

A Study to Assess the Effectiveness of Hot Water Foot Bath Therapy on the Quality of Sleep among the Elderly at Narayana Medical College and Hospital, Nellore

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Abstract

This study has the aim to understand the effectiveness of hot water foot bath therapy among elderly people for the quality of sleep has been focused on in this study. 60 elderly persons participated in the study conducted in NMCH and a quantitative research approach has applied. A non-equivalent control group (experimental and control group) have been adopted as the research design where pre-test and post-test have been conducted. GSQS or, Modified Groningen Sleep Quality Scale has been used as a tool and several demographic variables have also been utilized. It has been found that in the results of the pre-test, 43.3% (13) had poor sleep, 16.6% (5) had moderate sleep, and 40% (12) had good sleep. In post-test 26.6% (8) having poor sleep, 43.3% (13) moderate sleep, and 30% (9) good sleep among the elderly peoples. This study will be beneficial for the well-being of elderly people to overcome anxiety and stress.

Keywords: Modified Groningen Sleep Quality Scale, Footbath, Hot Water Footbath Therapy, Elderly People, Control Group, Experimental Group

1. Introduction

Footbath refers to the intervention method of nursing that is helpful for elderly people to feel relaxed. Sleep and wakefulness have a functional relationship with the temperature of the core body and the rhythm of skin temperature. Quality sleep is important for maintaining mental health, tissue repair, and the maintenance of the immune system in elderly people. A footbath with hot water provides good sleep as it relaxes the mind and body of the individual. Therapy of foot bath by hot water defines as the foot immerses in the hot water for about 15 to 30 mins at a temperature of 39 to 41 degrees Celsius. This article paper will assess footbath therapy utilizing hot water and the effect of this therapy on elderly people's sleeping.

2. Literature Review

Hot water footbath therapy

Therapy of a warm foot bath instigates the vessels of blood to dilate which improves the circulation of blood (Sharma and Kumari, 2019). Heat produces by the therapy encourages sweating and leads to toxin release in the body. Elderly people across the world have gone through several mental and physical stresses due to their increasing age. Warm foot bath thus relieves stress among elderly people and it also provides body relaxation to the whole body (Saeki, 2000). Anxiety, sleep distortion and fatigue are also found in elderly people and with the implementation of hot water bath therapy elderly people can easily relive stressful moments. Foot care and foot massage with hot water decrease the heart rate and increase the temperature of foot skin and that contributes to physiological and psychological well-being.

Effectiveness of footbath therapy on the Outcomes of quality sleeping in elderly people

A warm foot bath is very essential for sleeping as it is considered a natural aid for sleeping. Stimulation of blood circulation occurs for taking a warm foot bath as it re-energises the whole body, keeps the body self-relaxed, and reduces inflammation in the body. Toxin produces in the body of elderly people in daily life due to unhealthy lifestyles, stress, and diet which results in the blockages for free blood circulation. Soaking the feet before taking a nap maintains the secretion of toxins in the body and it also allows kidneys to replenish the flow of blood in the body during sleeping. Ankles get relaxed, and muscles, ligaments and tendons also get relaxed after the implementation of hot water foot bath therapy on elderly people.

3. Methodology

Here in this study quantitative data analysis had been done and quantitative data refers to the first-hand data that had been gathered by the researchers themselves. A quantitative structure was made up of tools such as surveys and polls, and a sample size or quantity and quantitative research in the social sciences had been used for the collection of quantitative data. Descriptive and inferential statistics had been measured in the data analysis and to maintain the quality of the research a pilot study was also conducted.

Research design

The non-equivalent control group (experimental and control group) had been adopted as the research design where pre-test and post-test had been conducted.

Tools used

The tool here used was the *GSQS* or, *Modified Groningen Sleep Quality Scale* which consists of 14 items. The reliability of the tool had been established by utilizing the method of r-test relying on the prophecy formula of spearman brown, $R=2r/1+r$, $r \text{ value} = 0.6$. Socio-demographic variables such as gender, age, residence, and habits were also taken into consideration during the conduction of the study.

4. Data Collection

A total of 60 participants had selected for the study in *NMCH or, Narayana Medical College and Hospital*, Nellore and among them, 30 participants were taken in the control group and 30 were taken in the experimental group. In order to assess the sleep quality among the participants, a pre-test was done utilizing the *Modified Groningen Sleep Quality Scale*. Therapy of foot bath by hot water was given for 6 days as a pre-test procedure and on the 7th day the post-test was done.

5. Data Analysis

Data of elderly people had been analyzed in the following tables:

Table 1: Percentage and frequency distribution of socio-demographic variables (Age) for sleeping quality among elderly people

(N=60)				
	Experimental		Control	
Age in years	F	%	F	%
a)60-65 years	12	40	7	23.3
b)66-70years	6	20	18	60
c)71-75 years	9	30	2	6.7
d) > 75 years	3	10	3	10
Total	30	100	30	100

The table shows that the age of the experimental group 3(10%) was above 75 years, 30%(9) were between the age of 71-75 years, 20%(6) were between the age group of 66-70 years, and 40% (12) were between 60 to 65 years. On the other hand, in the control group, 10%(3), 6.7%(2), 60%(18), and 23.3%(7) were found respectively for the above 75, 71-75, 66-70, and 60-65 respectively.

Table 2: Percentage and frequency distribution of in experimental group, the post and pre-test scores on the sleep quality among elderly people

(N=60)				
Criteria	Experimental group			
	Pre test		Post test	
	F	%	F	%
a) Good sleep	9	30	15	50
b) Moderate sleep	9	30	10	33.5
c) Poor sleep	12	40	5	16.5
Total	30	100	30	100

This table shows that in pre-test 40%(12) were having poor sleep, 30%(9) moderate sleep, and 30%(9) good sleep. In post-test 16.5%(5) were having poor sleep, 33.3%(10) moderate sleep, and 50%(15) good sleep.

Table 3: Percentage and frequency distribution of in control group, the post and pre-test scores on the sleep quality among elderly people

(N=60)

Criteria	Control group			
	Pre test		Post test	
	F	%	F	%
a) Good sleep	12	40	9	30
b) Moderate sleep	5	16.6	13	43.4
c) Poor sleep	13	43.4	8	26.6
Total	30	100	30	100

This table shows that in pre-test 43.3%(13) were having poor sleep, 16.6%(5) moderate sleep, and 40%(12) good sleep. In post-test 26.6%(8) were having poor sleep, 43.3%(13) moderate sleep, and 30%(9) good sleep.

Table 4: Percentage and frequency distribution of the post and pre-test for the effectiveness of hot water foot bath therapy among the elderly in the control group

Group	Criteria	Mean	S.D	Paired t-test
Experimental group	Posttest	41.07	13.534	C= 2.139
	Pre test	47.07	14.797	T=2.04 S*

This table shows that the pre-test mean was 41.07 with 13.534 SD, and the post-test mean was 47.07 with 14.797 SD. The value of the calculated table value was 2.04 and paired t-test was 2.139.

Table 5: Comparison of standard deviation and mean for the effectiveness of hot water foot bath therapy among elderly people for the quality of sleep in control and experimental group

(N=60)

Criteria	Experimental		Control		Independent t-test
	Mean	SD	Mean	SD	
Hot water foot bath therapy	47.07	14.797	39.93	12.124	C= 2.019 T=2.76 Df=29 P<0.05 S*

Here df n-1==29, df=degree of freedom, significance, and P<0.05 and from the table the SD was 14.797, and the post-test mean was 47.07. The value of the t-test was 2.76 and was greater than the table value.

6. Findings and Discussion

60 elderly persons participated in the study conducted in *NMCH* and utilized the quasi-experimental non-equivalent design of the control group. Data were analyzed by the use of inferential and descriptive statistics according to the objectives of the study. Results of pre-test 43.3%(13) were having poor sleep, 16.6%(5) moderate sleep, and 40%(12) good sleep. In post-test 26.6%(8) were having poor sleep, 43.3%(13) moderate sleep, and 30%(9) good sleep among the elderly peoples. The quality of sleep among the elderly participants was assessed and the effectiveness of the hot water foot bath therapy was evaluated for the quality of sleep. Several demographical variables such as age were taken and the comparison of standard deviation and mean for the effectiveness of hot water foot bath therapy among elderly people for the quality of sleep in the control and experimental group was analyzed.

7. Conclusion

This paper has drawn a significant picture of the effectiveness of hot water foot bath therapy among elderly people for the quality of sleep. *A modified Groningen Sleep Quality Scale* has been used and several demographical variables have been taken for the paper. A study can be done further to assess hot water bath therapy's effectiveness as a non-pharmacological management to improve the quality of sleep among elderly people.

References

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