

Combination of Warm Sitz Bath Therapy and Boiled Taumo Leaves (*Blumea Balsamifera*) on uterine involution in postpartum mothers: quasi-experimental study

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ABSTRACT

In East Asia and the Pacific region, the leading causes of maternal mortality are hemorrhage, sepsis/infections, obstructed labor, and hypertensive illnesses. The Objective was to analyze the effect of a combination of warm Sitz Bath therapy and boiled taumo leaves (*Blumea balsamifera*) on uterine involution in postpartum mothers. This quasi-experimental study used a pre- and post-intervention group design. The population in this study was all postpartum mothers in North Konawe Regency with a sample size of 196 mothers consisting of two groups, namely mothers who were given sitz bath therapy alone and mothers who were given a combination of sitz bath and taumo leaf decoction. The intervention will be carried out for 20 min every day for 3 days, and evaluation will be carried out every day for uterine involution. Mann–Whitney U and Wilcoxon signed-rank tests were used for the analysis. In the intervention group, there was a decrease in uterine fundus height on days 1–2 and 1–3, with p-values of 0.001 and 0.000, respectively. Uterine fundus height difference in the intervention group was on days 1-2, 2.89 (0.43 cm), and on days 1-3, 7 (0.51 cm). A decrease in Uterine Fundus Height also occurred in the control group on days 1 to 2 and days 1 to 3, with p-values of 0.003 and 0.002, respectively. Uterine fundus height difference in the control group was on days I-2, 1.53 (0.42), and on days 1-3, 2.7 (0.50). The analysis revealed significant differences in uterine fundus height during the first three days postpartum. Accelerated uterine involution, as evidenced by the significant reduction in uterine fundus height in the intervention group, play a crucial role in mitigating complications such as postpartum hemorrhage and infections. The integration of these therapeutic modalities could represent a valuable intervention in postpartum care, potentially leading to improved maternal health outcomes and reduced morbidity.

Keywords:

postpartum mothers, sitz bath, therapy, Taumo leaves, uterine involution

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INTRODUCTION

Maternal mortality rate is one of the indicators that can describe the welfare of society in a country.¹ Every day in 2020, almost 800 women died from preventable causes related to pregnancy and childbirth. A maternal death occurred almost every two minutes in 2020. Between 2000 and 2020, the maternal mortality ratio (MMR, number of maternal deaths per 100 000 live births) dropped by about 34% worldwide.² One of the critical periods in a mother's life is the postpartum period, which lasts for six weeks after delivery.³ Postpartum complications, particularly subinvolution of the uterus, can lead to severe outcomes such as hemorrhage and maternal mortality. Hemorrhage is a significant contributor to maternal deaths, accounting for approximately 27% of such fatalities globally.⁴

The postpartum period is important in many Southeast Asian cultures. It is seen as a period of recovery and often involves a postpartum period of ten to forty-five days.⁵ As a form of treatment, the postpartum period requires the mother to stay indoors and near a heat source, bathe only in hot water, consume hot drinks and food, and avoid drafts.⁶ During this time, the mother is typically cared for by family members and may receive special massages or herbal remedies to aid her recovery. These practices are believed to help restore balance and promote healing of the mother's body after childbirth.

Steam saunas and baths, particularly prevalent in Southeast Asia, often utilize medicinal plant decoctions to enhance therapeutic effects. Participants can choose to sit in a specially designed room where steam from these decoctions is channeled, a practice reminiscent of the Tenggerese community in Indonesia, where herbal steam baths are traditionally used, especially in postpartum care.⁷ Decoction is a favored method of preparation due to its efficacy in extracting beneficial phytochemicals from plants, making it a

common practice across various cultures for medicinal purposes.⁸ Research indicates that decoction not only facilitates the extraction of bioactive compounds but also preserves the medicinal properties of the plants, which is crucial for therapeutic applications.⁹ This method is widely recognized for its simplicity and effectiveness, making it a preferred choice among traditional healers and communities.¹⁰ The integration of steam baths with herbal decoctions exemplifies a holistic approach to health and wellness, reflecting deep-rooted cultural practices in medicinal plant usage.¹¹

The combination of sitz baths and *Blumea balsamifera* offers therapeutic benefits, particularly in managing perineal pain and promoting wound healing. Sitz baths have been shown to alleviate discomfort and reduce edema in the pelvic region, as evidenced by studies demonstrating their effectiveness in postpartum care and anal fissure management.^{12,13} The application of cold water in sitz baths can enhance circulation and expedite recovery from perineal wounds.¹² *Blumea balsamifera* is recognized for its anti-inflammatory and analgesic properties, which can complement the soothing effects of sitz baths. This herbal remedy has been traditionally used to manage pain and inflammation, aligning with the goals of sitz baths in promoting healing and comfort.¹⁴ The potential synergistic effect of combining these two modalities may enhance overall therapeutic outcomes, leading to improved patient satisfaction and recovery times in conditions such as hemorrhoids and postpartum recovery.¹⁵

The research gap addressed in the study of combining warm sitz bath therapy and boiled *Blumea balsamifera* leaves for uterine involution in postpartum mothers is the limited exploration of traditional remedies in enhancing postpartum recovery. While existing literature emphasizes the importance of postpartum care and the

psychological support needed for mothers^{16,17}, there is a notable absence of studies investigating specific traditional practices, such as the use of *Blumea balsamifera*, in conjunction with modern therapies. *Blumea balsamifera* has been recognized for its medicinal properties, including wound healing and anti-inflammatory effects, which could be beneficial during the postpartum period.^{18,19} Furthermore, the integration of such traditional methods with contemporary practices could potentially improve maternal health outcomes, addressing the need for holistic postpartum care.²⁰

This study aimed to fill this gap by evaluating the effectiveness of these combined therapies on uterine involution, thereby contributing to the body of knowledge on postpartum recovery strategies. The novelty of this study is the use of a combination of both therapies, which has never been done before in the context of uterine involution in postpartum mothers. It is hoped that the results of this study will contribute to efforts to improve maternal health after childbirth.

METHODS

Design

This was a quantitative study with a quasi-experimental design using a pre-post-test group design with two groups. The population in this study included all postpartum mothers in the North Konawe Regency, Indonesia. This study was conducted between June and August 2024.

Sample

The sample size was 196 mothers, consisting of two groups, namely mothers who were given sitz bath therapy alone and mothers who were given a combination of sitz bath and boiled taumo leaves. The sample size was determined using the Lemeshow formula. The population in this

study included all pregnant women spread across North Konawe Regency. According to North Konawe Health Service data, the prevalence of pregnancy is 15%, with a 5% acceptable deviation and a 95% confidence level. A sample of 196 pregnant women was obtained using the Lemeshow formula. The sampling technique used by the researcher was cluster sampling. The clusters were divided into 20 areas, based on the number of health centers in North Konawe Regency. A total of 9-10 pregnant women were taken from each specified cluster.

Data Collection Techniques

Preparation Phase

Team Formation and Area Assignment

In the preparation phase, a total of 20 certified midwives were organized into 20 distinct research teams. Each team was assigned a specific geographical area within the health center's operational map. The selection of these areas was based on demographic data and the prevalence of pregnant women, ensuring that the research was representative of the population served by the health center.

Data Plotting

The team assigned to the smallest area was tasked with plotting the presence of pregnant women using existing data from the health center. This involved a systematic approach to identifying and mapping the locations of pregnant women within the designated area. The plotting process included:

1. Data Verification: Ensuring the accuracy of the health center's records regarding pregnant women.

2. Geographical Mapping: Utilizing mapping tools to visually represent the locations of pregnant women, facilitating easier navigation for the research teams.

3. Home Visits: After plotting, researchers conducted home visits to each identified pregnant woman. This step was

crucial for gathering qualitative data and ensuring that the women were indeed pregnant and eligible for the study.

Recruitment of Participants

The objective was to record data from 9 to 10 pregnant women per team. During the home visits, researchers explained the purpose of the study, obtained informed consent, and collected baseline data on each participant's health status. This included demographic information, medical history, and any relevant socio-economic factors that could influence postpartum recovery.

Implementation Phase

Measurement of Uterine Fundus Height and Lochia Observation

On the first day of the intervention, postpartum mothers underwent a series of assessments:

1. Uterine Fundus Height Measurement: This was performed using a centimeter tape to assess the involution of the uterus. Accurate measurement is vital as it provides insight into the mother's recovery process.

2. Lochia Discharge Observation: Researchers recorded the characteristics of lochia (the vaginal discharge following childbirth), including its color, amount, and odor. This observation is essential for identifying potential complications such as infection or retained placental fragments.

Intervention: Sitz Bath Therapy

The primary intervention involved administering sitz bath therapy to the postpartum mothers. The procedure was as follows:

1. Preparation of the Sitz Bath: A special sitz bath container was filled with boiled Taumo leaves, known for their medicinal properties. The temperature of the water was carefully monitored to ensure it remained between 35-40 degrees Celsius, which is considered safe and effective for therapeutic purposes.

2. Administration of Therapy: Each mother was instructed to soak her buttocks and vagina in the sitz bath for 20 minutes. This therapy was conducted for three consecutive days, with the aim of promoting healing and comfort.

Follow-Up Measurements

On the second and third days following the therapy, researchers repeated the measurements of uterine fundus height and lochia discharge. This follow-up was critical for assessing the impact of the sitz bath therapy on postpartum recovery. The data collected during these follow-up assessments were compared to the baseline measurements taken on the first day.

Data Collection Instruments

The instruments utilized for data collection included:

Observation Sheets: These sheets were designed to systematically record qualitative and quantitative data regarding each participant's health status and response to the intervention.

Measuring Tapes: Standardized measuring tapes were used to ensure consistency and accuracy in the measurement of uterine fundus height.

Data analysis

Data processing was performed using computer software and SPSS analysis. Univariate analysis was performed to determine the characteristics of the respondents based on maternal age, parity, and maternal education. Bivariate analysis to test the hypothesis was performed using the Mann-Whitney U and Wilcoxon signed-rank tests. To test the homogeneity of the data, we use the Levene test with the assumption that the data is said to be homogeneous if the significance value ($p \geq 0.05$). We used non-parametric tests because the data in both groups were not normally distributed.

This non-normality could arise from various factors one of them was

inherent variability in postpartum recovery metrics. Non-parametric tests are less sensitive to outliers and skewed distributions, making them more robust in handling real-world data that may not meet the stringent assumptions of parametric tests. This robustness is particularly important in clinical research, where data can be influenced by various uncontrolled factors. Non-parametric tests often yield results that are easier to interpret in clinical contexts. For instance, the Mann–Whitney U test ranks data rather than relying on raw scores, which can provide insights into the relative performance of groups without the complications introduced by distributional assumptions.

Indicate bias

The quasi-experimental design employed in this study minimizes bias through several mechanisms. First, the use of a pre-post-test group design allows for the assessment of changes over time within the same subjects, which helps to control for individual differences that could confound results. By measuring outcomes before and after the intervention, the researchers can attribute changes more

confidently to the treatment rather than to external variables. Additionally, the study utilized cluster sampling to select participants from various health centers, which helps to ensure a more representative sample of the postpartum population in North Konawe Regency. This method reduces selection bias by including diverse groups within the population, thus enhancing the generalizability of the findings. Furthermore, the application of non-parametric tests, such as the Mann–Whitney U and Wilcoxon signed-rank tests, is appropriate given the non-normal distribution of the data, which further bolsters the validity of the results.

RESULTS

Table 1 shows that all sample characteristics were homogeneous, with a p-value > 0.005. This indicates that there was no significant difference between the sample groups. These results indicated that the samples used in this study had a high level of uniformity. Therefore, the results of the study can be used to draw valid conclusions.

Table 1. Respondent characteristics

Variables	Intervention		Control		Homogeneity
	Frequency	%	Frequency	%	
Age					0.859
< 20 Years	27	27.5	26	26	
20-35 Years	45	46.5	48	49	
> 35 Years	26	26	24	25	
Parity					0.977
1	19	19.4	15	15.3	
2	19	19.4	25	25.5	
3	24	24.5	27	27.5	
4	21	21.4	15	15.3	
5	15	15.3	16	16.4	
Education					0.943
University	26	26	26	26	
Senior High School	44	45	46	48	

Variables	Intervention		Control		Homogeneity
	Frequency	%	Frequency	%	
Junior High School	28	29	26	26	0.962
Weight					
Underweight	3	3	2	2	
Normal	85	87	86	88	
Overweight	7	7	5	5	
Obesity	3	3	5	5	

Table 2. In the intervention group, lochia discharge on the first day was a rubra for all the respondents. Lochia discharge on the third day was mostly lochia sanguinolenta in 92 respondents (93%). In

the control group, lochia discharge on the first day was a rubra for all respondents. Lochia discharge on the third day was mostly lochia rubra for 83 respondents (84%).

Table 2. Frequency distribution of lochia in the intervention group

Lochia	Intervention Group		Control Group	
	Pre Test	Day 3	Pre Test	Day 3
	n(%)	n(%)	n(%)	n(%)
Rubra	98 (100)	6 (7)	98 (100)	83 (84)
Sanguine	0 (0)	92 (93)	0 (0)	15 (16)
Total	98 (100)	98 (100)	98 (100)	98 (100)

Table 3. showed the height of the uterine fundus measured for three days in the intervention group. The mean uterine fundus height on day 1 was 13.35 with a minimum value of 11 and a maximum of 15.3. The mean uterine fundus height on day 2 was 10.45 with a minimum value of 8 and a maximum of 13.5. The mean value on day 3 was 6.34 with a minimum value of 5 and a maximum of 8. These data indicate a significant decrease in the uterine fundus height of the respondents every day.

The height of the uterine fundus was measured for three days in the control group. The mean value of the uterine fundus height on day 1 was 12.86 with a minimum value of 11 and a maximum of 15. The mean uterine fundus height on day 2 was 11.32 with a minimum value of 9.6 and a

maximum of 13.8. The mean value on day 3 was 10.17 with a minimum value of 8.5 and a maximum of 12.5. The data also showed a daily decrease in the size of the respondents' uterine fundus height.

In the intervention group, there was a decrease in Uterine Fundus Height on days 1 to 2 and 1 to 3, with P values of 0.002 and 0.000, respectively. A decrease in Uterine Fundus Height also occurred in the control group on days 1 to 2 and days 1 to 3, with p-values of 0.003 and 0.002, respectively.

The p-value for the difference in uterine fundus height from days 1 to 2 between the two groups was 0.000, and the p-value for the difference in uterine fundus height from days 1 to 3 between the two groups was 0.000.

Table 3. Results of analysis of differences in uterine fundus height in the intervention and control groups

Uterine Fundus Height	Intervention Group			Control Group		
	Mean (Standard Deviation) Cm	Median (Min/Max)	P-Value	Mean (Standard Deviation) Cm	Median (Min/Max)	P-Value
Day 1 (Pre-test)	13.35 (1.07)	13.45 (11/15.3)	0.001*	12.86 (1.06)	1.06 (11/15)	0.003*
Day 2 (Post-Test)	10.45 (1.23)	10.5 (8/13.5)		11.32 (1.15)	1.15 (9.6/13.8)	
Uterine Fundus Height Difference I-2	2.89 (0.43)			1.53 (0.42)		
P Value			0.000**			
Day 1 (Pre-test)	13.35 (1.07)	13.45 (11/15.3)	0.000*	12.86 (1.06)	1.06 (11/15)	0.002*
Day 3 (Post-Test)	6.3 (0.76)	6.5 (5/8)		10.17 (1.13)	1.13 (8.5/12.5)	
Uterine Fundus Height Difference I-3	7 (0.51)			2.7 (0.50)		
P Value			0.000**			

*Wilcoxon signed-rank test

** Mann-Whitney U test

DISCUSSION

The results of the analysis comparing the decrease in uterine fundus height on days 1, 2, and 3 between the two groups were $p < 0.005$. These results indicate that there is a significant difference between mothers who received warm sitz bath therapy combined with boiled taumo leaf water and mothers who received only warm sitz bath therapy. On average, mothers who were administered a combination of warm sitz bath therapy and boiled taumo leaf water experienced a decrease in uterine fundus height of 3 cm on day 2 and 7 cm on day 3. Mothers who were only given warm sitz bath therapy also experienced a decrease, but only around 1.5 cm on days 2 and 3.

The fundus should descend by approximately 1 cm a day. Cultural beliefs and practices related to postnatal care are consistent with the traditional beliefs and practices in many Asian cultures.²² Local community beliefs and practices can present opportunities and challenges for healthcare workers to improve the quality of postnatal care.²³ Understanding and respecting these cultural beliefs can help health workers build trust in their families and provide more effective care. By incorporating traditional practices into modern healthcare approaches, health workers can better meet the needs of diverse populations and improve the overall maternal and infant health outcomes.²⁴ One way is to use warm sitz bath therapy combined with boiled taumo leaf water, as in this study.

Taumo leaves have been used in several studies to reduce inflammation and improve healing. Boiled water from these leaves has been shown to have anti-inflammatory effects. *B. balsamifera* is reported to contain several phytochemicals, both volatile (terpenoids, fatty acids, phenols, alcohols, aldehydes, ethers, ketones, pyridines, furans, and alkanes) and non-volatile (flavonoids, flavanones, and chalcones). *B. balsamifera* extracts and phytochemicals have several biological properties, including antioxidant, antimicrobial, antifungal, and anti-inflammatory activities. The anti-inflammatory effect can help the healing process of the uterus after childbirth and help in the postpartum recovery process, which has an impact on reducing the height of the uterine fundus more optimally.²⁵

The sitz bath is a treatment method that involves soaking the lower body in warm water, which is often used to relieve discomfort in the perineal area, especially after childbirth. Although no research has directly shown the effect of a sitz bath on decreasing the height of the uterine fundus, some mechanisms and benefits of a sitz bath may contribute to the postpartum recovery process that affects the height of the uterine fundus. This increase in blood circulation helps tissue healing and reduces inflammation, which can contribute to the recovery of the uterus after childbirth. Sitz baths tend to have analgesic properties as well as a good recovery rate.²⁶

A combination of warm sitz bath therapy and boiled taumo leaf (*Blumea balsamifera*) water has been proven effective in reducing the height of the uterine fundus in postpartum mothers. This method helps in accelerating physical recovery during the postpartum period. This study suggests that non-pharmacological therapies can be a good choice for postpartum management, providing a safe and effective alternative for mothers.

The results of the statistical test showed a p value of <0.001. The results of

the analysis comparing the changes in lochia on day 3 between the two groups showed a p value of <0.001. There was a significant difference in the changes in lochia between mothers who received warm sitz bath therapy combined with boiled taumo leaf water and mothers who received only warm sitz bath therapy. On average, mothers who were given a combination of warm sitz bath therapy and boiled taumo leaf water experienced faster changes in lochia than those who were only given regular warm sitz bath therapy.

According to this study the lochia that emerged until the third day was lochia rubra. The discharge of lochia sanguinolenta occurred from day 3. In the study conducted, there were 92 respondents who were given a combination of warm sitz bath therapy and boiled taumo leaves who experienced a faster lochia discharge stage, namely lochia sanguinolenta on the third day, while respondents who were only given warm sitz bath therapy only had 15 respondents who had lochia sanguinolenta discharge on the third day. This indicates that the combination of warm sitz bath therapy and boiled taumo leaves contributed to a quicker transition to the sanguinolenta stage of lochia discharge. These findings suggest that traditional remedies such as boiled taumo leaves could potentially enhance postpartum recovery outcomes.

The combination of warm sitz bath therapy and boiled taumo leaves (*Blumea balsamifera*) presents a novel approach to managing lochia changes postpartum. Warm sitz baths are known to alleviate pain and promote healing by enhancing blood circulation in the pelvic region, which can facilitate the expulsion of lochia and reduce discomfort associated with perineal wounds.^{27,28} The addition of boiled taumo leaves, recognized for their anti-inflammatory properties, may further enhance healing and reduce inflammation in the postpartum period.²⁹ Research indicates that sitz baths significantly improve wound healing and pain management in postpartum

women, making them a valuable non-pharmacological intervention.^{27,28} The synergistic effect of herbal remedies like taumo leaves with sitz baths could potentially optimize recovery outcomes by addressing both physical discomfort and promoting uterine involution, thereby ensuring smoother lochia discharge.²⁹

The healing of postpartum moms' perineal lesions was positively impacted by the use of boiling green betel leaves and a warm water sitz bath.³⁰ Antioxidants and anti-inflammatory substances found in green betel leaves aid in wound healing.³¹ Since taumo leaves also contain these substances, they may potentially subtly hasten changes in lochia discharge.

Lochia, the focus of this study, underwent several stages of change during the postpartum recovery process. Starting with lochia rubra, which is bright red, it changes to lochia sanguinolenta, which is brownish, and finally to lochia alba, which is yellowish white. These changes reflect the healing and regeneration processes of the uterine lining or involution.

Most postpartum mothers who were respondents of the study were aged 20-35 years, had a parity of 3, and had a high school education level. Age 20-35 years are ideal for the postpartum period. Mothers in this age range generally have better physical health, contributing to faster recovery after years of age.^{32,33} In addition, they tend to be better able to cope with emotional challenges that arise during the postpartum period, such as hormonal changes and the demands of caring for a baby. At this age, women's reproductive organs have developed and functioned well, while those under 20 years or over 35 years of age are at greater risk.³⁴⁻³⁶

On average, mothers with these characteristics are more prepared to face the physical and emotional changes that occur after giving birth, and tend to have the ability to recover faster because of previous

experiences. Postpartum mothers with parity ≥ 2 are more open and can easily understand the education provided.^{37,38} This can lead to improved communication with healthcare providers and a higher likelihood of following recommended postpartum care instructions. These mothers may also be more confident in their parenting skills because of their previous experience with childbirth and newborn care. Mothers with higher parity may feel empowered and knowledgeable when caring for their newborns.³⁹⁻⁴¹ This increased confidence can positively affect their overall postpartum experience and help them navigate the challenges faced by having multiple children.

Educational theory states that education is an activity or effort to improve personality so that the process of behavioral change leads to maturity and perfection of human life.^{42,43} The higher a person's level of education, the easier it is to receive information so that more knowledge can be acquired. Conversely, low education hinders the development of a person's attitude towards newly recognized values because formal education affects a person's knowledge and ability to understand something.^{44,45}

The results of this study have important clinical implications for postpartum care. Healthcare providers should consider incorporating traditional remedies, such as boiled taumo leaves, into postpartum care protocols, particularly in culturally diverse settings. Training and education for healthcare workers on the benefits and applications of such traditional practices can enhance the quality of care provided to postpartum mothers. Furthermore, ongoing research into the efficacy of these interventions will be essential for establishing evidence-based guidelines that respect cultural practices while promoting optimal maternal and infant health outcomes.

CONCLUSION

The intervention had a more significant impact on decreasing the uterine fundus height than the control group. The intervention group exhibited significantly greater changes in uterine fundus height than did the control group over the specified time period. These findings suggest that the intervention was successful in effectively managing the uterine fundus height in this study population. These results highlight the effectiveness of the intervention in managing uterine fundus height over a specified time period.

RECOMMENDATION

It is recommended that healthcare providers incorporate warm sitz bath therapy combined with boiled taumo leaf (*Blumea balsamifera*) water into postpartum care protocols. This integrated approach has demonstrated significant efficacy in promoting uterine involution and accelerating the transition through the stages of lochia discharge. Given the documented anti-inflammatory properties of taumo leaves, future studies should explore the optimal preparation and dosage to maximize therapeutic benefits. Furthermore, healthcare professionals should receive training on traditional practices and their integration with conventional postpartum care methods. This ensures cultural competence and respect for patients' beliefs, which can enhance their trust in healthcare services.

LIMITATION

The biggest challenge during the research was visiting pregnant women in remote areas. This made it difficult for researchers in the data collection process. Some pregnant women in remote areas also did not understand Indonesian well and used local languages. So researchers needed

translators for pregnant women in remote areas.

Cultural influences can significantly impact the research process, particularly in understanding the beliefs, practices, and experiences of pregnant women in remote areas. The involvement of translators is essential in ensuring accurate communication and understanding between researchers and participants. However, this reliance can introduce additional complexities. Translators may have their own biases, which can inadvertently influence the data collection process.

AUTHOR CONTRIBUTIONS

KKA, HW, and MD designed the study, analyzed the data, served as the lead authors, and revised the manuscript. KKA, HW, MD, and SP assisted in data analysis and primarily wrote the manuscript. KKA, HW, SP, MD, YY, and SS contributed to the design and supervision of the study, aided in the local implementation, assisted in data analysis and interpretation, and revised the manuscript. All authors read and approved the final manuscript.

ETHICAL CONSIDERATION

This study was approved by the Poltekkes Kendari Ethics Commission (number:DP.04.03/F.XXXVI.15/002/2024, Approved on June 28, 2024). This shows that this study has undergone a rigorous evaluation process to ensure compliance with applicable research ethics standards. With this ethical approval, it is hoped that this research can be carried out with integrity to produce valid and reliable data. All participants signed a confidential consent form before the study began.

CONFLICTS OF INTEREST

All Authors State that no conflict of interest

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