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**Review Article**

**Diet Elimination of The  
Breastfeeding Mother in Treating  
Allergies of Infants Ages 0-12**

**Joice Cathryne<sup>1</sup> Lia Kartika<sup>2</sup>**

<sup>1,2</sup>Boulevard Jenderal Sudirman No. 20, Universitas  
Pelita Harapan, Faculty of Nursing, Indonesia  
Correspondent Email: [joyce.cathryne@uph.edu](mailto:joyce.cathryne@uph.edu)



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**Abstract**

**Background:** Breast Milk (BM) is the primary nutrient that must be given to babies. Complete breast milk nutrients help the babies' growth, development, and boost immunity. Some data found that breastfeeding triggers infant allergies.

**Objectives:** To critically appraise the evidence of the effectiveness of the breastfeeding mother's elimination diet (ED) in treating allergies of infants ages 0-12.

**Methods:** A literature search was conducted for publication during 2016 – 2021 using the following databases: EBSCO, Google Scholar, and Proquest with the search keywords of "Elimination Diet" AND "Allergies" AND "Breastfeeding". Eight primary articles were selected and included in the review.

**Results:** The study revealed five themes, namely the effectiveness of the elimination diet, the variation of the elimination diet, the effects of the elimination diet, the breast milk benefit, and the support from the family and healthcare while doing the elimination diet.

**Conclusion:** Having babies with allergies can put mothers in a dilemma situation. Fortunately, a mother can still breastfeed their babies without worrying about their babies' growth. Support from health workers and families is needed by breastfeeding mothers in doing the elimination diet consistently.

**Keywords:** breastfeeding, elimination diet, infants

**Introduction**

Breastfeeding is one way to provide food to newborns. Breast milk contains many nutrients needed for the growth of newborns.<sup>1</sup> According to the World Health Organization,<sup>2</sup> breastfeeding is essential, especially in the six months of a baby's life. There is no provision of other types of food or drink other than breast milk that is given exclusively. Exclusive breastfeeding is helpful as the first immunization for babies to maintain the baby's survival, as a nutrient needed for infant growth and development, and to prevent babies from life-threatening diseases such as diarrheal diseases, respiratory infections, and prevent disease.<sup>3</sup> Most allergies are caused by giving formula milk (The Ministry of Health, 2014). If exclusive breastfeeding has reached six months, breastfeeding continues until the baby is 2 years old.<sup>4</sup>

According to the World Health Organization (2020), only 1 in 2 babies aged less than six months are getting exclusive breastfeeding. Further data shows that only 5% of babies receive breast milk until they are 23 months old, and there are more than 40% of babies who

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have been introduced to complementary foods more before the age of 6 months.<sup>5</sup> This low achievement rate has prompted the Pan American Health Organization to invite the government to take steps to support, promote and protect breastfeeding rights. Breastfeeding mothers need to be protected to avoid health hazards for themselves and their babies. The success rate in exclusive breastfeeding in the world is expected to increase to 50% by 2025.<sup>6</sup>

A previous study<sup>7</sup> in their research found that when mothers breastfeed their babies, it can cause allergies. It happened in the case of two babies who were exclusively breastfed in Turkey, both babies aged less than six months suffered from fever, vomiting, diarrhea, and vomiting experienced weight loss resulting in the need to receive treatment in the Intensive Care Unit. The results of another study conducted in Kediri, Indonesia, found that 26.25% of infants who were exclusively breastfed had allergies.<sup>8</sup> Previous research concluded that mothers believe and feel very worried that their diet will affect their baby's behavior and can cause colic. Hence, mothers feel the need to do an elimination diet or food restrictions from the food they eat, advice from friends, families, health workers, and information from the internet are steps taken by mothers to overcome this problem.<sup>9</sup>

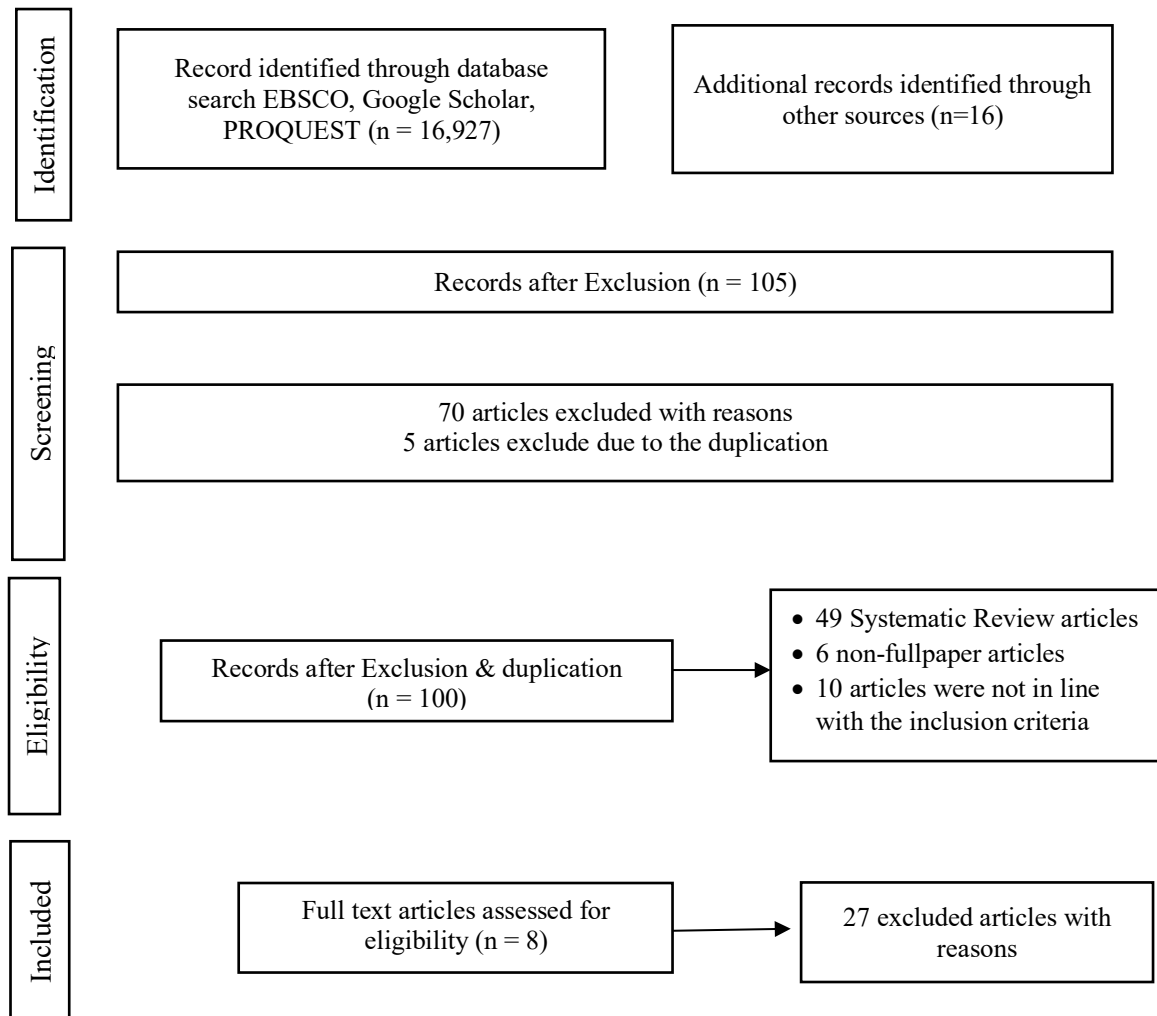
A recent study found a case of a 26-day-old baby with exclusive breastfeeding was found to be suffering from allergic proctocolitis induced by food protein or called Food Protein-Induced Allergic Proctocolitis, characterized by the presence of blood in the baby's feces. Then the baby was given an amino acid formula for the handler.<sup>10</sup> Breast milk as an essential nutrient is needed for infant growth. Up to now, a few studies have been found that discuss the interventions to manage symptoms and signs of allergies in infants caused by food consumed by the mother while breastfeeding. Based on the data described above, the authors are interested in researching the effectiveness of the elimination diet by mothers in breastfeeding infants aged 0-12 months.

## Methods

We conducted the literature review method by using three databases in searching for literature sources, namely EBSCO, Google Scholar, and Proquest, and other sources from 2016-2021. Key terms included: "Elimination Diet," "Allergies," "Breastfeeding." The inclusion criteria used were English and Indonesian articles, primary articles, full text, and research subjects were mothers who gave breast milk to babies aged 0-12 months. The exclusion criteria were articles in which the respondents are babies with congenital and chronic diseases. We obtained 16,943 articles based on keywords from the article searching process, and eight articles will be analyzed using a descriptive narrative approach. The results of the search are depicted in a PRISMA flow diagram.<sup>11</sup> Critical review guidelines for quantitative and qualitative studies were using the Aveyard appraisal. A thematic analysis process was used to synthesize the findings.

Results

Figure 1. PRISMA 2021 Flow Diagram



**Table 1.** Summary Table of Articles

<b>Research title, author, year</b>	<b>Methods</b>	<b>Result</b>	<b>Discussion</b>	<b>Recommendations</b>
<i>Maternal food restrictions during breastfeeding (Jeong, et al, <sup>12</sup>)</i>	<i>Logistic regression models with 145 mothers who have filled out the questionnaire</i>	This study revealed that there is a discomfort feeling among mothers in food restrictions during breastfeeding. The most common foods restricted are caffeine, spicy food. Local culture practices influenced mothers while doing breastfeeding and food restriction but not for mother education. The mothers' education does not have any relations with food restrictions	In this study, breastfeeding mothers did restrict to one or more foods without any scientific reason. More than three mothers had difficulty with food restrictions. Mothers should be educated about proper dietary practices.	Support and education about breastfeeding from health workers are needed to change mother perceptions about breastfeeding
<i>Allergic Proctocolitis in Infants: analysis of the evolution of the nutritional status (Camargo, 2016)</i>	<i>- A retrospective cohort with 44 infants diagnosed with allergic proctocolitis</i>	This study revealed that there was no difference in the anthropometric parameters of the nutritional intervention whether through Exclusive Breast Feeding (EBF) -Mother Elimination Diet (MED) and Hydrolyzed Formula (HF)	Based on research, shows there is an increase in baby's weight and height from successful interventions through exclusive breastfeeding with food restrictions and hypoallergenic formulas.	Allergic proctocolitis will not cause damage to the nutritional status of infants if an appropriate intervention diet is given.
<i>Maternal Dairy Consumption and Hematochezia in Exclusively Breastfed Infant (Lazare, et al, 2019)</i>	prospective, longitudinal, one-group before/after study A longitudinal prospective study with mothers who breastfed their infants exclusively for two weeks but less than six months babies had bloody stools on guaiac test with no bowel or other lesions found	The results showed that mother's elimination diet of cow milk and soy did not cure the hematochezia of infants	This study reveals that cow's milk and soy protein consumed by mothers did not cause hematochezia	Further research needs to be carried out to investigate the extent to which other antigens in breast milk can cause hematochezia
<i>Early risk factors for cow's milk allergy in children in the first year of life (Sardecka, et al, 2018)</i>	<i>A questionnaire to analyze infant risk factors, parental risk factors, and environmental risk factors was prepared for the purposes of the study</i>	Families who have a history of allergies will increase the risk of cow's milk allergy. Mother education at the university level also increases the risk of cow's milk allergy in infants in the early years of life. Allergies in IgE-mediated are more common than IgE- non mediated caused by cow's milk, and prolonged periods of breastfeeding can reduce the risk of allergies in infants	This study reported that allergies were three times higher in families with a history of allergies. There is no relationship between the incidence of allergies with education level.	Breastfeeding is very important for allergy prevention, especially in the early stages of a baby's life
<i>Detection of <math>\beta</math>-lactoglobulin in human breast-milk 7 days after cow milk ingestion (Matangkasombut,</i>	<i>Study period, 19 healthy lactating mothers, 15 mothers of non-CMPA infants, and four mothers of CMPA infants were recruited. with voluntary</i>	The results showed that $\beta$ -lactoglobulin could be detected in breast milk up to 7 days after the mother consumes cow's milk	This study reveals that the level of $\beta$ -lactoglobulin in breast milk will show Cow Milk Protein Allergy symptoms that vary between babies. The higher level of $\beta$ -lactoglobulin can worsen the symptoms of Cow Milk Protein	Mothers who consume cow's milk should temporarily suspend breastfeeding for babies who are allergic for more than seven days because it can worsen the

<i>et all 2018)</i>		Allergy in infants	baby's allergy symptoms	
<i>Evaluation of Our Food Protein-Induced Proctocolitis Cases: A Single-Center Experienced (Aslan, et all 2017)</i>	<i>A retrospectively study with 34 patients with a diagnosis of food protein-induced proctocolitis</i>	The results showed that allergic proctocolitis mainly occurs in exclusively breastfed infants with cow's milk as the leading cause.	Examination of eosinophils in stool smears is a specific method for diagnosing allergic proctocolitis, which mainly affects infants who are exclusively breastfed because cow's milk protein	Elimination diet and breastfeeding needs to be continued if the baby has allergic proctocolitis
Exclusive Breastfeeding with Allergic Incidence in Infants and Children aged 6 – 70 Months IN RSIA Kediri City (Suwoyo & Rahmaningtyas 2017)	This study used a retrospective cohort study design with 80 respondents	The results revealed that there was a relationship between exclusive breastfeeding and the incidence of allergies in infants and children	This study reports that the success of exclusive breastfeeding is influenced by factors of working mothers, habits of formula feeding, families support, health workers' support, and community leaders. The incidence of allergies is influenced by dietary factors or breastfeeding, family factors, and psychological factors	Support from health workers and families who are given during breastfeeding is needed to reduce the incidence of allergies in babies
Milk-Free Diet Followed by Breastfeeding Women (Januszko & Lange 2020).	<i>A cross-sectional study with 33 breastfeeding mothers using the purposive sampling method</i>	The main factor for breastfeeding mothers following a dairy-free diet is the occurrence of hypersensitivity reactions in the child's digestive system (72%). After removing milk from the diet, only 42% of mothers stated that they consumed other food products as a substitute for nutrition. Mothers also eliminate highly processed food products, fast food, and carbonated drinks. Sources of lactation information are mainly obtained from the Internet (85%). Only 12% of respondents asked a nutritionist for information about breastfeeding	This study showed that the main reasons mothers followed the elimination diets were gastrointestinal sensitivity in breastfed children (66%) and allergies 63% in children. A quarter of women stated removing products from food to prevent children from health problems caused by certain products	A practical method of treating cow's milk allergy is eliminating milk and milk products from mothers' diets and children. The support of health workers for breastfeeding mothers is essential

**Table 2.** Thematic Analysis

No	Significant Statement	Significant Findings	Sub Themes	Themes
1	<p>a. Generally, the types of foods that breastfeeding mothers eliminate have specific reasons. <i>Sikhye</i> can reduce breast milk production (n=10), Kiwis can cause allergies (n=4), spicy foods can cause colic or skin rashes (n=2), raw food may make one susceptible to food poisoning or parasitic infection (n=2); elimination of cow's milk can prevent the development of milk allergy (n=1). (Jeong, G., Park, S. W., Lee, Y. K., Ko, S. Y., &amp; Shin, S. M. 2017)</p> <p>b. A nutritional intervention carried out with 73% of mothers who exclusively breastfed (EBF): mothers given an elimination diet (MED) of six significant allergens that are internationally recognized, and after six months of intervention, it was found that dietary elimination can prevent the occurrence of proctocolitis (Camargo, L. S., Silveira, J. A., Taddeli, J. A., &amp; Neto, U. F 2016)</p> <p>c. A positive guaiac test was found in this study from 19 infants who received exclusive breastfeeding for two weeks and less than six months from their mothers. Investigators instructed the mothers to eliminate milk and soy from their diets. Then after three weeks of being tested again, it was found that the baby's body did not respond, so it was necessary to do an elimination diet for other types of food that became the etiology of the case. (Lazare, F. B., Brand, D. A., Noor, A., &amp; Daum, F. 2019).</p> <p>d. A study was conducted on 138 infants with cow's milk allergy and 101 without allergy. After doing the elimination diet, the symptoms that appeared in the baby seem to improve. (Sardecka, I., Łoś-Rycharska, E., Ludwig, H., Gawryjolek, J., &amp; Aneta Krogulska. 2018).</p> <p>e. After consuming Cow Milk. The level of <math>\beta</math>-lactoglobulin increased significantly in breast milk from 0.58 ng/ml to a peak level of 1.23 ng/ml. lactoglobulin up to 7 days. Breastfeeding mothers who consume cow's milk must temporarily stop breastfeeding for more than 7 days to avoid allergies. (Matangkasombut, P., Padungpak, S., Thaloengsok, S., Kamchaisatian, W., Sasisakulporn, C., Jotikasthira, W., Benjaponpitak, S., &amp; Manuyakorn, W. 2017)</p> <p>f. In this study, allergy symptoms were entirely resolved by elimination of cow's milk and dairy products from the mother's diet in 27 (75%) cases, whereas symptoms were resolved by elimination of various food allergens (eggs, nuts, and fish) in 8 cases (22.2). ) (Aslan, N., Koca, T., &amp; Akcam, M. 2017).</p>	<p>a. Elimination of cow's milk can prevent cow's milk allergy</p> <p>b. Appropriate elimination diet intervention.</p> <p>c. An elimination diet should be according to the etiology.</p> <p>d. Formula milk causes allergies in babies, while breast milk protects the baby's body</p> <p>e. If the level of <math>\beta</math> lactoglobulin increases, nursing mothers should stop breastfeeding for the next seven days to prevent allergies</p> <p>f. The elimination diet of cow's milk and other allergic foods (eggs, nuts, fish) that Mother did successfully overcome allergic proctocolitis</p> <p>g. <i>Diet</i>: dairy products are effective in dealing with allergy problems in babies. The level of statistical significance for the p-value was &lt;0.05</p>	Successful	Effectiveness of Elimination Diet.

- |    |  |   |   |
|----|--|---|---|
| g. | 33 Breastfeeding mothers in this study followed a dairy-free diet, and it was proven that this elimination diet method was a prevention method for infants from allergies. (Januszko, P., & Lange, E. 2020).   |   |   |
| 2. | <ul style="list-style-type: none"> <li>a. In this study, the types of foods that were eliminated by breastfeeding mothers. <i>Sikhye</i> could decrease milk production (n=10), kiwi could cause allergies (n=4), spicy foods could cause colic or skin rashes (n=2), eating raw food made one vulnerable to food poisoning or parasitic infection (n=2); and elimination of cow's milk can prevent the development of milk allergy (n=1). (Jeong, G., Park, S. W., Lee, Y. K., Ko, S. Y., &amp; Shin, S. M. 2017)</li> <li>b. Nutritional intervention; Patients in exclusive breastfeeding (EBF): mothers are provided with an exclusion diet (MED) of six major internationally recognized allergens, namely: cow's milk and dairy products, soy, fish and seafood, eggs, and wheat derivatives, and dried fruits (peanuts, walnuts, almonds, cashews, cocoa, and hazelnuts), during the intervention period. (Camargo, L. S., Silveira, J. A., Taddeli, J. A., &amp; Neto, U. F 2016)</li> <li>c. In this study, a positive guaiac test was found in 19 infants who received exclusive breastfeeding for two weeks and less than six months from their mothers. Investigators instructed the mothers to eliminate milk and soy from their diets. (Lazare, F. B., Brand, D. A., Noor, A., &amp; Daum, F. 2019).</li> <li>d. Nursing interventions in this study: breastfed infants suspected of having CMA, mothers may be able to continue breastfeeding but were asked to follow a cow's milk-free diet for at least two weeks. (Sardecka, I., Los-Rycharska, E., Ludwig, H., Gawryjolek, J., &amp; Krogulska, A. 2018)</li> <li>e. In this study, breastfeeding mothers who consumed cow's milk had to temporarily stop breastfeeding for more than seven days to avoid allergies in the baby, and this was marked by a significant increase in the level of <math>\beta</math>-lactoglobulin in breast milk. (Matangkasombut, P., Padungpak, S., Thaloengsok, S., Kamchaisatian, W., Sasisakulporn, C., Jotikasthira, W., Benjaponpitak, S., &amp; Manuyakorn, W. 2017).</li> <li>f. In this study, allergy symptoms were entirely resolved by eliminating cow's milk and dairy products from the mother's diet in 25 (75%) cases, while symptoms were resolved by eliminating various food allergens. (Aslan, N., Koca, T., &amp; Akcam, M. 2017).</li> <li>g. In this journal, it is written that the foods consumed by breastfeeding mothers that have the potential to cause allergic reactions in infants</li> </ul> | <ul style="list-style-type: none"> <li>a. Dairy milk consumed by mothers can cause allergies in babies</li> <li>b. Appropriate elimination diet intervention treats allergic proctocolitis in infants and does not affect infant growth parameters</li> <li>c. The elimination diet should be according to the etiology</li> <li>d. Cow's milk elimination diet for the next seven days if breastfeeding mothers consume cow's milk.</li> <li>e. Dairy-free diet for two at least two weeks</li> <li>f. Allergy symptoms are resolved entirely by elimination of cow's milk, dairy products and resolved by elimination of various food allergens (eggs, nuts, and fish)</li> <li>g. Foods consumed by the mother that can cause allergies in the baby</li> <li>h. Eliminated 82% of women's diet. The main reason: Dairy products</li> </ul> | <p>Foods that must be eliminated</p> <p>The variation of elimination diet</p> |

	<p>are cow's milk, eggs, fish, shellfish, and nuts. (Suwoyo, S., &amp; Rahmanningtyas, I. 2017).</p> <p>h. Dairy products including yogurt, kefir, buttermilk, or cheese were eliminated from 82% of women's diet. The primary reason for excluding milk and dairy products from the respondents' diet was cow's milk allergy in breastfed children. (Januszko, P., &amp; Lange, E. 2020).</p>		
<p>3.</p>	<p>a. After the elimination diet intervention in the assessment of anthropometric development at the beginning and after the intervention, there were no differences in female and male infants, and infants with proctocolitis allergy with complaints of rectal bleeding did not experience weight loss. (Camargo, L. S., Silveira, J. A., Taddeli, J. A., &amp; Neto, U. F 2016)</p> <p>b. In this study, a positive guaiac test was found in 19 infants who received exclusive breastfeeding for two weeks and less than six months from their mothers. Investigators instructed the mothers to eliminate milk and soy from their diets. Then after three weeks of being tested again, it was found that the baby's body did not respond to the intervention. (Lazare, F. B., Brand, D. A., Noor, A., &amp; Daum, F. 2019).</p> <p>c. This study showed that the level of <math>\beta</math>-lactoglobulin in breast milk causes the symptoms of Cow Milk Protein Allergy to vary between infants. The higher the value of <math>\beta</math>-lactoglobulin can worsen the symptoms of CMPA in infants. (Matangkasombut, P., Padungpak, S., Thaloengsok, S., Kamchaisatian, W., Sasisakulporn, C., Jotikasthira, W., Benjaponpitak, S., &amp; Manuyakorn, W. 2017).</p> <p>d. The infants had a healthy appearance despite the symptoms of diarrhea and rectal bleeding, and in the case of infants with a healthy appearance, no growth retardation was observed in any of the patients. (Aslan, N., Koca, T., &amp; Akcam, M. 2017).</p>	<p>a. After the intervention, the baby's weight and height remained significantly close to normal according to WHO parameters</p> <p>b. Elimination of improper diet cannot overcome allergies in babies</p> <p>c. Elimination of the diet can reduce the level of <math>\beta</math>-lactoglobulin in infants</p> <p>d. The elimination diet does not affect the growth of the baby.</p>	<p>Effects of Elimination Diet</p>
<p>4.</p>	<p>a. Exclusive breastfeeding for six months after birth has many benefits for babies and mothers. Breast milk is an essential source of energy and nutrition for children aged six years to 23 months. (Jeong, G., Park, S. W., Lee, Y. K., Ko, S. Y., &amp; Shin, S. M. 2017)</p> <p>b. From the research results, breastfeeding, except for the mother's diet for maintaining infant nutrition, is very effective in treating allergic proctocolitis. So, mothers who are on an elimination diet continue to breastfeed their children to provide good nutrition and strengthen the bond between mother and child. It can also save family expenses. (Camargo, L. S., Silveira, J. A., Taddeli, J. A., &amp; Neto, U. F 2016)</p>	<p>a. Nutrients and energy sources</p> <p>b. Breast milk overcomes allergies, improves bonding, and is more economical</p> <p>c. Breastfeeding is very important for allergy prevention, especially in the early stages of a baby's life. Breast milk protects infants, and the short duration of exclusive breastfeeding will increase the</p>	<p>Advantages The breast milk benefit</p>



- c. Families who have a history of allergies increase the risk of Cow's Milk Allergy. Maternal education at the university level also increases the risk of developing Cow's Milk Allergy in children in the early years of life. Cow's milk allergy to IgE-mediated is more common than IgE-mediated non. Duration of breastfeeding can reduce the risk of allergy in infants. This study shows that the short duration of exclusive breastfeeding increases the risk of cow's milk allergy. Moreover, cow's milk allergy increased four times in infants given formula milk compared to exclusively breastfed infants. Many studies prove that breastfeeding provides a protective effect on babies. (Sardecka, I., Łoś-Rycharska, E., Ludwig, H., Gawryjolek, J., & Aneta Krogulska. 2018)
- d. The basic approach in treating allergic proctocolitis is to eliminate the responsible food allergen from the diet. Most exclusively, breastfed infants improve when cow's milk and dairy products are removed from the mother's diet (Aslan, N., Koca, T., & Akcam, M. 2017).
- e. Breast milk as immunity. Exclusive breastfeeding can prevent babies from allergies. The results showed that of the 59 children who did not experience allergies, 55 children received exclusive breastfeeding, while the remaining four children did not receive exclusive breastfeeding (5%). Judging from genetic factors, of the 51 children who did not have allergies, no children had a family history of allergies (0%). This is because breast milk contains non-specific immune substances, including Bifidus factor, lactoferrin, and lysozyme. (Suwoyo, S., & Rahmaningtyas, I. 2017).
- f. The first liquid produced by the mother after giving birth is colostrum which is characterized by the highest amount of protein and the lowest energy value. (Januszko, P., & Lange, E. 2020).

- incidence of allergies.
- d. Exclusive breastfeeding helps overcome allergic proctocolitis.
- e. Breast milk forms immunity and protects babies from allergies
- f. Colostrum

- 5.
- a. In this study, out of 145 respondents, mothers received breastfeeding information from family members (n=75, 51.7%) or friends (n=75, 51.7%). Other sources included media (including internet) (n=69, 47.6%), postpartum care centers (n=64, 44.1%), books (n=44, 30.3%), medical professionals (n=43, 20.7%), and postpartum caregivers (n=17, 11.7%). Only a small proportion of medical professionals provided information to respondents. Breastfeeding education is needed by mothers before leaving the hospital to help mothers change perceptions about the baby's eating patterns and behavior and eliminate feelings of discomfort for the mother. (Jeong, G., Park, S. W., Lee, Y. K., Ko, S. Y., & Shin, S. M. 2017)
  - b. The results showed that the risk of cow's milk allergy in children was found in the first year of life and primarily found in mothers who had

- a. Lack of information
- b. Lack of mother's knowledge
- c. Lack of support
- d. Lack of information

The support from the family and healthcare, while mother doing the elimination diet.

higher education. (Sardecka, I., Łoś-Rycharska, E., Ludwig, H., Gawryjolek, J., & Aneta Krogulska. 2018)

- c. This research reports that:
- Support from health workers, good cooperation, and communication are essential indicators in breastfeeding
  - The behavior of health workers who have not fully supported breastfeeding mothers and still gives formula milk to mothers when leaving the hospital.
  - Much information is obtained from family and friends, which can result in misperceptions
  - Some husbands do not support mothers in giving breast milk. (Suwoyo, S., & Rahmaningtyas, I. 2017).
- d. In this study, only 12% of participants asked a nutritionist to get information about breastfeeding., with doctors (42%), midwives (58%), radio, television, and the internet (85%), so nutrition and breastfeeding education from care professionals are very much needed. (Januszko, P., & Lange, E. 2020)
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## Discussion

From the eight articles obtained, five themes emerged: the effectiveness of the elimination diet, the variation of the elimination diet, the effects of the elimination diet, the breast milk benefit, and the support from the family and healthcare while doing the elimination diet. All the themes come from selected articles from Jeong, et al (2017), Camargo, et all (2016), Lazare, et all (2019), Sardecka, et all (2018), Matangkasombut, et all (2017), Aslan, et all (2017), Suwoyo & Rahmaningtyas (2017) and Januszko & Lange (2020). The sample in this study were mothers who gave breast milk to their babies aged 0-24 months. Breastfeeding is recommended to provide adequate nutrition for babies, although there are reactions that can be caused, such as allergies in babies. This is due to the food consumed by breastfeeding mothers, and the views and knowledge of mothers about breastfeeding are still lacking.<sup>13</sup> There are several types of allergens in the mother's diet that have been identified that can be passed through breast milk to have an impact on breastfed babies. Elimination of food allergens such as protein can reduce allergy symptoms in babies, but food exclusion should be done if the food affects and adversely affects the growth and development of the baby. Some food allergens that can cause allergies in babies are fish, shellfish, peanuts, soy, cow's milk, tree nuts (chocolate and coffee beans), fermented foods (cheese, yogurt, bread, soy sauce, miso soup, and fermented soybeans), eggs and pork.<sup>14</sup>

Previous research stated a relationship between exclusive breastfeeding and the incidence of allergies in infants and children. From the study results, 59 children (73.75%) did not experience allergies; 55 of them received exclusive breastfeeding, while four children did not receive exclusive breastfeeding.<sup>8</sup> This study concluded that exclusive breastfeeding for six months could prevent early allergies in babies. This is because the protein in breast milk is very suitable for the baby's digestive system, unlike the protein contained in cow's milk which cannot be absorbed entirely by babies' digestion. This is also corroborated by a study conducted by Caldeira, et al. (2011), which said that cow's milk protein allergy is the most common food allergy in infants in both IgE mediated and non-IgE mediated groups. Breastfeeding indirectly can cause allergies in babies. This is caused by the food consumed by the mother and distributed to the baby through breast milk so that it becomes an allergen to the baby's body. If the baby's body is susceptible to the food consumed by the mother, the baby's body will respond by causing allergic reactions in the baby's body.<sup>8</sup>

The limitation of one or more foods by breastfeeding mothers causes discomfort for the mother. Types of foods that are often restricted for breastfeeding mothers are caffeine, spicy foods, raw foods, Sikhye, milk, and dairy foods. Milk is an essential source of calcium, but breastfeeding mothers do not need to drink extra milk to increase milk production.<sup>15</sup> This is in line with research conducted by Camargo et al. (2016) that six main allergens are internationally recognized: cow's milk and dairy products, soy, fish and seafood, eggs and wheat derivatives, and dried fruits. (peanuts, walnuts, almonds, cashews, cocoa, and hazelnuts) which should be avoided by breastfeeding mothers to prevent allergies in babies. Dogruel, et al<sup>16</sup> reported that 33 infants suffer from food allergies, including allergies caused by cow's milk (1.4%), eggs (1.3%), chicken meat (0.07%), and bananas (0.07%).

Research conducted by Aslan<sup>17</sup> stated an incidence of allergic proctocolitis in infants aged 1-10 months who were exclusively breastfed. Allergic proctocolitis is caused by protein in cow's milk which causes symptoms such as blood (32.3%) and blood spots (67.6%) in the baby's feces. These symptoms were overcome in 27 cases (75%) by eliminating cow's milk and dairy products from the mother's diet, and symptoms were also resolved by eliminating various foods that cause allergies, such as eggs, nuts, and fish, which occurred in 8 (22.2%) case. The effectiveness of food elimination diets for breastfeeding mothers is reported to be very effective. A previous study found that allergic proctocolitis is resolved by eliminating certain foods from the diet of breastfeeding mothers.<sup>18</sup> Furthermore, a previous study stated that the onset of allergies starts from infancy; pediatrician health workers, in this case, can help explain and provide advice to parents of babies about allergens such as cow's milk and chicken eggs. The discovery of allergies early in the baby's life can help implement appropriate interventions to treat allergies in infants.<sup>19</sup>

In their research, Camargo et al., 2016, reported that food restrictions carried out by mothers who gave exclusive breastfeeding and mothers who gave food made by hypoallergenic formula to their babies with allergies showed effective success in the nutritional status of their babies. This is in line with research in Korea that started the decrease of the symptoms after nutritional intervention and food elimination.<sup>20</sup> The practice of elimination diets carried out by

mothers who give exclusive breastfeeding causes discomfort and anxiety about the dangers of malnutrition in mothers and can impact babies.<sup>21</sup> Research conducted by Mohadese, et al<sup>22</sup> stated that eliminating a diet with cow's milk allergy did not suppress the baby's growth parameters but could increase it, especially weight gain. A previous study corroborates that after the elimination diet intervention, infants experienced significant and statistical weight and height gains, approaching the normal reference parameters determined by WHO.<sup>23</sup> Another study reported that the elimination of the diet carried out by mothers by removing milk and soy products did not show any changes in health, and the baby continued to experience hematochezia. This illustrated that dairy and soy products do not cause hematochezia in infants.<sup>24</sup>

One of the factors that can reduce discomfort and anxiety about implementing an elimination diet for mothers who give exclusive breastfeeding is to provide support. Mothers need to be guided in undergoing an elimination diet program when giving exclusive breastfeeding. Often local culture, suggestions from family, friends, news from the internet affect exclusive breastfeeding and food restrictions, giving rise to wrong perceptions.<sup>21</sup> Nurses must be given the education to support mothers in exclusive breastfeeding with food restrictions if needed. Nurses' communication and supportive behavior while in hospital are needed to explain appropriately about exclusive breastfeeding except for food to prevent allergies in babies. Support from their husband also plays a vital role in this program.<sup>8</sup> The limitation of the study is the limited research in a similar topic on previous studies in Indonesia.

### **Conclusion**

Exclusive breastfeeding is needed as the main nutrition for babies. However, exclusive breastfeeding often causes allergies in babies caused by several types of food consumed by mothers during exclusive breastfeeding. Cow's milk and dairy products are the types of food that cause the most allergies in babies, so mothers need to eliminate foods for these types of foods. The elimination of food by breastfeeding mothers makes mothers anxious and worried about the lack of nutrients that can harm the growth and development of their babies. Information obtained by mothers from family, internet, and culture often make mothers have wrong perceptions about breastfeeding, so support from nurses or health workers, and husbands are needed. This support plays an essential role in the breastfeeding process of the mother. Health workers must be educated, competent, skilled, and have good communication to provide the right information for mothers breastfeeding their babies with allergies. Mothers are expected to give exclusive breastfeeding to their babies until the age of six months, and after that, they can continue until the baby is two years old, according to the WHO program. Suggestions for further research can be carried out to investigate the extent to which other antigens in breast milk can cause hematochezia.

### **Conflict of Interest Declaration**

No potential conflict of interest relevant to this article was reported.

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