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ERGONOMIC GYMNASTICS AND AROMATHERAPY: AN INDEPENDENT BLOOD PRESSURE LOWERING INTERVENTION

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ABSTRACT Hypertension is a disease with a high prevalence of cases and can be life-threatening. Poor lifestyle is one of the factors that cause hypertension. Research shows that the combination of ergonomic exercises and aromatherapy can provide a synergistic effect in lowering blood pressure. Nursing self- intervention through ergonomic exercises and aromatherapy provides an opportunity for residents to play an active role in managing their blood pressure in a sustainable manner. This community service activity aims to increase teachers' understanding of the effectiveness of ergonomic exercises and aromatherapy as a nursing self-intervention exercise in lowering blood pressure in the community, as well as providing practical guidelines for implementation in the community. The partner in this activity is Lukmanul Hakeem School, Yala, Thailand. The target audience was all teachers at the school. The method used consists of the preparation stage, the implementation stage and the evaluation stage. The results of the service obtained the average pre-test score in the range of 33-67 with the dominance of scores 40-53. This shows that before the delivery of the material, the teacher's knowledge about the combination of ergonomic gymnastics and lemon aromatherapy is still classified as low-medium. After being given the material, the post-test results experienced a significant increase with a range of 67-100, and the average was higher than the pre-test. Almost all participants showed an increase in understanding, indicating that the delivery of the material was effective in improving teacher knowledge..

KEYWORDS: *Ergonomic Gymnastics And Aromatherapy; Blood Pressure*

1. INTRODUCTION

Hypertension is known as a *silent killer* that has become a global health problem. Hypertension occurs when systolic blood pressure > 140 mmHg and diastolic blood pressure > 90 mmHg according to LeMone (2018) in (Fadlilah et al., 2021) . WHO data in 2013 shows that the prevalence of hypertension in the adult population (>25 years) worldwide is around 40%. The prevalence of hypertension in adults is highest in Africa (46%) and lowest in the Americas (35%) . The incidence of hypertension is higher in poorer countries (World Health Organization (WHO), 2013). Based on the 2018 Riskesdas, the prevalence of hypertension based on measurement results in the population aged ≥18 years was 34.1%, the highest in South Kalimantan (44.1%) (Ministry of Health, 2019) . Based on data from the Banjar Regency Health Office profile (2020), the prevalence of hypertension is 39,671 people out of 555,611 people. Martapura 1 Health Center occupies the first position, namely men (32.9%) and women (66.9%). In Puskesmas Martapura 1, the number of high blood pressure cases reached 5,610 people. A total of 2,712 people with high blood pressure visited Puskesmas Martapura 1 from January to November 2021. Hypertensive disease is one of the non-communicable diseases with a high prevalence and tends to increase.

Hypertension requires serious attention to avoid complications and death. The current phenomenon shows that there is still a lack of efforts to control blood pressure in people with hypertension. Various measures are needed to control blood pressure in hypertensive patients. Proper medication or treatment is essential to control and lower high blood pressure. Blood pressure control with pharmacological and non- pharmacological treatment in hypertensive patients is useful for preventing complications, reducing mortality and improving the quality of life of patients. Nonpharmacological treatment is an option that continues to have an important influence in reducing hypertension in hypertensive patients. (Saparudin et al., 2020) .

Non-pharmacological management of hypertension by improving lifestyle, such as reducing salt intake, *Dietary Approaches to Stop Hypertension* (DASH) diet, yoga, meditation, aromatherapy. alcoholic beverages, losing weight, smoking, and physical exercise or exercise. Gymnastics can be an option for physical exercise for the elderly. One of them is ergonomic gymnastics that suits the physical condition of the elderly. The movements of this exercise are derived from prayer movements. The movements are minimal and simple, but when done consistently and continuously, it is beneficial for health and combined with the provision of lemon aromatherapy.

One form of couples therapy is aromatherapy. Aromatherapy is the name of a healing process that uses pure aromatic plant extracts. Essential oils are plant essences obtained from stems, leaves, flowers, bark, seeds or plant parts that produce certain aromatic elements. Essential oils are

obtained by cold pressing, effleurage, maceration, solvent extraction, carbon dioxide extraction, and steam distillation. Some commonly used types of aromatherapy such as Sandalwood (Santalum Album), Lemon (Citrus Lemon), Jasmine (Jasminum Grandiflorum), Rose (Rosa Centifolia), Lavender (Lavendula Augustfolia). (Abbas & Husnawati, 2021) .

Aromatherapy that is inhaled will make the body calm and relaxed so that breathing patterns and heart rate become calmer and can control blood pressure reduction (Wulan & Wafiyah, 2018) . According to Wong (2010), lemon aromatherapy can overcome pain and anxiety, one of the substances contained is linalool which functions to stabilize the nervous system so that it can have a calm effect on people who inhale it (Fadlilah et al., 2021) .

Research shows that the combination of ergonomic exercises and aromatherapy can have a synergistic effect in lowering blood pressure. The study by (Hasaini & Muhlisoh, 2024) revealed that individuals who underwent a mild physical exercise program such as ergonomic exercises accompanied by lemon oil essence aromatherapy inhalation experienced a significant decrease in systolic and diastolic blood pressure. Nursing self-intervention through ergonomic exercises and aromatherapy provides an opportunity for patients to take an active role in managing their blood pressure on an ongoing basis. The program also supports patient empowerment to practice a healthy lifestyle in the home environment (Han et al., 2022). This article aims to explore the effectiveness of ergonomic exercise and aromatherapy as a nursing self-intervention exercise in lowering blood pressure in the community, and provide practical guidelines for implementation in the community.

2. METHOD

The community service method is structured to solve the problems of partners, namely Lukmanul Hakeem School, located in Yala, Thailand. students and teachers of Lukmanulhakeem School, Yala-Thailand, with the following details Students totaled 135 students of Lukmanul Hakeem School, Teachers totaled 13 teachers of Lukmanul Hakeem School. The activity consists of several stages, namely as follows:

a. Preparation Stage

Coordination between the implementation team from 25 universities in Indonesia through. online meetings.

1. Preparation of schedules, division of tasks, and preparation of activity materials.
2. Collecting initial data on the condition of students and teachers at Lukmanul Hakeem School.
3. Preparation of supporting facilities and infrastructure, including technological devices for online activities and equipment for offline activities.

b. Implementation Phase

Online Implementation: service providers participate through a video conferencing platform, providing presentation materials, demonstrations, and interactive discussions in real time.

c. Evaluation Phase

1. Implementation of a simple pre-test and post-test to measure the increase in participants' knowledge and understanding of the material provided.
2. Reflective discussions with teachers to assess the relevance and sustainability of the program.
3. Preparation of the final report as a form of academic and administrative accountability.

3. RESULT AND DISCUSSION

3.1 Results

The implementation of this activity took place since the preparatory activities began in January 2025, then the implementation of hybrid activities at Lukmanulhakeem School, Yala- Thailand on July 29, 2025. Finally, publication, reporting and evaluation activities were carried out in July 2025. The characteristics of residents and health cadres in this service are as follows:

Table 1. Characteristics of teachers and students

Characteristics	Teacher		Students	
	f	%	f	%
Age				
Children (<11 years)	0	0	25	18,52
Early Adolescents (11-16 years)	0	0	110	81,48
Late Adolescents (17-25 years)	2	15,38	0	0
Early Adults (26-35 years old)	11	84,62	0	0
Total	13	100	135	100
Gender				
Male	3	23,08	68	50,37
Female	10	76,92	67	49,63
Total	13	100	135	100

Source: Primary Data, 2024

Based on the table above, the majority of teachers are early adults as much as 84.62% and 76.92% are female. And the majority of students are early adolescents as much as 81.48% and

50.37% are male. The results of the service conducted a pretest to the participants as many as 15 questions. The pretest lasted for 15 minutes and then based on the results of the pretest, Pengabdi then provided presentation material through a video conferencing platform. The delivery of the material lasted for 30 minutes. The material on hypertension and self-intervention to reduce blood pressure through videos and leaflets, while self-intervention to reduce blood pressure through videos.

Figure 1. Delivery of presentation materials via video conferencing platform

The next stage of service providers conducts evaluation monitoring by giving a posttest to measure participants' understanding of the material that has been provided. The results of the post-test evaluation can be seen in the diagram below as follows:

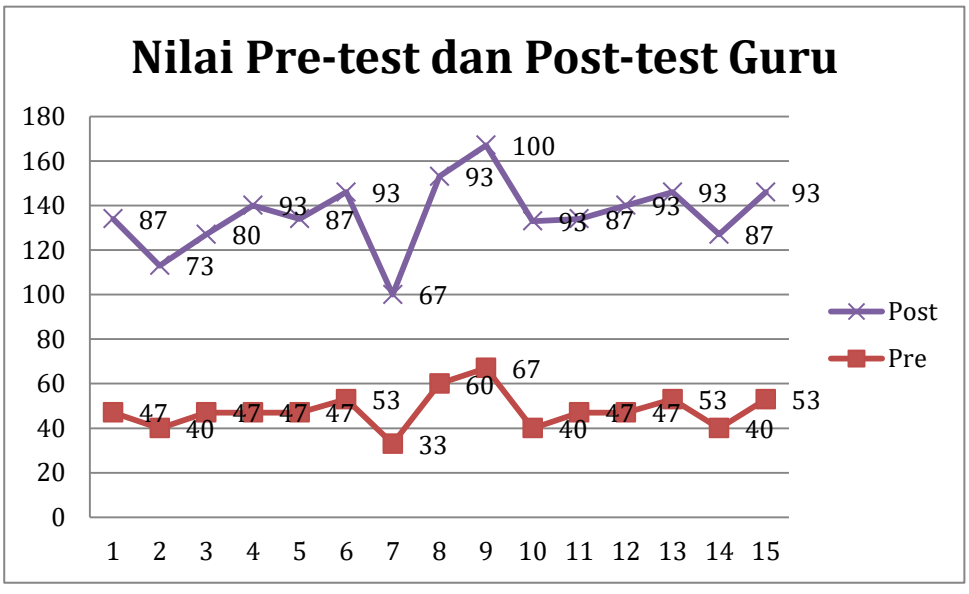

Figure 2. Teacher pretest and posttest result

Based on the graph above, it is found that there are changes in evaluation results before and after providing material for 30 minutes. The results of the graph show a significant difference between the pre-test and post-test scores of teachers after participating in the ergonomic gymnastics and aromatherapy program. Most participants experienced an increase in post-test scores compared to the pre-test. This increase reflects a positive change in the participants' understanding and ability to manage blood pressure through nursing self-intervention exercises (Han et al., 2022).

Based on the graph of teachers' pre-test and post-test scores, it can be seen that the average pre-test score is in the range of 33-67 with the dominance of scores 40-53. This shows that before the delivery of the material, the teacher's knowledge of the combination of ergonomic exercise and lemon aromatherapy is still classified as low-medium. After being given the material, the post-test results experienced a significant increase with a range of 67-100, and the average was higher than the pre-test. Almost all participants showed an increase in understanding, indicating that the delivery of material was effective in increasing teacher knowledge.

This phenomenon is in line with the theory of adult learning (andragogy) proposed by Knowles, where adult individuals will more easily understand material that is contextual, relevant, and can be directly applied to everyday life (Knowles et al., 2015). The material on ergonomic exercises and lemon aromatherapy are applicable and practical topics, making it easier for participants to understand and internalize the concepts. In addition, the increase in post-test scores supports the cognitive theory of constructivism which states that new knowledge will be more easily accepted if participants can relate information to real experiences (Piaget, 2001). In this case, ergonomic gymnastics as a physical activity and aromatherapy as a complementary therapy are forms of real experience that are easily understood. The decrease in blood pressure seen in the post-test results can be explained by the physiological mechanism of ergonomic exercises that increase peripheral blood flow and blood vessel elasticity (Chiu et al., 2020). In addition, the relaxing effect of aromatherapy can reduce the activity of the sympathetic nervous system, which plays a role in reducing blood pressure (McCaffrey et al., 2021).

In terms of health, ergonomic exercises are proven to help increase blood vessel elasticity, reduce peripheral resistance, and optimize heart function in pumping blood, thus effectively lowering blood pressure (Wahyuningsih et al., 2020; Nuraini & Puspitasari, 2022). Meanwhile, lemon aromatherapy contains main compounds such as limonene which has a calming effect, reduces anxiety, and stimulates the parasympathetic nervous system, which has an impact on lowering blood pressure (Komiya et al., 2006; Sari et al., 2021). The combination of the two produces a synergistic effect, both physiologically and psychologically. Thus, the increase in post-test scores not only

reflects teachers' cognitive understanding, but can also be an early indication of their readiness to apply the material to the community. This is important in the context of health promotion, as teachers act as educational agents who can disseminate knowledge related to non-pharmacological interventions in hypertension control.

4. CONCLUSION

The conclusion that can be drawn based on the results of the evaluation of the activities that have been carried out is that there are changes in the evaluation results before and after the provision of material for 30 minutes, and almost all participants show an increase in understanding, which indicates that the delivery of material is effective in increasing teacher knowledge.

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CONFLICT OF INTERESTS

No Conflict of Interests.

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