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The Increasing Level of Comfort and Decreasing Blood Pressure of Hypertensive Elderly with "TERTARIK" (Terapi Tertawa dengan Musik Rindik)

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ABSTRACT
Changes in people's activity patterns during the pandemic caused discomfort responses that had implications for blood pressure fluctuations in hypertensive elderly. This phenomenon is significant because high blood pressure can cause complications and hospitalisation. This study aimed to determine the effect of TERTARIK on the comfort level and blood pressure of hypertensive elderly. A quantitative approach with a quasi-experimental pre-post test design with a control group was chosen. The sampling technique was purposive sampling with inclusion and exclusion criteria. The sample size obtained was 64 (32 per group), and 2 in the intervention group dropped out. Data was collected for four weeks with an intervention frequency of once a week. Comfort level and blood pressure variables are not normally distributed. These variables were tested with the Wilcoxon for paired data and the Mann-Whitney for unpaired data. The results obtained were that there was an influence of TERTARIK intervention on the comfort level (p-value 0.001), systolic blood pressure (p-value 0.001, and diastolic blood pressure (0.001) for hypertensive elderly. These results can guide nursing care for hypertensive elderly, especially with the complementary approach.
Keywords*: Hypertension; Music Therapy; TERTAWA Therapy*

ABSTRAK
Perubahan pola aktifitas masyarakat pada masa pandemi menimbulkan respon ketidaknyamanan hingga berimplikasi pada fluktuasi tekanan darah pada lansia hipertensi. Fenomena ini menjadi sangat penting untuk diperhatikan karena tingginya tekanan darah berpotensi menimbulkan komplikasi dan hospitalisasi. Tujuan penelitian ini adalah untuk mengetahui pengaruh intervensi TERTARIK terhadap tingkat kenyamanan dan tekanan darah lansia hipertensi. Pendekatan kuantitatif dengan desain quasi experimental pre-post test with control group dipilih dalam

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penelitian ini. Teknik sampling dalam penelitian ini adalah purposive sampling dengan kriteria inklusi dan eksklusi. Besar sampel yang didapatkan adalah 64 (32 per kelompok) dan terdapat 2 dalam kelompok intervensi yang drop out. Pengambilan data dilakukan selama empat minggu dan dengan frekuensi pemberian intervensi sekali seminggu. Variabel tingkat kenyamanan dan tekanan darah tidak berdistribusi normal. Sehingga kedua variabel diuji dengan uji Wilcoxon untuk data berpasangan dan uji Mann-Whitney untuk data tidak berpasangan. Hasil yang didapatkan adalah terdapat pengaruh intervensi TERTARIK terhadap tingkat kenyamanan (p value 0,001), tekanan darah sistolik (p value 0,001, dan tekanan darah diastolik (0,001) lansia hipertensi. Hasil ini dapat menjadi pedoman dalam memberikan asuhan keperawatan bagi lansia hipertensi terutama dengan pendekatan komplementer.
Kata Kunci*: Hipertensi; Terapi Musik; Terapi TERTAWA*

INTRODUCTION

Hypertension is the condition of blood pressure greater than or equal to 140/90 mmHg (Miller, 2012; Indonesian Ministry of Health, 2014). Hypertension is a health problem experienced by many elderly in several countries, including Indonesia. The average prevalence of hypertension in Indonesia is 8.8% based on a doctor's diagnosis or taking antihypertensive medication in residents aged ≥ 18 years (Indonesian Ministry of Health, 2018a). Apart from that, hypertension is the most common health problem experienced by older people in Indonesia, namely 63,8% (Indonesian Ministry of Health, 2016).

The vulnerability experienced by older adults is closely correlated with fluctuations in blood pressure. Blood pressure fluctuations are influenced by many factors, one of which is comfort status. Psychological stress is one of the most common psychological discomforts due to a lack of social interaction and family support (Tutpai, Unja and Nura, 2021). In addition, older adults also experience physical discomfort, namely pain. Li et al. (2022) stated that as many as 56,21% of hypertensive elderly in the United States experienced pain, with the highest percentage of locations in the back area (Li *et al.*, 2022). The interaction between physical and psychological discomfort will affect blood pressure through the mechanism of endothelial function changes, including decreased nitric oxide bioavailability, causing blood vessel vasoconstriction (Puzserova & Bernatova, 2016). So, efforts to control blood pressure are also expected to be able to manage physical and psychological discomfort.

Blood pressure that is not controlled for a long time can raise the risk of complications such as stroke, kidney disease and other catastrophic diseases (Anshari, 2020). This

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will increase the number of hospitalisations that can potentially cause nosocomial infections (Mohamadi *et al.*, 2020). So, the blood pressure of the hypertensive elderly must be controlled. The problem-solving approach in this study was carried out with complementary interventions. This intervention is relevant to nursing because it emphasises non-pharmacological aspects. One intervention that can be a solution is laughter therapy. This intervention can lower blood pressure by suppressing epinephrine and cortisol (Bete, Kurniyanti and Mayasari, 2022). However, older adults also need a cultural approach to optimise comfort levels.

Music therapy has a solid attachment to cultural aspects, and traditional instrument music increases emotional sensitivity, which can affect mood (Geraldina, 2017; Suguna, 2018). One of the soothing traditional Balinese music is Rindik`s music. Rindik's music was initially intended to entertain farmers working in the fields. Over time, this music is used as accompaniment in wedding and religious receptions. This soft and soothing music is also sourced from natural sounds to have a relaxing effect (Kurniawan *et al.*, 2015). The relaxing effect produced by Rindik Music stimulates the production of natural endorphin hormones, lowering the pulse rate, dilating blood vessels, and ultimately lowering blood pressure (Pratama & Wardana, 2024). The limbic system is also activated when the body is relaxed. Music can stimulate the body to produce Nitric Oxide (NO) molecules, which act on blood vessel tone to control blood pressure (Pratama et al., 2023). However, only a few related studies have examined the effectiveness of Music Rindik and have been published in scientific journals.

Several previous studies have described the results of laughter therapy and traditional music. However, these two interventions have never been combined for the hypertensive elderly group. TERTARIK is a combination of these two interventions in which, technically, researchers will guide laughter therapy accompanied by Rindik music. This is an aspect of novelty in this study, so researchers are interested in formulating the question, "Is there an influence of TERTARIK on Blood Pressure and Comfort Levels for Elderly Hypertension in Tabanan Regency, Bali Province?". This study aimed to determine the effect of the TERRIK intervention on blood pressure and the comfort level of elderly hypertensives in Tabanan Regency, Bali Province.

METHOD

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This study uses a quantitative approach with a quasi-experimental pre-post test design with a control group design. The data collection location was in the Working Area of Penebel II Public Health Center for four weeks of research. This research was conducted from 24th July until 24th August 2023. The population in this study were all hypertensive older people in Tabanan Regency in 2023. Purposive sampling was used as a sample selection technique. Inclusion criteria in this study were elderly diagnosed with hypertension and undergoing antihypertensive treatment according to health centre standards, elderly who were able to stand, able to open their mouths, able to hear, and elderly who were able to communicate in Balinese and Indonesian. Meanwhile, the exclusion criteria in this study were the elderly who were isolated from COVID-19, experienced mental disorders, and the elderly with complications of hypertension such as stroke, heart disease, and kidney disease. The sample size was calculated using the formula for the average of two unpaired populations and obtained 64 samples (32 per group). The intervention group received standard antihypertensive treatment and the TERTARIK intervention. Meanwhile, the control group only received standard antihypertensive treatment. 2 people in the intervention group dropped out, so the total sample until the end was 62.

Initial data collection (pre-test) on blood pressure and comfort level variables was carried out in the intervention and control groups in the same week. The TERTARIK intervention was given to the intervention group for four weeks with a frequency of once a week (30 minutes per session) according to the results of previous studies with the same intervention (Yoshikawa *et al.*, 2019). The reason for choosing the duration of this intervention is following the last research and is a minimum time scheme for modifying the blood pressure of hypertensive elderly with physical exercise (Amir *et al.*, 2022). Final data collection (post-test) was conducted in both groups at the end of the fourth week. The TERTARIK intervention was given to the control group after all data was collected to maintain the study's fairness principle.

The General Comfort Questionnaire (GCQ) will measure the comfort level, which has previously been tested for validity and reliability. The r count in testing the validity of the 48 statement items of the GCQ questionnaire is 0.596-0.885 with r table 0.576 (>r table), then all statement items in this questionnaire are declared valid (Widayati & Hayati, 2017). Meanwhile,

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blood pressure is measured using a calibrated digital tensimeter. The data that has been collected was analyzed with the SPSS computer program in univariate and bivariate. The Mann-Whitney test was chosen for the analysis of unpaired data and the Wilcoxon test for paired data because the data were not normally distributed for comfort level and blood pressure variables. This research has been declared to have passed the ethical test from the Health Research Ethics Committee Stikes Bina Usada Bali No. 197/EA/KEPK-BUB-2023.

RESULTS AND DISCUSSION

The following tables present the research results to answer this study's objectives.

Table 1. Description of Gender, Family History, and Smoking Habits (n=62)

Variable	Intervention Group		Control Group		Total
	f	%	f	%	
Gender					
Man	7	23,3	10	31,2	17
Woman	23	76,7	22	68,8	45
Family History					
There is not any	17	56,7	18	56,2	35
There is	13	43,3	14	43,8	27
Smoking Habit					
Never Smoked	26	56,7	24	75,0	50
Smoked	4	43,3	8	25,0	12

Table 1 shows that most respondents in both groups were female, had no family history of hypertension, and had never smoked.

Table 2. Description of Respondents' Age, Blood Pressure, and Comfort Level (n=62)

Variable	Intervention Group		Control Group	
	Mean (SD)	Min-Max	Mean (SD)	Min-Max
Age	69,9 (6,8)	60,0-82,0	69,8 (7,4)	60,0-86,0
	Median	**Min-Max**	**Median**	**Min-Max**
Systolic Blood Pressure				
Pre-Test	150	130,0-160,0	140,0	127-160
Post-Test	130	120,0-155,0	143,0	125-160
Diastolic Blood Pressure				
Pre-Test	88,5	67,0-103,0	88,5	80-103
Post-Test	80,0	64,0-98,0	90,0	80-100
Comfort Level				
Pre-Test	90,0	90,0-155,0	98,0	60-124
Post-Test	98,0	99,0-165,0	98,0	60-125

Table 2 illustrates that the mean age of respondents in the intervention and control groups is relatively the same. The median systolic and diastolic blood pressure in the

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intervention group moderately decreased. Meanwhile, the control group experienced an increase. In addition, the comfort level in the intervention group tended to increase, while in the control group, it remained.

Age is one of the variables studied in this study. Several studies state that age is correlated with the incidence of hypertension. An increased risk of cardiovascular disease occurs as a person ages (Currie & Delles, 2018). This condition is reinforced by the functional consequence theory by Miller (2015), which states that the risk of disease in old age is caused by a combination of lifestyle at a young age and the effects of ageing (Miller, 2015). Changes in the cardiovascular organ system of older adults are arterial wall thickening or arteriosclerosis (Miller, 2012). This study's results also show that most respondents are female. Menopause is one of the most substantial non-modifiable risk factors for hypertension in women, which has implications for estrogen deficiency (Weyer et al., 2016).

Another result of this study was that most respondents did not have a family history of hypertension. However, heredity is one factor that contributes 20 to 50% to fluctuations in blood pressure (Abebe *et al.*, 2015; Atinyi *et al.*, 2017). The majority of respondents in this study also did not have smoking habits. This result is reasonable because exposure to one cigarette smoke raises the risk of an increase of 1.865 mmHg in passive smoker's systolic blood pressure (Fitri *et al.*, 2018).

Table 3. Analysis of the Effect of TERTARIK on Systolic Blood Pressure in Elderly Hypertension (n=62)

Variable	Intervention Group	Control Group
Differences in Systolic Blood Pressure Before and After Intervention in Each Group		
Z	-4,806	-1,710
P value	0,001*	0,087
Differences in Systolic Blood Pressure between the Intervention and Control Groups Before and After the Intervention		
Mean Rank	47,5	16,5
Sum of Rank	1425,0	528,0
Z	-6,984	
P value	0,001*	

*p< 0,05

Table 3 describes the results of the systolic blood pressure bivariate test in this study. The significance value was seen from paired and unpaired data before and after the intervention was given. Significant differences existed in the intervention group before and after the intervention

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(p-value of 0.001). However, there was no significant difference in the control group before and after the intervention (p-value of 0.087). In addition, there was a significant difference in systolic blood pressure between the intervention group and the control group after being given the intervention (p-value of 0.001).

Table 4. Analysis of the Effect of TERTARIK on Diastolic Blood Pressure in Elderly Hypertension (n=62)

Variable	Intervention Group	Control Group
Differences in Diastolic Blood Pressure Before and After Intervention in Each Group		
Z	-4,331	-0,566
P value	0,001*	0,571
Differences in Diastolic Blood Pressure Between the Intervention and Control Groups Before and After the Intervention		
Mean Rank	43,87	19,9
Sum of Rank	1316,0	637,0
Z	-5,567	
P value	0,001*	

*p< 0,05

Table 4 describes the results of the diastolic blood pressure bivariate test in this study. Significant differences existed in the intervention group before and after the intervention (p-value of 0.001). However, there was no significant difference in the control group before and after the intervention (p-value of 0.571). In addition, there was a significant difference in diastolic blood pressure between the intervention group and the control group after being given the intervention (p-value of 0.001).

The results of this study are supported by the results of several previous studies, which stated that the intervention of laughter therapy and traditional music was able to control blood pressure in people with hypertension. Previous studies have stated that laughter therapy can significantly reduce the mean systolic and diastolic blood pressure of hypertensive older people in the community (Eryani & Martaliana, 2019; Bete et al., 2022). The occurrence of a decrease in blood pressure in hypertensive elderly who received laughter therapy intervention was mentioned because there was stimulation of the release of endorphins. This mechanism helps reduce pain and increase comfort, which causes vasodilation so that blood pressure decreases (Kezia et al., 2020). Nadirawati, Ismafiaty and Yulia (2018) stated that the mean systolic blood pressure before laughter therapy was given was 169,96 mmHg and after it was 157,65 mmHg. Meanwhile, the mean diastolic blood pressure before laughter therapy was 95,09 mmHg; afterwards, it was 84,61 mmHg. Other literature also states that laughter can reduce serum cortisol,

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epinephrine, growth hormone, and 3,4-dihydro phenylacetic. Some of these hormones are classified as stress triggers in the blood (Yim, 2016). So, laughter therapy can suppress some of these hormones, thereby increasing physical and psychological comfort, which has implications for reducing blood pressure.

Laughter therapy in this study was combined with music therapy. The music chosen is traditional Rindik music. Rindik's music was initially intended to entertain farmers working in the fields. Over time, this music is used as accompaniment in wedding and religious receptions. This soft and soothing music is also sourced from natural sounds to have a relaxing effect (Kurniawan *et al.*, 2015). Traditional music significantly reduces blood pressure in hypertensive patients (Im-oun *et al.*, 2018). The limbic system is activated when the body is relaxed. Music can stimulate the body to produce Nitric oxide (NO) molecules, which act on blood vessel tone to control blood pressure (Pratama *et al.*, 2023).

Table 5. Analysis of the Effect of TERTARIK on the Comfort Level of Elderly Hypertension (n = 62)

Variable	Intervention Group	Control Group
Differences in Comfort Levels Before and After Intervention in Each Group		
Z	-4,331	-0,378
P value	0,001*	0,705
Differences in Comfort Levels between the Intervention and Control Groups Before and After the Intervention		
Mean Rank	47,5	16,5
Sum of Rank	1425,0	528,0
Z	-7,099	
P value	0,001*	

*p< 0,05

Table 5 describes the comfort level bivariate test results in this study. Significant differences existed in the intervention group before and after the intervention (p-value of 0.001). However, there was no significant difference in the control group before and after the intervention (p-value of 0,705). In addition, there was a significant difference in comfort level between the intervention group and the control group after being given the intervention (p-value of 0,001). The results of this study are supported by some of the results of previous studies. Laughter and music therapy are said to have relaxing and pleasurable effects, affecting comfort. The results of previous studies stated that laughter therapy can reduce depression in older adults (Wibowo *et al.*, 2021). The results of other studies also say that laughter therapy can affect the

psychological condition of older adults, which is characterised by an increase in the hormone serotonin and a decrease in salivary concentration (Yoshikawa *et al.*, 2019). Laughter therapy is a non-invasive, cost-effective, easy-to-implement intervention to reduce symptoms of psychological disorders (Akimbekov & Razzaque, 2021). In addition, music therapy is also said to be able to significantly reduce the level of anxiety and depression in older adults (Rummy et al., 2020; Yang, 2021).

CONCLUSION

The results of this study indicate that most of the two respondents are female, have no family history of hypertension, and have never smoked. In addition, the ages of the two groups of respondents were the same. This study also showed that the TERTARIK intervention significantly reduced blood pressure and increased the comfort level of hypertensive older people. The significance value and the difference in the mean value of all variables between the pre-test and post-test evidence this.

The results of this study are expected to be a reference for nurses in community settings to provide nursing interventions for hypertensive elderly. In addition, these results are expected to stimulate further research related to non-pharmacological therapy for elderly hypertension. Researchers also hope that elderly cadres and families with hypertension will facilitate the elderly to continue listening to traditional music, laughter therapy, and antihypertensive treatment.

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