



RESEARCH ARTICLE

A STUDY TO ASSESS THE EFFECTIVENESS OF DEMONSTRATION ON STRETCHING EXERCISES REGARDING PREVENTION AND MANAGEMENT OF NOCTURNAL LEG CRAMP (NLC) AMONG ELDERLY AT SELECTED OLD AGE HOMES OF MYSURU

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ABSTRACT

Background of the study: Nocturnal leg cramp is a Musculo-skeletal disorder characterized by sudden and painful involuntary contractions of the lower limbs occurring during prolonged rest periods, mostly at night. It has negative impact on quality of life, particularly among elderly over 60years. Stretching exercises is a useful preventive therapy which in turn helps to reduce the frequency and intensity of pain during NLC among elderly. **Aim and objective:** The study was conducted to assess the effectiveness of planned demonstration programme on stretching exercises for prevention and management of NLC among elderly at selected old age homes of Mysuru. **Methods:** Post-test only Control group design was adopted for the study. Non probability purposive sampling technique was used to select 60 study subjects using NLC screening checklist, 30 each in experimental and control group. Planned demonstration programme on stretching exercises was done only to elderly in experimental group. The frequency of NLC and intensity of pain during NLC was assessed by using frequency of NLC scale and modified VAS on day-3, day-5 and day-7 following the intervention. **Results:** The results of the study revealed that there was a significant difference between the post-test frequency and intensity of pain during NLC in experimental and control group on day-3, day-5 and on day-7 which was statistically tested using Independent 't' test for frequency of NLC (day-3 $t_{(58)}=2.25$; day-5 $t_{(58)}=3.07$; day-7 $t_{(58)}=8.73$; $p<0.05$) and intensity of pain during NLC (day-5 $t_{(58)}=4.41$; day-7 $t_{(58)}=8.68$; $p<0.05$) was found to be significant at 0.05 level of significance. **Conclusion:** The study concluded that the stretching exercises was effective in reducing the frequency of NLC and intensity of pain during NLC among elderly. Hence performing daily stretching exercises can be adopted as a non-pharmacological therapy among elderly for prevention and management of NLC. The study also stresses the increasing responsibility of health professionals in planning and implementing various strategies to reduce frequency of NLC and intensity of pain during NLC using different self-care techniques which in turn helps to increase the quality of life among elderly.

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INTRODUCTION

Nocturnal leg cramp (NLC) is a Musculo-skeletal disorder characterized by sudden and painful involuntary contractions of the lower limbs occurring during prolonged rest periods, mostly at night. They often cause sleep disturbances, which can seriously affect the quality of life (QOL). In 20% of people who experience NLCs, cramps also occur during the day time¹. NLC occur more commonly with advancing age, affecting between 38% and 50% of the elderly². NLCs are more prevalent among women and among people with co-morbidities, especially those with neurological and cardiovascular diseases³. Patient epidemiology analysis (2020) found NLC in 40% of people over the age of 50 in general population, grow in frequency with age, have no sex preference, and are linked to sleep disturbances and ill health. Around 7% of children and adolescents have experienced NLC⁴. Existing prevalence data (2017) suggest that 37%-50% of older adults have nocturnal leg cramps⁵. According to department of geriatrics, Exeter, UK (1999) - The prevalence of leg cramps was 50% and common in females (56%) than in males (40%)³. In a general practice-based study of 233 people aged 60 years or more, almost one third had rest cramps during the previous two months, including half of those aged 80years or more, 40% had cramps more than three times per week and 21% described their symptoms

as very distressing⁶ Because nocturnal leg cramps occur primarily at night and may be associated with physical inactivity and muscle shortening, stretching immediately before sleep may be a useful preventive therapy⁷. According to the squatting theory[sotang1988] muscle and tendon shortening are suspected of increasing the risk of occurrence of NLCs. Several studies have shown the potential benefits of stretching methods to prevent cramps⁸. An observational study on stretches to prevent leg cramps reveal that Muscle cramps are a painful and even debilitating part of life that affect an estimated 60% of all adults in the US according to some studies. Leg cramps, in particular, are extremely common, though studies have shown that regardless of the cause, they can be eased or even prevented through a regular program of stretches, which will help increase flexibility, and strength in the muscles, keeping them relaxed and healthy⁹. In order to reduce the frequency of NLCs, leg stretching before sleep is commonly recommended. Various studies suggests that nightly stretching of the calves and hamstrings reduces the frequency of NLCs in older adults with no recognized side effects.¹⁰

Reviews revealed that, the people over the age of 60 are having leg cramps during night and may be associated with physical inactivity and muscle shortening. This often cause sleep disturbances and distress which can seriously affect the QOL of elderly. It further promotes selfcare and encourages a sense of control among elderly over their condition, which can have positive psychological effects. Since stretching exercises are a low cost and accessible intervention, it could benefit a wide range of individuals and it aligns with the goals of promoting healthy ageing, enhancing selfcare, and reducing healthcare burden. Hence the investigator felt that it is very essential and useful to demonstrate stretching exercises for prevention and management of NLCs, which in turn helps to reduce the frequency and intensity of pain during NLC and improve the QOL.⁷

OBJECTIVES

- To identify elderly with NLC.
- To assess the frequency of NLC and intensity of pain during NLC among elderly in experimental and control group.
- To determine the effectiveness of planned demonstration programme regarding stretching exercises for prevention and management of NLC among elderly.

HYPOTHESES

H₁: There will be statistically significant difference between the post-test frequency of NLC among elderly in experimental and control group.

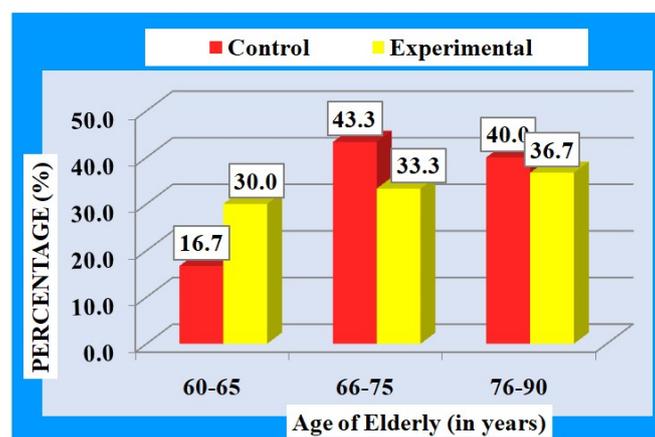
H₂: There will be statistically significant difference between the post-test intensity of pain during NLC among elderly in experimental and control group.

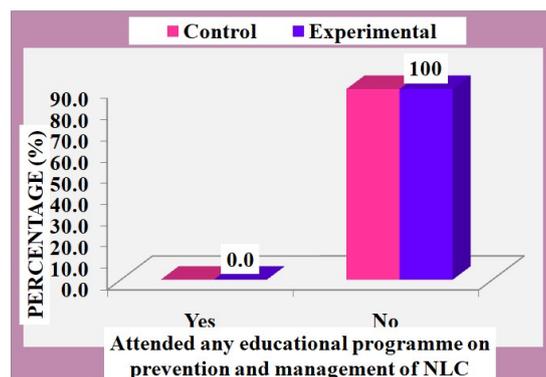
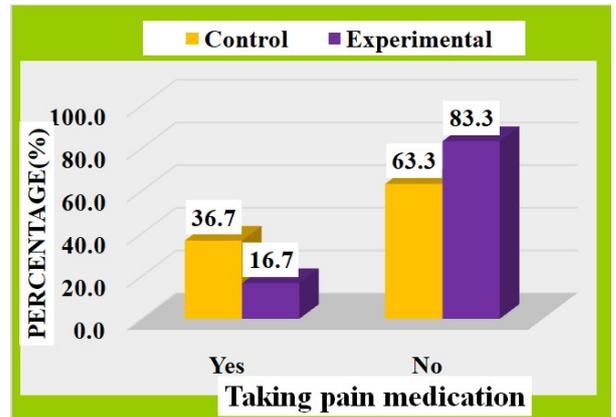
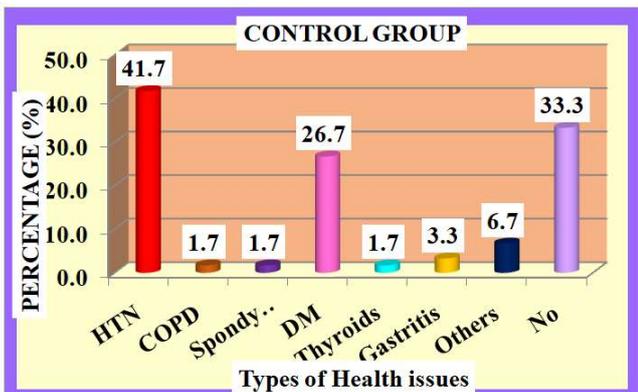
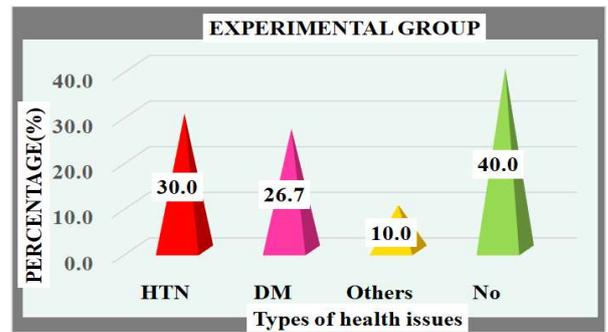
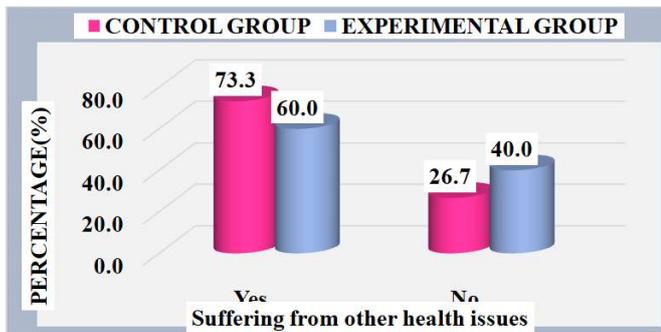
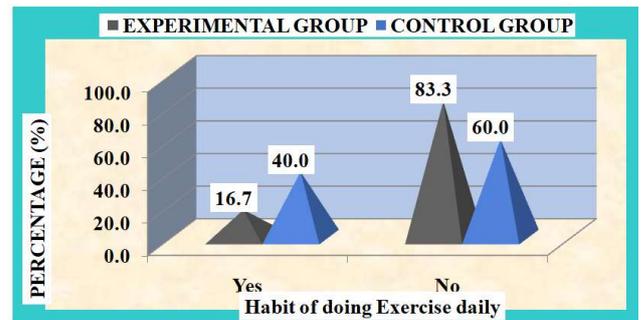
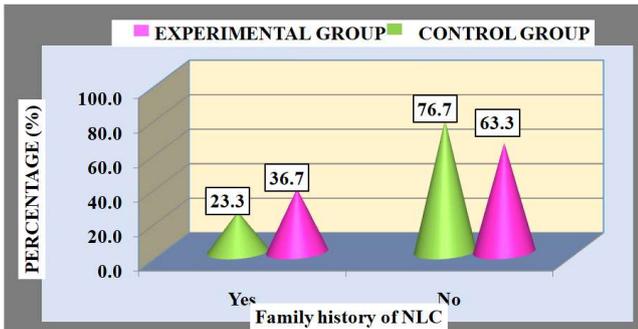
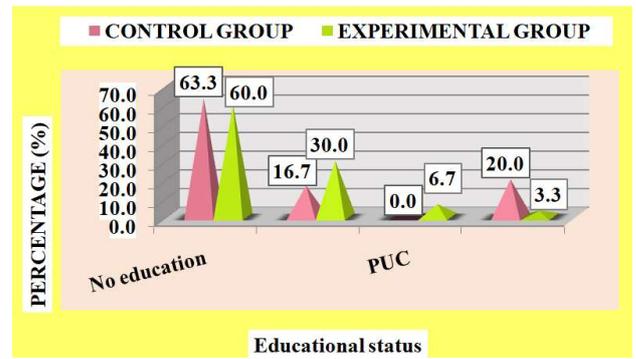
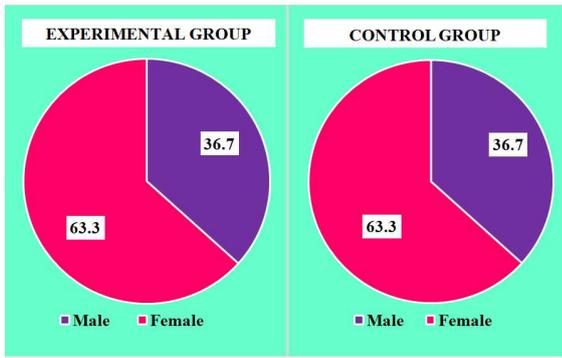
METHODOLOGY

A Post-test only control group design was adopted for the study. Non probability Purposive sampling technique was used for selecting 60 elderly for the study. The data was collected using NLC screening checklist, Scale to assess frequency of NLC and Modified VAS for NLC. The tool was validated by seven experts from the field of medicine and nursing. The reliability of the tool was established by using test retest and interrater method and the Karl Pearson's coefficient of correlation (r) was 0.92, 0.85 and 0.96 respectively. The pilot study was conducted from 13-05-2023 to 19-05-2023. The tool and the study were found to be feasible. The data were collected from 20-05-2023 to 12-06-2023. The data analysis was done by using both descriptive and inferential statistical method.

RESULTS

SECTION I DESCRIPTION OF SELECTED PERSONAL VARIABLES OF THE STUDY SUBJECTS





Significance of difference between the frequency of NLC among elderly with NLC in experimental and control group

Table 1. Frequency and percentage distribution of elderly with NLC in experimental and control group according to their selected personal variables

n=60

Sl. No	Sample Characteristics	Experimental group n=30		Control group n=30	
		f	%	f	%
1	Age (in years)				
	1.1 60-65	9	30.0	5	16.7
	1.2 66-75	10	33.3	13	43.3
	1.3 76-90	11	36.7	12	40.0
2	Gender				
	2.1 Male	11	36.7	11	36.7
	2.2 Female	19	63.3	19	63.3
3	Educational level				
	3.1 No education	18	60.0	19	63.3
	3.2 SSLC	9	30.0	5	16.7
	3.3 PUC	2	6.7	0	0.0
	3.4 Degree & above	1	3.3	6	20.0
4	Family history of NLC				
	4.1 Yes	11	36.7	7	23.3
	4.2 No	19	63.3	23	76.7
5	Habit of doing exercise daily				
	5.1 Yes	5	16.7	12	40.0
	5.2 No	25	83.3	18	60.0
6	Suffering from other health issues				
	6.1 Yes	18	60.0	22	73.3
	6.2 No	12	40.0	8	26.7
	Types of health issues when yes				
	Hypertension	9	30.0	16	53.3
	COPD	0	0.0	1	3.3
	Spondylitis	0	0.0	1	3.3
	DM	8	26.7	8	26.7
	Thyroids	0	0.0	1	3.3
	Gastritis	2	6.7	0	0.0
	Others	3	10.0	1	3.3
7	Taking pain medication				
	7.1 Yes	5	16.7	11	36.7
	7.2 No	25	83.3	19	63.3
8	Attended any educational programme on prevention & management of NLC				
	8.1 Yes	0	0.0	0	0.0
	8.2 No	30	100.0	30	100.0

TABLE -2. Frequency and percentage distribution of elderly according to the presence of NLC in experimental and control group

Sl. No	Criteria for selection	NLC screening checklist score	Presence of NLC			
			JSS Vrudhashrama (Experimental group)		Jeeva Nidhi Trust (Control group)	
			f	%	f	%
1	Present	1-6	30	83.3	30	85.7
2	Absent	0	6	16.7	5	14.3
Total=70			36	100.0	35	100.0

SECTION II

EFFECTIVENESS OF PLANNED DEMONSTRATION PROGRAMME ON PREVENTION AND MANAGEMENT OF NLC AMONG ELDERLY

Table 3. Frequency and percentage distribution of frequency of NLC among elderly in experimental and control group

n=60

Days	Frequency of NLC per day with scores	Experimental group (n=30)		Control group (n=30)	
		Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
Day-3	Absent - (0)	0	0.0	0	0.0
	Once - (1)	24	80.0	16	53.3
	Twice - (2)	6	20.0	14	46.7
Day-5	Absent - (0)	17	56.7	8	26.6
	Once - (1)	13	43.3	17	56.7
	Twice - (2)	0	0.0	5	16.7
Day-7	Absent - (0)	29	96.7	5	16.7
	Once - (1)	1	3.3	21	70.0
	Twice - (2)	0	0.0	4	13.3

Table 4. Frequency and percentage distribution of intensity of pain during NLC among elderly in experimental and control group n=60

Days	Intensity of pain during NLC with scores	Experimental group (n=30)		Control group (n=30)	
		Frequency f	Percentage %	Frequency f	Percentage %
Day-3	Mild pain (0-3)	3	10.0	5	16.7
	Moderate (4-7)	24	80.0	23	76.7
	Severe (8-10)	3	10.0	2	6.6
Day-5	Mild pain (0-3)	29	96.7	14	46.7
	Moderate (4-7)	1	3.3	15	50.0
	Severe (8-10)	0	0.0	1	3.3
Day-7	Mild pain (0-3)	30	100.0	14	46.7
	Moderate (4-7)	0	0.0	16	53.3
	Severe (8-10)	0	0.0	0	0.0

Table 5. Mean, median, range and standard deviation of Post-test frequency of NLC among elderly in experimental and control group n = 60

Group	Mean	Median	SD	Range
Day 3				
Control group	1.47	1	±0.51	0-2
Experimental group	1.20	1	±0.41	0-2
Day 5				
Control group	0.90	1	±0.66	0-2
Experimental group	0.43	1	±0.50	0-2
Day 7				
Control group	0.97	1	±0.56	0-2
Experimental group	0.03	1	±0.18	0-2

Table 6. Mean, median, range and standard deviation of Post-test intensity of pain during NLC among elderly in experimental and control group

n = 6

Group	Mean	Median	SD	Range
Day 3				
Control group	4.53	4	±1.66	2-8
Experimental group	4.80	4	±1.63	2-8
Day 5				
Control group	3.07	4	±2.39	0-8
Experimental group	0.93	0	±1.14	0-4
Day 7				
Control group	3.20	4	±1.94	0-6
Experimental group	0.07	0	±0.37	0-2

Significance of difference between the frequency of NLC among elderly with NLC in experimental and control group

H₀₁: There will be no statistically significant difference between the mean frequency of NLC among elderly in experimental group and control group.

Table 7. Mean, mean difference, SD, SD difference and independent 't' test of posttest frequency of NLC among elderly in control and experimental groups

Groups	Mean	SD	Mean difference	SD difference	Independent 't' value
Day 3					
Control	1.47	±0.51	0.27	±0.1	2.25*
Experimental	1.20	±0.41			
Day 5					
Control	0.90	±0.66	0.47	±0.16	3.07*
Experimental	0.43	±0.50			
Day 7					
Control	0.97	±0.56	0.94	±0.38	8.73*
Experimental	0.03	±0.18			

$t_{(58)} = 1.96$; $p < 0.05$ *Significant

Significance of difference between the intensity of pain during NLC among elderly in experimental and control group

H₀₂: There will be no statistically significant difference between the mean intensity of pain during NLC among elderly in experimental group and control group.

Table 8. Mean, mean difference, SD, SD difference and independent ‘t’ test of post-test intensity of pain during NLC among elderly in experimental and control group on day 3, day 5 and day 7

Group	Mean		SD		Mean difference	SD difference	Independent ‘t’ value
n=60							
Day 3							
Control	4.53		±1.66		0.27	±0.03	0.63 ^{NS}
Experimental	4.80		±1.63				
Day 5							
Control	3.07		±2.39		2.14	±1.25	4.41*
Experimental	0.93		±1.14				
Day 7							
Control	3.20		±1.94		3.13	±1.57	8.68*
Experimental	0.07		±0.37				

$t_{(58)} = 1.96$; $p < 0.05$ *significant; NS-Non-significant

CONCLUSION

The stretching exercises was effective in reducing the frequency of NLC and intensity of pain during NLC among elderly. Hence performing daily stretching exercises can be adopted as a non-pharmacological therapy among elderly for prevention and management of NLC. The study findings stress the increasing responsibility of health professionals in planning and implementing various strategies to reduce frequency of NLC and intensity of pain during NLC among elderly using different self-care techniques which in turn helps to increase the quality of life among elderly.

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