



Early Initiation of Breastfeeding Can Accelerate Uterine Involution in Postpartum Women

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<p>Track Record Article</p> <p>Accepted: 22 September 2023 Revised: 12 June 2023 Published: 29 September 2023</p> <p>How to cite: Yorita, E., Anggraini, Dian, J., Burhan, R., Yanniarti, S., & Rina, R. (2023). Early Initiation of Breastfeeding Can Accelerate Uterine Involution in Postpartum Women. <i>Contagion: Scientific Periodical Journal of Public Health and Coastal Health</i>, 5(3), 1017–1025.</p>	<p style="text-align: center;">Abstract</p> <p><i>Maternal Mortality Rate (MMR) in Indonesia is still high with the main causes of pre-eclampsia and postpartum hemorrhage, this occurs due to endometritis, congenital coagulation disorders as well as residual conception products, subinvolution of blood vessels at placental implantation. Therefore, efforts are needed to increase uterine contractions in the first minute after birth by stimulating the release of the hormone oxytocin so that the uterus contracts adequately with early initiation of breastfeeding (EIB). This study aims to determine the effect of EIB on uterine involution in postpartum mothers in Bengkulu Regency, Bengkulu Province. Design of research is cross sectional with independent variable of EIB, dependent variable of uterine involution. External variables measured include early mobilization, age and parity. The sample in this study were postpartum mothers on day 7, a total of 54 people selected by purposive sampling. The research site was located in Central Bengkulu Regency, Bengkulu Province. Data were analyzed univariate, bivariate with Mann Whitney and multivariate with ancova. There is an effect of EIB with uterine involution $p=0.000$. There is no relationship between parity and uterine involution $p=0.100$. There is a relationship between age and uterine involution $p=0.00$. There is a relationship between early mobilization and uterine involution $p=0.00$. EIB is the dominant factor affecting uterine involution in postpartum mothers. EIB is the dominant factor affecting uterine involution. Health care providers should perform EIB within the first hour after the birth of the baby to prevent sub involution in postpartum women.</i></p> <p>Keywords: <i>Breastfeeding, Early, Initiation, Involution, Uterine</i></p>
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INTRODUCTION

The Maternal Mortality Rate (MMR) in Indonesia is still high at 305/100.000 live births or 14,623 cases. In India, the maternal mortality rate is 383/100,000 live births, while in the United States it is 17.4/100,000 live births globally, the maternal mortality rate is 202/100,000 live births. The direct cause of maternal mortality is due to pre-eclampsia and hemorrhage (Balitbangkes RI, 2018; Declercq & Zephyrin, 2020; Horwood et al., 2020; World Health Organisation, 2023). In Bengkulu Province, the maternal mortality rate is 32/100.000 live births, while in Central Bengkulu Regency, the number of maternal deaths is 3 cases (Badan Pusat Statistik Provinsi Bengkulu, 2022)

Complications of pregnancy, childbirth and medical comorbidities are the main risk factors associated with maternal mortality $p=0.00$, OR 50.2, 95% CI 44.5-56.6 (Horwood et al., 2020). One of the most common complications is postpartum hemorrhage, which is a serious condition because it causes hemorrhagic shock and a tendency to disseminated

coagulopathy. Secondary postpartum hemorrhage is also common within 24 hours to 6 weeks postpartum. This occurs when the mother is discharged home. The main causes of this condition are endometritis, congenital coagulopathies, residual products of conception, and subinvolution of blood vessels during placental implantation.

Previous studies have shown that subinvolution occurs due to a delay in the uterus returning to its pre-pregnancy shape, which usually occurs at 4-6 weeks postpartum due to inadequate contractions (Liabsuetrakul & Peeyananjarassri, 2018). Therefore, efforts are needed to accelerate uterine involution by increasing uterine contractions from the first minute after birth by stimulating the release of oxytocin hormone. This hormone is responsible for contraction of myometrial smooth muscle to prevent bleeding, accelerate involution, and increase milk production (Wray et al., 2021).

A preliminary survey in Central Bengkulu Regency, the causes of deaths that occurred during the postpartum period due to postpartum hemorrhage and puerperal infections were 2 cases in 2020 (Badan Pusat Statistik Provinsi Bengkulu, 2022). Previous research found that this condition is related to the process of involution is hindered by inadequate uterine contractions, characterized by uterine atony, bleeding, fever, and an increase in the height of the fundus uteri on abdominal palpation (Schrey-Petersen et al., 2021).

Research has shown that EIB is one way to stimulate the posterior pituitary gland to secrete oxytocin so that the uterus contracts. EIB is a process of providing an opportunity given to the baby immediately after birth by placing the baby on the mother's stomach, then allowing it to find the mother's nipple and suckle until satisfied (Diba Faisal et al., 2020). EIB followed by continuous breastfeeding increases adequate uterine contractions, thereby accelerating uterine involution (Delli Carpini et al., 2019; Dixon et al., 2013).

The implementation of EIB is a fixed procedure that must be performed on every postpartum mother, but the implementation of EIB in Indonesia is only 58.2%. The implementation of EIB in infants less than the first 1 hour after birth in Bengkulu Province is only 56.64%, while in Bengkulu Tengah Regency is only 56.48% (Badan Pusat Statistik Provinsi Bengkulu, 2022; Kementerian Kesehatan RI, 2018; RI, 2021). This study aims to determine the effect of EIB on uterine involution in postpartum mothers in Bengkulu Regency, Bengkulu Province.

METHODS

This research design is cross-sectional with EIB as the independent variable and uterine involution as the dependent variable. EIB status was measured based on the success of EIB,

which was considered successful if the baby was able to reach the mother's nipple independently within the first hour of EIB, and unsuccessful otherwise. Uterine involution was measured on postpartum day 7 using a tape measure, with the first benchmark measurement being the upper edge of the symphysis drawn to the fundus uteri. Measurements Uterus Fundus Height (UFH) were expressed in centimeters (cm). External variables measured included early mobilization, age, and parity.

The sample in this study was postpartum mothers on day 7, a total of 54 people selected by purposive sampling with inclusion criteria for normal postpartum mothers, with exclusion criteria for babies with congenital anomalies, fetal distress, and low birth weight. Primary data collection was conducted from November 2021 to January 2022 in Pekik Nyaring Health Center area, Kembang Seri Health Center area, and Taba Lagan Health Center area in Central Bengkulu Regency. Data were analyzed univariate, bivariate with mann-whitney test and multivariate with ancova test using SPSS version 23 software.

RESULTS

Table 1 Frequency Distribution of EIB, Early Mobilization, Maternal Age and Parity In Central Bengkulu Regency ($n=54$)

Variable	n	%
EIB Status		
No	13	24.1
Yes	41	75.9
Early Mobilization		
No	15	27.8
Yes	39	72.2
Age		
< 20/ >35	18	33.3
20-35	36	66.7
Parity		
Multiparos	39	72.2
Primipara	15	27.8

Table 1 shows that most respondents (75.9%) successfully EIB, most (72.2%) perform early mobilization and most (66.7%) are 20-35 years old and (72.2%) with multiparous parity.

Table 2 Frequency Distribution of Uterine Involution Based on Mean Uterus Fundus Height in Postpartum Mothers

Variabel	<i>n</i>	Min	Max	Mean	median	SD
<i>Involution Uterine</i>	54	4	8	5.72	5.00	1.07

Table 2 shows the average UFH in postpartum women is 5.72 cm with the lowest size of 4 cm and the highest of 8 cm.

Table 3. Relationship between EIB, Early Mobilization, Age, Parity to Uterine Involution in Postpartum Women.

Variabel	n	Mean Rank	Beda Mean	Nilai p
EIB Status				
Yes	13	45.54	23.76	0.000
No	41	21.78		
Parity				
Multiparous	39	25.45	7.38	0.100
Primipara	15	32.83		
Age				
<20/>35	18	35.58	13.62	0.000
20-35	36	21.96		
Early Mobilization				
Yes	15	41.00	18.69	0.000
No	39	22.31		

Mann whitney test

Table 3 shows that there is a difference in the average uterine involution in postpartum mothers who successfully perform EIB with those who do not successfully perform EIB, namely 3.76. The statistical test results show that there is a relationship between EIB success and uterine involution in postpartum women with a value of $p=0.000$. The statistical test results in Table 2 also showed no relationship between parity and uterine involution with a value of $p=0.100$. There is a relationship between age and uterine involution $p=0.00$. There is a relationship between early mobilization and uterine involution $p=0.00$.

Table 4. Multivariate Analysis of the Effect of EIB, Early Mobilization and Maternal Age on Uterine Involution in Postpartum Mothers

Variabel	Mean Square	f	p value
Early Mobilization	0.697	2.123	0.151
Age	0.000	0.001	0.977
EIB	0.899	2.737	0.004

Ancova test

Table 4. shows that EIB is the most influential factor on uterine involution in postpartum mothers with a p-value of 0.00.

DISCUSSION

The results of this study showed that the mean uterine involution in postpartum women as measured by the height of the uterine fundus on day 7 was 5.72 cm, which is consistent with previous findings that 98.9% of UFH is in the mid-symphysis center, but different results were obtained with UFH 7.50 cm (Lestari & Azizah, 2022). The difference in the results of this study may be due to the fact that the involution process is influenced by various factors such as early mobilization, good nutritional status, age, and EIB status (Cholifah & Siswanti, 2021).

The results of this study showed that there was a relationship between EIB status and uterine involution. Infants with successful EIB in the first hour were significantly associated with uterine involution. This is consistent with previous findings that EIB affects UFH. This finding is consistent with previous research that postpartum mothers who perform EIB may accelerate uterine involution. Mothers who performed EIB had an average decrease in UFH of 2.13 cm at 12 hours postpartum (Fahriani et al., 2020)(Fahriani et al., 2020).

EIB is the first step in successful breastfeeding; stimulation of the nipple suck at the baby's mouth stimulates the release of oxytocin, which stimulates the uterus to contract, accelerating involution (Erickson et al., 2020; Yorita et al., 2023). Similar research also found that postpartum mothers who were late in performing EIB had a flaccid uterine consistency.

Increased oxytocin secretion from the baby's initial suck on the nipple stimulates receptors on the breast to help the posterior pituitary release oxytocin. This will increase uterine contractions, accelerating uterine involution, shrinking the uterus and returning it more quickly to its pre-pregnancy state. Continued adequate contractions will restore the size of the uterus from 1000 grams to 100 grams (Al Sabati & Mousa, 2019).

In this study, mothers who successfully performed early initiation experienced a mean difference in UFH reduction of 3.76 cm compared to mothers who did not perform EIB, which means that EIB has the ability to accelerate the process of uterine involution. This finding supports the results of research on faster uterine involution in mothers who initiate early breastfeeding, where there is a decrease in UFH of 1.63 cm, $p=0.003$, at 12 hours postpartum (Putri et al., 2020).

The decrease in UFH is normal if on the first day of postpartum it is 1 finger below the middle and on the third day it is 3 fingers below the middle. UFH is slow if it is 1 finger below the center on day 1, < 1 finger below the center on day 2, and < 3 fingers below the center on day 3. In mothers who initiate early breastfeeding UFH 2.21 cm on days 1 and 3 and day 5.78 cm, this situation is in the fast category (Amelia et al., 2019).

This study also found that early mobilization was also significantly associated with uterine involution, this result supports previous findings that 80% of the respondents who mobilized early had rapid uterine involution and faster lochea release than the control group. This is consistent with previous findings that the process of uterine involution occurs rapidly in postpartum mothers who mobilize (Mudlikah, 2022).

Early mobilization is an effort to prevent sub-involution, it has been proven to significantly reduce the mean UFH to 5.72 cm, this supports previous findings that the mean UFH occurred in mothers who performed early mobilization was 5.86 while the control group

had a mean UFH of 7.86 cm (Colin et al., 2019; Rosdiana et al., 2022). The results of this study are also consistent with previous studies that 60% of respondents who performed early mobilization had a decrease in fundus uteri height ≥ 2 cm while in the control group only 10%, this means that early mobilization can accelerate the decrease in fundus uteri in postpartum women $p=0.00$ (Purwati, 2019).

However, different results were obtained where the mean UFH of mothers who performed early mobilization such as postpartum exercises was only 8.68 cm (Hadianti & Sriwenda, 2019). The difference with the results of this study may be other factors that affect uterine involution such as the characteristics of the respondents in the form of age and parity and nutritional status (Cholifah & Siswanti, 2021).

This study also found that age has an effect on uterine involution, this result is the same as that obtained that age affects uterine involution with a value of $p = 0.00$ (Rohmawati et al., 2019), but there are different findings that age has no effect on accelerating uterine involution (Ningsih, 2021). The results of this study also found that parity was not associated with uterine involution, this result supports previous findings that parity has no effect on uterine involution (Ningsih, 2021).

Different results were found in research that parity is a factor that affects the decrease in UFH. This is because primiparous mothers are associated with lack of information about postpartum care and health, on the other hand, mothers with parity three or more affect the weakness of endometrial muscles to contract due to too frequent childbirth, which affects uterine involution (Pradana & Asshiddiq, 2021).

This result is consistent with the finding that the size of the uterine cavity in multiparous is larger than that in primiparous, although the downward trend remains the same between multiparous and nulliparous, but the postpartum period after normal delivery depends on parity. Uterine involution in the postpartum period follows the same pattern in both primiparous and multiparous, but the pattern lasts longer in multiparous, so continuous monitoring is needed in postpartum women with high parity (Paliulyte et al., 2017).

The results of multivariate analysis in this study found that EIB is the most dominant factor affecting uterine involution, this result proves that the stimulation of the baby's initial sucking on the mother's breast during the breastfeeding process stimulates the medulla oblongata and accelerates the work of parasympathetic nerves to send signals to the hypothalamus so that the posterior pituitary lobe secretes oxytocin. This causes the uterus to contract more, accelerating uterine involution (Antonio et al., 2018).

Strong uterine contractions occur due to the presence of actin and myosin components that occur due to the stimulation of the hormone oxytocin, which is released due to the stimulation of the baby's mouth sucking on the mother's nipple (Antonio et al., 2018). EIB has a beneficial effect on both mother and baby, therefore the implementation of EIB should be a fixed and routine procedure.

Educational factors, mode of delivery, maternal knowledge, assistants, and place of delivery affect the implementation of EIB, so socialization, health education, and SOPs for implementation of EIB are needed continuously, especially during pregnancy, in every health care setting (Adhani et al., 2022; Pangemanan et al., 2020). The use of attractive and diverse health promotion media can increase knowledge among pregnant women, thereby increasing the success of EIB in newborns. Health care providers need to educate pregnant women about the implementation of early initiation for outcomes that benefit mothers and babies (Supriani, 2021).

CONCLUSION

There is an association between EIB and uterine involution. Early mobilization and age are associated with uterine involution, but there is no relationship between parity and uterine involution. EIB is a domain factor that affects the rate of uterine involution in postpartum women. Policy makers need to establish strict regulations for the implementation of EIB in all health care settings, both hospital and community. Health care providers should ensure successful initiation of early breastfeeding within the first hour to accelerate uterine involution in postpartum women. Future researchers can design studies related to the implementation of EIB in different health care settings.

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