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The Impact of Science-Based Education on Colostrum Provision Behavior Among Postpartum Mothers: A Case Study in Aceh Province, Indonesia

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Abstract: Maternal and toddler health issues are one of the main indicators of a nation's health; one way to reduce infant mortality is to provide the best food, namely breast milk (ASI), especially colostrum. Colostrum is the first milk from a yellowish liquid produced several days after birth. This study aimed to determine the effect of science education for postpartum mothers on providing colostrum to infants in the obstetrics room of Tgk. Chik Ditiro Regional Hospital, Aceh Pidie Regency. The methodology of this study is quantitative research with an analytical research design and a cross-sectional approach. The sample of this study was 30 mothers who gave birth in the obstetrics room. The research instrument used was a questionnaire/direct interview with respondents. Data were analyzed univariately and bivariate using the chi-square test. The study's results showed a relationship between knowledge, attitudes, practices, or actions and maternal behavior in terms of providing colostrum. Science education for postpartum mothers is very important to improve mothers' understanding of the importance of colostrum for babies. Based on several previous studies, it was found that science education in the form of counseling can significantly increase the knowledge and tendency of mothers to provide colostrum to their babies after birth. The study highlights the value of targeted science-based education in maternal health literacy, supporting science education integration into community health practices.

Keywords: Action; Attitude; Colostrum; Knowledge; Science-based education

Introduction

Maternal and toddler health is one of the main indicators of a nation's health, which is reflected in the high Maternal Mortality Rate (MMR) and Infant Mortality Rate (IMR). Indonesia has the highest infant mortality rate in Southeast Asia. The main causes of infant mortality include diarrhea, malnutrition, and infection (Ministry of Health of the Republic of Indonesia, 2019).

According to the World Health Organization (WHO), in 2019 approximately one in ten children was born with a low birth weight (Branca, 2019). Infant mortality is an important indicator for determining the level of health in a country and even for measuring the level of progress of a nation. One way to reduce infant mortality is to provide the best food, namely breast milk (ASI), especially colostrum. Exclusive breastfeeding for 6 months can reduce infant mortality by up to 13 percent (Pritasari, 2019).

Colostrum is the first milk to come out, in the form of a yellowish liquid produced a few days after birth, and is different from transitional breast milk and mature breast milk. Colostrum contains high protein 8.5%, low carbohydrates 3.5%, fat 2.5%, salt and minerals 0.4%, water 85.1%, and fat-soluble vitamins. The protein content of colostrum is higher, while the lactose content is lower than mature breast milk. In addition, colostrum is also high in secretory immunoglobulin A (IgA), lactoferrin, leukocytes, and developmental factors such

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as epidermal growth factor. Colostrum can also function as a laxative that can clean the digestive tract of newborns. The amount of colostrum the mother produces is only around 7.4 teaspoons or 36.23 mL per day. Therefore, although the amount of colostrum is small, it is sufficient to meet the needs of newborns (Permatasari et al., 2020).

UNICEF (United Nations Children's Fund) and WHO recommend that mothers exclusively breastfeed their babies for 6 months. Breast milk is an ideal and balanced source of nutrition for babies, especially in their first month of life (Turyati & Nurbaeti, 2018).

According to UNICEF 2019, the global average coverage of exclusive breastfeeding is 38%. According to WHO, the coverage of exclusive breastfeeding is still low in many ASEAN (Association of South-East Asia Nations) countries, including India (46%), the Philippines (34%), Vietnam (27%), and Myanmar (24%). The practice of exclusive breastfeeding in Indonesia in 2020 was 66.1%. In Central Java in 2019, it was 66% (Ministry of Health of the Republic of Indonesia, 2019).

Exclusive Breast Feeding (EBF) varies widely. The average regional early breastfeeding initiation rate is 41% in East Asia, Pacific, and Asia Pidie, while the prevalence is only 30% and 49%, respectively. High EBF up to 6 months occurs in several countries, namely Bangladesh (64%), Cambodia (74%), Nepal (70%), and Sri Lanka (76%), although it is much lower (Khandelwal & Kurpad, 2019).

According to the 2021 Basic Health Research (RISKESDAS) data, 52.5 percent—or only half of the 2.3 million infants under six months of age—received exclusive breastfeeding in Indonesia, a 12 percent decrease from the figure in 2019. The early initiation of breastfeeding (IMD) rate also fell from 58.2 percent in 2019 to 48.6 percent in 2021 (Kato et al., 2022).

According to the results of the Indonesian Basic Health Research (RISKESDAS) in 2018, the percentage of maternal behavior towards providing colostrum to children aged 0-23 months according to the highest province in Indonesia is the DI Yogyakarta province of 97.7%, while the lowest is in Papua province of 68.8%. While in Aceh, it has a percentage of 83.2%, 18th out of 34 provinces (Riskesdas, 2018). According to the Central Statistics Agency in Aceh Province, the percentage of babies under 6 months of age who received exclusive breastfeeding was only 65.43% in 2020, and in 2021, it increased to 66.66%, while in 2022, it decreased to 65.88% (Statistics, 2022).

The Aceh Provincial Health Office, through data from Profiles (Aceh Health Profile), found that the percentage of newborns who received IMD (Early Breastfeeding Initiation) in Pidie Regency reached 62.55% in 2019. The early breastfeeding initiation (IMD) rate increased to 64.83% in 2020 and decreased to 63.83% in 2021 (Aceh, nd)

The results of a study conducted by Steve Harakah (2020) in Jeddah explained that colostrum is yellow, thick, and sticky. Some mothers still consider colostrum to be a disease and, indeed, not safe for babies' consumption. The factor that causes mothers not to give colostrum is the lack of knowledge and information from parents (Harakeh et al., 2020).

There is research that supports the statement above, put forward by Khosidah (2018), who stated that 53.3% of mothers of newborn babies did not provide colostrum at the Baturaden Health Center, Banyumas Regency, and most of the colostrum was given by the multipara group (78.5%) (Khosidah, 2018).

Septiani and Liza's (2020) research on factors influencing colostrum provision to infants at BPM Nurhayati, S.Sit, Peusangan District, Bireuen Regency showed that family support and knowledge factors were related to colostrum provision to infants. Postpartum mothers did not provide colostrum immediately because they were afraid that the baby would be cold, the mother would be tired if she breastfed her baby immediately, colostrum did not come out, and there was an understanding that colostrum was not good for the baby. This would not happen if a postpartum mother had good knowledge and received support from her family (Septiani & Umami, 2020).

Research by Devita et al. (2020) shows that there is a relationship between maternal knowledge and attitudes and the provision of colostrum to infants. This is because behavior based on knowledge is more permanent than behavior that is not based on knowledge, and someone who has a positive attitude has a greater chance of providing colostrum than someone with a negative attitude (Devita et al., 2020).

The behavior of mothers who do not provide colostrum to newborns can be influenced by knowledge, age, education, sources of information, perception factors, attitudes, socio-culture, social support, and the inability of health workers to provide knowledge to breastfeeding mothers. The obstacle to providing colostrum is caused by the mother's poor knowledge about colostrum, so many mothers who have just given birth do not give colostrum to their babies. Even in various regions, the first breast milk (colostrum) is deliberately expressed by hand, thrown away, and not given to the baby (Sulaimah, 2019).

Steps that can be taken to increase the level of colostrum provision to postpartum mothers is to provide science-based education. This education can be done through counseling or providing science literacy in the context of applied science learning to the community about the importance of colostrum for babies. This education can be done by anyone, medical personnel or

by families. Some science education materials that can be delivered are about the definition of colostrum, the benefits and nutrition in colostrum, the practice of providing colostrum, overcoming myths and misunderstandings, and the impact of providing colostrum to babies (Ayele et al., 2025; Wiryo & Hakimi, 2005). Science education and health counseling can be done through direct counseling and video-based education. Providing health education during antenatal and postnatal visits is very important. Research on counseling conducted by (Yeshambel Wassie et al., 2020) explained that counseling can improve mothers' knowledge and attitudes, where mothers have a higher tendency to give colostrum to their babies. The implementation of video-based health education programs in addition to routine counseling has been shown to increase knowledge about exclusive breastfeeding and colostrum provision in new mothers (Adhisivam et al., 2017). Teach mothers to do breast care so that breast milk can flow smoothly and their babies can also receive breast milk well, and carry out IMD (Early Breastfeeding Initiation) immediately after birth so that colostrum is not wasted. (Devita et al., 2020). This applied science education is not only given to mothers, but can also be delivered to fathers and can even be applied in learning at school.

Based on an initial survey conducted at Tgk. Chik Ditiro Hospital, Pidie Regency, it was found that babies after birth were given IMD (Early Breastfeeding Initiation) for the first 30 minutes. The babies were observed in the monitoring room for 1 hour. The initial survey conducted from August to September 2023 included 30 postpartum mothers. The interviews with 10 breastfeeding mothers showed that 6 mothers did not provide colostrum, and 4 mothers did. The role of health workers in hospitals is often to provide health education about colostrum. Still, mothers do not provide colostrum to newborns because colostrum does not come out. They think formula milk is as good as breast milk and colostrum, and formula milk makes babies healthier, and the mother's attitude is less supportive.

Based on the description above, the author is interested in knowing more about "The influence of science-based education for postpartum mothers on the provision of colostrum in the Obstetrics Room of Tgk. Chik Ditiro Hospital, Pidie District, Pidie Regency".

Method

The research method used is a quantitative method with an analytical research design with a cross-sectional approach. Data were collected through questionnaires/interviews to collect data on respondent characteristics, knowledge, attitudes and practices or actions. The questionnaire used was developed based on a review of several previous studies that discussed the provision of colostrum by mothers to infants. The research instrument was analyzed for validity and reliability to determine the quality of the questionnaire. Validity analysis was carried out on each questionnaire item by comparing the calculated r and the table r. Items are considered valid when the table r < calculated r. Reliability testing is carried out by comparing the values of the table r and the calculated r. If the calculated r > table r, then the instrument used is reliable (Sahdi et al., 2024).

The research sample was selected through consecutive sampling technique, where subjects who meet the criteria can be samples. The inclusion criteria in this study were mothers who had just given birth (0-7 days), could read and write, and were willing to be respondents and participate in counseling. The research procedure was carried out by providing a pretest, counseling, then a posttest.

Data analysis used in this study is univariate analysis and bivariate analysis. Univariate analysis is an analysis carried out to analyze one variable or each variable from the research results. The purpose of this analysis is to explain/describe each variable studied. Bivariate analysis is carried out to determine the relationship between independent variables and dependent variables through Crosstabs or cross tabulations. The statistical test carried out in this Bivariate analysis is using the Chi-Square test with a 95% confidence level ($\alpha = 0.05$). It is said that there is a statistical relationship if the p value is obtained <0.05, with a validity test using SPSS. Data presentation is carried out after the data is processed and presented in the form of a frequency distribution table and a cross table.

Results

Univariate Analysis

The univariate analysis in this study consists of the analysis of respondent demographics and respondent attitudes. The following are the results of the univariate analysis.

Table 1. Univariate Analysis (n=30)

Category	Frequency	Percentage (%)
Distribution of education		
Elementary school	1	3.3
Junior high school	5	16.7
Senior high school	12	40.0
Collage	12	40.0
Total	30	100
Job distribution		
Housewife	22	73.3
Civil servant	4	13.3

Category	Frequency	Percentage (%)
Private employees	4	13.3
Total	30	100
Knowledge distribution		
Good	14	46.7
Enough	8	26.7
Insufficient	8	26.7
Total	30	100
Distribution of Attitude		
Support	14	46.7
Does not support	16	53.3
Total	30	100
Distribution of Actions		
Good	19	63.3
Poor	11	36.7
Total	30	100
Distribution of Colostrum Giving Behavior		
Yes	14	46.7
No	16	53.3
Total	30	100

Bivariate Analysis

a. Relationship between Knowledge Level and Mother's Behavior in Providing Colostrum

To find out the relationship between knowledge and behavior, you can see the following cross tabulation.

Table 2. Relationship between level of knowledge and behavior (n=30)

Knowledge	Colostrum Administration				Total		*P Value*
	Yes		No		F	%	
	F	%	F	%			
Good	14	46.7	0	0	14	46.7	0.000
Enough	0	0	8	26.7	8	26.7	
Not enough	0	0	8	26.7	8	26.7	
Total	14	46.7	16	53.3	30	100	

Based on Table 2, it can be seen that of the 30 respondents in this study, 14 respondents (46.7%) were in the good knowledge category, 8 respondents (26.7%) were in the sufficient knowledge category and 8 respondents (26.7%) were in the insufficient knowledge category.

Based on the chi-square statistical test, the significance value (0.000) < alpha (0.05) is known, so the conclusion that can be made is that there is an influence of knowledge on the provision of colostrum in the obstetrics room of Tgk. Chik Ditiro Hospital, Pidie District, Pidie Regency.

b. Relationship between Attitude and Mother's Behavior in Providing Colostrum

To find out the relationship between attitudes and maternal behavior in providing colostrum, see the following cross tabulation:

Table 3. Relationship between attitude and behavior (n=30)

Attitude	Colostrum Administration				Total		*P Value*
	Yes		No		F	%	
	F	%	F	%			
Positive	14	46.7	0	0	14	0	0.000
Negative	0	0	16	53.3	16	0	
Total	14	46.7	16	53.3	30	100	

Based on Table 3, it can be seen that of the 30 respondents in this study, 14 respondents (46.7%) had a positive attitude and 16 respondents (53.3%) had a negative attitude. Based on the chi-square statistical test, the significance value (0.000) < alpha (0.05) is known, so the decision that can be concluded is that there is an influence of attitudes towards the provision of colostrum in the obstetrics room of Tgk. Chik Ditiro Hospital, Pidie District, Pidie Regency.

c. Relationship between Action and Mother's Behavior in Providing Colostrum

To find out the relationship between actions and maternal behavior in providing colostrum, see the following cross tabulation.

Table 4. Relationship between actions and behavior (n=30)

Attitude	Colostrum Administration				Total		*P Value*
	Yes		No		F	%	
	F	%	F	%			
Positive	19	63.3	0	0	19	0	0.000
Negative	0	0	11	36.7	11	0	
Total	19	63.3	11	36.7	30	100	

Based on table 4, it can be seen that of the 30 respondents in this study, 19 respondents (63.3%) had good actions, and 11 respondents (36.7%) had bad actions.

Based on the chi-square statistical test, the significance value (0.000) < alpha (0.05) is known, so the decision that can be concluded is Ha is accepted. So it can be concluded that there is an influence of action on the provision of colostrum in the obstetrics room of Tgk. Chik Ditiro Hospital, Pidie District, Pidie Regency.

Discussion

Relationship between Knowledge and Mother's Behavior in Providing Colostrum

The study's results show a relationship between knowledge and colostrum administration in the obstetrics room of Tgk. Chik Ditiro Hospital, Pidie District, Pidie Regency, the significance value obtained is (0.000) < alpha (0.05), so the decision that can be concluded is Ha is accepted, evidenced by the presence of 14 respondents (46.7%) in the good knowledge

category, 8 respondents (26.7%) in the sufficient knowledge category and 8 respondents (26.7%) in the poor knowledge category.

Mothers' knowledge, which is mostly quite good, can be influenced by the information they obtain about breastfeeding. This information can be obtained by mothers through various information media currently enjoyed by the community, such as television, the internet, and counseling from health workers (Khosidah, 2018). Not only through the media, this knowledge can be done through counseling and science literacy for pregnant and postpartum mothers. Some of the materials presented at the counseling stage are the definition of colostrum, the benefits and nutrition in colostrum, the practice of providing colostrum, overcoming myths and misunderstandings, and the impact of providing colostrum to babies. These findings can inform science education curricula in midwifery and community health education, integrating biological and nutritional science with socio-cultural awareness to promote early neonatal health.

This study's results align with research conducted at the Kedaton Bandar Lampung Health Center with a sample of 95 respondents, finding a relationship between knowledge of colostrum and colostrum administration to newborns (0.001). The OR value obtained was 7.102 (95% CI = 1.895 - 26.617), meaning that respondents with good knowledge have a greater chance of providing colostrum when compared to respondents with less and sufficient knowledge (Sulaimah, 2019).

In this study, the researcher concluded that there is a relationship between knowledge and maternal behavior in providing colostrum. This is influenced by mothers with good knowledge who will continue to provide colostrum to their babies; on the other hand, mothers with sufficient and insufficient knowledge do not provide colostrum to their babies, and mothers state that providing colostrum is not good because of their lack of understanding of colostrum, mothers assume that colostrum is stale milk that must be discarded first after the white milk liquid comes out before being given to the baby, where a mother does not understand the benefits of colostrum for babies. This shows that a mother's knowledge has a significant influence on her tendency to provide colostrum; the higher the mother's education, the mother will understand colostrum and its benefits so that she will give it to her newborn baby (Asaro et al., 2023; Marni, 2023). The knowledge of the colostrum in question is about its composition, color, shape, and benefits for babies (Harakeh et al., 2020).

Despite general awareness, misconceptions persist among less educated mothers. In Lahore, 42% of mothers with no formal education believed that colostrum is “unclean milk,” while more educated mothers cited practical difficulties such as post-cesarean challenges (Jawaid et al., 2022). In Bahawalpur, Pakistan, only 25% of mothers believed colostrum was the best first food, while most were unaware or misinformed about its benefits (Faisal et al., 2016).

Targeted educational interventions can effectively improve understanding, knowledge, and practice across educational settings. Educational programs can improve knowledge and practice. For example, an educational program in the NICU significantly reduced stress, anxiety, and depression among mothers, empowering them to better care for their newborns (Goudarzi et al., 2016). Another study showed that an online instructional video significantly improved pregnant women’s knowledge and confidence regarding antenatal colostrum expression (O'Sullivan et al., 2019).

Culture also influences maternal knowledge of colostrum. Cultural beliefs and misconceptions can negatively impact colostrum feeding practices. In some communities, colostrum is considered harmful, leading to avoidance (Asaro et al., 2023; Rogers et al., 2011). In Ethiopia, poor maternal knowledge of colostrum was a significant predictor of colostrum avoidance, influenced by inadequate counseling and cultural misconceptions (Sisay et al., 2025). In rural Punjab, India, many mothers were unaware of the importance of colostrum, highlighting the need for targeted health education (Garg et al., 2010). However, educational programs addressing these cultural beliefs can increase colostrum feeding rates (Rogers et al., 2011).

Relationship between Attitude and Mother's Behavior in Providing Colostrum

The results of the study showed that there is a relationship between attitude and colostrum administration in the obstetrics room of Tgk. Chik Ditiro Hospital, Pidie District, Pidie Regency, where the significance value (0.000) < alpha (0.05) was obtained, then the decision that can be concluded is Ha is accepted, marked by 30 respondents in the study, 14 respondents (46.7%) had a positive attitude, and 16 respondents (53.3%) had a negative attitude. So, the most dominant respondents in this study had a negative attitude.

This is in line with research conducted by (Pulungan, 2021), which shows that there is a significant relationship between the attitude of mothers after giving birth and the provision of colostrum breast milk to newborns in the Rambung Health Center work area, Binjai Pidie District, with data analysis using Chi-Squared with a p-value = 0.000 <α (0.05).

Based on the results of the analysis of attitudes towards giving colostrum is very important. If the attitude is good towards giving colostrum, the mother will give colostrum. Therefore, attitudes are very much needed by breastfeeding mothers so that they know

things they do not know. The lack of positive attitudes held by respondents can be influenced by socio-cultural conditions, namely imitating friends, neighbors, and family who think it is better to use a milk bottle because it is easier and more time-saving, and the opinion that formula milk is as good as breast milk colostrum.

The relationship between maternal attitudes and colostrum-feeding behavior involves cultural factors, education, and support. The culture around the mother can have a significant influence on maternal behavior, where the mother will tend to follow the prevailing culture. In some cultures, colostrum is considered negative, so it is avoided. For example, in rural Turkey, colostrum is often considered unsuitable for infants, and practices such as giving sugar water before breast milk are common (Ergenekon-Ozelci et al., 2006; Ertem, 2011). In Ethiopia, misconceptions about colostrum causing neonatal morbidity and mortality still exist, leading to avoidance of colostrum consumption (Haji et al., 2024; Mose et al., 2021). Mothers with higher education tend to give colostrum to their babies; this is because mothers have an understanding and knowledge of the benefits of colostrum for babies (Asaro et al., 2023; Idris & Palutturi, 2019; Yeshambel Wassie et al., 2020). Improving maternal knowledge can be done through counseling to strengthen the mother's understanding of the benefits of colostrum for babies (Gslassie et al., 2021; Yeshambel Wassie et al., 2020). Support is very important for postpartum mothers, both from health workers, family, and the community, to increase the mother's positive attitude toward giving colostrum (Lu et al., 2011; Permatasari et al., 2020).

Relationship between Action and Mother's Behavior in Providing Colostrum

The study results showed a relationship between actions and the provision of colostrum in the obstetrics room of Tgk. Chik Ditiro Hospital, Pidie District, Pidie Regency, obtained a significance value (0.000) < alpha (0.05). Then, the conclusion that can be concluded is that Ha is accepted; it is known that of the 30 respondents in the study, 19 respondents (63.3%) had good actions, and 11 respondents (36.7%) had bad actions. So, the most dominant respondents in this study had good actions.

The right actions taken by respondents are currently quite good, but this must be maintained and even improved because there are still many mothers who do inappropriate actions; where after the delivery process, health workers help respondents to do IMD (Early Breastfeeding Initiation) immediately after birth so that colostrum is not wasted, but respondents do not continue giving colostrum a few hours after delivery due to lack of knowledge and understanding of the needs of their babies, such as the actions of mothers breastfeeding when their babies cry, when in fact what mothers should do is breastfeed their babies on demand, which is whenever the baby wants. Some mothers even try to put their babies to sleep all night without breastfeeding. It would be better if mothers breastfeed their babies at night as long as the baby wants because breastfeeding at night helps maintain breast milk supply because babies suck more often; breastfeeding at night is very beneficial for working mothers, and breastfeeding at night is very prone to delaying pregnancy.

In many developing countries, cultural beliefs and misconceptions play a significant role in colostrum avoidance. Some mothers believe colostrum is harmful or inadequate for the newborn, so they discard it (Idris & Palutturi, 2019; Marni, 2023). The practice of ritual pre-lacteal feeding, in which another substance is given to the newborn before breastfeeding, is also common and contributes to colostrum avoidance (Rogers et al., 2011; Yimer & Liben, 2018). Positive attitudes toward colostrum feeding are associated with higher rates of colostrum feeding. Mothers who understand the importance of colostrum are more likely to initiate breastfeeding earlier and avoid pre-lacteal feeding (Sisay et al., 2025; Yeshambel Wassie et al., 2020). Other factors, such as support from health workers, family members, and the community, significantly impact colostrum feeding behavior. Mothers who receive encouragement and support from this group are more likely to provide colostrum to their babies (Marni, 2023; Permatasari et al., 2020; Sisay et al., 2025).

Based on the description above, several factors influence maternal behavior in providing colostrum to infants: educational factors that influence knowledge, cultural factors, and supporting factors. Based on research, it is known that the level of understanding mothers have about the benefits of colostrum is still low, which makes it important to have science education to increase awareness and understanding of mothers about the importance of colostrum for infants. Antenatal and postnatal care services are known to significantly help reduce avoidance of colostrum (Asaro et al., 2023; Sisay et al., 2025; Yeshambel Wassie et al., 2020). Then community-based interventions can help overcome cultural beliefs and misunderstandings about colostrum (Aslam et al., 2024). Educational programs empower mothers by increasing their confidence in breastfeeding practices, including providing colostrum. This empowerment is associated with reduced stress, anxiety, and depression among new mothers (Goudarzi et al., 2016; Ummah et al., 2023). Improving breastfeeding practices through continuous education from the antenatal to the postnatal period can help ensure that mothers are adequately informed about the importance of early breastfeeding and colostrum provision. This education helps establish effective breastfeeding techniques and practices (Armugham et

al., 2022; Ummah et al., 2023). Interventions aimed at improving maternal education and breastfeeding practices significantly reduced the prevalence of colostrum avoidance. These interventions included counseling during antenatal care and immediate postpartum support (Addisu et al., 2020; Kebede et al., 2023).

Some recommendations that can be made to improve colostrum provision by mothers to infants are to conduct routine counseling, address cultural beliefs, and provide support to mothers after cesarean section. Health workers should offer routine and detailed counseling on the benefits of colostrum and proper breastfeeding techniques during antenatal visits and immediately after delivery (Addisu et al., 2020; Kebede et al., 2023). Science education programs provided to mothers should be culturally tailored to address specific beliefs and misconceptions about colostrum in different communities (Addisu et al., 2020; Jawaid et al., 2022; Sisay et al., 2025). Special attention and support should be given to mothers who undergo cesarean section to ensure they can initiate breastfeeding and provide colostrum as soon as possible (Addisu et al., 2020; Sisay et al., 2025). It can be concluded that science-based education for postpartum mothers is important in encouraging colostrum provision, thereby improving neonatal health outcomes. Sustained and culturally sensitive educational interventions are essential to address barriers to colostrum provision and improve overall breastfeeding practices.

Conclusion

The study's results showed a relationship between knowledge, attitudes, and actions of mothers toward the behavior of giving colostrum to babies. Science education has an important role in increasing the understanding and tendency of mothers to give colostrum to their babies. Science education that can be given to mothers after giving birth is counseling, which is known to significantly increase mothers' understanding of the importance of the benefits of colostrum for babies. Counseling can also help increase the tendency of mothers to give colostrum to their babies as soon as possible after giving birth.

Author Contributions

Conceptualization, I.; methodology, I. and Y.; software, Y; validation, I and M.S.H.; formal analysis, M.S.H.; investigation, I. and N.; resources, M.S.H and N.; data curation, I; writing—original draft preparation, Y.; writing—review and editing, I and N.; project administration, M.S.H. All authors have read and agreed to the published version of the manuscript.

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Conflicts of Interest

The authors declare no conflict of interest.

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