 3 showed that in baseline the RLS mean score was 23.9 and after a week of muscle stretching exercise in the mean score was reduced to 15.7. After another one week intervention mean score was reduced to 10.44. It can be interpreted that the structured muscles stretching exercise is significantly reduced the severity of the RLS symptoms at the level of significant $p \leq 0.05$.

The data presented in table 4 showed that in baseline the RLS mean score was 24.49 and in control group no intervention is given after a week the mean score was 24.19 in second observation mean score was 25.19.

The data presented in table 5 showed that at baseline the experimental group and control group mean score were not significantly differ in each other. Since the muscle

stretching exercise was implemented to the experimental group the experimental group mean score was

significantly differ from the control group at both levels (i.e First observation, second observation).

Table 1: Frequency (f) and percentage (%) distribution of RLS patients according to their selected personal variables n=86.

Sample Characteristics	Experimental (n=43)	Control (n=43)	χ^2	P value
Age				
18-40	8(18.6%)	8(18.6%)	14.2	0.9
41-60	24(55.8%)	31(72.09%)		
Above 60	11(25.5%)	4(9.3%)		
Gender				
Male	22(51.1%)	20(46.5%)	17.7	0.4
Female	21(48.8%)	23(53.4%)		
Types of family				
Joint family	28(65.1%)	21(48.8%)	23.8	0.1
Nuclear family	15(34.88)	22(51.1%)		
Education				
Above secondary	12(27.9%)	23(53.4%)	16	0.3
Below secondary	31(79.06%)	20(46.5%)		
Marital status				
Married	39(90.6%)	41(95.34%)	37.6	0.3
Unmarried	4(9.3%)	2(4.6%)		
Occupation				
Working	26(60.4%)	24(55.8%)	24.3	0.003
Not working	17(39.5%)	19(44.1%)		
Monthly income of family				
Below 10,000	23(53.4%)	26(60.4%)	23.3	0.1
Above 10,000	20(46.5%)	17(39.5%)		
Socioeconomic Status				
Upper	39(90.6%)	21(48.8%)	5.1	0.3
Lower	4(9.3%)	22(51.1%)		
Religion				
Hindu	40(93.0%)	40(93.0%)	17.9	0.9
Muslim	2(4.65%)	2(4.65%)		
Sikh	1(2.32%)	1(2.32%)		
Personal habits				
Smoking	2(4.65%)	2(4.65%)	9.6	0.064
Nothing	41(95.3%)	41(93.02%)		
Number of dialysis in a week				
One	2(4.65%)	1(2.32%)	7.7	0.7
Two	12(27.9%)	10(23.25%)		
Three	26(60.4%)	31(72.0%)		
Four	3(6.9%)	1(2.32%)		
Duration of Haemodialysis				
Less than 3 year	20(46.5%)	22(51.1%)	8.6	0.6
3-5 year	17(39.5%)	17(39.5%)		
5-7 year	3(6.9%)	3(6.9%)		
More than 7 year	3(6.9%)	1(2.32%)		

Table 2: Prevalence of restless leg syndrome among patients undergoing haemodialysis.
N =86.

RLS Score	Score level	Frequency (%)
11-20	Moderate	21(24.41%)
21-30	Severe	57(66.27%)
31-40	Very severe	8(9.3%)

Table 3: Effectiveness of structured muscles stretching exercise program on restless leg syndrome among patients undergoing haemodialysis of experimental group.

Level	Mean \pm S.D	F value	P Value
Baseline	23.95 \pm 3.8	102.05	.001
1 st Observation	15.74 \pm 5.7		
2 nd Observation	10.44 \pm 2.8		

The data presented in table 6 depicts that there was no significant association between the pre-test RLS score with personal profile variables like gender, age, type of family, education, marital status, occupation, personal habits, Religion, No. of dialysis in a week, duration of dialysis except income and personnel habits.

Table 4: Effectiveness of structured muscles stretching exercise program on restless leg syndrome among patients undergoing haemodialysis of control group.

Level	Mean \pm SD	F value	P Value
Baseline	24.49 \pm 4.8	0.683	0.45
1 st Observation	24.19 \pm 4.6		
2 nd Observation	25.19 \pm 3.9		

Table 5: RLS mean RLS score comparison between experimental group with control group.

Level	Mean \pm SD	t value	P value
Baseline			
Experimental (n=43)	23.95 \pm 3.8	0.40	0.6
Control (n=43)	24.49 \pm 4.8		
First observation			
Experimental (n=43)	15.74 \pm 5.7	5.36	0.001
Control (n=43)	24.49 \pm 4.6		
Second observation			
Experimental (n=43)	10.44 \pm 2.8	14.1	0.001
Control (n=43)	25.19 \pm 3.9		

Table 6: Association between RLS score with personal profile of study participants.

Characteristics	Mean±SD	df	t value	P value
Gender				
Male	24.83±4.3	84	1.26	0.2*
Female	23.64±4.4			
Type of family				
Joint family	24.4±5	84	0.4	0.6*
Nuclear family	23.9±3.4			
Education				
Above secondary	24.9±3.8	84	1.9	0.05*
Below secondary	23.4±4.9			
Marital status				
Married	24.1±4.4	84	0.9	0.3*
Unmarried	25.8±3.4			
Occupation				
Working	24.4±4.3	84	0.4	0.6*
Not working	24±4.4			
Income				
Below 10,000	26.78±3.7	84	2.8*	0.005*
Above 10.000	23.5±4.3			
Personal habits				
Smoking	28.74±2	84	2.1	0.03*
Nothing	24±4.3			
Age				
18-40	48.32±11.80	83	0.015	0.9**
41-60	49.5±11.34			
Above 60	47.5±13.35			

Religion				
Hindu	0.116±0.49			
Muslim	0.07±0.25	83	0.052	0.9**
Sikh	0.11±0			
No. of dialysis in a week				
One	29.33±0.5	82	2.3	0.07**
Two	23.45±4.3			
Three	24.04±4.4			
Four	24.22±2.06			
Duration of dialysis				
Less than 3yrs	23.79±4.05			
3-5yrs	24.09±4.7	82	1.2	0.3**
5-7yrs	27.33±4.1			
More than 7yrs	24.22±4.3			

(*independent t -test, ** one way anova)

DISCUSSION

The study findings illustrated that two third of the Dialysis patients were reported severe RLS symptoms, one fourth of the dialysis patients were reported moderate RLS symptoms and only very few dialysis patients were reported very severe RLS symptoms. These study finding consistent with Stefanidias, Vainas A, Dardiotis E, Giannaki C.D et al that HD patients having more prevalence of RLS then the general population.⁹ Other study finding also supported that HaiderIrfan, Anees Muhammad, Syed Adnan, Shahid, Hussain that RLS is common in patients undergoing regular HD. It is more commonly seen in females.¹⁰

The study finding illustrated that in baseline the RLS mean score was higher and after a week of muscle stretching exercise the mean score was significantly reduced. These study finding consistent with Magda Mohamed that exercise program will helps in reduction of RLS in haemodialysis patients. Aukerman MM, Aukerman D, Bayard M, Tudiver F, Thorp L, Bailey B reported that exercise program was effective in improving the symptoms of RLS.¹¹

CONCLUSION

Regular muscles stretching exercise plays an important role in reducing the RLS symptoms in haemodialysis patients. Nurses should acquire thorough knowledge about the problems related RLS in haemodialysis patients and should have in-depth knowledge regarding the benefits of muscles stretching exercise for the RLS patients.

Strengths

1. Study has the control group.
2. Random assignment of sample was done for both experimental and control group.

3. Homogeneity of the groups was maintained.

4. The researcher has measured RLS Symptoms at different interval to assess the effectiveness of exercise.

Limitations of the study was random selection of samples from the population, the study was conducted with a small sample size, which restricts the generalization and the study was conducted in one hospital setting only.

Recommendation: Studies can be conducted on to measure the long –term effects to see the effectiveness of muscles stretching exercise. A Cross –sectional study can be done on the Psychological distress of patients suffering from restless legs syndrome. A Prospective Study can be done on the Restless Legs Syndrome and Risk of Depression in Women. A single-blind randomized controlled trial to evaluate the effect of progressive aerobic exercise training in patients with restless legs syndrome. A further study can be conducted with enough number of study participants and events. A comparative study can be conducted among RLS patients undergoing haemodialysis of two or more hospitals. A follow up study can be done to assess the effectiveness of muscle stretching exercise on RLS patients.

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