

Factors Related to the Granting of Colostrum in Newborn Baby with Caesarean Section in Hospital Government at Banten, Indonesia

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Abstract Efforts to reduce Neonatal Mortality are important because neonatal deaths contribute to 59% of infant deaths in Indonesia. World Health Organization (WHO) universally recommends colostrum as the perfect food for newborns. The mother's behavior in giving breast milk (ASI in Indonesia) from mom is related to the type of labor. The purpose of this study was to determine the dominant factors associated with giving colostrum to newborns by the cesarean section method. This study was an observational analytic study with a cross-sectional approach. This study involved 138 post-cesarean mothers in May-June 2018 at Hospital Government at Banten, Indonesia. Data were obtained through observation, interviews, and hospital data. The statistical test used in this study is the multiple logistic regressions. The results showed that the administration of colostrum to newborns was carried out by the majority (79%) of post-cesarean section mothers. The intention of breastfeeding (OR 9.029), support of health workers (OR 6.165), husband's support (OR 5.098), and knowledge (OR 3.726) are jointly related to the provision of colostrum to newborns by the cesarean delivery method. Mothers who had strong breastfeeding intention were 8 times more likely to give colostrum compare with women who had low intention.

Keywords Cesarean, Colostrum, Husband, Mother, Newborn

1. Introduction

The neonatal period is a critical time for babies. At this time, the baby must adapt to the new environment. When in the womb, all functions of the baby's body are very dependent on the mother's body functions. But after birth, the baby's organs begin to function on their own. This situation causes physiological changes in the baby's body which include the respiratory system, circulatory system, body temperature regulation system, glucose metabolism, gastrointestinal system, and immune system [1]. Efforts can be made to reduce neonatal morbidity and mortality. One of them is through increased utilization of breast milk. Breast milk is the main source of nutrition for babies. Infants who are not breastfed in the first 1 month of life have 10.88 times the risk of death from 1 to less than 3 months compared to infants who are exclusively breastfed [2].

The first breast milk secreted by the breast gland is

colostrum. World Health Organization (WHO) universally recommends colostrum as the perfect food for every newborn baby. Sticky and yellowish substances produced by the mother's breast immediately after birth are ideal for newborns in terms of composition, quantity, and antibody-rich [3]. Colostrum contains a lot of protein for endurance (IgA, IgG, and IgM), which functions as a killer of germs in high numbers (Ministry of Health Republic of Indonesia, 2014, Indonesian Pediatrician Association [4-5]. Colostrum is a yellowish sticky substance that is formed immediately after delivery, secreted within the first 2 to 3 days after delivery, an ideal substance for newborns in the composition, quality, and richness of antibodies that serve as a high-risk death [6-8]. Cesarean section is an operation to give birth to the fetus by opening the abdominal wall and uterine wall [9].

Based on data in the year 2016 from World Health Organization (WHO), 2.6 million deaths or 46% of under-five deaths occurred in the first 28 days of life, which shows that 7 thousand newborn deaths occur every day. The majority of neonatal deaths occur on the first day and week of life, with around 1 million neonates dying on the first day, and close to 1 million died within the next 6 days [10]. The Neonatal Mortality Rate (NMR) of Indonesia in 2016 was 13.7 per 1000 live births. NMR in other ASEAN countries such as Malaysia is 4.4 per 1000 live births, Brunei Darussalam is 4.4 per 1000 live births, and Singapore is 1.1 per 1000 live births [10-11]. Attention to efforts to reduce the Neonatal Mortality Rate becomes important because neonatal deaths contribute to 59% of infant deaths in Indonesia [12].

According to data from the Banten Province Health Office in 2015, the reported Neonatal Mortality Rate in Banten Province was 6 per 1000 live births [13]. This number is higher than DKI Jakarta Province, which is 2 per 1000 live births. In 2015, Lebak Regency was the region with the highest number of neonatal deaths in Banten, namely 371 neonatal deaths out of 23,999 live births [14]. The most common causes of neonatal death in the world are infections (36%, including sepsis, tetanus, and diarrhea), pre-term births (28%), and asphyxia (23%) [15]. Complications that cause the most neonatal deaths in Indonesia, according to Basic Health Research of the Republic of Indonesia in the year 2017, that are asphyxia, low birth weight babies, and infections [16].

In Indonesia, there are still postpartum mothers who do not give colostrum to their babies. According to Basic Health Research of the Republic of Indonesia in 2013, there were 8.9% of respondents disposed of part of colostrum, and 5.9% of respondents discarded all colostrum or did not give it to babies [16]. Research on Nias Island in Indonesia showed mothers who have children with mildly wasted nutritional status aged 6 to 60 months, 6% of them never breastfeed, and 52% of mothers who breastfeed start breastfeeding within the first 6 hours postpartum but 17% of them discard colostrum

[17].

According to Legesse et al, 2015, informed that labor at home, mothers who do not work (housewives), lack of awareness about the benefits of colostrum, and delay in IMD are factors related to the practice of mothers who do not give colostrum to their babies in Ethiopia [18]. Wulandari et al, (2014), conducted at a hospital in Surabaya, showed that the practice of breastfeeding was only carried out by 6.9% of respondents on the first day after childbirth even though 26.4% of all respondents had produced breast milk since the first day after the cesarean section [19].

Based on data from the Indonesia Demographic and Health Survey in the year of 2012 that are deliveries are performed with a cesarean section of 12%. The rate of cesarean section is higher in the year 2012, if compared to the year 2007, get findings of 7% [16]. A cohort study in Canada showed that the cesarean section was associated with more difficulty in breastfeeding, needed more help, and a shorter duration of breastfeeding compared to spontaneous labor [20].

High neonatal mortality is due to the low immunity of infants. One way to increase the baby immunity is to give colostrum. Colostrum is the first breast milk secreted by the breast gland. The content of immunoglobulin (IgA, IgG, and IgM) in colostrum is higher than that of mature Breastfeeding (Indonesian Pediatrician Association [5, 21]. Colostrum is a substance that a baby needs during the first few days of life. According to Basic Health Research of the Republic of Indonesia in 2013, there were 8.9% of respondents disposed of part of colostrum and 5.9% of respondents discarded all colostrum or did not give it to babies [12, 16, 22].

Some studies have shown that socio-demographic characteristics [23-29], infant characteristics [25-26], Knowledge [23, 26, 29], Breastfeeding Intent [28-30], rooming-in [31], health support [10, 28, 29, 30] and husband support [10, 27, 28, 29] with the delivery of colostrum to newborns.

Mother's breastfeeding behavior is related to the type of labor, and labor through cesarean section is associated with more difficulty breastfeeding compared to spontaneous labor [17, 20, 23]. Based on this problem, it can be formulated a problem that is what factors are associated with the provision of colostrum to newborns with the cesarean section method. The purpose of this study was to analyze the factors associated with the administration of colostrum to newborn babies with the cesarean section method in Hospital Government at Banten, Indonesia.

2. Materials and Methods

2.1. Population of Data

This research uses analytical observational methods

with a cross-sectional research design. Data collection was conducted in May-June 2019, to determine and factors related to colostrum allocation at the study site. This study was conducted at one of the reference hospitals owned by the Banten Regional Government in Indonesia. This hospital is a Type B (non-educational) hospital. Banten Regional Government Hospital is a hospital that has policies that support exclusive breastfeeding. In the year 2016, information data is known to have been performed using a total of 2,038 in referral patients and 122 in non-referral patients [32].

The respondents who participated in this study were the postpartum nurses who were hospitalized at the Maternal Room of Hospital Lebak, Banten Province in Indonesia. The criteria for respondents inclusion was maternity through the witness section at Hospital Government of Banten, birth mother with a single-birth condition, mother and baby are being treated in the same hospital and mother are ready to respond. Large samples were selected from the results of previous research data [24-26]. Once calculated, we obtained a sample size based on educational variables [24] of at least 114 respondents after multiplying 2 and adding 10% of the sample to prevent dropout. Sampling technique in this study using purposive sampling.

2.2. Data Collection

Data collection techniques are conducted through observation, interviews, and hospital data. Observations were made to evaluate colostrum expenditures, breastfeeding effectiveness, and colostrum adaptation from the 2010 neonatal health service pocketbook published by the Ministry of Health, the Republic of Indonesia in 2010, and Breastfeeding Counseling Training Guidelines and Breastfeeding Facilitator Training Guidelines published in 2007 [33]. Interviews with how to read the questions in the questionnaire has been used for validity testing and instrument reliability. For APGAR (Appearance, Pulse, Grimace, Activity, and Respiration) score data obtained from hospital data.

The process of data collection through observation and interviewing was done once during the hospital treatment, except for the mother who at the time of data collection did not provide colostrum to her baby and was observed until the third day of treatment. Observations are made in the morning and conjunction with the visors of the room doctor. Observations of colostrum expenditure are performed to ensure that there is colostrum secretion in the mother. Then the mother was asked to nurse the baby. Mothers with no colostrum withdrawal, refusal to breastfeed, and confess to not give colostrum to their baby until the third day of treatment are told not to give colostrum. Data collection via interviews is done after the observation process [23, 26, 29].

2.3. Analysis of Data

Once all the data needed in the research was collected, the data processing was performed using the SPSS Version 22.0 computer statistics program. Statistical data analysis is the stage of data processing to see the relationship between variables [34,35]. Analytical techniques used:

- a) Univariate analysis was performed to obtain an overview of the frequency distribution of each studied variable. Each answer category of the variables is displayed in the form of frequency distribution tables and then analyzed by data. Descriptive statistics result in proportion. The variables analyzed by univariate were the dependent variable and the independent variable.
- b) Bivariate analysis was used to know the relationship between each independent variable and the dependent variable. Using *Chi-Square* statistical test (X^2) at 95% efficiency ($\alpha = 0.05$). This test is used because the data to be analyzed is a type of categorical data. When derived from statistical analysis of p-value <0.05 then both variables are considered significant or significant.
- c) Multivariate analysis was performed to determine the relationship of all independent variables with dependent variables together. As well as to know the most dominant independent variable in relation to the dependent variable. This multivariate analysis was performed by double logistic regression analysis. The steps for taken of multivariate are: (1) from the results of bivariate analysis will be known variables that can be a candidate model. If the bivariate test result has a p value <0.25 , then the variable is included in the multivariate model; (2) Furthermore, using the double logistics regression analysis of the prediction model is analyzed so that all the variables in the model have a p value <0.05 by removing one by one the variables that have a p value > 0.05 . Double logistic regression analysis was chosen because the dependent variables and their independent variables are categorical; (3) In this analysis a variable that has a p value > 0.05 but affects the OR change, then the variable is re-entered into the model; (4) Next, a test is conducted to assess the overall fit model of the data. Statistics used based on Likelihood. Likelihood L of the model is the probability that the model hypothesized reflects the input data. The reduction of the value between the initial value of -2LogL and the value of -2LogL in the next step shows that the hypothesized model fits with the data. The likelihood finding (-2LogL) indicates a better regression model or in other words a model hypothesized to fit the data [51]; (5) Determination coefficient test (Nagelkerke R Square) is performed to determine how many independent variables are able to explain and affect dependent variables. The value

of Nagelkerke R Square value varies between 0 (zero) to 1 (one) [51]. The classification value of Nagelkerke R Square is 0-0.1 indicates very weak model, 0.1-0.3 indicates weak model, 0.3-0.5 indicates sufficient model, more than 0.5 indicates strong model [35]. (6) To test the null hypothesis that empirical data match or fit the model can be seen from the test of Hosmer and Lemeshow's goodness of fit [51, 52, 53], if the value is > 0.05 then the null hypothesis cannot be rejected, meaning the model is able to predict the value of its observations or match the observation data.

3. Results

3.1. Univariate Analysis

Univariate analysis was performed to understand the picture of colostrum giving and the factors associated with colostrum giving. The variables studied in this study included all variables namely colostrum, maternal employment, family income, asphyxia, knowledge, breastfeeding intention, rooming-in, early breastfeeding initiation giving, health support, and husband support. The results of the univariate analysis can be seen in **Table 1 to 4**.

Table 1. Distribution of Respondents Based on the Production and Distribution of Colostrum in Newborns by Section Caesarean Method at Government Hospital of Lebak at Banten, Indonesia

| Colostrum Production Variables | Amount (n) | Percentage (%) |
|------------------------------------|------------|----------------|
| Production of colostrum | | |
| The colostrum is not coming out | 12 | 8.7 |
| The colostrum is out | 126 | 91.3 |
| Colostrum distribution | | |
| The colostrum is not coming out | 12 | 8.7 |
| The colostrum is out but not given | 17 | 12.3 |
| The colostrum is out and give | 109 | 79.0 |
| Total | 138 | 100.0 |

Based on the data in **Table 1**, it is known that colostrum was present in the majority of respondents (91.3%). Most respondents (79%) provided colostrum to their baby. It is said that colostrum is given when it is observed that it is known that there are colostrum and breastfeeding expenditures with effective breastfeeding techniques.

According to **Table 2**, that are 89.9% of the respondents were unemployed and 10.1% were employed. Of the highest proportion of respondents working as private employees were 3.6%. In terms of earnings, it is known that more than half of respondents have a reasonable income (51.4%). Based on the condition of the baby at birth, it is known that a large proportion of infants (85.5%) are born in a normal condition. Respondents who had infants born with mild asphyxia were 13.8% and 0.7% of infants with severe asphyxia. The data in **Table 2**

indicate that more than half (55.1%) of respondents had adequate knowledge of colostrum. based on breastfeeding intentions, it is known that most respondents have a strong breastfeeding intention of 58.7%.

Table 2. Distribution of Respondents based on Predisposing Factors related to Provision of Colostrum to Newborns with the Section Caesarean Method at Government Hospital of Lebak at Banten, Indonesia

| Variables | Amount (n) | Percentage (%) |
|---|------------|----------------|
| Occupation | | |
| Housewife | 124 | 89.9 |
| Labor | 4 | 2.9 |
| A civil servant | 4 | 2.9 |
| Private employees | 5 | 3.6 |
| Entrepreneurs | 1 | 0.7 |
| Income | | |
| Less than from (<Standard Income) | 67 | 48.6 |
| Moderate form (\geq Standard Income) | 71 | 51.4 |
| Asphyxia | | |
| Weight (APGAR Score 1-3) | 1 | 0.7 |
| Lightweight (APGAR score 4-6) | 19 | 13.8 |
| Normal (APGAR score 7-10) | 118 | 85.5 |
| Knowledge | | |
| Low (score <70%) | 62 | 44.9 |
| Moderate (score \geq 70%) | 76 | 55.1 |
| Breastfeeding intention | | |
| Poor (score <16) | 57 | 41.3 |
| Strong (score 16) | 81 | 58.7 |
| Total | 138 | 100.0 |

Table 3. Response Distributions by Enabling Factors Relating to the Provision of Colostrum to Newborns by the Section Caesarean Method at Government Hospital of Lebak at Banten, Indonesia

| Variables | Amount (n) | Percentage (%) |
|------------------------|------------|----------------|
| Rooming implementation | | |
| Non-rooming-in | 19 | 13.8 |
| Roaming in | 119 | 86.2 |
| Total | 138 | 100.0 |

Based on the data in **Table 3** it is known that the majority of the respondents were rooming in with the baby (86.2%).

Table 4. Response Distributions by Reinforcing Factors Amplifiers Related to the Provision of Colostrum to Newborns the Section Caesarean Method at Government Hospital of Lebak at Banten, Indonesia

| Variables | Amount (n) | Percentage (%) |
|-------------------------------|------------|----------------|
| Healthcare support | | |
| No support (score <10) | 64 | 46.4 |
| Get support (score \geq 10) | 74 | 53.6 |
| Husband support | | |
| No support (score <10) | 69 | 50.0 |
| Get support (score \geq 10) | 69 | 50.0 |
| Total | 138 | 100.0 |

From **Table 4** it is known that more than half of respondents received health support (53.6%). In terms of husband support, it is known that some respondents (50.0%) have support from husband and others do not have support from the husband. Levels of empathy of the participants that consist of 90 medical students classified

into 29 males and 61 females for three groups of an academic year of medical students (first year, fourth year, and sixth year) at the Faculty of Medicine are shown in **Table 1**.

3.2. Bivariate Analysis

Bivariate analysis was performed to identify factors associated with colostrum delivery in newborns. The analysis was performed using chi-square and variables with less than 5 expected values were analyzed using Fisher's exact test. The following bivariate analysis can be seen in **Table 5 ~ 7**.

According to **Table 5**, it is known that there is a significant relationship between occupation and colostrum allocation (p-value <0.05). The analysis results also obtained the value of OR = 4.636 (95% C.I. for Exp (B: 1.5-14.5)) which means that working mothers do not have 4.636 more chance of giving colostrum to their baby compared to working mothers. Earnings were unrelated to colostrum giving (p-value > 0.05). However, there was a

greater tendency for colostrum to be given to mothers of low-income families (83.6%) than to mothers of low-income families (74.6%). Asphyxia was not associated with colostrum administration (p-value > 0.05). However, colostrum delivery was more likely to occur in infants born in normal conditions (81.7%) than in infants born in asphyxia (61.1%). Knowledge has a significant relationship with the distribution of colostrum (p-value <0.05). From the results of the statistical test, it is also known that the value of OR = 3.545 (95% C. I. for Exp (B): 1.4-8.5) indicates that a mother who has sufficient knowledge of colostrum and breastfeeding has a chance of 3.545 times to give her baby colostrum compared to a mother with less knowledge. Breastfeeding intention was significantly associated with colostrum giving (p-value <0.05). Statistical test results show OR = 8.456 (95% C. I. for Exp (B): 3.1-22.6), meaning that mothers with strong breastfeeding are 8,456 times more likely to give their baby colostrum compared to mothers with weak breastfeeding intentions.

Table 5. Response Distributions Based on the Relationship of Predisposing Factors to the Delivery of Colostrum to Newborns by the Section Caesarean Method at Government Hospital of Lebak at Banten, Indonesia

| Occupation | Distribution of Colostrum | | | | Total | | OR (95% CI) | P-value |
|---------------------------------------|---------------------------|------|--------------|------|-------|-------|----------------|---------|
| | Not Distribution | | Distribution | | N | % | | |
| | N | % | n | % | | | | |
| Employment | | | | | | | | |
| Working | 7 | 50.0 | 7 | 50.0 | 14 | 100.0 | 4.636 | 0.011 |
| Not Working | 22 | 17.7 | 102 | 82.3 | 124 | 100.0 | (1.5-14.5) | |
| Income | | | | | | | | |
| Less than (< Standard income) | 11 | 16.4 | 56 | 83.6 | 67 | 100.0 | 0.578 | 0.281 |
| Moderate than (≥ Standard income) | 18 | 25.4 | 53 | 74.6 | 71 | 100.0 | (0.2-1.3) | |
| Asphyxia | | | | | | | | |
| Asphyxia (APGAR score 0-6) | 7 | 38.9 | 11 | 61.1 | 18 | 100.0 | 2.835 | 0.062 |
| Normal (APGAR score 7-10) | 22 | 18.3 | 98 | 81.7 | 120 | 100.0 | (0.9-8.1) | |
| Knowledge | | | | | | | | |
| Low (correct answer score count <70%) | 20 | 32.3 | 42 | 67.7 | 62 | 100.0 | 3.545 | 0.007 |
| Enough (correct answer score ≥70%) | 9 | 11.8 | 67 | 88.2 | 76 | 100.0 | (1.4-8.5) | |
| Breastfeeding intention | | | | | | | | |
| Weak (<16) | 23 | 40.4 | 34 | 59.6 | 57 | 100.0 | 8.456 | 0.000 |
| Strong (16) | 6 | 7.4 | 75 | 92.6 | 81 | 100.0 | (3.1-22.6) | |
| Total | 29 | 21.0 | 109 | 79.0 | 138 | 100.0 | | |

Table 6. Distribution of Respondents Based on the Relationship of Enabling Factors with Colostrum Giving to Newborns with the Section Caesarean Method at Government Hospital of Lebak at Banten, Indonesia

| Variable | Distribution of Colostrum | | | | Total | | OR (95% CI) | P-value |
|------------------------------|---------------------------|------|--------------|------|-------|-------|----------------|---------|
| | Not Distribution | | Distribution | | N | % | | |
| | n | % | n | % | | | | |
| Implementation of rooming in | | | | | | | | |
| 1) Non rooming in | 11 | 57.9 | 8 | 42.1 | 19 | 100.0 | 7.715 | 0.000 |
| 2) Rooming in | 18 | 15.1 | 101 | 84.9 | 119 | 100.0 | (2.7-21.8) | |
| Total | 29 | 21.0 | 109 | 79.0 | 138 | 100.0 | | |

Table 6 presented that there is a significant relationship between the implementation of rooming in with the provision of colostrum in newborns with the method of sexual delivery (p value <0.05). From the results of bivariate analysis, the value of OR = 7.715 (95% CI for Exp (B) 2.7-21.8) is known, meaning that the mother who is treated with the baby has a chance of 7.715 times to give colostrum to her baby compared to the mother who is not treated join the baby.

From the data in **Table 7**, it is known that there is a significant relationship between health support and the provision of colostrum in newborns with the method of sexual delivery (p value <0.05). The results of the statistical test showed that the value of OR = 11,218 (95% C.I. for Exp (B): 3.6-34.5) means that mothers who received healthcare support had an opportunity 11.218 times to provide colostrum compared to mothers who did

not receive healthcare support. Husband support has a meaningful relationship with the provision of colostrum in newborns by the method of Cesarean Section (p value < 0.05). The results of statistical tests show that the value of OR = 9.233 (95% C.I. for Exp (B): 3.0-28.4) means that mothers who have received the support of their husbands have a chance 9.233 times to give colostrum compared to mothers who do not receive support from their husbands.

3.3. Multivariate Analysis

Multivariate analysis was performed with the aim of finding out the dominant factors related to colostrum administration in newborns. This analysis was performed using double logistics regression, comparison of initial model and final model presented on **Table 8**.

Table 7. Distribution of Respondents Based on the Relationship between Reinforcing Factors and Colostrum Giving to Newborns with the Section Caesarean Method at Government Hospital of Lebak at Banten, Indonesia

| Profession | Distribution of Colostrum | | | | Total | | OR (95% CI) | P value |
|---------------------------|---------------------------|------|--------------|------|-------|-------|----------------------|---------|
| | Not Distribution | | Distribution | | N | % | | |
| | n | % | n | % | | | | |
| Support of health workers | | | | | | | | |
| 1) Not supported | 25 | 39.1 | 39 | 60.9 | 64 | 100.0 | 11.218 (3.6-34.5) | 0,000 |
| 2) Get support | 4 | 5.4 | 74 | 94.6 | 74 | 100.0 | | |
| Husband's support | | | | | | | | |
| 1) Not supported | 25 | 36.2 | 44 | 63.8 | 69 | 100 | 9.233 (3.0-28.4) | 0,000 |
| 2) Get support | 4 | 5.8 | 65 | 94.2 | 69 | 100 | | |
| Total | 29 | 21.0 | 109 | 79.0 | 138 | 100.0 | | |

Table 8. Comparison of Initial and Final Modeling of Multivariate Analysis

| Early Models | | | | | |
|------------------------------|-------|---------|--------------------|--------|--|
| Variable | Sig | Exp (B) | 95% CI for Exp (B) | | |
| | | | Lower | Upper | |
| Profession | 0.245 | 2.774 | 0.497 | 15.487 | |
| Income | 0.547 | 0.672 | 0.184 | 2.455 | |
| Asphyxia | 0.699 | 1.407 | 0.249 | 7.937 | |
| Knowledge | 0.037 | 3.737 | 1.084 | 12.881 | |
| Intention of breastfeeding | 0,000 | 9.042 | 2.629 | 31.096 | |
| Implementation of Rooming in | 0.091 | 3.824 | 0.807 | 18.119 | |
| Support of health workers | 0.016 | 5.830 | 1.384 | 24.556 | |
| Husband's support | 0.023 | 5.283 | 1.255 | 22.236 | |
| Constant | 0.009 | 0.030 | | | |
| Final Model | | | | | |
| Variable | Sig | Exp (B) | 95% CI for Exp (B) | | |
| | | | Lower | Upper | |
| Intention of breastfeeding | 0,000 | 9.029 | 2.627 | 31.031 | |
| Support of health workers | 0.012 | 6.165 | 1.496 | 25.401 | |
| Husband's support | 0.024 | 5.098 | 1.233 | 21.076 | |
| Knowledge | 0.037 | 3.726 | 1.085 | 12.796 | |
| Implementation of rooming in | 0.070 | 4.084 | 0.890 | 18.743 | |
| Profession | 0.217 | 2.909 | 0.533 | 15.862 | |
| Income | 0.557 | 0.678 | 0.186 | 2.476 | |
| Constant | 0.007 | 0.037 | | | |

Based on **Table 8**, after five times the multivariate analysis modeling with multiple logistic regression, there are 5 variables which are confounder variables (change in $OR > 10\%$), namely the implementation of rooming in, work and income. The variables that were jointly associated with the provision of colostrum to newborns with the method of cesarean delivery were breastfeeding intention, health worker support, husband support and knowledge.

The variable that had the greatest relationship was breastfeeding intention with a sig value of 0.000 with an OR of 9.029 (95% CI for Exp (B), 2,627-31,031). This shows that mothers who have a strong breastfeeding intention are 9.029 times more likely to give colostrum to their babies compared to mothers who have weak breastfeeding intentions. The support variable for health workers with a sig value of 0.012 and OR 6.165 (95% CI for Exp. (B), 1.496-25.4012) shows that mothers who receive support from health professionals have a 6.165 times chance of giving colostrum. The husband support variable with a sig value of 0.024 and OR 5.098 (95% CI for Exp. (B), 1.233-21.076) shows that mothers who get husband's support have the opportunity to provide colostrum by 5.098 times compared to mothers who receive support from their husbands.

After the overall fit model test was carried out by looking at the statistical value the difference between -2 Log likelihood without variables and after inserting 7 new variables there was a decrease of $(141,905-65,092) = 76,813$ the difference of $df (138-131) = 7$, the number is 2.365, because $76.813 > 2.365$, it can be said that the difference in decreasing -2LogL is significant. This means that the addition of independent variables to the model improves the fit model.

The Nagelkerke R Square value classification is 0-0.1 indicating very weak, 0.1-0.3 indicating weak, 0.3-0.5 indicating sufficient, more than 0.5 indicating a strong model [35]. In the final modeling, it is known that the Nagelkerke R Square value is 0.585, which means that the variable of colostrum giving to newborns can be explained by factors in the multivariate model of 58.5%. This suggests that the factors in the model can strongly improve colostrum delivery to newborns by cesarean section delivery method. The results of the goodness of fit model test using the Hosmer-Lemeshow test show that the chi-square value is 11.287 with a p value of $0.186 > 0$.

4. Discussion

Colostrum is a sticky and yellow substance that is produced by the mother immediately after birth until the third day, many containing proteins for the body's immune system that acts as a killer of germs [3, 4, 6 12]. Based on the results that researchers have found, out of the 138 postpartum mothers, most respondents (91.3%) produced colostrum, for all respondents who had colostrum (91.3%),

79% of respondents gave it to infants and 12.3% did not. This study is in line with a study conducted in one hospital in Manipur India which showed that 88.8% of mothers gave colostrum to their baby [36]. The similarity of the research results due to socio-demographic conditions is very similar to this study. In terms of demographics, there are similarities between the Manipur region of India and the Regency of Lebak, Banten in Indonesia. Of the people of Manipur India, 70% of them work in the agricultural sector [18]. While the potential for economic growth and growth in Lebak Banten Regency is agriculture [32].

Colostrum expenditure according to a study conducted by Desmawati (2013) showed that breastfeeding, mobility, and joint position influence the colostrum expenditure on postpartum risk. Proper breastfeeding will help the baby to attach itself well to the mother's breast [22]. If the position and adhesion to the mother's breast are correct then the baby will suck effectively [12]. Inhalation of the baby can increase the level of prolactin in the blood and stimulate ASI production in the alveoli [31]. According to Desmawanti (2013) mobilization also has an effect on breastfeeding, ambulation on the first day of postpartum can accelerate blood flow and lower the reflex of breastfeeding [22]. According to Nurliawati (2010), motivation is a key factor in determining breast milk (ASI in Indonesia) production [17].

4.1. Occupational Relationship with the Distribution of Colostrum

Work is an activity that moms do to earn money. This study shows that there is a significant relationship between work and colostrum delivery in newborns. This study is similar to the study conducted by [37], mother work is one of the most common causes of breastfeeding. The similarity of the results of this study is due to respondents having the same characteristics which are predominantly dominated by non-working mothers. Maternal positive attitudes toward breastfeeding are the dominant factors associated with breastfeeding [38]. Based on the data collected through interview techniques, it is known that working mothers are less likely to provide colostrum to their baby due to concerns over plans to return to work. The difficulty of providing breastfeeding exclusively enables mothers to find other alternatives to meet their baby's nutritional needs. The provision of nutrition other than breastfeeding to the baby is done early, in the hope that the mother will have no difficulty in adapting the baby to a supplement other than breastfeeding when the mother must return to work.

4.2. The Relationship of Income to the Distribution of Colostrum

Family income determines the family's economic status. It is related to one's economic ability to meet the needs of

a decent living. This study shows that income is a protective factor. Low-income moms have a lower risk of not giving their baby colostrum. This study is in line with research conducted in Iran. Studies in Iran have shown that family income is associated with partial breastfeeding behavior in the first month of postpartum [39]. Research in Pakistan has shown similar things. The proportion of breastfeeding is higher in mothers with low family income than in mothers with high-income families [37]. High incomes make breastfeeding easier compared to low-income mothers, which is influenced by relatively high formula milk prices.

4.3. Relationships of Asphyxia with the Distribution of Colostrum

The condition of the baby at birth can be evaluated using the APGAR score. The results of this study indicate that asphyxia is not associated with colostrum administration. However, there is a tendency for more colossal giving to mothers with babies born under normal circumstances (APGAR score 7-10). While different results were obtained in a study conducted in Ethiopia. The study showed that mothers who had infants with a bad condition (disease) were more likely to avoid colostrum than mothers who had a baby born with normal conditions [25, 40]. In this study, the health of the baby is examined based on the condition of birth. During the study period up to 3 (three) days post-baby birth. During the study, the newborns with asphalt conditions may have improved so their sucking ability will improve and rooming-in soon. Rooming-in is one of the steps to support breastfeeding success [33]. The condition of infants with asymptomatic is higher in infants given colostrum. This shows that normal baby conditions can improve the success of colostrum delivery

4.4. The Relationship of Knowledge with the Provision of Colostrum

According to Notoatmodjo (2012), the result of human sensation or the knowing of one's object through his or her senses (eyes, nose, ears, and so on) [41]. The results of this study show that there is a significant relationship between maternal knowledge and the delivery of colostrum to newborns. Mothers who have less knowledge of colostrum and breastfeeding have 3 times less chance of giving colostrum compared to mothers who have sufficient knowledge. This study supported research conducted in China. The study revealed that low knowledge of colostrum was negatively associated with breastfeeding practices. Mothers who do not have the knowledge that they can breastfeed immediately after the pregnancy can delay breastfeeding as well as post-natal pain can delay postpartum breastfeeding [26]. Similar results were also obtained at the Hospital in Bantul

Yogyakarta, which showed that most mothers with good category knowledge had a great motivation for giving colostrum [40]. According to Notoatmodjo (2012), knowledge is an important factor in the formation of one's behavior because knowledge-based behavior is more lasting than knowledge-based [41]. The more knowledge a person develops, the better the mother will know about breastfeeding especially colostrum for infants. This, in turn, increases the mother's awareness that colostrum is very much needed by the baby.

4.5. The Relationship of Breastfeeding Intention to the Distribution of Colostrum

Intention (intention) according to [42] is a determinant of one's behavior. This study shows that breastfeeding intention is significantly associated with colostrum delivery. The results of this study are supported by a study conducted in Malaysia which shows that breastfeeding intention is related to positive breastfeeding, early maternal breastfeeding will have a positive impact on breastfeeding behavior [43]. The similarity of the results of this study is obtained because respondents have similar characteristics which are that the majority of respondents have low income and support husband. This study is also in line with that of [28, 29, 30], breastfeeding intention in pregnant women has the strongest relationship to early breastfeeding initiation.

4.6. Relationship of Rooming in with the Distribution of Colostrum

Rooming-in is a place for mom and baby in the same room for 24 hours. This study shows that rooming-in has a significant relationship with the delivery of colostrum to newborns. The results of this study are supported by [10], breastfeeding mothers are more likely to breastfeed exclusively during the first 4 days postpartum. This study is in line with the study of Ida (2012) who showed that mothers who were hospitalized were 3 times more likely to have breastfeeding than breastfeeding mothers [44]. Rooming-in is an important step to take in supporting a mother's success in providing colostrum. Breastfeeding can make it easier to breastfeed especially in the early stages of postpartum, which is when the mother starts mobilizing. Direct contact with the baby, seeing, and interacting with the baby is expected to create a stronger motivation for the mother to mobilize and provide colostrum.

4.7. Relationship of Health Support with the Distribution of Colostrum

Regulations of the Minister of Women Empowerment and Child Protection of the Republic of Indonesia Number 03 of the 2010 year, the ten steps to effective

breastfeeding make it evident that the assistance of health providers in ensuring breastfeeding success is quite significant. This study shows that health support is significantly associated with the provision of colostrum. This study is in line with studies in Ethiopia which show that mothers who do not receive breastfeeding counseling have a 4 times greater chance of not giving colostrum to their baby compared to mothers receiving breastfeeding [25]. The similarity of the results of the study due to the respondent has almost the same characteristic that the majority do not work. Qualitative research conducted by [45, 46] revealed that support and education about breastfeeding need to be given during pregnancy, hospitalization, and continued after the mother and baby are completed. Breastfeeding counseling by health workers is easier and more effective in reducing breastfeeding difficulties [47]. Good health support in the form of informational, instrumental, judgmental, and emotional support is needed to motivate and help mom to help mom deliver colostrum to her baby.

4.8. Relationship of Husband Support to the Distribution of Colostrum

The husband is a family member who plays an important role in assisting mothers during pregnancy, childbirth to breastfeeding. The results of this study indicate that husband support has a significant relationship with the provision of colostrum. This study is in line with research in Australia that shows that mothers who do not have a supportive spouse have a higher chance of not breastfeeding in the early postnatal period [27]. According to the study, the limitation of the information obtained by the husband is an obstacle for the husband to participate in providing support. The results of the research result are obtained due to the similarity of the data collection time. Data collection was done during maternity care at the hospital maternal room.

4.9. The Dominant Factor Associated with the Distribution of Colostrum to Newborns is Utilizing the Birth Control Method

The results of this study showed that breastfeeding intention, health support, husband support, and knowledge were significantly associated with colostrum delivery to newborns using the birth control method. The dominant factor associated with the delivery of colostrum to newborns is breastfeeding intention. Mothers with weak breastfeeding intentions have 9 times less colostrum. The first breast-secreted breast or colostrum is produced in small amounts but the amount is sufficient to meet the needs of the baby [31]. The small amount of colostrum production may make the mother feel that breastfeeding does not go away or that the colostrum is unable to meet the needs of the baby [26]. Colostrum and breastfeeding

are needed for the mother to develop the perception that the colostrum is capable of meeting the needs of the baby. So the baby doesn't need any extra nutrients.

Knowledge of the benefits of giving colostrum not only positively affects the baby but also for the mother, is expected to increase the mother's intention to breastfeed. Mothers with a strong intention to breastfeed will work their best to provide colostrum. The intention is a factor that shapes behavior. Intention indicates how strong a person is to try and how much effort is required to realize a planned behavior [42]. This study showed that almost all post-partum girls (92.6%) who gave colostrum to their baby had a strong intention to breastfeed. Breastfeeding intentions can be formed since pregnancy. Strong interventions are created by mothers to the problem of breastfeeding [48].

Mothers who cannot give the colostrum directly to the baby will try to squeeze the colostrum. In the early stages of breastfeeding, mothers face a variety of difficulties, especially in postpartum mothers who experience greater pain compared to spontaneous delivery [24, 49]. Mothers who have sufficient knowledge of lactation and strong breastfeeding intentions can more easily and quickly overcome obstacles that arise. Another factor associated with the delivery of colostrum is support. Postpartum mothers need more support than spontaneous births. This is related to the difficulties experienced by postpartum sexy mothers [19]. In particular, the challenge of mobilizing due to the discomfort that the mother cannot breastfeed. This makes moms need help and support from both husband and health worker.

The husband is a close mother and plays an important role in the mother's life. The support of the husband is very much needed by the mother in the face of difficult times, especially in the early stages of breastfeeding. Another well-known support for colostrum delivery is health care support. It has to do with the knowledge and skills of healthcare workers. Health support in the form of informational, assessment, instrumental, and emotional support is very much needed by the mother. Through this form of support, it is expected that mothers' knowledge of breastfeeding especially colostrum, and the difficulties that mothers experience can be more easily overcome especially with the difficulty of mobilization due to pain. The provision of anti-pain by health care (doctor) in the early stages of breastfeeding seems to be the mother's need for pain relief. Another important step towards breastfeeding success can be to show mom how to breastfeed properly and to maintain breastfeeding [7]. Another policy related to the role of health care in the delivery of colostrum to newborns through the delivery method is the implementation of rooming-in. The contact between mother and baby can motivate the mother to mobilize immediately. Active mobilization can accelerate colostrum production and motivation is a key factor determining ASI production [19, 28, 30]. The effort to

support the delivery of colostrum to newborns using the delivery method is closely linked to breastfeeding immediately through this rooming policy. Rooming-in this study was not applied to all newborns (86.2%). This study showed that there was a non-rooming mother who did not give her baby colostrum (57.9%). Babies are not being treated for a baby condition that requires special care in the perinatal room or the Neonatal Intensive Care Unit (NICU).

Previous studies conducted by [46] on the NICU rooming-in program show that mothers who need their baby need special care, vulnerable to emotional stress after delivery. The program provides real benefits that mothers feel including promoting breastfeeding, improving the bond between mother and baby, and improving the mother's ability to care for her baby. The condition of the mother worrying about the baby's condition makes the psychological condition of the mother depressed. Stress in breastfeeding affects the smooth production of breast milk [50]. Poor breastfeeding production can hinder breastfeeding success. The whole process of breastfeeding involves the factors of the baby, the mamma, the breast, and the mother's brain. Having an outpatient as soon as the baby is born can encourage the mother to give colostrum immediately even if the mother has not been able to actively mobilize. Breastfeeding techniques on post sexy girls can be tailored to your ability. Maternal complications in the early stages of breastfeeding can be minimized by improving the role of the health worker. Healthcare support is associated with successful colostrum delivery in this study.

5. Conclusions

Based on the results from this study, it can be concluded that: most postpartum sexy mothers (91.1%) produce colostrum. Of these, 79% of respondents gave it to infants. 89.95% of respondents do not work, 51.4% have adequate income, 85.5% of respondents have normal baby, 55.1% of respondents have sufficient knowledge of colostrum and breastfeeding, 58.7% of respondents have strong intention to breastfeed, 86.2% of the respondents were rooming-in, 53.6% of respondents received health support and 50% of respondents received support from the husband. Variables that have the strongest relationship with the delivery of colostrum to newborns using sexually explicit methods namely breastfeeding intention, health support, husband support, and knowledge of respondents.

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