Nursing Journal
Volume 10, Issue 1, Page 110-116
e-ISSN: 2354-6050

https://ejurnal.poltekkesjakarta3.ac.id/index.php/JKep/
DOI: https://doi.org/10.32668/jkep.v10i1.2020

EFFECTIVENESS OF COMBINATION DEEP BREATHING AND PROGRESSIVE MUSCLE RELAXATION TO DIMINISH ANXIETY OF THE ELDERLY WITH HYPERTENSION

1st Indriana Rakhmawati
2nd Endang Banon
3rd Omi Haryati
4th Nurhalimah
5th Mia Fatma Ekasari
6th Andi Sari Bunga
7th Ace Sudrajat

email : indriana@poltekkesjakarta3.ac.id

[1,2,3,4,5,6,7]Poltekkes Kemenkes Jakarta III, Jakarta, Indonesia

Keywords:
deep breathing relaxation,
elderly anxiety,
progressive muscle relaxation.

Abstract

The background of this study is the prevalence of the elderly aged 64-75 with hypertension in 2023 is 57.8 percent, and the number of elderly is estimated to reach 29 million of the total number of Indonesians in 2023. Hypertension can endanger the life of the elderly because it causes various serious health complications. Anxiety as one of the factors which aggravate hypertension in elderly, needs to be controlled so that complications do not occur. Deep breathing relaxation and progressive muscle relaxation are non-pharmacological interventions that can be performed to reduce anxiety. The aim of this study was to find out whether the combination of deep breathing relaxation therapy and progressive muscle relaxation can reduce anxiety in elderly with hypertension. The design of this study is a quasi-experimental one group pretest-post-test design, because it measures the anxiety level of the elderly before and after therapy. The respondents consist of 30 elderly people in the Jatiwarna Village area, who were selected by random sampling method. Anxiety data was obtained using the HARS (Hamilton Anxiety Rating Scale) questionnaire and analyzed using descriptive and dependent t-test analysis. The results of the descriptive analysis showed that 93.3 percent of the elderly had mild anxiety before the intervention and became 100 percent after the intervention. The results of the bivariate test using the dependent t-test showed a p-value: 0.00 at a sig. value of 0.05 which indicates the effect of giving both therapies on the reduction of anxiety levels in the elderly with hypertension

Received: 08 May 2025
Accepted: 14 May 2025
Published: 30 May 2025

INTRODUCTION

Data from the Central Statistics Agency shows that in 2023 there will be 30.9 million elderly people in Indonesia (11.10% of the total population of Indonesia)1. The results of the 2023 Indonesian Health Survey show that the prevalence of hypertension in the age group of 35–44 years is 27.2%, increasing to 39.1% at the age of 45–54 years, 49.5% at the age of 55–64 years, and reaching 57.8% at the age of 65–74 years2. Hypertension experienced by the elderly can be caused by degenerative conditions or by diseases experienced3. An unstable emotional state (stress) in response to an unpleasant event will trigger the hormone cortisol, one of the effects of which is to increase blood pressure4. If a hypertensive elderly person experiences stress, his blood pressure will be higher and can cause serious health complications. Hypertension can be managed by consuming antihypertensive drugs and stress control. The efforts to control stress are deep breathing relaxation therapy and progressive muscle relaxation because simple breathing exercises and muscle relaxation techniques provide therapeutic benefits to calm the heart rate, lower blood pressure, and lower stress hormone levels5. Several previous studies have shown that these two therapies have been shown to be able to reduce anxiety levels in the elderly with hypertension6-11.

The deep breathing relaxation technique is a technique of getting comfort/relaxation by inhaling and exhaling slowly so that it increases lung ventilation and blood oxygenation and can reduce anxiety levels12. In this technique, what is done is maximum inspiration, hold for a few seconds then expirate slowly, because in this way lung ventilation will be maximized so that oxygen in the blood will increase and circulate throughout the body; including the brain, which will trigger the release of hormones that make the body feel comfortable6,8.

In the human body, there are parts of the body that experience tension when experiencing physical and psychosocial stress and the relaxation process of these muscles will cause a sense of comfort. Progressive muscle relaxation is done by focusing on a muscle activity by identifying the tense muscle and then lowering the tension to get a feeling of relaxation13, by means of contraction and relaxation of various muscle groups; from head to toe or from head to toe14. This technique can be done independently by individuals to reduce or eliminate the tension felt by the individual so that the individual feels comfortable/relaxed11.

Previous research has shown that deep breathing relaxation techniques have a significant effect on the anxiety level of the elderly; because this relaxation technique is effective in lowering the anxiety level. Some research also showed the level of anxiety of the elderly5-7 and effectiveness of the progressive relaxation therapy in lowering the blood pressure of hypertensive patients at Health Centre8,9. The search in the previous study did not find a combination of the two therapies, so this study aims to determine the effect of deep breathing relaxation therapy and progressive relaxation therapy on anxiety in the elderly who experience hypertension.

METHOD

The design of this study used a one-group pretest–posttest design, by measuring the anxiety level of the elderly before and after deep breathing relaxation therapy and progressive muscle relaxation using a HARS questionnaire that had been translated into Indonesian. The HARS contains 14 questions covering feelings of anxiety, tension, fear, sleep disturbances, cognitive difficulties, depressive symptoms, somatic symptoms, sensory symptoms, cardiovascular symptoms, respiratory symptoms, gastrointestinal symptoms, autonomic symptoms, and behavior10. Each item has five response options: 0 (no symptoms), 1 (mild symptoms), 2 (moderate symptoms), 3 (severe symptoms), and 4 (very severe symptoms). The content validity of the questionnaire ranges from 0.529 to 0.727, with a reliability coefficient of 0.756. The results classify elderly anxiety levels into five categories: no anxiety (score <14), mild anxiety (score 14–20), moderate anxiety (score 21–27), severe anxiety (score 28–41), and very severe anxiety (score 42–56)7,11.

The population of this study consisted of elderly individuals with hypertension who experienced anxiety in the Jatiwarna area. Because the exact population size was unknown, the researcher referred to the minimum sample size guideline for quantitative research, which ranges from 30 to 500 participants19,20. A total of 30 elderly individuals with hypertension in Jatiwarna sub-district were selected using purposive sampling, based on specific inclusion criteria relevant to the research objectives21.

The inclusion criteria for respondents were: aged 60–74 years and diagnosed with hypertension within the last 10 years.

The research procedure began with administrative approvals and coordination with the Jatiwarna Health Center and RW 06 health cadres. The next step involved respondent selection and informed consent collection after explaining the study's purpose and procedures. During the first session in the RW 06 area, participants completed the questionnaire with assistance from the research team, followed by education on deep breathing relaxation through demonstration and simulation. Participants were provided with a guidebook containing step-by-step procedures for deep breathing and

progressive muscle relaxation, along with a logbook for home practice.

The second session involved evaluation of deep breathing practice and further education on progressive muscle relaxation, including demonstrations, simulations, and supervised practice. Participants then conducted independent exercises for one week, monitored by local health cadres. Post-tests were conducted after two weeks of independent practice.

Data from pre- and post-tests were processed and analyzed using institutional software. Descriptive analysis was used for univariate data, while paired **t-tests** (dependent correlation) were used for bivariate analysis.

This study received ethical approval from the Research Ethics Commission of Jakarta Health Polytechnic III (No. LB.02.02/KEPK/079/2022). Ethical considerations included fair treatment of participants, anonymity in data collection, confidentiality, and assurance that no participants were materially harmed and all benefited from the study.

RESULTS AND DISCUSSION

Univariate analysis was used to obtain an overview of the characteristics of the study respondents consisting of age, gender, education level, and length of illness. These data were analyzed using frequency descriptive statistics.

Table 1 Distribution of Respondent Characteristics (N=30)

Respondent Characteristics	Frequency (n)	Percentage (%)
Age		
60 – 69 yo	18	60.0
70 – 79 yo	12	40.0
Gender		
Male	8	26.7
Female	22	73.2
Education Level		
Elementary - Junior	19	63.3
High School - University	11	36.7
Duration of hypertension		
≤ 2 years	21	70.0
> 2 years	9	30.0
Anxiety Level		
Light	28	93.3
Moderate	2	6.70
Hypertention		

yo=years old

Table 1 shows that the characteristics of the respondents in this study include elderly age (60%), female (73.2%), with secondary education level (63.3%), with less than 2 years of illness (70%) and mild anxiety (93.3%).

Bivariate analysis was used to determine the effect of therapy administration on respondents' anxiety levels. Data processing is carried out using *dependent t-test*.

Table 2 The relationship between respondent characteristics and anxiety

Variabel	Anxiety				Total	*P value*
	light		keep			
	sum	%	sum	%		
Age						
60 – 69	18	60,0			18	0,307
70 – 79	10	33,3	2	6,67	12	
Gender						
Man	8	26,7			8	0,680
Woman	20	66,7	2	6,67	22	
Education Level						
Elementary - Junior High School	17	56,7	2	6,67	19	0,506
S.E.	11	36,7			11	
Long Illness						
Less than 2 years	19	63,3	2	6,67	21	0,227
More than 2 years	9	30,0			9	

Table 2 shows that of the 4 characteristics of the respondents, which have an effect on the respondent's anxiety is the length of illness (P value < 0.05), the other aspect has no effect on the respondent's anxiety

Table 3 Average distribution of anxiety levels before and after treatment

Anxiety Level measurement	Mean	SD	SE	p-value	N
				0.000	30
Before	10.53	2.58	0.47		
After	2.67	2.20	0.40		

Table 3 shows the results of the first measurement, with an average anxiety score of 10.53 (SD 2.58), and the second measurement after therapy showing a reduced average score of 2.67 (SD 2.20), with a mean difference of 7.867. Statistical test results indicated a p-value of 0.000, which means there was a significant difference in anxiety levels before and after the intervention.

An analysis of the relationship between respondent characteristics and anxiety showed that the aspect most influencing anxiety levels was the duration of illness. As shown in Table 3, these findings are consistent with previous studies reporting that age, gender, education, and duration of illness do not significantly affect anxiety12-15. This phenomenon may occur because older individuals are generally more prepared to face stressful situations. Meanwhile, low education levels can affect a person's critical thinking ability and understanding of complex problems, which may lead to underestimating certain health problems, resulting in lower anxiety levels.

In this study, 70% of elderly participants had experienced illness for less than two years, and 93.30% had mild anxiety. This finding suggests that duration of illness influences anxiety levels, as it may be related to the perceived severity of the disease16.

Effect of Relaxation Therapy on Elderly Anxiety Levels

The analysis showed that the average anxiety level before therapy was 10.53, and decreased to 2.67 after therapy, with a p-value of 0.000. This indicates that relaxation therapy significantly reduced anxiety levels in the elderly. The results are in line with several previous studies that examined the effects of deep breathing relaxation and progressive muscle relaxation5-18 which consistently demonstrated their effectiveness in reducing anxiety in elderly individuals with hypertension.

Deep breathing relaxation is a technique that provides physical and mental comfort, helping individuals to manage stress more effectively. This technique improves lung ventilation and increases oxygen levels in the blood19. Adequate oxygen supply throughout the body, especially the brain, enhances overall comfort and well-being.

Progressive muscle relaxation involves concentrating on muscle activity by alternating muscle tension and relaxation over a specified duration to induce a relaxed state. This technique may stimulate the release of endorphins and enkephalins, suppress the sympathetic nervous system, reduce tension, and stimulate brain signaling that increases blood flow, resulting in muscle relaxation and counter-conditioning responses17.

The results of this study show that the combination of these two relaxation therapies provides a greater impact on reducing anxiety levels among the elderly. Therefore, it can be concluded that the application of both deep breathing relaxation and progressive muscle relaxation is effective in lowering anxiety in elderly individuals with hypertension.

CONCLUSION

Writing conclusions is based on the main findings of the research, the methods used, and the characteristics of the research,

The ability of the elderly to deal with conditions that cause anxiety depends on the coping mechanism they have. Anxiety experienced by the elderly must be handled well, because increased anxiety can affect a person's physical and psychological functioning; especially if the elderly have hypertension which is closely related to the level of stress/ anxiety. Hypertension with high levels of anxiety can result in a stroke; one of the most common diseases in Indonesia, which can cause death.

Treatment of anxiety for the elderly can be done through psychotherapy; such as therapy by combining deep breathing reactions with progressive muscle relaxation to make the elderly more relaxed. The results of this study have proven that the combination of deep breathing and progressive muscle relaxation can reduce anxiety levels in the elderly. For further study, it is necessary to explore the research by combine

quantitative and qualitative research to obtain the qualified result.

ACKNOWLEDGMENT

Thank to the all parties that involve in the research, especially to the responden and the cadres, and Jatiwarna Helath Centre and Poltekkes Kemekes Jakarta III for all the helping hand and support.

REFERENCES

1. Badan Pusat Statistik. Statistik Indonesia 2023 [Internet]. Imam Machdi, editor. Jakarta; 2023. 830 p.
2. BKPK Kemenkes. Survey Kesehatan Indonesia 2023 [Internet]. Jakarta: BKPK Kemenkes; 2023. 908 p. Available from: https://drive.google.com/file/d/1rjNDG_f8xG6-Y9wmhJUnXhJ-vUFevVJC/view
3. Ariyanti R, Preharsini IA, Sipolio BW. Edukasi Kesehatan Dalam Upaya Pencegahan dan Pengendalian Penyakit Hipertensi Pada Lansia. To Maega J Pengabdi Masy [Internet]. 2020 Aug 5;3(2):74–82. Available from: https://ojs.unanda.ac.id/index.php/tomaega/article/view/369
4. Halawa A, Artini B, Manutmasa YS. Hubungan Tingkat Stres dengan Kejadian Hipertensi pada Usia Dewasa Awal (18-40 tahun). J Keperawatan [Internet]. 2023 Nov 23;12(2):34–45. Available from: https://jurnal.stikeswilliambooth.ac.id/index.php/Kep/article/view/541
5. Rito G. Pengobatan Alternatif untuk Mengatasi Tekanan Darah. Jakarta: Gramedia Pustaka Utama; 2011. 243 p.
6. Yuniati RP, Wulandari Y, Suparmanto G. Pengaruh Terapi Relaksasi Otot Progresif Terhadap Tingkat Kecemasan pda Lansia. J Keperawatan 'Aisyiyah [Internet]. 2020 Dec 31;7(2):7–12. Available from: http://journal.unisa-bandung.ac.id/index.php/jka/article/view/205
7. Rizki A, Permatasari RE, Raniah N, Dahlan Z, Rafika N, Balgies S. Efektifitas Relaksasi Pernafasan Dalam Terhadap Penurunan Tingkat Kecemasan Pada Lansia. J Psikol Malahayati. 2023;5(2):292–9.
8. Asda P, Anida A, Sholiqah AY. Teknik Relaksasi Nafas Dalam Efektif Menurunkan Tingkat Stres pada Lansia. J Gema Keperawatan. 2023;16(2):277–86.
9. Muliani SS, Tahir.Maryam. Efektifitas Relaksasi Napas dalam pada Lansia Hipertensi yang Mengalami Kecemasan di RS Bhayangkara Palu Polda Sulteng The Effectiveness of Deep Breathing Relaxation Hypertensive Elderly who Experience Anxiety at the Bhayangkara Hospital Palu Regional Sul. 2024;7(1):102–9.
10. Nasuha, Widodo D, Widiani E. Pengaruh Teknik Relaksasi Nafas dalam Terhadap Tingkat Kecemasan pada Lansia di Posyandu Lansia RW IV Dusun Dempok Desa Gading Kembar kecamatan Jabung Kabupaten Malang. J Nurs News. 2016;1(2):53–62.
11. Ema Anindita Berliyanti, Shanti Wardaningsih. Intervensi Terapi Relaksasi Otot Progresif Untuk Menurunkan Kecemasan Pada Lansia. Diagnosa J Ilmu Kesehat dan Keperawatan. 2023;1(2):122–30.
12. Hardiyati. Kecemasan Saat Pandemi Covid 19. Pratama MG, editor. Gowa: Jariah Publishing Intermedia; 2020. 74 p.
13. Setyoadi; Kushariyadi. Terapi Modalitas Keperawatan pada Klien Psikogeriatrik. Jakarta: Salemba Medika; 2011. 164 p.
14. Murniati M, Sundari RI, Dewi FK. Pelatihan Relaksasi Otot Progresif Pada Kader Posyandu Lansia di Posyandu Lansia RW 05 Desa Kalibagor. J Community Engagem Heal. 2020;3(1):74–81.
15. Norma N, Supriatna A. Pengaruh Teknik Relaksasi Otot Progresif Terhadap Penurunan Tekanan Darah Pada Pasien Hipertensi Di Puskesmas

Mariat Kabupaten Sorong. Nurs Arts [Internet]. 2019 Aug 14;12(1):31–5. Available from: https://poltekkes-sorong.e-journal.id/nursingarts/article/view/71

16. Suratini. Pengaruh Relaksasi Progresif Terhadap Tingkat Tekanan Darah Pada Lansia Hipertensi. J Kebidanan dan Keperawatan, [Internet]. 2013;9(2):193–204. Available from: https://www.unisayogya.ac.id/en/wp-content/uploads/sites/16/export-unisa-files/297628092015-1018052646.pdf
17. Ramdan IM. Reliability and Validity Test of the Indonesian Version of the Hamilton Anxiety Rating Scale (HAM-A) to Measure Work-related Stress in Nursing. J Ners. 2019;14(1):33.
18. Simatupang HR, Soputri N. Kecemasan Staff Renal Unit Rumah Sakit Advent Bandung Selama Masa Pandemik Covid-19. 2022;4(1):2685–7154. Available from: http://ejournal.unklab.ac.id/index.php/kjn
19. Roscoe, J.T. Fundamental Research Statistics for the Behavioral Science. 2nd editio. New York: Harcourt College Publishers; 1975.
20. Fred Nichols Kerlinger; Howard Bing Lee. Foundations of Behavioral Research. 4th ed. Florida: Harcourt College Publishers; 2000. 890 p.
21. Subhaktiyasa PG. Menentukan Populasi dan Sampel: Pendekatan Metodologi Penelitian Kuantitatif dan Kualitatif. J Ilm Profesi Pendidik [Internet]. 2024 Nov 19;9(4):2721–31. Available from: https://jipp.unram.ac.id/index.php/jipp/article/view/2657
22. Redjeki, Gerardina Sri & Tambunan H. Faktor – Faktor yang Berhubungan dengan Kecemasan Lanjut Usia di Puskesmas Johar Baru II Jakarta. J Kesehat Saelmakers Perdana [Internet]. 2019;2(1):83–90. Available from: https://journal.ukmc.ac.id/index.php/joh/article/view/199
23. Amelia, Andi Rizki; Baharuddin, Nurul Hikmah; Septiani WT, Haeril A. Faktor yang berhubungan dengan Tingkat Kecemasan Lansia dalam Berkunjung Kepelayanan Kesehatan Puskesmas pada masa pandemi covid-19. J Keperawatan. 2022;16(1):383–96.
24. Sary EW. Faktor-faktor yang berhubungan dengan terjadinya kecemasan pada lansia di panti sosial Tresna Werfha Budi Sejahtera Provinsi Kalimantan Selatan Banjarbaru. Tunas tunas Ris Kesehat [Internet]. 2019;9(4):312–5. Available from: https://2trik.jurnalelektronik.com/index.php/2trik/article/view/2trik9403/9403
25. Handayani Mangapi Y, Habel P. Hubungan Umur, Jenis Kelamin Dan Pendidikan Dengan Tingkat Depresi Pada Lansia Di Dusun Rante Kecamatan Sa'dan Ulusalu Kabupaten Toraja Utara Tahun 2018. J Ilm Kesehat Promot [Internet]. 2020 Dec 14;5(1):120–9. Available from: https://journal.stikestanatoraja.ac.id/jikp/article/view/37
26. Seafira, Arisa Ela; Khasanah, Suci; Susanti IH. Hubungan Lama Sakit Hipertensi dengan Tingkat Kecemasan pada Lansia. J Lang Heal. 2024;5(3):999–1006.
27. Lestari, Kurniati Puji; Yuswiyanti A. Pengaruh Relaksasi Otot Progresif Terhadap Penurunan Tingkat Kecemasan pada Pasien Pre Operasi di Ruang Wijaya Kusuma RSUD Dr. R. Soeprapto Cepu. J Keperawatan Matern [Internet]. 2015;3(1):27–32. Available from: https://jurnal.unimus.ac.id/index.php/JKMat/article/view/4017
28. Salsabila; Meilita Z. Pengaruh Terapi Relaksasi Otot Progresif Terhadap Tingkat Kecemasan Pada Lansia Di Posbindu Wilayah Bidara Cina RW.04 Jakarta Timur. J Afiat Kesehat dan Anak [Internet]. 2024;10(1):95–106. Available from: https://jurnal.uia.ac.id/index.php/afiat/article/view/3821/1853
29. Perciavalle V, Blandini M, Fecarotta P, Buscemi

A, Di Corrado D, Bertolo L, et al. The role of deep breathing on stress. Neurol Sci [Internet]. 2017 Mar 19;38(3):451–8. Available from: http://link.springer.com/10.1007/s10072-016-2790-8