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The Correlation of Lavender Aromatherapy with The Childbirth Process in The Independent Practice of Midwives in Denpasar City

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ABSTRACT

Prolonged labor is one of the causes of high Maternal Mortality Rate (MMR) in the world. Prolonged labor has an average cause of maternal death worldwide by 8% and in Indonesia by 9%. Prolonged labor can be prevented with several efforts, namely by using various proven pharmacological and non-pharmacological methods, which are used to shorten the labor process. Lavender aromatherapy is a well-known complementary medicine with a calming effect. Lavender essential oil, used as aromatherapy for analgesics, contains 8% terpenadan and 6% ketones. This study aims to determine the relationship between lavender aromatherapy and the labor process in the Independent Midwife Practice in Denpasar City. This type of research was a correlation analysis using a cross-sectional design. The research conducted in February-April 2023 with 55 respondents used simple random sampling. The instrument used in this study was a data collection format. The data analysis used was the Chi-Square test, and the Chi-Square statistical test was 0,004 (<0,05) so that the hypothesis can be accepted and it can be concluded that there was a relationship between lavender aromatherapy and the labor process in Independent Midwife Practices in Denpasar City. Independent Midwife Practices in Denpasar City were expected to apply complementary lavender aromatherapy therapy to provide obstetric care for labor.

Keywords: lavender aromatherapy; labor process; prolonged labor

Introduction

Maternal death is defined as the death of a woman during pregnancy or within 42 days after delivery regardless of time and any cause related to or aggravated by the pregnancy and its treatment, but unintentional or due to any cause [1]. Complications during pregnancy or childbirth will result in the death of the mother. The global maternal mortality ratio decreased by 38% from 342 deaths to 211 deaths per 100,000 live births in 2000 to 2017. The UN inter-agency estimates an average annual reduction rate of 2.9% [1].

The Maternal Mortality Rate (MMR) recorded in the family health program at the Ministry of Health increases every year. The maternal mortality rate in Indonesia was 7,389 in 2021, showing an increase compared to 2020, which showed 4,627 deaths, while neonatal deaths in 2021 showed 20,154 deaths. Neonatal mortality aged 0-6 days was (79.1%), while neonatal mortality from 7-28 days was 20.9%. Mortality in the post-neonatal period aged 29 days-11 months was 18.5% (5,102 deaths) [2].

The maternal mortality rate in Bali has been below the national figure for the last five years, namely below the target of 100 per 100,000 live births, but the decline in MMR has not been reduced significantly. The Maternal Mortality Rate decreased in 2018 to 54.03 per 100,000 KH, the lowest figure in 5 years, and reached the highest rate, 189.65 per 100,000 KH in 2021. The Infant Mortality Rate (IMR) in Bali from 2016 was 6. 2 per 100 KH, decreased to 4.5 per 1000

KH in 2017 and 2018, then increased to 5.0 per 1000 KH in 2019 and 2020, and IMR increased to 5.8 per 1000 KH in 2021 [3].

Prolonged labor is one of the causes of high MMR in the world. The impact of prolonged labor can cause emergencies or complications for the mother and neonate. Bleeding and stress can cause complications in the mother, while fetal distress, asphyxia, and caput are complications in neonates [4]. Long labor can be prevented with several efforts, namely by using various proven pharmacological and non-pharmacological methods, which are used to shorten labor. Pharmacological methods can have a negative impact on the mother and fetus, while for mothers giving birth, using non-medical methods is usually easier, one of which is using non-pharmacological methods, namely relaxation, respiration techniques, physical exercise, music therapy, massage, acupressure, acupuncture, aromatherapy, hypnobirthing [5].

Non-pharmacological methods, namely aromatherapy, are used as an alternative or complementary treatment, which is well known for reducing symptoms of various physiological processes such as childbirth [6]. Aromatherapy consists of molecules that are released into the air as water vapor. Water vapor containing these chemical components is inhaled and absorbed by the body through the nose, lungs, and bloodstream. Aromatherapy can affect the brain's limbic system, which is the center for producing emotions, moods, and memories; neurohormone endorphins and encephalin can relieve pain, and serotonin helps deal with tension or stress and anxiety when facing the birthing process. Lavender aromatherapy is a non-pharmacological treatment to calm the mother during labor and can shorten the second stage of labor [7].

Lavender aromatherapy is a complementary treatment that is famous for its calming effects. The pleasant smell of lavender will produce a calming feeling, which can reduce anxiety [5]. Lavender essential oil is used as aromatherapy for analgesics, which contains 8% terpenadan and 6% ketones. High-quality lavender extract generally exceeds monograph specifications with a higher linalyl acetate content, ideally 33-45%, and lavender set ≥1,5% plus content cineol, which has a lower limit [5]. Lavender Officinalis, usually called lavender, is included in the family Lamiaceae which is used as an aromatherapy ingredient. The contents of lavender are camphor, terpinene-4-ol, linalool, linalyl acetate, beta-ocimene and 1, and 8-cineole. Studies on the benefits of lavender aroma show that linalool and linalyl acetate can stimulate the parasympathetic system. Linalyl acetate has narcotic effects, and linalool acts as a sedative. Inhaling lavender aromatherapy can relieve pain naturally, making it more comfortable because it is caused by stimulating the body to release endorphin compounds [8].

Considering that prolonged labor can cause maternal death in several areas in Indonesia and the negative impact of prolonged labor on the mother and fetus, as well as the differences in the results of the research above, researchers are interested in researching the relationship between lavender aromatherapy and the labor process at PMB Ni Ketut Suriyanti, SST, PMB Yan Mona Fridayanthi, S.Tr.Keb, PMB bdn. Jaba P.Rahguslyani Budarsana, S.Tr.Keb and PMB Made Sri Devi Indrawati, S.Keb., Bd (Maternity House Garba Nanda). The research aims to obtain a relationship regarding the birth process with lavender aromatherapy and without lavender aromatherapy.

Methods

Quantitative research with Secondary Data Analysis (ADS) includes this research, which uses secondary data as the primary source. This type of research is correlation analysis research to determine whether there is a relationship between the independent and dependent variables using a cross-sectional design.

This research carried out in February-April 2023. The sample collection technique is by calculating the sample using a sample size formula until it is found that the number of samples does not receive the complementary lavender aromatherapy determined by the researcher. A total of 55 samples were used in this research. Samples were obtained from a population of primiparous mothers from 2021-2022 in PMB, which has been selected as the research location.

The data analysis carried out in this study was bivariate. This analysis was used to prove the existence of a correlation between lavender aromatherapy and the birthing process through the Chi-Square test; if the p-value <0.05, then there is a relationship, and if p≥0.05, then there is no correlation.

Results and Discussion

Table 1.
Characteristics of Maternity Mothers Based on Occupation, Recent Education and Religion in PMB Denpasar City Area

Respondent Characteristics	Frequency (f)	Percentage (%)
Work		
IRT	10	18,2
Private Employees Self-	16	29,1
Employed	16	29,1
Civil servants	13	23,6
Total	55	100
Last education		
Elementary School Middle School	6	10,9
Diploma, Masters	11	20,0
	14	25,5
	24	43,6
Total	55	100
Religion		
Hindu Islam Christian	29	52,7
	14	25,5
	12	21,8
Total	55	100
Work		
IRT	10	18,2
EmployeePrivate	16	29,1
Entrepreneur	16	29,1
Civil servants	13	23,6
Total	55	100
Last education		
Elementary School Middle	6	10,9
School	11	20,0
Diploma, Masters	14	25,5
	24	43,6
Total	55	100
Religion		
Hindu	29	52,7
Islam	14	25,5
Christian	12	21,8
Total	55	100

Table 2
Frequency Distribution of Lavender Aromatherapy and the Childbirth Process

No	Aromatherapy	Frequency	Percentage
1.	With Lavender Aromatherapy	29	52,7
2.	Without Lavender Aromatherapy	26	47,3
	Total	55	100
No	**Childbirth Process**		
1.	Normal Delivery	38	69,1
2.	Abnormal Labor	17	30,9
	Total	55	100

Table 3
Bivariate Analysis of the Correlation between Lavender Aromatherapy and the Childbirth Process in PMB Denpasar City Area 2021-2022

No	Aromatherapy	Childbirth Process						*P*
		Normal		Abnormal		Total		
		f	%	f	%	F	%	
1	With Lavender Aromatherapy	25	45,5	4	7,3	29	52,7	
2	Without Aromatherapy Lavender	13	23,6	13	23,6	26	47,3	0,004
	Total	38	69,1	17	30,9	55	100	

Table 1 shows that the most significant proportion of respondents' characteristics, namely from 55 respondents, obtained the same percentage results for job characteristics, namely 29.1% of respondents (16 people) had private sector jobs and were self-employed, as many as 43.6% of respondents (24 people) having a diploma or bachelor's degree, 52.7% of respondents (29 people) were Hindu.

1. Characteristics of birth mothers

a. Characteristics by job

Respondents in this study tended to have jobs as private employees and entrepreneurs, as many as 16 respondents (29.1%). Pregnant women who work have limited time to carry out pregnancy checks. Mothers who choose to work will prioritize their work because it is related to income to ensure survival, which could lead to cesarean section delivery. Mothers who do not have a job will have free time to routinely carry out pregnancy checks, reducing the risk of cesarean section delivery [9].

Characteristics based on last education Maternity mothers with a diploma or bachelor's degree were the most significant number of respondents, namely 24 respondents (43.6%). The mothers with a high level of education tend to have pregnancy checks. Mother's education influences her to take action and look for causes and solutions. Based on these data, a high level of education will influence a person's ability to obtain information so that the mother's ability to think more rationally. The level of education is one of the factors that are the basis for mothers in making decisions, and birth outcomes are also supported by the mother's level of knowledge regarding health, the environment, the economy, interactions with health workers and awareness. A person with a low level of education can hamper a person's attitude in accepting information and new things that are introduced. Mothers with a low level of education will have less knowledge about high-risk pregnancies, which can result in risky births [10].

b. Characteristics based on religion

Respondents in this study were dominated by mothers who adhered to the Hindu religion, namely 29 respondents (52.7%). Religion cannot directly influence pregnancy, but religion can influence community rituals, culture, and traditions. The spiritual support that pregnant women have can relieve the patient's psychology, such as shock, fear, despair, anger, anxiety, and depression. Spiritual support not only focuses on the need for worship in a relationship with God, but spiritual needs can help mothers in labor find comfort and calm [11].

Based on these results, the characteristics of respondents are related to the mother's birth process, starting from work; if the mother has a job, she will make her work a priority and will experience fatigue so that she rarely has a pregnancy check-up which causes the possibility of surgical delivery. Low maternal education or no schooling will result in the mother needing a better understanding of the birthing process. Mothers also need spiritual support during the birthing process because it can increase their trust in God and ease the psychological burden of the mother giving birth.

2. Proportions of lavender aromatherapy and the childbirth process

Based on Table 2, 29 people (52.7%) of the 55 respondents gave birth with lavender aromatherapy, and 26 people (47.3%) without lavender aromatherapy. This data proves that using lavender aromatherapy during childbirth is greater than without lavender aromatherapy. Inhaling aromatherapy can provide many health benefits and can be used as an alternative therapy in dealing with several health problems [12].

Aromatherapy is a treatment technique using the aroma of essential oils from the

distillation process of various parts of plants, flowers, and trees, which contain different therapeutic properties. Lavender is one essential plant whose processed products can be used in aromatherapy [13]. The main ingredients in lavender aromatherapy are linalyl acetate and linalool. Linalool is the main active ingredient which plays a relaxing role. Lavender oil contains linalool and is an aromatherapy oil widely used by inhalation or massage techniques. Lavender aromatherapy has calming benefits to treat stress [14].

Aromatherapy administered via inhalation or topical method through the skin can provide beneficial fragrant effects. Aromatherapy causes psychological and physiological changes, such as increasing alpha waves in the brain and causing a more relaxed state [15].

Most respondents, namely 38 people (69.1%), experienced expected delivery, while 17 (30.9%) experienced abnormal delivery. This data shows that normal labor is a type of physiological labor that many mothers hope for because it carries a small risk compared to abnormal labor, where the labor process involves procedures such as cesarean section. The standard or spontaneous vaginal delivery is a physiological birth with many positive effects [16].

Normal delivery is the process of expulsion of the fetus at term gestational age (37-42 weeks), spontaneous birth with a back of the head presentation, no complications for the mother or baby, while abnormal delivery is labor that occurs not spontaneously but rather through action. Indications of abnormal labor due to complications include prolonged second stage, undeveloped labor, fetal distress, hydration, placenta previa, severe preeclampsia, and malposition [17].

Several respondents underwent referral to health services with more complete facilities because they experienced complications, namely prolonged first stage and long second stage. The factors causing prolonged labor are slow or stopping opening of the cervix, fetal weight ≥ 4000 grams, failure to lower the presentation of the fetal head to the pelvic floor, inadequate uterine contractions, height (<155 cm), body mass index (>28), weight gain during pregnancy (>8.0 kg) and right occiput transverse (ROT) fetal position [18]. A labor process that experiences a long first stage and a prolonged second stage will impact the mother and baby. The impacts on the mother are uterine atony, infection, and bleeding; the mother experiences fatigue, dehydration, and shock and undergoes labor with procedures such as vacuum extraction, labor induction, forceps, and cesarean section. The impacts experienced by the fetus are asphyxia, infection, and fetal death [19]. Prolonged labor is associated with the incidence of cesarean delivery in Indonesia. This is in accordance with research conducted in England and Australia showing that cesarean section is caused by complications during the delivery process, such as prolonged labor, prematurity, and fetal distress [20]. Research conducted in Ethiopia shows that the results of a cesarean section on the mother can cause postpartum fever, surgical site infection, puerperal sepsis, and maternal death, while the impacts that occur on the baby are asphyxia, low Apgar scores, neonatal sepsis, infant death, children's sensory disorders, and prematurity [21].

Based on these results, complementary therapy helps many women. Many mothers want to have a normal birth compared to a surgical birth. Lavender aromatherapy is one of the non-pharmacological treatments that is often chosen because it has few side effects. The use of lavender aromatherapy is always simple and safe to use. Complementary therapy with lavender aromatherapy is widely chosen because it provides many benefits, namely overcoming labor pain prolonged labor, and preventing surgical labor in the mother, such as cesarean section, labor induction, vacuum, and forceps.

3. The correlation between lavender aromatherapy and the childbirth process

Table 3 shows the research results that 45.5% of births with lavender aromatherapy experienced normal labor, and 23.6% of births without lavender aromatherapy experienced normal labor. The bivariate analysis using chi-square obtained $p = 0.004$, meaning that H0 was rejected because $p < 0.05$. The results of this analysis prove a significant relationship between lavender aromatherapy and the labor process in PMB Denpasar City.

Lavender aromatherapy is effective in the labor process; it can speed up labor. Lavender aromatherapy has benefits for improving the physical and psychological condition of mothers in labor. Physically, it is used to reduce pain, while psychologically, it can relax the mind, reduce tension, and provide calm to the mother. This means that when the labor process is underway, the mother still has the energy to push so that the labor process is not hampered [22].

Non-pharmacological methods are often chosen as treatment because they have few side effects, are cheap, and can be used during birthing. The lavender aromatherapy technique is used as an alternative or complementary treatment, which is well known for reducing symptoms of various physiological processes such as childbirth [6].

The lavender aromatherapy is the most effective in reducing pain than lemon aromatherapy. The pain that mothers feel can cause psychological disorders. The reactions caused are harmful, such as stress, anxiety, fear, and rejection of standard delivery. This reaction is caused by the excessive release of catecholamine hormones, which reduces blood circulation to the uterus and placenta, which can result in prolonged labor, and the fetus experiences hypoxia and stress [23].

Based on these results, complementary therapy, especially lavender aromatherapy, has benefits in childbirth, one of which is that it can speed up the duration of labor. Mothers who were given lavender aromatherapy had more normal deliveries than those who were not. The success of using lavender aromatherapy during the birthing process may be influenced by several factors, namely the mother's cooperative attitude, good room conditions, and application of aromatherapy using the right tools, as well as the absence of birth complications.

Conclusion

Based on the research result it can be concluded that a correlation between lavender aromatherapy and the childbirth process at the Independent Midwife Practice in Denpasar City.

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