

THE RELATIONSHIP BETWEEN THE IMPLEMENTATION OF EARLY BREASTFEEDING INITIATION (IMD) IN CAESAREAN SECTION DELIVERY AND COLOSTRUM PRODUCTION

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ABSTRACT

One cause of colostrum discharge in caesarean section delivery is the implementation of early initiation of breastfeeding (IMD). The study's objective was to investigate the relationship between the implementation of IMD caesarean section delivery and colostrum discharge. The study design was cross-sectional , the population was 50 mothers who underwent caesarean section delivery , sampling using systematic sampling techniques , the number of respondents was 34 people according to the inclusion criteria. The research instruments were questionnaires and observations, then analyzed using Chi-square correlation. and it was found that χ^2 count was 5.37 , with a p-value of 0.02 (<0.05), a moderate relationship of 0.37. It was found that the implementation of I MD with an optimal duration (more than 60 minutes) in caesarean section delivery can play a role in accelerating the release of colostrum (less than 24 hours).

Keywords : Colostrum Production, Early Initiation of Breastfeeding (IMD)

1. INTRODUCTION

In Indonesia, the breadth of IMD implementation in postpartum mothers, especially cesarean section, is still low. The 2023 Indonesian Health Survey (SKI) found that only 27% of newborns in Indonesia received IMD 1 hour after birth. This means that around 73% of babies do not receive IMD according to the recommendations of the World Health Organization (WHO). These data show that although around 90% of deliveries in Indonesia take place in health facilities, the implementation of IMD is still not optimal. Factors such as lack of training for health workers, unsupportive medical procedures, and lack of education for mothers and families can be the cause of low IMD (WHO, 2024).

East Java Provincial Health Profile 2023, the coverage of IMD implementation in this province reached 74.2%. This figure shows an increase compared to previous years, reflecting ongoing efforts in optimizing IMD. According to the Satu-Data application of Kediri City in 2023, the Kediri City government also played an active role in encouraging the application of exclusive breastfeeding and IMD. For example, in March 2023, the Chairperson of the Kediri City PKK TP provided education to pregnant women at the Sukorame Health Center regarding the importance of IMD and exclusive breastfeeding.

RS Baptist Kediri as a private hospital that has complete delivery facilities and obstetric services is expected to be a pioneer in the implementation of IMD, including in cesarean section actions. There is data on higher incidence of hypoglycemia in babies who are late in IMD. In August-

September 2024, 80% of babies who experienced delayed breastfeeding experienced hypoglycemia, compared to 4.5% in babies who were breastfed early.

Colostrum is the best substance for babies. Colostrum as the first milk is yellowish in color by the mother after giving birth. The characteristics of colostrum include yellowish in color, more yellow than mature breast milk, its fat contains cholesterol and lecithin compared to mature breast milk, trypsin inhibitors are found, so that the hydrolysis of the baby's intestinal protein is not optimal. Colostrum has a higher protein concentration than breast milk. This is good for newborns because there is enough protein for their needs in the first week with colostrum (Rianti, 2014: 47-48).

Colostrum has many benefits and nutrients for newborn nutrition. The nutritional content of colostrum is 8.5% protein, 2.5% fat, 3.5% carbohydrates, 0.4% salt and minerals, and 85.1% water. Colostrum contains immunoglobulin A (antibodies), lactoferrin or protein that prevents infection, leukocytes and proteins that help cell growth. Vitamin A is crucial for the infant's immune system, skin, and eyesight. Colostrum also contains magnesium for the baby's immunity, and vitamin A which is beneficial for vision, skin. The nutritional content in colostrum is very much needed by newborns (Wijaya, 2019: 296) .

The process of IMD for newborns with the condition that the baby is born healthy, cries strongly, initial steps for handling newborns have been carried out, the umbilical cord has not been or has been cut and the skin of the baby's stomach is attached to the skin of the mother's chest, given a warm blanket

and the baby's temperature is kept stable. The newborn baby lies on his mother's chest and is directed to the mother's nipple (Siahaan & Panjaitan, 2020: 13) . It is very important for mothers to enjoy the IMD moment with their newborn babies. According to PP No. 33 of 2012 concerning exclusive breastfeeding, IMD helps babies breastfeed their mothers later on (Furi, 2020: 22) .

Early initiation of breastfeeding (IMD) supports the release of colostrum known as "golden cari" because it is rich in antibodies that form the immune system of newborns. This process promotes a strong emotional bond to trigger the natural sucking reflex of the baby and mother. Colostrum also aids in intestinal cleaning, which is crucial for preventing jaundice in the early days of birth. A series of IMD stage is important to ensure that babies get early access to breast milk, especially colostrum, and then the success of the exclusive breastfeeding process (Muthmainnah, 2024: 10).

Vaginal delivery and cesarean delivery are the two forms of childbirth. Both vaginal and cesarean deliveries, especially for primiparous mothers, are experiences that can cause anxiety, stress and sometimes trauma during the process and after delivery. If stress occurs, the hormone cortisol will increase so that the hormone oxytocin decreases to produce the process of colostrum release is inhibited. Rarely is early breastfeeding initiated during cesarean birth, or the baby is not put straight on the mother's chest, and there is an effect of anesthetic drugs that also slow down colostrum release. The mother's weak condition, nausea and vomiting due to the effects of

anesthesia, complaining of pain in the surgical wound can delay the procedure for starting breastfeeding early. Health workers, especially obstetricians and midwives must ensure that the baby gets good IMD (Kause et al., 2019: 198) .

The results on the smoothness of breast milk by Hayati (2022) stated that postpartum mothers on IMD facilitate postpartum mothers' breast milk. The above facts show that direct contact is important to make mothers and babies happy. The effect of the baby's suction on the mother's nipples has an impact on the results of breast milk and increases its quantity (Hayati, 2022: 42) .

Based on a preliminary study at Kediri Baptist Hospital, early initiation of breastfeeding is also applied in caesarean section deliveries with good baby condition and stable mother condition. In August to September 2024, there were 50 caesarean section deliveries with various indications. The indications were 10 mothers with a history of previous caesarean section , 17 failed labor inductions, 5 cephalopelvic disproportion, 5 fetal distress, 5 abnormal position, 4 preeclampsia, 1 twin pregnancy, and 3 at their own request. It was found that 6 mothers gave birth whose colostrum did not come out immediately, and 5 babies did not get IMD because of conditions that did not allow it.

2. METHODS

Analytical, cross-sectional, correlational research is used to explain the status of something or what is occurring during the study in order to determine the relationship between the

independent and dependent variables (Santoso and Madiistriyatno, 2021: 44) .

This study was conducted at Kediri Baptist Hospital. This selection was made based on the results of observations at the hospital. Data collection on January 23 - March 6, 2025 at Kediri Baptist Hospital .

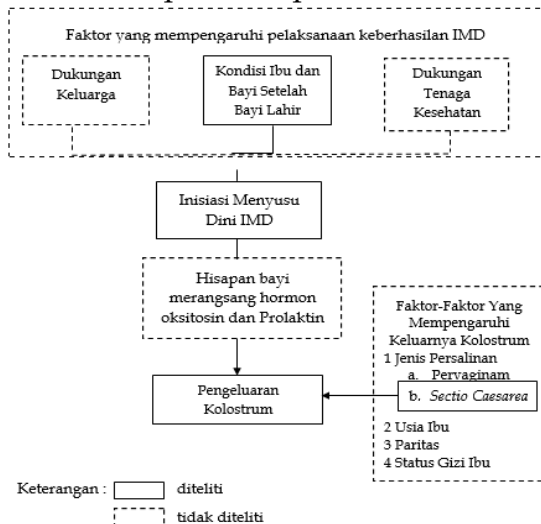


Figure 1. Conceptual Framework of Research

Source: Processed by Researchers (2025)

The population of the study was all mothers with cesarean section delivery at Kediri Baptist Hospital on January 23 - March 6, 2025, totaling 50 people. Mothers who had their babies via cesarean section at Kediri Baptist Hospital and who satisfied the inclusion and exclusion requirements made up the study's sample and through a probability sampling approach, namely systematic sampling, totaling 34 people.

The primary data of this study is information about maternal age, parity, and nutritional status through interviews and questionnaires before the cesarean section was carried out at the Kediri Baptist Hospital. The dependent variable is colostrum

expenditure. The independent variable is the application of IMD for cesarean section delivery. After the respondents received PSP (Explanation Before Approval), Informed Consent was given . Respondents signed the Informed Consent . before sectio caesarea . Data processing using univariate and bivariate analysis.

Submitting ethical clearance to the Health Research Ethics Commission of STIKES RS Baptis Kediri and Poltekkes Malang, this research has received a certificate of ethical feasibility on January 22, 2025 with ethics number No.139/22/I/EC/KEPK-3/STIKESRSBK/2025 and on May 6, 2025 with ethics number No.DP.04.03/F.XXI.30/00245/2025.

3. RESULTS

A. General Data

1. Characteristics of Mother

Table 1. Frequency distribution of respondents based on indications for performing a caesarean section

Variables	Frequency	Presentation
Abnormalities in Position	9	26
Former SC	15	44
Fetal Distress	3	9
High Myopia	3	9
ROJ	1	3
Induction Failure	2	6
Pre eclampsia	1	3
Total	34	100

Source: Primary data 2025

Referring to table 1, with indications of abnormality of position as many as 9 respondents (26%); former caesarean section as many as 15 respondents (44%); fetal distress as many as 3 respondents (9%); high

myopia as many as 3 respondents (9%); Induction failure as many as 2 respondents (6%); poor obstetric history as many as 1 respondent (3%); and Preeclampsia as many as 1 respondent (3%). Former CS is the indication for the majority of caesarean sections .

Table 2. Frequency distribution of respondents by age

Variables	Frequency	Presentation
< 20 years	0	0
20-35 years	29	85
>35 years	5	15
Total	34	100

Source: Primary data 2025

In table 2, there are 3 groups and none of them are under 20 years old. The most age is almost all 20-35 years old 29 respondents (85%), > 35 years old 5 respondents (15%).

Table 3. Frequency distribution of respondents based on parity

Variables	Frequency	Presentation
First Birth	9	26
Second Birth	18	53
The Third Birth	6	18
Fourth Birth / more	1	3
Total	34	100

Source: Primary data 2025

In table 3, 34 respondents of mothers who gave birth, where seen from the 4 parity categories, a small portion of the fourth birth or more was only 1 respondent (3%) and the third birth was 6 respondents (18%); almost half were the first birth, 9 respondents

(26%) and the majority were the second birth 18 respondents (53%).

Table 4. Frequency distribution of respondents based on nutritional status

Variables	Frequency	Presentation
Lila < 23.5	2	6
Lila ≥ 23.5	32	94
Total	34	100

Source: Primary data 2025

The results of table 4, a small portion of Lila < 23.5 as many as 2 respondents (6%) and almost all Lila ≥ 23.5 as many as 32 respondents (94%). Almost all with good status.

Table 5. Distribution of IMD Implementation Frequency

Category	Frequency	Presentation
30-60 minutes	15	44
>60 minutes	19	56
Total	34	100

Source: Primary data 2025

From table 5, almost half of the implementation IMD as many as 15 respondents (44%) were carried out for 30-60 minutes. The majority of 19 respondents (56%) early breastfeeding initiation (IMD) was more than 60 minutes. However, out of 34 respondents, there were 14 respondents who did the most IMD, namely for 65 minutes.

Table 6. Distribution of Colostrum Release Frequency

Category	Frequency	Presentation
Slow	12	35
Fast	22	65
Total	34	100

Source: Primary Data 2025

The results of table 6, most (65 %) of the 22 respondents had fast colostrum output, less than or equal to 24 hours. Almost half (35%) of the 12 respondents had slow colostrum output, more than 24 hours.

B. Special Data

Table 6. Results of the Relationship between the Implementation of IMD in Caesarean Section Delivery and Colostrum Release

Implement ation of IMD on caesarean section delivery (x)	Colostrum secretion (y)				Total	
	Slow		Fast			
	F	%	F	%	F	%
30-60 minutes	9	2 6	6	18	15	44
>60 minutes	3	9	1 6	47	19	56
Total	1 2	3 5	2 2	65	34	10 0

Source: Primary Data 2025

Next, calculate the observed frequency by calculating what percentage of each sample chose the dependent variable, as follows:

1. Respondents with slow colostrum production

$$\frac{9 + 6}{34} = \frac{15}{34} = 0,441 \text{ (44,1 \%)}$$

2. Respondents with rapid colostrum excretion

$$\frac{3 + 16}{34} = \frac{19}{34} = 0,559 \text{ (55,9 \%)}$$

Furthermore, each fh (expected frequency) is:

1. Respondents with IMD implementation 30-60 minutes

$$\text{fh slow colostrum output} = 0,441 \times 12 = 5,292$$

$$\text{fh rapid colostrum release} = 0,441 \times 22 = 9,702$$

2. Respondents with IMD implementation >60 minutes

$$\text{fh slow colostrum output} = 0,559 \times 12 = 6,708$$

$$\text{fh rapid colostrum release} = 0,559 \times 22 = 12,298$$

Table 7. Frequency of IMD Implementation in Caesarean Section Deliveries with Colostrum Release

Implementation of IMD during caesarean section delivery (x)	Colostrum secretion (y)			
	Slow		Fast	
	Fo	Fh	Fo	Fh
30-60 minutes	9	5,292	6	9,702
≥60 minutes	3	6,708	16	12,298

Source: Primary data 2025

Then enter it into the Chi Square formula as follows:

χ^2 hitung

$$= \text{total seluruh} \frac{\sum (O_i - E_i - 0,5)^2}{E_i}$$

O (observation) = fo and E (expectation) = fh

Analysis of the relationship between IMD for caesarean section delivery and colostrum production:

$$\begin{aligned} \chi^2 &= \frac{(9 - 5,292 - 0,5)^2}{5,292} + \frac{(6 - 9,702 - 0,5)^2}{9,702} \\ &+ \frac{(3 - 6,708 - 0,5)^2}{6,708} + \frac{(16 - 12,298 - 0,5)^2}{12,298} \\ \chi^2 &= \frac{10,291}{5,292} + \frac{10,252}{9,702} + \frac{10,291}{6,708} + \frac{10,252}{12,298} \end{aligned}$$

$$X^2 = 1,945 + 1,057 + 1,534 + 0,834$$

$$X^2 = 5,37$$

Chi square calculation (χ^2) count $5.37 > (\chi^2)$ table 3.841, the results obtained H_0 is rejected and H_1 is accepted with a value of 2 sig.sided in this study is 0.02, p-value < 0.05 , then it is determined relationship between the IMD in caesarean section delivery and colostrum release.

$$C = \sqrt{\frac{X^2}{N + X^2}}$$

$$C = \sqrt{\frac{5,37}{34 + 5,37}}$$

$$= 0.369$$

And there is a close relationship between them, with a contingency coefficient result of 0.37 (there is a moderate correlation).

4. DISCUSSION

4.1 Implementation of Early Initiation of Breastfeeding (IMD) in Caesarean Section Delivery

Referring to table 5, early breastfeeding initiation (IMD) was mostly more than 60 minutes as many as 19 respondents (56%). From the data, it shows that most of the implementation of IMD was more than 60 minutes.

IMD is exclusive breastfeeding starting as early as possible. After the infant is born, the umbilical cord should be severed right away. The infant rests on the mother's tummy or chest without cloth to allow direct skin-to-skin contact. So the baby will naturally start crawling to find the mother's breast and breastfeed (Arsyad et al., 2024: 173).

There are several supporting factors and factors of IMD. Family support factors in knowledge of the

benefits and objectives can motivate and support the implementation of IMD during childbirth (Putri and Nurokhmah, 2021: 12). Factors of the condition of the mother and baby after the baby is born, IMD is carried out in all deliveries except for conditions prohibited by the medical team (Novianti and Mujiati, 2016: 37). And the support factor of health workers in IMD is vital. The lack of availability of health workers who understand IMD or the lack of support from health workers is a factor inhibiting IMD (Umar, 2021: 16).

The results of Asmita's (2024) qualitative research on IMD defects in CS deliveries were due to the mother's attitude, mother's knowledge, lack of support from health facilities, and lack of support from medical personnel. It means the implementation factors of IMD such as family support, maternal knowledge, maternal and infant conditions, health facilities and support from health workers. Support from health workers must be optimal so that IMD is implemented properly.

There was 1 respondent in implementing the shortest IMD, which was only 40 minutes. In line with Novianti and Mujiati (2016) who said that in caesarean section delivery, the mother will feel sleepy due to the influence of the anesthetic drug or the mother will become unconscious during surgery because total anesthesia is performed.

The longest implementation of IMD was carried out for 70 minutes by 6 respondents, and the respondents who carried out IMD the most were for 65 minutes, namely 14 mothers. The baby was in contact with mother's skin for 60 minutes. When the mother and baby were treated in the recovery

room, the father accompanied them (Aryani, 2022: 27).

Thus, the implementation of IMD for caesarean section delivery can continue to be supported by all parties, especially health workers who are directly involved in the caesarean section delivery. The implementation time continues to be maximized, as long as possible the baby is in contact with the mother. For this reason, observation of the newborn must also continue to be carried out while on the mother's stomach is the baby.

4.2 Colostrum Release During Caesarean Section Delivery

In this study, an evaluation of colostrum discharge was conducted by researchers within the first 24 hours or more than 24 hours until colostrum discharge was known. The result (65%) that 22 mothers had fast colostrum discharge, less than 24 hours. As many as 12 respondents (35%) had slow colostrum discharge, more than 24 hours. This is mostly the colostrum discharge of IMD caesarean section delivery is fast.

Colostrum is the first milk released by the breast on days 1-4 after giving birth. Colostrum is thick, sticky, yellowish. Colostrum contains more content than breast milk (Bahrah et al., 2023: 81).

Newborns who breastfeed for the first few hours of life will get colostrum, which is very important for maintaining long-term breastfeeding. In addition, there is evidence that children who are IMD have the potential for intelligence, experience an increase in IQ of 3-4 points, have a lower chance of obesity, and a lower risk of diabetes (WHO, 2024: 1).

Colostrum discharge is caused by several factors. The type of delivery

factor, according to Novansyah's research (2022) In mothers with caesarean section, the first colostrum discharge is on average slower than in mothers who give birth spontaneously. The maternal age factor, Dinal's research (2017) age > 30 years can significantly be one of the causes of delayed onset of the lactation process. The parity factor in Septiani and Ummami's research (2020), lack of colostrum for babies because most mothers are new and have no experience of giving colostrum. And the last factor is the nutritional status of the mother, Poor maternal nutrition can affect breast milk production and the composition and nutritional intake of newborns (Natalia, 2016: 95).

Muti'ati's research (2017) stated that the release of clear or yellowish fluid was obtained by pressing colostrum from the areola to the ductus in postpartum mothers on day 1-2 of the examination. The release of colostrum as early as possible is very necessary for babies considering the many benefits of colostrum itself so that it can come out quickly in less than 24 hours. For this reason, midwives must always socialize IMD so that colostrum release in less than 24 hours.

4.3 Relationship between the Implementation of IMD in Caesarean Section Delivery and Colostrum Production

The result shows that fast colostrum release ≤ 24 hours in the implementation of IMD 30-60 minutes was only 6 respondents and IMD > 60 minutes was 16 respondents. These results indicate that most respondents experienced fast colostrum release with the implementation of IMD > 60 minutes.

After conducting a manual statistical test, the calculated χ^2 was 5.37, which is greater than the χ^2 table of 3.841 and Chi square using a computer shows a p-value of 0.02 where $< \alpha$ 0.05 where there is a relationship between the implementation of IMD section caesarea and colostrum expenditure at Kediri Baptist Hospital. And there is a close relationship with the results of the contingency coefficient of 0.37 (moderate correlation).

IMD is one of the factors in the process of colostrum release. If the mother in the labor process is facilitated to do IMD, it is hoped that there will be immediate interaction between the mother and baby. Unfortunately, the implementation of IMD in Indonesia >1 hour is still low, which is only 15.9% of the government's target of 50%. So support from health workers is very influential (Masrurah and Andriani, 2020: 99).

Post- delivery caesarean section Mothers often have difficulty breastfeeding their babies, including mothers who receive general anesthesia, or anesthesia. They cannot breastfeed their babies for up to an hour after giving birth. In addition, post-operative conditions can interfere with the breastfeeding process (Sari, 2023: 23).

This study shows that in caesarean section delivery, the implementation of IMD for a longer time can accelerate the release of colostrum, therefore the recommendation for the implementation of IMD is maintained according to the SOP. These results are in line with Widiyastuti and Yunitasari (2018), mothers who do IMD for more than 60 minutes produce colostrum

faster than those who do IMD <30 minutes. If there is no adequate stimulation through the early IMD process, the process cannot take place properly (Rahmawati, 2021: 6).

The data shows, most of those who implemented IMD > 60 minutes experienced colostrum release \leq 24 hours. This suggests that the longer the initial breastfeeding contact period, the greater the chance of the mother's body producing and releasing colostrum earlier.

Then, there is a relationship between the implementation of IMD and the time of colostrum release indicating a moderate relationship strength. This strengthens the assumption that the implementation of IMD has a significant effect on the early breastfeeding process, even in mothers who give birth by caesarean section.

5. CONCLUSION

Based on the results of the study, it was concluded as follows: 1) In caesarean section deliveries, the majority of IMD is more than 60 minutes meaning that awareness and implementation of IMD with optimal duration are quite good; 2) The release of colostrum in mothers in caesarean section deliveries is mostly fast, less than 24 hours, meaning that the physiological process of colostrum release is classified as good; 3) A relationship was found between the implementation of IMD and caesarean section deliveries.

With these findings, it is hoped that hospitals, especially midwives, will provide IMD during caesarean section deliveries with optimal duration. so that colostrum release can occur quickly. Then, the next researcher can further explore clinical, psychological, and systemic factors of IMD and colostrum release like type of anesthesia, maternal readiness, and hospital policies.

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