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Research Article

The Effect of Progressive Muscle Relaxation on Depression and Anxiety among Postpartum Mothers in Semarang

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Abstract. Mothers often face psychological issues during the postpartum phase, such as depression and anxiety, which can impact the health and development of their children. Complementary therapy in the form of progressive muscle reactivity (PMR) is a non-pharmacological strategy to reduce depression and anxiety. The purpose of this study was to investigate how progressive muscle reactivity affects postpartum maternal anxiety and grief in two community health centers (Puskesmas) and several hospitals in Semarang City. Using a quantitative approach, this research design captured pre-installation and post-installation patterns. Purposive sampling was used to select 50 respondents for the study sample. The Edinburgh Postnatal Depression Scale (EPDS) was used to measure depression, and the Generalized Anxiety Disorder-7 (GAD-7) was used to measure anxiety. The Wilcoxon test was used to analyze the data. Based on the results of the progressive muscle reactivity technique, there was a significant decrease in depression and anxiety ($p = 0.0005$, $p < 0.05$). Seventy-six percent indicated that their anxiety had reached a satisfactory level, while 36 percent indicated that their decisions had decreased. Thus, it can be said that progressive muscular connection makes people more resilient and reduces anxiety. In medical settings, this treatment is recommended as a complementary intervention to improve patients' psychological well-being.

Keywords: Anxiety; Depression; EPDS; Postpartum mothers; Progressive muscle relaxation.

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1. Introduction

The postpartum period is a crucial period that deserves attention to reduce maternal and infant mortality in Indonesia. Labor and the first week of delivery are critical for both mother and baby (Solama & Handayani, 2022). The postpartum period is the period of change following the delivery of the placenta, leading to the return of the reproductive organs to their pre-pregnancy state, lasting for six weeks after delivery. In this context, the postpartum period can be considered a period of adaptation, reflecting the physiological and psychological changes a mother experiences after childbirth. During the postpartum period, women experience increased fatigue as mothers navigate their new roles. These physiological and psychological transitions in postpartum mothers can lead to psychological changes. Proper adaptation is crucial; unsuccessful adaptation can lead to emotional disturbances such as anxiety (Nadiroh et al., 2022).

After giving birth, some parents experience psychological problems due to hormonal changes. Psychological factors are associated with depression and increased symptoms of paraphilia. The prevalence of social anxiety disorders ranges from 0.2% to 6.5%, while postpartum anxiety generally ranges from 0.5% to 2.9% (Anggraeni & Saudia, 2023). Anxiety, sometimes called anxiety, is a condition characterized by worry and fear with no apparent cause. Anxiety is an intense reaction to something triggered, but it is inappropriate if the reaction and its manifestations are inappropriate, both in intensity and severity (Nugraha,

2022). Postpartum maternal anxiety can negatively impact their relationships, mental health, and the baby. Progesterone, estrogen, thyroid hormone, cortisol, and prolactin are among the significant hormonal changes that may affect the mother. Postpartum anxiety is common and untreated, leading to the conclusion that this condition can progress to more severe stages, such as depression. According to research conducted in Indonesia, the prevalence of postpartum depression is generally 18.37% in the first month after birth and 15.19% in the second and third months after birth (Solama & Handayani, 2022).

Depending on the diagnostic criteria used, the prevalence of postpartum depression (PPD), the most common mental health problem during the postpartum period, can range from 10% to 15%, and even reach 30%. PPD is characterized by a mother's inability to cope with and lack of happiness with her newborn, as well as a persistent mental state accompanied by feelings of hopelessness, worthlessness, or despair. Other symptoms may include agitation, anxiety, loss of appetite, difficulty concentrating, fatigue, or suicidal thoughts. A child's emotional, cognitive, and motor development are negatively affected by PPD, which is associated with changes in the mother's behavior toward her baby. Furthermore, women with PPD are more likely to develop major depression later in life (Franco-Antonio et al., 2022). Feelings of discomfort, decreased activity, and pessimism about the future are hallmarks of depression, a condition characterized by gloom, melancholy, and hopelessness. Depression is caused by a number of factors, such as the death of a loved one, traumatic or stressful events like violence, chronic physical illness, the presence of other mental illnesses, and an increased risk of depression for someone who has a parent or sibling with depression. The most successful and efficient treatment for psychosomatic conditions like anxiety is relaxation. This is because when the body relaxes, it produces natural chemicals to repair damage and remove toxins. Furthermore, relaxation enhances positive outcomes by developing internal capacities, strengthening mental and psychological strength, boosting self-confidence, and expanding the ability to think and innovate (Fashafsheh et al., 2022).

According to WHO data (2016), up to 20% of women in developed countries experience postpartum mental health issues (Anggraeni & Saudia, 2023). Meanwhile, the global incidence of postpartum depression is estimated at 100–150 per 1,000 live births. In contrast, the prevalence of postpartum psychosis ranges from 0.89 to 2.6 per 1,000 live births. Postpartum depression has been the subject of numerous studies, while anxiety symptoms have received less attention. However, due to its high frequency and impact on women and newborns, postpartum anxiety has attracted the attention of researchers and perinatal professionals (Anggraeni & Saudia, 2023). According to the Ministry of Health (2018), there are 373,000,000 pregnant women in Indonesia, and 107,000,000 of them (28.7%) experience anxiety before giving birth (Briliant et al., 2022). Postpartum hemorrhage (25%), hypertension (12%), abortion (13%), obstructed labor (8%), low birth weight (6%), premature babies in developing countries (12%), and premature babies in developed countries (9%) are some of the adverse effects of anxiety that may affect pregnant women (Briliant et al., 2022). The Indonesian Psychiatric Association (PDSKJI) used an online self-assessment to conduct a mental health survey in 2020. Anxiety, depression, and trauma were the three psychological disorders assessed in 1,522 respondents. Women made up the majority of respondents (76.1%) and ranged in age from 14 to 71. According to the survey findings, 63% of participants reported feeling anxious. The study found that irritability, difficulty relaxing, excessive worry, and fear of negative outcomes were some of the main signs of anxiety. According to the results of a follow-up examination of 2,364 respondents in 34 provinces, 68% reported feeling anxious (Alvionita et al., 2022). Both pharmacological and non-pharmacological treatments can help reduce anxiety. In many situations, non-pharmacological techniques are risk-free and have no negative side effects. Complementary medicine encompasses many of these techniques. Complementary medicine has been widely used in recent years to improve health and prevent disease. The body's psychological reaction to anxious thoughts is muscle tension. One non-pharmacological supplementary technique often used to reduce anxiety is progressive muscle relaxation. Relaxation techniques can maximize comfort and quality of life. The goal of muscle relaxation exercises is to regularly and continuously tense and relax muscles until the entire body is relaxed. This activity aims to teach someone how to relax on their own and experience the difference between tension and relaxation in the body (Alvionita et al., 2022).

Edmund Jacobson created progressive muscle relaxation therapy, a methodical approach to achieving a state of relaxation. Endorphins and other encephalon chemicals are released during progressive muscle relaxation therapy, which trigger brain signals that relax muscles and increase blood flow to them. Numerous studies have demonstrated the efficacy of

progressive muscle relaxation therapy, including one that showed that cancer patients undergoing the therapy experienced increased relaxation and a sense of purpose in life, as well as decreased worry and sadness. According to Gitanjali et al., patients who underwent continuous progressive muscle relaxation for three days experienced decreased anxiety and increased relaxation. These study findings suggest that progressive muscle relaxation therapy is a viable treatment option for anxiety disorders (Syisnawati et al., 2022). Progressive muscle relaxation is a method of relaxing muscles that is performed in specific areas or across the entire body using a muscle relaxation program. It is a type of relaxation technique that does not require imagination or suggestion. The ultimate goal of progressive muscle relaxation is to help patients manage their health without the use of medication and to provide and enhance subjective awareness that physical changes can occur, resulting in physical reactions that are responded to in the form of physical symptoms when someone experiences stress. Relaxation can also reduce the physical or psychological manifestations caused by stress.

Based on medical record data from a preliminary study on April 25, 2025 at the Ngaliyan Community Health Center and Purwoyoso Community Health Center for the period January-March 2025, data were obtained on 150 postpartum mothers with an average of 50 postpartum mothers per month at the community health center polyclinic and data were obtained on 50 postpartum mothers who experienced depression and anxiety in postpartum mothers. Based on the results of interviews conducted by researchers on April 28, 2025 with 15 postpartum mothers, there were 8 respondents who said they experienced depression and anxiety due to the number of children born which resulted in mothers being easily angry, ultimately the mother and child felt uncomfortable and there was a buildup of emotions in the mother. and there were 4 respondents who experienced depression and anxiety and caused anger and a buildup of emotions due to the lack of support from parents. And there were also 3 respondents who said they experienced depression and anxiety due to the lack of attention from their husbands which resulted in emotions not being able to be expressed so that they were affected by their babies, ultimately the mother was easily angry. Based on the explanation above, the researcher is interested in conducting further research on "The Effect of Progressive Muscle Relaxation on Depression and Anxiety in Postpartum Mothers in Semarang.

2. Preliminaries or Related Work or Literature Review

Definition of Progressive Muscle Relaxation

Progressive muscle relaxation is a method of deep muscle relaxation that requires no creativity, persistence, or suggestion, claims Sherwood (2011). By detecting tight muscles and using relaxation techniques to relieve them, progressive muscle relaxation draws attention to muscle activity and produces a calming sensation. One type of relaxation therapy that can help people fall asleep is progressive muscle relaxation therapy (Ferdisa & Ernawati, 2022). Stress-related conditions such as headaches, insomnia, and hypertension can disrupt a patient's sense of well-being and impact their immune system. Progressive muscle relaxation techniques can help address these issues. One method for reducing tension and headaches is progressive muscle relaxation (Fudori et al., 2022). To induce physical relaxation, progressive muscle relaxation is a type of relaxation therapy that involves tensing and relaxing muscles in one area of the body at a time. Different muscle groups are used in this progressive tensing and relaxing movement. The patient's focus during progressive muscle relaxation is to distinguish between the sensations of relaxed muscle groups and tense muscle groups (Ocky et al., 2024).

Definition of Depression

One type of mood disorder is depression. The term "mood" refers to a person's emotional state, encompassing a range of sensations that indicate emotional well-being or unhappiness. Persistent emotions that permeate a person's life and mental state are sometimes referred to as mood states (Anggarani, 2023). The National Institute of Mental Health defines depression as a disorder that disrupts daily activities, including eating, sleeping, and working, and affects feelings and thoughts (Aji Pamungkas et al., 2022). Persistent feelings of depression or loss of interest and pleasure in activities are hallmarks of depression, a common mental illness. Feelings of extreme sadness, disinterest, or loss of pleasure in activities are hallmarks of depression, a clinical disorder (Omega & Herman, 2024).

Definition of Anxiety

Nearly everyone suffers from a psychological disorder known as anxiety. Anxiety often occurs, especially when someone is faced with a challenging problem or a frightening

situation, causing feelings of anxiety, panic, confusion, restlessness, and so on. According to Eysenck's book, anxiety is a learning process resulting from traumatic experiences or unpleasant events. Because of its relationship with the autonomic nervous system (ANS) reaction, it is highly sensitive. Therefore, worry will arise more quickly if the same situation is repeated (Rahmawat & Nafi', 2022). Anxiety is a subjective personal sensation that can cause irregular behavior. Anxiety is characterized as a sensation of "complexity" or "problem" and is a common byproduct of development, improvement, new opportunities, and the search for purpose and identity in life. Fear of the unknown and ambiguity is called anxiety. According to Ainingsih & Novia (2023), anxiety is a subjective state characterized by a feeling of terror and an intellectual evaluation of a stressor.

Definition of Postpartum

After giving birth, the postpartum period, which lasts six to eight weeks, is when the mother recovers and her reproductive organs return to their pre-pregnancy state. Postpartum mothers experience various physical and mental changes during this time. Postpartum mothers are at risk of experiencing problems during the postpartum phase if they do not receive adequate support from family and healthcare providers. Uterine involution—the process by which the uterus shrinks after growing during pregnancy and then returns to its pre-pregnancy size—is one of the physiological changes that occurs. Between before and after pregnancy, the weight of the uterus can increase approximately 11-fold. One week after delivery, the uterus will have involuted, or shrunk, by approximately 500 grams, and by two weeks, it has reduced by approximately 350 grams. By the sixth week, the uterus will weigh between 50 and 60 grams, having returned to its pre-pregnancy size after one week in the pelvic position (Danur Jayanti & Indah Mayasari, 2022). The postpartum period, which generally lasts up to six weeks after delivery, is defined by Mansur (2011) as the time required for the reproductive organs to recover. Thus, the term "postpartum" describes the six weeks after birth, during which the reproductive organs return to their pre-pregnancy form. Reproductive organs undergo modifications during the postpartum phase. Similarly, the mother experiences psychological changes. Childlessness results in the birth of a cute little baby who now lives with the mother. Mothers need to be prepared to face these changes, as parenthood is a crisis in itself. Psychologically, a mother will experience mental health issues after giving birth. In the first weeks or months after giving birth, a woman must adapt physically and mentally to her new functions and activities as a mother (Anggarani, 2023).

3. Materials and Method

This study applied quantitative methods and the research methodology was pre-experimental through a one-group pretest-posttest design approach. A total of 50 respondents participated in this study, and total sampling was used as the sampling method. Progressive muscle relaxation was the tool applied in this study, and each therapy session lasted for 20 to 30 minutes. A bed or chair was used as the tool. A questionnaire was used in the data collection process, which was obtained from interviews and observations. The questionnaire sheet with questions about the respondent's identity, EPDS (Edinburgh Postnatal Depression Scale), and GAD-7 (Generalized Anxiety Disorder-7) was the research tool used. The data processing methodology of this study involved the use of SPSS to process Excel data obtained from participant responses. The Wilcoxon Signed-Rank Test was used to analyze the data to compare levels of anxiety (GAD-7) and depression (EPDS) before and after the progressive muscle intervention.

The validity and reliability of the anxiety questionnaire results have been tested. The validity test results, namely Sig (2-tailed) > Total X Pearson Correlation and obtained using SPSS, varied between 0.529 to 0.727, indicating that each questionnaire item is valid. The Cronbach's alpha value of 0.867 is higher than the r table value of 0.756, indicating that all questionnaire questions are reliable, according to the results of the reliability test conducted using SPSS (Wang et al., 2022).

The validity and reliability of the depression questionnaire results were examined. The questionnaire was found to be valid based on validity test results (r count $\geq$ 0.3610). It consisted of ten questions. Meanwhile, the degrees of freedom reliability obtained was 0.67. These findings indicate that the EPDS is a valid and reliable tool for postpartum depression screening in Indonesia (Murti & Lestari, 2023).

4. Results and Discussion

Data were collected from 50 postpartum mothers. Data collection for this study was conducted from June 28 to July 23, 2025, among postpartum mothers in Semarang. Progressive muscle relaxation therapy was used as a data collection method to reduce postpartum anxiety and depression. The following information was collected based on the study findings:

Respondent Identity

Table 1. Respondent Identity.

Type	Category	Frequency (f)	Percentage (%)
Age	Age < 20 years	1	2.0
	Age 20 - 30 years	34	68.0
	Age > 30 years	15	30.0
Education	Elementary School	3	6.0
	JUNIOR HIGH SCHOOL	5	10.0
	SENIOR HIGH SCHOOL	29	58.0
	Higher Education (S1)	13	26.0
Work	Housewife	32	64.0
	civil servant	1	2.0
	Private	15	30.0
	Businessman	2	4.0
History of Depression	Never	45	90.0
	Once	5	10.0
Economic Status (Monthly Family Income)	< Rp. 1,000,000	3	6.0
	Rp1,000,000 – Rp2,999,999	16	32.0
	Rp3,000,000 – Rp4,999,999	24	48. 0
	≥ Rp. 5,000,000	7	14.0
Parity / Number of Births	Primapara (1 child)	29	58.0
	Multipara (≥ 2 children)	21	42.0
Type	Normal	24	48.0
Labor	Caesarean Section	26	52.0
Labor	Rs	32	64.0
	Community Health Center	18	36.0
Total		50	100.0

This study can be analyzed there are 50 respondents, the results of the identity of respondents to age concluded that the number of those aged <20 years was 1 respondent (2.0%), respondents aged 20-30 years were 34 respondents (68.0%), and respondents aged >30 years were 15 respondents (30.0%). Based on the results of the identity of respondents to education concluded that there were 3 respondents (6.0%) were elementary school education, 5 respondents (10.0%) were junior high school education, 29 respondents (58.0%) were high school education and 13 respondents (26.0%) were college education (S1). The results of the identity of respondents to the employment status above, showed that there were 32 respondents (64.0%) were housewives, 1 respondent (2.0%) was a civil servant, 15 respondents (30.0%) were private and 2 respondents (4.0%) were entrepreneurs. The results of the identity of respondents to the history of depression obtained 45 respondents (90.0%) had never been depressed before and 5 respondents (10.0%) had been depressed before. The results of respondents' identity regarding complications or other diseases during pregnancy or childbirth showed that 45 respondents (90.0%) had no complications or other diseases during pregnancy or childbirth and 5 respondents (10.0%) had complications or other diseases during pregnancy or childbirth. The results of respondents' identity regarding economic income (family income per month) showed that 3 respondents (6.0%) earned <Rp1,000,000, 16 respondents (32.0%) earned Rp1,000,000 - Rp2,999,999, 24 respondents (48.0%) earned Rp3,000,000 - Rp4,999,999 and 7 respondents (14.0%) earned ≥ Rp5,000,000.

The results of respondents' identity regarding parity or number of births showed that 29 respondents (58.0%) were Primapara (1 child) and 21 respondents (42.0%) were Multipara (≥ 2 children). The results of the respondents' identity regarding the type of delivery obtained 24 respondents (48.0%) were Normal and 26 respondents (52.0%) were Caesarean Section. The results of the respondents' identity regarding delivery obtained 32 respondents (64.0%) gave birth in the Hospital and 18 respondents (36.0%) gave birth in the Community Health Center.

Wilcoxon Test Analysis in Postpartum Mothers with Depression and Anxiety Before and After Progressive Muscle Relaxation

Based on the results of the difference test above, the research results show that there is a difference between the pre-test values.

Table 2. Distribution Frequency Pre Test And Post Test Depression and Anxiety Scores on Progressive Muscle Relaxation.

Pre-Test				Post Test		
Depression	information	Frequency	Percentage	information	Frequency (f)	Percentage (%)
	Depression	50	100.0	Not Depressed	48	96.0
	Amount	50	100.0	Depression	2	4.0
				Amount	48	96.0
Anxiety	information	Frequency	Percentage	information	Frequency (f)	Percentage (%)
	Heavy	2	4.0	Heavy	0	0.0
	Currently	9	18.0	Currently	3	6.0
	Light	25	50.0	Light	9	18.0
	Minimum	14	28.0	Minimum	38	76.0
	Amount	50	100.0	Amount	50	100.0

Based on the results of the study in the table, it was found that the highest distribution of pre-test depression in the progressive muscle relaxation group of postpartum mothers was in the depression category of 50 (100.0%) respondents. The highest distribution of post-test depression in the progressive muscle relaxation group of postpartum mothers was in the non-depression category of 48 (96.0%) respondents and depression of 2 (4.0%) respondents. While the highest distribution of anxiety in the progressive muscle relaxation group of postpartum mothers was in the severe category of 2 (4.0%) respondents, the moderate category of 9 (18.0%) respondents, the mild category of 25 (50.0%) respondents, the minimal category of 14 (28.0%) respondents.

Wilcoxon Test Analysis on Depression and Anxiety Before and After Progressive Muscle Relaxation

Table 3. Wilcoxon Test Before and After Intervention.

		Frequency (n)	Percentage (%)	Asymp. Sig. (2-tailed)
Post test Depression < Pre test Depression	Negative Ranks	48	96%	0.000
Post test Depression > Pre test Depression	Positive Ranks	0	0%	.
	Ties	2		
	Total	50		
Post test Anxiety < Pre test Anxiety	Negative Ranks	4	8%	0.000
Post test Anxiety > Pre test Anxiety	Positive Ranks	30	60%	
	Ties	16		
	Total	50		

The statistical data presented in the table above, 48 respondents (96%) with negative ratings in the table, which indicates there is a decrease in depression from pre-test to post-test. On the other hand, Positive Rating is indicated by the absence of respondents (0%) indicating no increase in depression from pre-test to post-test. After undergoing progressive

muscle relaxation, the depression of 2 respondents with the same value (tie) remains unchanged. It was found that the p-value is 0.000 or less than 0.05. As a result, Ho is rejected and Ha is accepted, which indicates that there is a decrease in depression in postpartum mothers as well as postpartum mothers' understanding of progressive muscle relaxation towards depression, and there are 4 respondents (8%) with negative ratings in the table, which indicates there is a decrease in anxiety from pre-test to post-test. On the other hand, Positive Rating is indicated by 30 respondents (60%) indicating there is an increase in anxiety from pre-test to post-test. After undergoing progressive muscle relaxation, the anxiety of 16 respondents with the same value (tie) remains unchanged. It was found that the p-value was 0.000 or less than 0.05. Consequently, Ho was rejected and Ha was accepted, indicating that there was a decrease in anxiety in postpartum mothers as well as postpartum mothers' understanding of progressive muscle relaxation against anxiety.

The following research results explain the effect of progressive muscle relaxation variables on depression and anxiety in postpartum mothers in several Semarang hospitals and two community health centers in Semarang in 2025 using the Wilcoxon test, the p value is 0.000, meaning $p < 0.05$, so based on the statistical results it can be concluded that $0.000 < \alpha$ (0.05) then Ho is rejected and Ha is accepted, which means there is a difference in depression and anxiety between before and after being given progressive muscle relaxation intervention.

Discussion

Based on the results of the difference test above, the research results showed that there was a difference between the pre-test and post-test scores because the significance value obtained was 0.000, which is smaller than 0.05, so it can be concluded that "Ha is accepted." This means that in providing progressive muscle relaxation for depression and anxiety in postpartum mothers, there was a difference before and after the intervention.

Respondent Characteristics

a. Age

In 2025, a survey of several hospitals and two community health centers in Semarang found that the age of postpartum mothers with depression and anxiety was most often 20-30 years old, with 34 respondents (68%). This finding aligns with other research studies (Rahmatina et al., 2025). Twenty-six, or 87%, stated that women aged between 20 and 35 years were the ones most likely to experience postpartum depression and anxiety. This suggests that age during pregnancy and childbirth is not the only factor that can cause postpartum depression; other factors may also be responsible (Devi & Sari, 2023) , who claim that the occurrence of postpartum depression can be influenced by maternal age. According to a survey of 60 participants, 25% of pregnant women reported experiencing symptoms of depression. In addition to having many obligations, mothers who give birth before the age of 35 are more vulnerable during pregnancy, childbirth, and the postpartum phase. The high prevalence of postpartum depression and disparities in experiences with illness or health problems may be partly influenced by socioeconomic inequalities. Due to aging of the uterus and hardening of the birth canal, which can lead to obstructed labor or even hemorrhage, it is physiologically easier to become ill after 35. Psychologically, most mothers at that age have given birth before and do not want to become pregnant again. As a result, they feel burdened by the burden of having many responsibilities for their previous children.

b. Education

After conducting research at several hospitals and two community health centers in Semarang, the majority, 29 respondents (58.0%), had a high school diploma. A nation's human resources can be improved largely through education. Educational principles embedded in society naturally form the foundation of quality human resources. Furthermore, education has the power to shape a person's personality and skills, enabling them to compete in the global economy. Of course, a country's competitiveness is also influenced by other factors (Sanga, LD, & Wangdra, 2023). Emotional intelligence, logical thinking, and the availability of information are strongly influenced by education. Social media and village midwife programs have increased postpartum mothers' knowledge on various topics, making it easier for them to cope with childcare and manage their emotions. Confidence during childbirth is enhanced by adequate preparation during pregnancy (Wulan et al., 2023).

c. Work

Patients from several hospitals and two community health centers in Semarang accounted for the largest number of patients, with 32 respondents (64.0%). Furthermore, there was no correlation between respondents' occupations and their levels of postpartum depression. Housewives typically perform daily chores and activities at home, while mothers working in government and the private sector have a reliable source of income. The

psychological well-being of postpartum mothers is generally unaffected by this type of employment, as their employment status has a greater impact on increasing family income. Unlike employed mothers, who may have more money to pay for medical treatment, unemployed mothers' anxiety levels are typically related to their lack of resources when seeking medical assistance. (Fazraningtyas, 2023).

d. History of depression

Based on research findings from several hospitals and two community health centers in Semarang, the majority of respondents, 45 respondents (90.0%), had never experienced depression before or had no history of depression. One factor associated with an increased risk of postpartum depression is a history of anxiety and hopelessness. Many studies have documented a correlation between postpartum depression and a history of previous depression, which has been identified as a strong predictor of postpartum depression. One of the best indicators of postpartum depression is the presence of mental health conditions such as depression during pregnancy (Veri Nora et al., 2024).

e. Complications or other illnesses during pregnancy or childbirth

The following research results based on complications or other illnesses during pregnancy or childbirth show that the majority, namely 45 respondents (90.0%), had no complications or other illnesses during pregnancy or childbirth. Test results show a strong correlation between postpartum depression and pregnancy complications. This study supports research by Meldawati (2020), which found a substantial correlation between pregnancy complications and postpartum depression, stating that pregnancy complications are a cause of postpartum depression. Several problems arise during pregnancy. Direct obstetric problems, including hemorrhage, preeclampsia/eclampsia, fetal malposition, hydramnios, and premature rupture of membranes, are three categories of pregnancy complications. Second, indirect obstetric problems, such as malaria, anemia, heart disease, and tuberculosis. Third, problems such as poisoning, accidents, and other problems unrelated to obstetrics (Azzahra, 2024).

f. Economic status (monthly family income)

The following research findings from several hospitals and two community health centers in Semarang revealed that the largest number of respondents, 24 (48.0 %), had an economic income (monthly family income) of Rp3,000,000 – Rp4,999,999. The majority of respondents with low economic status experienced postpartum depression. This finding contradicts studies that show a link between postpartum depression and low income. Due to the readiness of mothers and husbands to accept the birth of their child, as well as the fact that their partners were working and earning enough money to support them, respondents were likely financially independent when the study was conducted and questions about their financial situation were asked. The findings suggest that mothers with high economic status also suffered from mild depression, which may be caused by aspects of their home life, family support, or spiritual considerations. Because more respondents are needed to obtain more reliable results, further research is needed. This could avoid biased results (Mahendra et al., 2023).

g. Parity or number of births

After researchers conducted research in several hospitals and two community health centers in Semarang, it was found that the most parity or number of births was primapara (1 child), there were 29 respondents (58.0%) who experienced depression. According to Ling and Duff (2012), parity status impacts postpartum problems. Primiparous women are more likely to have the same obstetric history as the patient, which includes the patient's pregnancy and childbirth history, as well as difficulties that may have been experienced during pregnancy and childbirth. Primiparas, or first-time mothers, have less experience than multiparas, or women who have given birth before. This will impact the client's adaptation process; primiparous women have a longer adaptation period than multiparas after giving birth, which increases their risk of experiencing postpartum depression (Solama et al., 2023).

h. Types of labor

After conducting research at several hospitals and two community health centers in Semarang, the most common type of delivery, with 26 respondents (52.0%), was Caesarean Section. Because cesarean sections can cause physical injury to the mother due to damage to the uterine wall and abdomen, this operation is associated with postpartum depression. Surgical wounds take longer to heal, and mothers who give birth by cesarean section often relive their birth process, which can hinder the mother's ability to care for her baby. Feelings of shock and disbelief over what has happened are the initial stages of this condition (Wulan et al., 2023).

i. Persal inan

The results of the study conducted by researchers showed that the majority of births, 32 respondents (64.0%), occurred in hospitals. According to Nurasih & Nurrochmi (2023), comfort, usability, and accessibility to medical facilities are important factors when giving birth in a medical facility. Only by facilitating a safe delivery as a medical professional can you ensure the health and safety of the mother and baby. In an emergency, having complete supplies and prescription medications is crucial.

Before administering Progressive Muscle Relaxation intervention

The results of the study before being given progressive muscle relaxation showed that 50 respondents (100.0%) had postpartum depression and 2 respondents (4.0%) had severe anxiety, 9 respondents (18.0%) had moderate anxiety, 25 respondents (50.0%) had mild anxiety and 14 respondents (28.0%) had minimal anxiety. The first step in changing behavior based on their knowledge is to provide information. The goal of health education is to encourage people individual, community, or group to increase their understanding, perspective, and ability to maintain and improve their health (Pratiwi et al., 2024). Stable systolic and diastolic blood pressure, heart rate, respiratory rate, and reduced muscle tension—which patients perceive as reduced pain—all demonstrate the calming effects of progressive muscle relaxation therapy. Progressive muscle relaxation therapy must be used consistently and continuously over a long period of time because the effects of relaxation therapy can diminish over time. (Ati et al., 2023).

After Progressive Muscle Relaxation intervention is carried out

The results of the study after being given progressive muscle relaxation showed that depression and anxiety can be reduced effectively in helping most postpartum mothers. Before progressive muscle relaxation was applied, 50 respondents (100.0%) had postpartum depression and as many as 2 respondents (4.0%) had severe anxiety, 9 respondents (18.0%) had moderate anxiety, 25 respondents (50.0%) had mild anxiety and 14 respondents (28.0%) had minimal anxiety. According to Kurniasih et al., (2023) respondents who experience depression will become more aware of their current condition if they have a strong knowledge of the facts. Providing information to depressed patients is an effort to teach them healthy coping strategies, which include recognizing problems and practicing self-control, as a way to deal with stress. Educating patients will increase their confidence that they will get better results. According to Nazilah et al., (2023) , the muscles of postpartum mothers will tense because they are still contracting when they experience high levels of anxiety. Blood flow to the muscles is disrupted by prolonged muscle contractions. The body's reaction to emotions, mental stress, and fatigue can cause anxiety. Progressive muscle relaxation therapy is a non-pharmacological option aimed at helping postpartum mothers manage stress and reduce their anxiety. This method involves tensing and relaxing the body's muscles. This muscle relaxation technique needs to be performed in a quiet and comfortable environment to be effective. Certain stiff muscles are encouraged to relax as the body engages in progressive muscle relaxation, allowing them to gradually relax and become more comfortable. The body reacts to the comfort and relaxation of postpartum mothers by producing endorphins, which lower cortisol levels. Research by Mawardika, Umi, and Puji (2022) supports this, showing that progressive muscle relaxation techniques are more effective than a control group in reducing postpartum maternal anxiety levels (Chauhan & Tadi, 2025).

Progressive muscle relaxation influences postpartum mothers' understanding of depression and anxiety.

The results of the study entitled "The Effect of Progressive Muscle Relaxation on Depression and Anxiety in Postpartum Mothers in Several Hospitals in Semarang and Two Community Health Centers in Semarang" showed that out of 48 respondents, there were those who experienced a decrease in depression and 4 respondents who experienced a decrease in anxiety from pre-test to post-test (negative rank). Conversely, 0 respondents (0%) did not experience a decrease in depression and 30 respondents (60%) did not experience a decrease in anxiety (positive ranks).

In addition, 2 respondents did not experience changes in depression and 16 respondents did not experience changes in anxiety (ties), which was caused by a lack of understanding of the importance of depression and anxiety, even though some patients already understood the importance of depression and anxiety. Because the p value of 0.000 was smaller than 0.05 , Ho was rejected while Ha was accepted. This shows that post-postpartum mothers' understanding of depression and anxiety during postpartum in several hospitals in Semarang and two community health centers in Semarang.

5. Conclusion

It can be concluded from the research on the effect of progressive muscle relaxation on depression and anxiety in postpartum mothers in Semarang that there is a difference in the two groups of mothers before and after receiving progressive muscle relaxation, the P value is obtained = 0.000. Researchers suggest that health services teach postpartum mothers to do progressive muscle relaxation and provide an explanation to mothers the benefits of progressive muscle relaxation to reduce the level of depression and anxiety after giving birth. This research can be used as input for reference sources and evaluations related to maternity nursing in the form of reducing the level of depression and anxiety in postpartum mothers.

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