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Research Article

Effect of Isometric Handgrip Exercise on Sleep Quality of Hypertension Patients in the Elderly

Vita Lucya[1]* | Gilang Dwi Pratiwi[2] | Novita Anggie[3]

[1,2,3]STIKep PPNI Jawa Barat, Bandung, West Java, Indonesia

***contact**

vitalucyavita@gmail.com

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Abstract

Aims: The study aimed to knowing the effect of isometric handgrip exercise on the quality of sleep of hypertension patients in the elderly.
Methods: The study was Quasi Experiment research with one group pretest-posttest design. The study population was purposive sampling and obtained a total of 30 respondents. This research was conducted at the Sukawarna Health Center Work Area, Bandung City. The instrument used was PSQI (Pittsburgh Sleep Quality Index).
Results: There was an effect ofisometric handgrip exercise on the quality of sleep of hypertension patients in the elderly (p-value = 0,000).
Conclusion: Isometric handgrip exercise is a non-pharmacological therapy that can be used to improve quality of sleep of hypertension patients in the elderly.

Keywords:
Elderly, Exercise, Hypertension, Isometric-Handgrip, Quality Of Sleep

INTRODUCTION

The elderly are an age group that is vulnerable to suffering from hypertension due to a decrease in the body's physical and physiological functions. The aging process affects the work of the heart and blood vessels, thereby causing several problems for the health of the elderly because there is a disruption in the blood circulation system which requires compliance in maintaining diet, lifestyle, physical activity and sleep patterns. The sleeping pattern of the elderly is one of the problems. A problem that often occurs in the elderly is difficulty sleeping at night. Factors that can influence the decline in sleep quality in the elderly include illness, stress, medication, nutrition, environment, motivation, and also physical activity (1). This condition of decreased sleep quality is one that affects the physiology of the elderly and the body's metabolic condition. This especially occurs in elderly people who experience hypertension. Management that can be done to doing physical exercise (2). Physical exercise is one of the important things in maintaining the body's metabolism and increasing blood circulation. One of the physical activities that elderly people can do is isometric handgrip exercises.

Isometric handgrip exercises is an exercise to contract the hand muscles with moderate movements . The effect of this exercise is to facilitate blood flow which can stimulate ischemic stimuli with a shear stress mechanism resulting from muscle contractions. Shear stress affects nitric oxide from endothelial cells to smooth

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muscle by diffusion (3,4). Nitric Oxide will then stimulate the release of guanylate cyclase which dilates blood vessels by relaxing smooth muscles. Therefore, this handgrip exercise will improve blood circulation and reduce high blood pressure (5). In a stable blood pressure situation, it is hoped that the sleep quality of the elderly will gradually improve. This study aims to see the effect of Isometric Handgrip Exercise on the Sleep Quality of Hypertension Sufferers in the Elderly.

METHODS

The research design used in the research was quasi experimental with a one group pretest-posttest design. Intervension conducted in the work area of the Sukawarna Health Center, Bandung-West Java. The sample consistend of 30 elderly. Sampling was taken by purposive sampling. Inclusion criteria: elderly with hypertension and were willing to take part in the study. Exclusion criteria: elderly who have impaired body function in hand area. The study was conducted for 5 days with a duration of 30 minutes each meeting. The intervention provided is SOP Isometric Handgrip Exercise. Research with procedures carried out on isometric handgrip exercises using handgrip tools. The instrument used was PSQI (Pittsburgh Sleep Quality Index). Statistical analysis used is frequency distribution, min-max, and T test.

This research has ethical permission with permit number No. III/059/KEPK-SLE/STIKEP/PPNI/JABAR/VII/2023.

RESULTS

The result of the characteristics of the respondents in this research based on gender, level education, profession, and age, in the study are presented in the following table 1

Table 1. Characteristics Demographic Data (n=30)

Variable	Total f (%)
Gender	
male	8 (26,7)
female	22 (73,3)
Level of education	
Primary school	15 (50,0)
Junior high school	12 (40,0)
Senior high school	3 (10,0)
Profession	
unemployment	19 (63,3)
work	11 (36,7)
Age (Years)	
60-74	18 (60,0)
75-90	12 (40,0)

Based on table 1show that most the gender is female (73,3%). had an primary school education (50.0%), were unemployment (63.3%), and were aged 60-74 (60.0%).

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Tabel 2. Description of Pretest and Posttest Sleep Quality

Variable	F	%	Range Min – Max	Mean ± SD
Pre Test sleep quality			1-4	2.27 ±0.785
Sleep quality is good	5	16.7%		
Light sleep quality	13	43.3%		
Moderate sleep quality	11	36.7%		
Poor sleep quality	1	3.3%		
Post Test sleep quality			1-3	1.20 ±0.551
Sleep quality is good	26	86.7%		
Light sleep quality	2	6.7%		
Moderate sleep quality	2	6.7%		

The table 2 above shows the results of the sleep quality score using the PSQI questionnaire. Based on the mean sleep quality score, it can be seen that the increase in the pre-test score was 2.27 (SD = 0.785) and the post-test score was 1.20 (SD = 0.551), namely with a mean difference of -0234.

The effect of isometric handgrip training on the sleep quality of hypertension sufferers in the elderly

Table 3. Effect of isometric handgrip training on the sleep quality of elderly hypertension sufferers

	Std. Deviation	95% Lower	Upper	T	P-Value
Sleep Quality Level	1.015	0.668	1.446	5.757	0.00

Based on table 3 after a statistical test was carried out, it showed that there was a difference in the quality of the patient's sleep before and after the isometric handgrip exercise with the mean rank result being 1.067 and the p-value showing 0.000 < 0.05. This stated that the results of hypothesis testing were Ho was rejected and Ha was accepted. This means that there is an effect of isometric handgrip training for hypertensive patients in the elderly.

DISCUSSION

The number of respondents obtained in this research were 30 respondents. Previous research shows that at the age of over 60 years various problems appear and, they need about 6-8 hours of sleep a day. Age influences the sleep quality of the elderly (6). Poor sleep quality is associated with the aging process, it was found that the 70-80 year old age group experienced more sleep disorders such as difficulty falling asleep and frequently waking up at night. Providing isometric handgrip training can increase hand muscle contractions with moderate movement and the effect of this exercise is that blood vessels can stimulate ischemic stimuli with a shear stress mechanism resulting from muscle contractions. Shear stress affects nitric oxide from endothelial cells to smooth muscle by diffusion (7,8). Nitric Oxide will then stimulate the release of guanylate cyclase which dilates blood vessels by

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relaxing smooth muscles. Therefore, this handgrip exercise will improve blood circulation and reduce high blood pressure. When blood pressure improves, sleep quality will also improve (9).

The results of data analysis on the effect of isometric handgrip exercise on the elderly before and after the intervention resulted in changes in blood pressure with a p-value of 0.00 < 0.05. This shows an increase in sleep quality in elderly people who suffer from hypertension. A person's sleep adequacy is not only measured by the length of time they sleep, but also the quality of sleep itself. A person's sleep is said to be quality if he wakes up fresh and fit. The need for sleep in the elderly decreases because the homestatic urge to sleep decreases. The results of this research are in line with research conducted by (10) entitled The Effect of Isometric Handgrip Exercises and Progressive Muscle Relaxation on Blood Pressure in Hypertension Sufferers in the East Ring Health Center Work Area, Bengkulu City with a total of 15 respondents. This research shows that there is a significant effect after the isometric handgrip training intervention on sleep quality in elderly people suffering from hypertension with a p-value of 0.00 < 0.05. Based on the results of observations in the field (11,12), researchers assume that the more often the isometric handgrip exercise intervention is carried out, the better the sleep quality of elderly people with hypertension will be. Apart from that, practicing every day can form a habit in the elderly to do physical activity to support their health.

Research Limitations

The research was only carried out in one group desain. So it does not describe the comparison of the intervention group and the control group.

CONCLUSION

The results of the study concluded that the effect of the isometric handgrip exercise can improving on sleep quality of hypertension patients in the elderly was significant. isometric handgrip exercise are a program implemented in the work area of Sukawarna Health Center, Bandung to optimal the quality of sleep of hypertension patients in the elderly.

REFERENCES

1. Maulana N. Kualitas Tidur Berhubungan dengan Tingkat Hipertensi pada Lansia Penderita Hipertensi. Jurnal Ilmiah Permas: Jurnal Ilmiah STIKES Kendal. 2021;11(4):641–8.
2. Sutrisno S, Rekawati E. Isometric Handgrip Exercise Salah Satu Intervensi Keperawatan untuk Mengontrol Tekanan Darah pada Lansia dengan Hipertensi. Jurnal Keperawatan. 2021;13(1):215–24.
3. Hidayat AF. HUBUNGAN KUALITAS TIDUR DENGAN KONDISI TEKANAN DARAH PADA LANSIA: LITERATURE REVIEW. Jurnal Medika Hutama. 2022;3(02 Januari):2498–507.
4. Wang P, Song L, Wang K, Han X, Cong L, Wang Y, et al. Prevalence and associated factors of poor sleep quality among Chinese older adults living in a rural area: a population-based study. Aging Clin Exp Res. 2020;32:125–31.
5. Ratnawati D, Choirillaily S. Latihan menggenggam alat handgrip menurunkan tekanan darah pada penderita hipertensi. Jurnal Keterapian Fisik. 2020;5(2):101–8.
6. Lasanuddin H, Firmawati F, Harun M. HUBUNGAN ANTARA STRES EMOSI DENGAN KUALITAS TIDUR LANSIA DI PANTI LKS. LU BERINGIN KABUPATEN GORONTALO PROVINSI GORONTALO. Termometer: Jurnal Ilmiah Ilmu Kesehatan dan Kedokteran. 2023;1(3):22–34.
7. Harsismanto J, Andri J, Payana TD, Andrianto MB, Sartika A. Kualitas tidur berhubungan dengan perubahan tekanan darah pada

p-ISSN : 2354 8428 | e-ISSN: 2598 8727

Jurnal Keperawatan Komprehensif
Volume 10 Issue 1 January 2024

lansia. Jurnal Kesmas Asclepius. 2020;2(1):1–11.

8. Cho EH, Lee MY, Hur MH. The effects of aromatherapy on intensive care unit patients' stress and sleep quality: a nonrandomised controlled trial. Evidence-Based Complementary and Alternative Medicine. 2017;2017.
9. Rudimin R, Hariyanto T, Rahayu W. Hubungan Tingkat Umur Dengan Kualitas Tidur Pada Lansia Di Posyandu Permadi Kelurahan Tlogomas Kecamatan Lowokwaru Malang. Nursing News: Jurnal Ilmiah Keperawatan. 2017;2(1).
10. Graciano FT, Sartika A. Pengaruh Isometric Handgrip Exercises dan Progressive Muscle Relaxation terhadap Tekanan Darah pada Penderita Hipertensi di Wilayah Kerja Puskesmas Lingkar Timur Kota Bengkulu. JURNAL NERS GENERATION. 2022;1(1):55–60.
11. Dehghani K, Fahim Raouf Fahim Raouf Z, Vaezi AA. The effect of eyemasks and earplugs use on sleep quality of Patients suffering from myocardial infarction in CCU. SSU_Journals. 2015;23(7):700–8.
12. Tabas EE, Khodadadi F, Sarani H, Saeedinezhad F, Jahantigh M. Effect of eye masks, earplugs, and quiet time protocol on sleep quality of patients admitted to the cardiac care unit: A clinical trial study. Medical-Surgical Nursing Journal. 2019;8(3).

https://doi.org/10.33755/jkk