


The Effect of Early Breastfeeding Initiation (IMD) on Uterine Involution in Post Partum Mothers at Ninda Harni Clinic

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Article Info	ABSTRACT
<p>Article history:</p> <p>Received July 11, 2023 Revised August 23, 2023 Accepted September 12, 2023</p> <hr/> <p>Corresponding Author:</p> <p>Lili Yuliana Tambunan Sekolah Tinggi Ilmu Kesehatan As Syifa Kisaran, Indonesia Email: yulianalilitambunan@gmail.com</p>	<p>The early initiation of breastfeeding is one of the factors affecting uterine involution. This is due to the stimulation and release of hormones, including oxytocin, which functions to stimulate the contraction of breast smooth muscles and also causes the contraction and retraction of uterine muscles. This will result in the compression of the blood vessels, thereby reducing the blood supply to the uterus. The objective of this study is to ascertain the relationship between early breastfeeding initiation and uterine involution in postpartum mothers. The study was conducted at Ninda Clinic on 26 postpartum mothers, of whom 13 had undergone IMD and 13 had not undergone IMD. The data were analyzed using the chi-square test. The results of this study demonstrated that 12 respondents (46.2%) exhibited normal TFU, while 14 respondents (53.8%) demonstrated abnormal TFU. It can be concluded that there is a relationship between early breastfeeding initiation (IMD) and involution in postpartum mothers, with a value of $p=0.018$ ($0.018 < 0.05$). It is recommended that health workers, particularly midwives, provide health education about IMD in the postpartum period.</p> <p>Keywords: <i>IMD, mothers, Involusio Uteri</i></p> <p>This article is licensed under a Creative Commons Attribution 4.0 International License.</p> 

1. INTRODUCTION

The World Health Organization (WHO) estimates that approximately 15% of all pregnant women will potentially experience complications related to their pregnancy, which can threaten the life of the mother and fetus. Indonesian data on the causes of maternal mortality indicates that the primary causes are bleeding (28%), eclampsia (24%), infection (11%), and complications of the puerperium (8%) [29]

Complications of the puerperium represent a significant cause of maternal mortality. In response, the government has developed a national puerperium program policy, which includes four scheduled postpartum visits. The postpartum visits occur at six-to-eight hours after delivery, six days after delivery, and at two and six weeks after delivery. The objective of this program is to assess the status of mothers and newborns, to prevent, detect, and treat any potential issues that may arise. During the postpartum period, activities of particular concern include the early initiation of breastfeeding within one hour of birth and ensuring normal uterine involution.

The process of early breastfeeding initiation (IMD) refers to the act of infants being breastfed immediately after birth for a period of one hour. The initiation of breastfeeding (IMD) is one of several factors that affect uterine involution. During breastfeeding, stimulation and the release of hormones, including oxytocin, occur, which function to stimulate contraction of the breast smooth muscles and also cause contraction and retraction of the uterine muscles. This results in compression of the blood vessels, thereby reducing the blood supply to the uterus. This process helps to reduce the site or place of placental implantation and reduce bleeding [34]. According to Praborini (2008), mothers who initiate early breastfeeding will accelerate uterine involution due to the influence of the hormone oxytocin, which can increase uterine contractions.

The proportion of infants who are exclusively breastfed in different regions of the world varies considerably. In Central Africa, for instance, only 25% of infants are exclusively breastfed, while in Latin America and the Caribbean the figure is 32%, in East Asia 30%, in South Asia 47%, and in developing countries as a whole 46%. In general, less than 40% of children under the age of six months are exclusively breastfed (WHO, 2017). Meanwhile, UNICEF data from 2015 indicated that the global coverage rate for early breastfeeding initiation practices was 42% between 2010

and 2015. The prevalence of early breastfeeding initiation in Indonesia itself is still lower, at 49.3% (SDKI, 2012). In 2013, the percentage of mothers who initiated early breastfeeding decreased to 34.5% (Riskesdas, 2013). This figure is notably low in comparison to other countries in Southeast Asia, including Myanmar (76%), Thailand (50%), and the Philippines (54%).

In light of the aforementioned data, it is evident that the implementation of exclusive breastfeeding in Indonesia is still far from reaching the targeted 80%. The 2012 Indonesian Basic Health Survey (IDHS) revealed that among infants under two years of age who had been breastfed, only 42% of those aged 0-6 months were exclusively breastfed (IDHS, 2012). Meanwhile, exclusive breastfeeding in Indonesia decreased to only 41.9% in 2015.

The lowest rates of exclusive breastfeeding among infants up to six months of age were observed in North Sumatra (12.4%) and Gorontalo (12.5%), while the highest rates were observed in DI Yogyakarta (55.4%). The data from the Indonesian Health Profile (2017) indicates that the prevalence of exclusive breastfeeding in West Sumatra until the age of six months was 37.6%. A review of the data reveals that the lowest rates of IMD implementation are observed in West Papua Province (21.7%), West Nusa Tenggara (42.9%), Maluku (41.5%), Southeast Sulawesi (43.7%), North Sumatra (44%) and West Sumatra (44.2%) (Riskesdas, 2013). A review of the data at the district/city level in West Sumatra Province in 2016 revealed that three districts/cities had the lowest achievement rates: Mentawai District (35.2%), South Solok District (38.5%), and Padang Panjang City (39.1%) [32]

The postpartum period is defined as the period immediately following childbirth. This period also encompasses the subsequent weeks during which the reproductive tract reverts to its non-pregnant state, typically lasting six weeks. During the postpartum period, the reproductive organs undergo a gradual return to their pre-pregnancy state. One of the changes that occurs in the reproductive organs is involution. Uterine involution, also known as uterine shrinkage, represents the process by which the uterus returns to its pre-pregnancy condition. Involution of the uterus may also be defined as the process of returning the uterus to its original state or state prior to pregnancy. If uterine involution occurs as it should, it will reduce the incidence of bleeding, especially postpartum bleeding, which is one of the direct causes of maternal mortality. One factor that influences uterine involution is the initiation of early breastfeeding.

In a study conducted by Edmond (2006), it was found that 71% of mothers who initiated early breastfeeding did so on the first day of birth. The risk of puerperal complications is 3.5 times higher in mothers who do not initiate early breastfeeding within the first 24 hours of childbirth, with a subsequent decrease up to 7 days postpartum. Additionally, the risk of neonatal death is four times higher in children who are given formula other than breast milk. Martini's research (2012) on 78 respondents regarding the Fundus Uteri Height (TFU) from the first 24 hours of birth to the seventh day yielded the following results: 61.5% (48 people) exhibited normal TFU, while 38.5% (30 people) demonstrated abnormal TFU. The results of the bivariate analysis indicated a significant difference in the proportion of fundus uteri height between mothers who performed IMD and those who did not perform IMD, as evidenced by the discrepancy in TFU from the first 24 hours of birth to day seven.

The importance of breastfeeding is evidenced by a verse of the Qur'an which states that it is an obligation for a mother to breastfeed her child until the child is two years old. This is found in QS. Al-Baqarah [2]: 233, which reads: Furthermore, the act of breastfeeding involves two main aspects: the nourishment of the infant and the fulfillment of the mother's intention to breastfeed. It is obligatory for the mother to breastfeed her child for a period of two years, and it is the responsibility of the father to provide for the mother and child in accordance with the principles of Islamic law.

The verse states that mothers should breastfeed their children for two full years, or until they choose to stop breastfeeding. Additionally, it is the responsibility of the father to provide for and care for the mother in a reasonable manner. (Q.S. Al-Baqarah [2]: 233) [7]

A study conducted in Ghana and published in the journal *Pediatrics* (2006) examined the incidence of neonatal deaths (babies under 28 days old) and the potential impact of early breastfeeding. The study included a sample of 10,947 babies born between July 2003 and June 2004. The findings indicated that 16% of neonatal deaths could be prevented if babies were given the opportunity to breastfeed after the first 24 hours. The findings of Mashurhoh's (2011) research indicated a correlation between early breastfeeding initiation and uterine involution in postpartum women. Similarly, [15] study demonstrated that early breastfeeding initiation affects the achievement of uterine involution in postpartum women. [15][34]

The findings of Nelwatri's (2013) study indicate a reduction in the mean fundal height of postpartum women on day 6 who were subjected to early breastfeeding initiation (IM). The mean value of D is 10.54 ± 1.103 cm, while the mean value of the height of the fundus uteri in postpartum women who did not undergo IMD is 13.33 ± 1.129 cm. These findings indicate a reduction in the height of the fundus uteri by 2.79 cm in mothers who initiated early breastfeeding compared to those who did not. Sari's research (2014) revealed that the mean height of the mother's fundal uteri 2 hours postpartum was 11.80 ± 0.73 cm in mothers who initiated early breastfeeding, while in those who did not initiate early breastfeeding, the mean height was 13.80 ± 0.73 cm. The mean height of the mother's fundus uteri 2 hours postpartum after initiating early breastfeeding was 12.85 ± 0.38 cm, which was a decrease of 1.05 cm when compared to mothers who did not initiate early breastfeeding. A preliminary survey conducted on 10 postpartum mothers who gave birth at the Ninda clinic revealed that 50% of respondents did not initiate early breastfeeding. [15][16]

2. METHOD

The type of research used in this study is quantitative, using a Cross Sectional approach. The sampling technique used in this study was total sampling, namely 26 people. The sampling technique in this study was Total Sampling.

3. RESULTS AND DISCUSSION

3.1. Univariate Analysis

Table 1. Characteristics of Respondents Based on Age, Education, Occupation at Ninda Clinic

No	Respondent Characteristic	N	%	
1	Age			
	17 – 25 years	14	53,8	
	26 - 35 years	8	30,8	
	36 – 45 years	4	15,4	
	2	Education		
		Did Not Finish Elementary	3	4,3
Elementary School		5	19,2	
Junior High School		4	25,4	
Senior High School		13	50	
University		1	15,4	
3	Occupation			
	Housewives	12	51,1	
	Civil Servant	6	15,2	
	Employee	3	4,3	
	Entrepreneur	5	17,4	
	Total	26	100	

Based on the results of Table 1, in terms of age, the majority of mothers are 17-25 years old as many as 14 people (53.8%) and a minority of 26-35 years old as many as 8 people (30.8%). The majority of respondents' education is high school as many as 13 people (50.0%), and the minority of Bachelor's degree is 1 person (15.4%). The majority of the occupations were housewives as many as 12 people (46.2%) and the minority of private sector as many as 3 people (11.5%).

Table 2. Distribution of Early Breastfeeding Initiation at Ninda Clinic

No	Respondent Characteristic	N	%
1	Given	13	50
2	Not Given	13	50

Based on table 2, it was found that the number of respondents who did IMD was 13 (50%) respondents and those who did not do IMD were 13 (50%) respondents.

Table 3. Distribution of Uterine Involusio at Ninda Clinic

No	Respondent Characteristic	N	%
1	Normal	12	46,2
2	Not Normal	14	53,8

Based on table 3, it was found that the majority of respondents with normal TFU were 12 (46.2%) respondents and the minority who were abnormal were 14 (53.8%) respondents.

3.2 Bivariate Analysis

Based on the research conceptual framework, the IMD and TFU post partum day seven were examined. Bivariate analysis was conducted to determine whether there was a relationship between the independent variable and the dependent variable. In this study, the independent variable is IMD while the dependent variable is the height of the fundus uteri of postpartum mothers on day seven.

Table 4. Relationship between early breastfeeding initiation and uterine involution at Ninda Clinic

IMD	Uterine Fundus Height						p-value
	Normal		Not Normal		Total	%	
	n	%	n	%			
Do	9	96,2	4	3,8	13	100	*0,018
Did not do	3	23,1	10	76,9	13	100	
Total	12	46,2	14	53,8	26	100	

Of the 13 postpartum women who performed IMD, the majority of TFU was normal, namely 9 people (69.2%), while of the 13 people who did not perform IMD, the majority of TFU was abnormal, namely 10 people (76.9%). The

statistical test results obtained a p value = 0.018, so it can be concluded that there is a significant relationship between IMD and the size of the fundus uteri height.

3.3 Discussion

3.3.1 Early Breastfeeding Initiation (IMD) for Postpartum Mothers at Ninda Clinic

The analysis revealed that 13 respondents (50%) had undergone IMD, while 13 respondents (50%) had not undergone IMD. IMD is one of the factors that support the process of uterine involution, as providing breast milk immediately after the birth of the infant has a contraction effect on the uterine smooth muscle. Prolactin is responsible for initiating milk production; however, the delivery of milk to the infant and maintenance of lactation depends on mechanical stimulation of the nipple. Stimulation of the infant's sucking action, known as ejection, is the primary stimulation of milk ejection, and this reflex can be conditioned [32].

The findings of this study are consistent with those of M. Hassanudin's research on the impact of early breastfeeding initiation on the rate of uterine involution in the catchment area of the Bangkalan Madura Health Center. The study found that 7 individuals (38.8%) out of 18 participants initiated breastfeeding at an early stage. The results demonstrated that the process of uterine involution was still palpable in 11 respondents (61.1%), while 7 respondents (38.9%) exhibited no palpable involution.

Postpartum prolactin activity increases, thereby affecting the mammary glands and stimulating the production of milk. This is mediated by the binding of prolactin and oxytocin production in response to the infant's sucking (sucking).

An increase in prolactin results in enhanced milk production, whereas elevated oxytocin levels stimulate uterine contractions, facilitating involution. Once a certain level of contraction is reached, prolactin and oxytocin levels will decline once more (negative feedback), while production and ejection cease. Moreover, milk production is stimulated through the let-down reflex, which involves stimulation of the nipple, pituitary, prolactin, and mammary glands. Similarly, oxytocin is released as a hormone that stimulates the myoepithelium of the mammary duct. During lactation, the mother may experience uterine discomfort or contractions due to the influence of oxytocin, which also increases uterine activity [19][21][27]

In light of the findings of the research and the aforementioned theories, it can be argued that respondents, particularly primiparous mothers, require more information, attention, and support to facilitate the process of early breastfeeding initiation. The process of initiating early breastfeeding is of great importance, as it confers numerous advantages to both the infant and the mother. It fosters a strong bond between them, which can also prevent the infant from developing hypothermia. Additionally, it stimulates the release of oxytocin and prolactin.

3.3.2 Uterine Involusio in Postpartum Women at Ninda Clinic

The results of the analysis of 26 respondents regarding the seventh day of uterine involution have been obtained. Of these respondents, 56.7% (12 people) exhibited normal uterine involution, while the remaining 53.8% (14 people) demonstrated abnormal uterine involution. In this study, the involution process was observed based on the height of the fundus uteri on the seventh day postpartum. According to Justina (2016), during breastfeeding, there will be skin-to-skin contact between mother and baby. [10]. The maintenance of physical contact between mother and infant following the birth of the child appears to result in a heightened peripheral concentration of oxytocin within the maternal circulation, particularly within the initial hour following birth. This phenomenon is postulated to facilitate the acceleration of the process of uterine involution.

Immediately following the birth of the infant, the intensity of uterine contractions will increase significantly, presumably in response to the substantial reduction in intrauterine volume. Oxytocin is a hormone that can stimulate the uterine myometrium, thereby initiating contractions. The process of uterine contraction is a complex one, occurring as a result of the interaction between actin and myosin. Actin and myosin are therefore components of the contraction process. The interaction of actin and myosin is dependent on the presence of myosin light chain kinase (MLCK) and myosin adenosine triphosphatase (Myosin ATPase). The influx of calcium ions into the cell can facilitate this process. Oxytocin is a hormone that increases the entry of calcium ions into cells, thereby strengthening uterine contractions [1]

The findings of this study are consistent with those of Helpi Nelwatri (2018) regarding the correlation between early breastfeeding initiation (IMD) and uterine involution in maternity patients at BPS Kota Padang in 2018. The average fundal uteri height in postpartum women who underwent early breastfeeding initiation was 10.54 cm, with a standard deviation of 1.103 cm. In comparison, the fundal uteri height in postpartum women who did not undergo early breastfeeding initiation was 13.33 cm, with a standard deviation of 1.129 cm. A total of 12 hours postpartum, the mean fundal height in women who initiated early breastfeeding (IMD) was 10.54 cm, with a standard deviation of 1.103 cm. In comparison, the mean fundal height in postpartum women who did not initiate early breastfeeding was 13.33 cm, with a standard deviation of 1.129.

In alignment with the findings of the study and the aforementioned theories, the authors posit that 14 respondents (53.8%) exhibited abnormal seventh-day involution. The majority of respondents with abnormal seventh-day involution did not initiate early breastfeeding. However, early breastfeeding initiation was also observed in a

subset of respondents with abnormal seventh-day involution. This phenomenon can be attributed to the influence of various factors, including postpartum mobilization, nutritional status, parity, and age.

The aforementioned results are corroborated by the research of Roesli and Utami. In 2018, it was posited that the infant's suckling of the mother's nipple will stimulate the release of the hormone oxytocin, which in turn will stimulate the uterus to contract and accelerate uterine involution. The immediate postnatal expression of optimal breastfeeding behaviour is expected to facilitate uterine contractions and decrease TFU, due to the hormonal response of oxytocin in the brain, which will in turn strengthen uterine contractions. It is anticipated that early breastfeeding initiation will mark the beginning of exclusive breastfeeding for the infant.

A study conducted by Fikawati and Syafiq (2018) revealed that infants who were given the opportunity to breastfeed early were eight times more likely to be exclusively breastfed than those who were not given this opportunity. The contraction and retraction of uterine muscles will reduce bleeding. During the first 1 to 2 hours postpartum, the intensity of uterine contractions may decrease and become regular; thus, it is crucial to maintain and regulate uterine contractions during this period [3].

Immediate breastfeeding after the birth of the infant will stimulate the release of oxytocin due to the infant's suckling action on the breast. During the third stage of labor, oxytocin causes the separation of the placenta. It then acts on the muscles that hold the contractions, detaching the placenta and preventing bleeding. In women who are IMD, the baby's suction on the mother's nipple will stimulate the release of oxytocin, which helps the uterus return to its normal shape and stimulates the release of milk [1].

3.3.3 Relationship between IMD and uterine involution in postpartum mothers at Ninda Clinic

Of the 13 postpartum mothers who underwent IMD, the majority exhibited normal uterine involution, with nine individuals (62.9%) demonstrating this outcome. In contrast, among the 13 individuals who did not undergo IMD, the majority exhibited abnormal uterine involution, with ten individuals (76.9%) exhibiting this outcome. The results of the statistical tests yielded a p-value of 0.018, indicating a statistically significant relationship between IMD and uterine involution.

The results of this study are also in accordance with the theories of Walyani (2015) and Wiknjastro (2016), which posit that the involution process can occur rapidly or gradually. Several factors have been identified as influencing involution, including early mobilization, nutritional status, breastfeeding, age, parity, early breastfeeding initiation, and psychological factors. Postpartum prolactin activity increases, affecting the mammary glands to produce milk. This is spurred by increased production of prolactin and oxytocin in response to suckling. Increased prolactin causes an increase in milk, while oxytocin production increases contractions, thus assisting involution. [30]

The findings of this study align with those of Roesli (2018). (Roesli, 2018) During the early stages of breastfeeding, direct skin-to-skin contact between mother and infant has been shown to stimulate the release of oxytocin and prolactin in the mother. The physical contact between the infant and the mother, including the pounding of the infant's head against the mother's chest, the touch of the infant's hand on the nipple and its surrounding area, the emutan, and the infant's licking of the mother's nipple, has been observed to stimulate the release of the hormone oxytocin. Oxytocin causes the uterus to contract, thereby facilitating the expulsion of the placenta and reducing bleeding. It also induces feelings of calmness, relaxation, and stress relief in the mother, enhances maternal bonding, increases the pain threshold, and induces feelings of happiness. The likelihood of death among infants aged 28 days or younger is reduced by 22%. In addition to stimulating milk flow to the breast, it increases the likelihood of successful exclusive breastfeeding and the duration of breastfeeding. Furthermore, the elevated levels of Kadaroksisitosin in breastfeeding mothers facilitate the uterus' return to its pre-pregnancy size. This shrinking process occurs at a faster rate than in non-breastfeeding mothers.

The findings of this study align with those of Helpi Nelwatri's research (2017) on the impact of early breastfeeding initiation (IMD) on uterine involution in postpartum mothers at BPS Padang City in 2017. The results demonstrated that the average fundal uteri height in postpartum mothers who underwent early breastfeeding initiation was 10.54 cm, with a standard deviation of 1.103 cm. In comparison, the fundal uteri height in postpartum mothers who did not undergo early breastfeeding initiation was 13.33 cm, with a standard deviation of 1.129 cm. The mean fundal height in postpartum mothers who initiated breastfeeding early (IMD) was 10.54 cm, with a standard deviation of 1.103 cm. In contrast, the mean fundal height in postpartum mothers who did not initiate breastfeeding early (non-IMD) was 13.33 cm, with a standard deviation of 1.129. The results of the statistical tests revealed a statistically significant difference in the average fundal height between the two groups (p-value = 0.000, 95% confidence interval). This finding suggests that there is a notable discrepancy in the fundal height between those who underwent early breastfeeding initiation (IMD) and those who did not, among laboring mothers at Ninda Clinic.

Postpartum prolactin activity increases, thereby affecting the mammary glands and stimulating milk production. This is mediated by the binding of prolactin and oxytocin, which is triggered by the suckling reflex. An increase in prolactin results in enhanced milk production, whereas elevated oxytocin levels stimulate uterine contractions, facilitating involution. Once a certain level of contraction is reached, the levels of prolactin and oxytocin will decrease once more (negative feedback), while production and output cease. Moreover, milk production is stimulated through the let-down reflex, which involves stimulation of the nipple, pituitary, prolactin, and mammary glands. Similarly, oxytocin is released as a hormone that stimulates the myoepithelium of the mammary duct. During lactation, the

mother may experience uterine discomfort or contractions due to the influence of oxytocin, which also increases uterine activity (Priveranti, 2017)

In light of the findings of the research and the aforementioned theories, it can be posited that the initiation of breastfeeding at an early stage, followed by exclusive breastfeeding, plays a pivotal role in the process of uterine involution. This is due to the stimulation that occurs during the early stages of breastfeeding, as well as the suction exerted by the infant, which in turn stimulates the The oxytocin hormone affects the uterus, causing it to contract and accelerate involution. If involution can run perfectly, it can affect the mother's recovery in the postpartum period and reduce the incidence of MMR due to bleeding (Leni, 2018)

Early breastfeeding initiation is only one of several factors affecting uterine involution. In the study, some respondents exhibited a slow decrease in uterine involution fundal height due to an absence of early breastfeeding initiation. Conversely, there were also respondents who were not initiated into early breastfeeding but whose The rate of uterine involution was found to be rapid in this study. This was attributed to the high level of activity and light mobilization undertaken by the mothers postpartum, as well as the varying nutritional status of each respondent. Conversely, there were postpartum mothers who were initiated early on in the breastfeeding process but whose uterine involution was observed to be slow. Furthermore, primiparous mothers undergo a faster involution process, as postulated by the theory. Parity also affects uterine involution, with muscles that are frequently disturbed taking a longer time to return to their original state. The aforementioned factors can occur due to the influence of other variables on uterine involution [30]

The researcher postulates that there is a correlation between early breastfeeding initiation and uterine involution. The act of the infant suckling the mother's nipple stimulates the release of the hormone oxytocin, which results in the contraction of the mother's uterus, thereby facilitating the normal progression of the uterine involution process.

4. CONCLUSION

The conclusion from the results of the study of the relationship between Early Breastfeeding Initiation and Uterine Involusio in postpartum women at the Ninda Clinic is as follows Respondents who did IMD were 13 respondents (50%) and those who did not do IMD were 13 people (50%). The majority of respondents' uterine involution on the seventh day was abnormal as many as 14 people (53, 8%). There is a relationship between early breastfeeding initiation and uterine involution in the postpartum period at Ninda Clinic, where the P value is 0.018 (0.018 <0.05).

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