

The Effect of Lavender Aromatherapy Scores in Mothers with Postpartum Blues

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ABSTRACT

Background: Postpartum blues is a mild mood disorder that commonly occurs in postpartum mothers, characterized by mood swings, anxiety, and emotional exhaustion. Globally, the incidence of postpartum blues affects about 50-80% of mothers after giving birth, while in Indonesia the prevalence reaches 50-70%, if not properly managed, this condition may develop into more severe postpartum depression, which can negatively affect the mother-child relationship and overall family well-being. This study aims to determine the effect of lavender aromatherapy on EPDS scores in mothers with postpartum blues in the Working Area of UPTD Madukoro Primary Health Care, North Lampung Regency

Methods: This study used quantitative methods with a quasi experiment design and pretest-posttest design with control group. The study population consisted of all postpartum mothers on the third day who experienced postpartum blues, with a sample of 30 participants divided into 15 in the intervention group and 15 in the control group.

Results: The results showed that the average EPDS score in the group given lavender aromatherapy decreased, median score in the experimental group was 9.00 with a minimum score of 5 and a maximum score of 10. In the control group it was 6.00 with a minimum score of 5 and a maximum score of 8. The greater decrease in the intervention group showed a significant effect of lavender aromatherapy on reducing EPDS scores in mothers with postpartum blues with a p-value of <0.001

Conclusion: lavender aromatherapy has a significant effect on reducing EPDS scores in mothers with postpartum blues.



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INTRODUCTION

Postpartum is the period after childbirth that starts from the time the baby is born until about six weeks later, during which the mother's body undergoes physical and hormonal changes to return to its pre-pregnancy state. During this period, the mother needs optimal physical recovery, good nutrition, emotional support, and intensive baby care (Isnaini & Nuzuliana, 2023). Some of the problems that often occur during postpartum include infection, bleeding, pain from labor, and difficulty in breastfeeding. In addition, mental health problems are also common, such as postpartum blues, which is characterized by mood swings, crying easily, and emotional exhaustion due to hormonal changes and the stress of caring for a baby (Hidayat & Susanti, 2024). Mental health is an integral component of overall health and plays an important role in determining a person's quality of life. According to the World Health Organization (WHO), good mental health enables individuals to realize their potential, cope with normal life stresses, work productively, and contribute to their communities (Radiani, 2019).

This becomes even more crucial when a person experiences major changes in their life, such as those experienced by women after childbirth (Ningrum, 2017).

The postpartum period is a significant transitional period in a woman's life, characterized by various physical, hormonal, and psychological changes (Khamidullina et al., 2025). During this period, women not only have to adapt to their new role as mothers, but also face challenges such as postpartum recovery, breastfeeding, and adjusting sleep patterns. The complexity of these changes can trigger various mood disorders, one of which is postpartum blues (Saputri et al., 2023). The prevalence of postpartum blues in the world population according to WHO ranges from 3% to 8% with about 50% of these cases occurring in productive-aged individuals in the range of 20 to 50 years (Aryani et al., 2022). While in Indonesia in 2022 there are 22% cases of postpartum depression (Murti & Lestari, 2023). The incidence of postpartum depression in Indonesia shows that it is still a significant problem for maternal and child health in some areas. About 20% of new mothers experience mild to severe depression (Ardhianingtyas et al., 2025). By 2024, the incidence of postpartum blues will be 57% (Kokom, 2024). Data from Lampung Province, 25% of mothers experience postpartum depression (Anita et al., 2024). Postpartum blues falls into the mild depression category.

The high incidence of postpartum blues is the main reason for researchers to explore this phenomenon further. This condition is still a significant problem in postpartum maternal health and can have an impact on the well-being of the mother and the development of the baby. If left untreated, postpartum blues is at risk of developing into more serious postpartum depression, which can affect the quality of life of the mother and her family. Postpartum blues, also known as "baby blues", is a mild mood disorder that commonly occurs in postpartum mothers. The condition usually appears on the 3rd to 5th day after delivery and can last up to two weeks (Handayani et al., 2021). Common symptoms include rapid mood swings, crying easily, anxiety, insomnia, and feeling overwhelmed. Although considered a normal response to hormonal changes and postpartum stress, this condition deserves attention as it can develop into postpartum depression if not treated appropriately (Rukiyah & Yulianti, 2018).

Health workers, especially midwives, have an important role in dealing with postpartum blues by providing education, emotional support, and monitoring the mother's condition after childbirth. Midwives can help mothers manage stress, provide information about hormonal changes that occur, and encourage family involvement in providing support (Mariany et al., 2022). In addition, early detection of postpartum depression is necessary to prevent more serious conditions. Therefore, it is necessary to screen using the Edinburgh Postnatal Depression Scale (EPDS), which has been validated as a measurement tool to assess the level of postpartum depression (Rauf et al., 2024). The Edinburgh Postnatal Depression Scale (EPDS) is a validated and widely used screening instrument globally to detect the risk of postpartum depression (Atuhaire et al., 2023). The scale consists of 10 questions that evaluate the feelings and symptoms experienced by the mother in the past week. A high Edinburgh Postnatal Depression Scale (EPDS) score indicates a greater risk of developing postpartum depression, making it important to intervene early in mothers with elevated Edinburgh Postnatal Depression Scale (EPDS) scores (Gondo, 2015). Efforts that can be made to overcome postpartum blues consist of pharmacological and non-pharmacological. One of the non-pharmacologic approaches that has received increasing attention is the use of aromatherapy. Various kinds of aromatherapy consist of Lavender, Peppermint, Lemon, Eucalyptus, Ylang ylang, Valerian, Lemongrass, and others. However, this research will use lavender aromatherapy. Lavender (*Lavandula angustifolia*) has long been known to have calming and anxiolytic effects that can help reduce stress and anxiety (Nainggolan, 2020)

Lavender aromatherapy works through the limbic system in the brain, which is responsible for emotions and behavior. When lavender aromatherapy molecules are inhaled, they interact with receptors in the nervous system, triggering the release of neurotransmitters such as serotonin and dopamine that play a role in mood regulation (Rahmawati & Ningsih, 2017). In line with previous research which shows that lavender aromatherapy can reduce Edinburgh Postnatal Depression Scale (EPDS) scores in mothers who experience postpartum blues so it is effective for overcoming the incidence of postpartum blues (Amin et al., 2021).

Research on postpartum blues is very important because this condition can have an impact on the mother's well-being, the bonding process with the baby, and the overall quality of life of the family. If not managed properly, postpartum blues has the potential to develop into more serious postpartum depression, so effective prevention and treatment efforts are needed. One method that is starting to be widely recommended is the use of lavender aromatherapy as a non-pharmacological therapy. Lavender has a calming effect that can help reduce stress, anxiety, and sleep disturbances that are often experienced by postpartum mothers. The linalool and linalyl acetate content in lavender essential oil has been shown to have relaxant properties that can help balance mood and reduce symptoms of postpartum blues.

The results of a pre-survey conducted in the Madukoro Primary Health Care found that in 2022 there were 68 (24.3%) mothers who experienced postpartum blues, in 2023 there were 71 (23.1%) mothers who experienced postpartum blues, and in 2024 there were 29% of mothers who experienced postpartum blues. Based on the results of interviews, it was found that mothers who experienced postpartum blues had never used lavender aromatherapy as an effort to overcome postpartum blues. The purpose of this study was to determine the effect of lavender aromatherapy on the Edinburgh Postnatal Depression Scale (EPDS) score in postpartum blues mothers in the Working Area of UPTD Madukoro Primary Health Care, North Lampung Regency.

METHODS

This study used a quantitative method with a quasi experiment design and pretest-posttest design with control group and sampling technique used purposive sampling. The study population consisted of all postpartum mothers on the third day who experienced postpartum blues, with a sample of 30 participants divided into 15 in the intervention group and 15 in the control group. The size of Confidence interval for this research is 95%. Data were collected through EPDS questionnaire and analyzed using Wilcoxon Method for within group analyze and using Mann-Whitney statistical test for between group analyze. This methods research, Participants were given a cotton handkerchief soaked in seven drops of lavender oil and asked to inhale the scent deeply for 10 breaths every day before bed. Distance for nose between 15-20 cm. The handkerchief was then placed near the pillow until morning. This intervention was carried out daily for two weeks. The used handkerchief was replaced each night.

This research was conducted from February 10 to July 14, 2025 and was carried out in the Working Area of UPTD Madukoro Primary Health Care, North Lampung Regency, namely at PMB Sriani Purba Ningsih, Amd. Keb, Emilia Hapizoh, S.ST., Bdn, and Lise Marlina Viniwati, Amd.Keb. Although the Edinburgh Postnatal Depression Scale (EPDS) has been widely used globally, there is debate about its validity in cross-cultural contexts and its application as an effective national screening tool. In the UK, primary healthcare professionals, such as midwives and community nurses, have utilized the Edinburgh Postnatal Depression Scale (EPDS) to improve early detection and provide evidence-based treatment. However, training among medical professionals in perinatal mental health remains inadequate, necessitating increased awareness and education. Overall, the Edinburgh Postnatal Depression Scale (EPDS) not only plays a role in supporting the secondary prevention of postpartum depression but also encourages more research and policies that prioritize maternal and child mental health. This research has been declared ethically sound by the health research ethics commission at Malahayati University.

RESULTS

Tabel 1. Characteristics of Respondents.

| Respondent Characteristics | Experiment Group | | Control Group | |
|--|------------------|------|---------------|------|
| | n | % | n | % |
| Age | | | | |
| <20 years or >35 years | 3 | 20.0 | 2 | 13.3 |
| 20-35 years | 12 | 80.0 | 13 | 86.7 |
| Education | | | | |
| Low (elementary or junior high school) | 6 | 40.0 | 6 | 40.0 |
| High (high school or university) | 9 | 60.0 | 9 | 60.0 |
| Parity | | | | |
| Primipara | 8 | 53.3 | 6 | 40.0 |
| Multiparous | 7 | 46.7 | 9 | 60.0 |

Based on Table 1, it is known that in the experimental group, most respondents were in the age range of 20-35 years, as many as 12 Respondents (80%), in terms of education, the majority of respondents had a high level of education (high school or college), namely 9 respondent (60%). Based on parity, most respondents were primiparous (giving birth to the first child) as many as 8 respondent (53.3%).

In the control group, the age distribution showed that the majority of respondents were also in the 20-35 years age group as many as 13 respondent (86.7%). In terms of education, the composition of respondents was similar to the experimental group, with 9 respondent (60%) having higher education. However, in the parity variable, the majority of respondents were multiparous as many as 9 respondent (60%)

Tabel 2. Average Edinburgh Postnatal Depression Scale (EPDS) scores and Mean difference before and after being given lavender aromatherapy in the Experimental Group in the Working Area of UPTD Madukoro Primary Health Care, North Lampung Regency

| EPDS Score | n | Median | Min-Max | P value |
|------------|----|--------|---------|---------|
| Pretest | 15 | 9.00 | 5-10 | <0.001 |

Table 2 Shows that the average score of the Edinburgh Postnatal Depression Scale (EPDS) before being given lavender aromatherapy was 9.00 (risk of depression) and a range of values between 5 and 10.

The paired sample test results obtained p value <0.001 means that there is a difference in the average Edinburgh Postnatal Depression Scale (EPDS) score before and after being given lavender aromatherapy in the experimental group.

Tabel 3. Average score of Edinburgh Postnatal Depression Scale (EPDS) before and after in the control group in the Working Area of UPTD Madukoro Primary Health Care, North Lampung Regency

| EPDS Score | n | Median | Min-Max | P value |
|------------|----|--------|---------|---------|
| Posttest | 15 | 6.00 | 5-8 | <0.001 |

Table 3 shows that it is known that the pretest results show an average Edinburgh Postnatal Depression Scale (EPDS) score of 6.00 (mild depression risk) and a score range of 10 to 13. Looking at the category, it was found that 12 respondent experienced mild depression risk (score 10-12) and 3 respondent experienced moderate depression risk (score 13).

After the observation period, a score range of 3 to 7. Judging from the category of all respondents after being given lavender aromatherapy in the normal category (ie scores 3-7)

The Wilcoxon test results obtained p value <0.001 means that there is a difference in the average Edinburgh Postnatal Depression Scale (EPDS) score before and after being given lavender aromatherapy in the control group. The effect of lavender aromatherapy on the Edinburgh Postnatal Depression Scale (EPDS) score in mothers with postpartum blues in the UPTD Madukoro Primary Health Care, North Lampung Regency.

Table 4. Effect of lavender aromatherapy on Edinburgh Postnatal Depression Scale (EPDS) scores in mothers with postpartum blues

| EPDS Score | n | Median | Min-Max | P value |
|------------------|----|--------|---------|---------|
| Experiment Group | 15 | 9.00 | 5-10 | <0.001 |
| Control Group | 15 | 6.00 | 5-8 | |

Based on Table 6, it is known that the average score of Edinburgh Postnatal Depression Scale (EPDS) in the experimental group is 9, while in the control group it is 6. The statistical test using Mann Whitney showed a p < 0.001, which means there is a statistically significant difference between the two groups. Thus, it can be concluded that there is an effect of lavender aromatherapy on the Edinburgh Postnatal Depression Scale (EPDS) score in mothers with postpartum blues in the UPTD Madukoro Primary Health Care, North Lampung Regency.

DISCUSSION

The average Edinburgh Postnatal Depression Scale (EPDS) score before and after being given lavender aromatherapy

The postpartum period is the period immediately after birth up to 6 weeks. During this period, the reproductive tract anatomically returns to its normal pre-pregnancy state (Suherni, 2019). The postpartum period also includes the 40 days postpartum, including after a miscarriage (abortion). During this period, the reproductive organs are restored to their pre-pregnancy state and breastfeeding takes place (Asih & Risneni, 2016).

Psychological adaptation of the postpartum period is an adjustment process experienced by postpartum mothers. During this period, mothers tend to be more sensitive to various things, especially those related to themselves and their babies. Psychological changes have a very important role in determining the emotional well-being of the mother and the smooth process of caring for the baby (Susanti & Sulistiyanti, 2023).

Postpartum blues is also known as natal blues, mommy blues. A condition describing temporary tears, mood swings, fatigue, and irritability that may be experienced by postpartum mothers in the first few weeks after giving birth (Sebastian, 2016). Complementary therapy using aromatherapy can be developed to overcome postpartum blues by minimizing the side effects of therapy. Aromatherapy is an inexpensive and non-invasive form of complementary therapy used to treat psychological disorders. One of the essential oils used for aromatherapy is lavender oil obtained from *Lavandula angustifolia* flowers by steam distillation. Lavender is a member of the genus *Lavandula* and belongs to the mint family, Lamiaceae, which is native to the Mediterranean. In general, lavender (*Lavandula angustifolia* Mill) essential oil consists of linalyl acetate, β -linalool, and β -caryophyllene. The general properties of lavender oil are antibacterial, antifungal, carminative (smooth muscle relaxant), sedative, antidepressant, accelerates wound healing, and increases detoxification of enzymes associated with insecticide resistance.

This research is in line with research conducted by Nainggolan (2020) which shows that before being given lavender aromatherapy, the average Edinburgh Postnatal Depression Scale (EPDS) score was 11.1 and after being given aromatherapy it decreased to 5.3. This shows that there is a decrease after being given lavender aromatherapy (Nainggolan, 2020).

According to the researchers, the significant decrease in Edinburgh Postnatal Depression Scale (EPDS) scores after lavender aromatherapy indicates that this intervention provides a real relaxing effect on the psychological condition of postpartum mothers who experience postpartum blues. The therapeutic effects of lavender essential oil, especially the content of linalyl acetate and β -linalool, play a role in reducing emotional tension and improving mood. In

addition, the mechanism of action of aromatherapy that involves the limbic system of the brain through the olfactory pathway is believed to influence the emotional center and trigger the release of calming neurotransmitters. However, if you experience dizziness or nausea when using lavender aromatherapy, stop using it. The limitations of this study are that the respondents' sleep quality, mental health history and social environment were not assessed.

The average Edinburgh Postnatal Depression Scale (EPDS) score before and after the intervention in the control group

Postpartum blues is a condition of mild emotional disturbance that generally appears in the first week after childbirth and is temporary. Some sources mention that the symptoms of postpartum blues can subside spontaneously within 7-10 days, even without special treatment, if the mother gets adequate environmental support, is able to get enough rest, and starts to get used to her role as a new mother (Ningrum, 2017).

In this case, the mother's psychological adaptation during the postpartum period plays an important role. Over time, the mother is able to recognize and understand her baby's behavior patterns, breast milk production begins to stabilize, and assistance from husband or family can help reduce emotional burden. Positive interactions between mother and baby, such as skin-to-skin contact, breastfeeding, and warm hugs, can also increase the hormone oxytocin, which has an emotionally calming effect. This contributes to a decrease in stress and anxiety that are part of the symptoms of postpartum blues (Susanti & Sulistiyanti, 2023). In addition, social support from the family, especially the biological mother, in-laws, and husband, is very influential in the mother's psychological recovery process. The presence of family members who help with household chores, look after the baby, and provide encouragement, can indirectly create a sense of comfort and security for postpartum mothers. The involvement of health workers, such as midwives or posyandu cadres, who provide counseling or education although not in the form of special interventions can also contribute to increasing the knowledge and confidence of mothers in undergoing the postpartum period.

This study is in line with research conducted by Amin et al (2021) which shows that of the 14 respondent in the pre-test who were detected with postpartum blues, 14.28% whose Edinburgh Postnatal Depression Scale (EPDS) score dropped to normal, 57.14% experienced mild depression, and 28.58% increased to moderate depression (Amin et al., 2021).

According to the researchers, the decrease in Edinburgh Postnatal Depression Scale (EPDS) scores in the control group in this study can be explained through natural recovery mechanisms, social support, increased mother-child interaction, and psychological adaptations that occur during the postpartum period. This reinforces the understanding that although interventions such as aromatherapy are effective, non-pharmacological and natural factors also play an important role in supporting maternal mental health after childbirth. Therefore, a holistic approach that takes into account emotional, social and environmental aspects needs to be prioritized in postpartum care, both with and without additional interventions.

The effect of lavender aromatherapy on the Edinburgh Postnatal Depression Scale (EPDS) score in mothers with postpartum blues

The essential oils most commonly used for anxiety and depression are lavender, jasmine, sandalwood, and rose. A study found that inhaling lavender oil significantly lowered blood pressure, heart rate, and skin temperature. The changes in these parameters represent the function of the parasympathetic nervous system counteracting that of the sympathetic nervous system. As for mood state, the subjects felt better, fresher, more active, more relaxed, and less sleepy. This finding leads to a decrease in arousal assessed through subjective self-evaluation. The results of this study support previous research that shows lavender aroma can affect relaxation (Kianpour et al., 2016).

The significant effect of lavender aromatherapy on reducing Edinburgh Postnatal Depression Scale (EPDS) scores in mothers with postpartum blues can be explained through

physiological and neuropsychological mechanisms that occur when lavender essential oil is inhaled by respondents. The main mechanism of action of aromatherapy is through the olfactory system which is directly connected to the limbic system, which is the center of emotional control in the brain (Rahmawati & Ningsih, 2017). When lavender aromatherapy is used through inhalation, the volatile molecules of the essential oil enter through the nasal cavity and are captured by olfactory receptors. Signals from these receptors are then sent to the olfactory bulb and relayed to the limbic system, specifically to areas such as the amygdala and hypothalamus, which are involved in mood regulation, stress response, and hormone regulation. Lavender (*Lavandula angustifolia*) essential oil contains active compounds such as linalool and linalyl acetate, which have been shown to have sedative, anxiolytic (anxiety calming), and antidepressant effects. Linalool works by increasing the activity of the inhibitory neurotransmitter GABA (gamma-aminobutyric acid) in the brain. GABA plays a role in calming the central nervous system, decreasing neuronal overactivity, and providing a relaxing effect as well as stress and anxiety reduction.

Cortisol is a stress hormone whose levels tend to increase during the postpartum period due to physical exhaustion, lack of sleep, and heavy emotional adaptation. As cortisol levels decrease, the mother's stress response becomes more manageable, so that symptoms such as irritability, restlessness, or unprovoked crying that are characteristic of the postpartum blues can be minimized. On the other hand, linalyl acetate is known to have a mild analgesic effect and stabilize emotions, and works to slow down the activity of the sympathetic nervous system responsible for the "fight or flight" response. Indirectly, aromatherapy can also facilitate better sleep quality, reduce muscle tension, and create a sense of comfort, calm, and an environmental atmosphere that supports the mother's psychological stability. A more stable psychological state will have a positive impact on the mother's perception of herself, her baby, and her environment, all of which contribute to a decrease in the Edinburgh Postnatal Depression Scale (EPDS) score (Amin et al., 2021). This study is in line with research conducted by Nainggolan (2020) which states that the mean Edinburgh Postnatal Depression Scale (EPDS) score at baseline, day 7, and day 14 was 11.15 ± 1.30 ; 5.30 ± 2.17 ; and 1.50 ± 1.73 ($p < 0.001$). Lavender essential oil aromatherapy is effective for reducing Edinburgh Postnatal Depression Scale (EPDS) scores in postsectiono cesarean mothers. In addition, according to Dewi's research (2022) which says that the administration of lavender aromatherapy is effective in reducing symptoms of postpartum depression (Dewi Sulastri et al., 2023).

According to researchers, the administration of lavender aromatherapy is able to significantly reduce the Edinburgh Postnatal Depression Scale (EPDS) score due to the relaxing and emotional regulation effects caused by active components in lavender essential oil, such as linalool and linalyl acetate. These compounds work by stimulating the olfactory system that connects directly with the limbic system in the brain, thus affecting mood- and stress-regulating areas such as the amygdala and hypothalamus. This activation increases the release of the inhibitory neurotransmitter GABA and decreases the hormone cortisol, thereby relieving anxiety, tension and other emotional symptoms typical of mothers with postpartum blues. In addition, the sedative effect and increased activity of the parasympathetic nervous system also help to improve sleep, reduce fatigue, and create a sense of calm and comfort during the postpartum period.

Although the lavender aromatherapy intervention was generally effective in reducing the level of postpartum depression, there was one respondent, Mrs. E, who only experienced a decrease in the Edinburgh Postnatal Depression Scale (EPDS) score by 5 points, from an initial score of 10 to 5. This happened because Mrs. E had a relatively mild level of depression from the beginning, so the decline in scores was not as great as other respondents who had higher initial scores. In addition, Mrs. E's undergraduate educational background shows that she has a good level of literacy and understanding of the conditions experienced, but it can also cause its own psychological pressure due to high expectations of motherhood. On the other hand, Mrs. E did not get optimal social support from the family environment, so the postnatal adaptation process was less than optimal. The response to the lavender aromatherapy given also did not show a significant relaxation effect on Mrs. E, due to internal factors such as deeper anxiety or the habit

of controlling emotions rationally. In addition, the conditions during the implementation of the intervention did not take place optimally, such as a less calm room atmosphere or disturbances during the aromatherapy process, so that its effectiveness was not maximized. Therefore, although lavender aromatherapy is proven to have a positive impact, the results are still influenced by the psychological, social, and environmental conditions of each individual.

Although the Edinburgh Postnatal Depression Scale (EPDS) has been widely used globally, there is debate about its validity in cross-cultural contexts and its application as an effective national screening tool. In the UK, primary healthcare workers, such as midwives and community nurses, have utilized it. It is hoped that future researchers can expand research on lavender aromatherapy by adding other relevant variables, such as sleep quality, mother-infant bonding, and family support, thereby providing a more comprehensive picture of the benefits of this therapy. Furthermore, future research could also be directed to exploring other non-pharmacological techniques, such as lemon, rose, or ginger aromatherapy, to compare the effectiveness of different types of aromatherapy in reducing postpartum blues symptoms.

The limitation of this study is that the use of lavender aromatherapy was carried out in an open room, so there is a possibility of aroma dispersion which can affect the intensity of exposure and the effectiveness of the intervention. The advantage of this research is that it uses a quasi-experimental research method.

CONCLUSION

There is an effect of lavender aromatherapy on the Edinburgh Postnatal Depression Scale (EPDS) score in mothers with postpartum blues in the Work Area of UPTD Madukoro Primary Health Care, North Lampung Regency with a p value of 0.000. Postpartum mothers are advised to utilize lavender aromatherapy regularly as a non-pharmacological method to help reduce symptoms of postpartum blues. Use can be done at home by inhaling the aroma from a diffuser or droplets of essential oil on media such as tissue or cotton during rest time.

Author's Contribution Statement: **Anggraini:** conceptualization, Methodology, **Neneng Siti Lathifah:** investigation, writing-review and editing, **Desmalia:** investigation, writing-review and editing

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