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## Exclusive Breastfeeding Related to Diarrhea Occurrence in Babies Aged 0-6 Months Old at Sudiang Community Health Center, Makassar

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### ABSTRACT

Exclusive breastfeeding is a condition in which infants are only given breast milk without the addition of other fluids and foods. until the baby reaches 6 months old. Breast milk strengthen the immune system in infants so they can avoid various diseases including diarrhea. This study aims to determine the relationship between exclusive breastfeeding and the incidence of diarrhea in infants aged 0-6 months in the Sudiang Community Health Center. This research is an analytical survey research with a cross-sectional design. This research was conducted at the Sudiang Health Center, Makassar City in the period November 1<sup>st</sup> to December 31<sup>st</sup>, 2019. The total respondents were 89 mothers with babies aged 0-6 months. The results showed that most of the respondents were mothers with male babies (61%), most of the mothers' education was high school graduates (46%), housewives (75%) with low economic background (56%). Exclusive breastfeeding related to the incidence of diarrhea in children aged 0-6 months in the Sudiang Community Health Center with a value of  $p < 0.05$  ( $p = 0.001$ ). In addition, no significant relationship on maternal nipple hygiene to diarrhea in children aged 0-6 months  $p < 0.05$  ( $p = 0.075$ ). In conclusion, this study showed there is a relationship between exclusive breastfeeding and the incidence of diarrhea in children aged 0-6 months in Sudiang Health Center. There is a relationship between hand hygiene and the incidence of diarrhea in children aged 0-6 months in Sudiang Health Center, Makassar.

### 1. Introduction

Mother's milk (ASI) is the best nutrition that a baby can get because it contains nutrients that match the baby's needs. The nutritional content includes essential fatty acids, protein, and carbohydrates in the right composition. The main nutritional content that cannot be matched by formula milk is the content of immunity such as immunoglobulins, lactoferrin, lysozyme, and cytokines.<sup>1,2</sup> Breastfeeding until the age of 2 years is proven to reduce child mortality due to diarrheal diseases.<sup>3</sup> Exclusive breastfeeding for infants is known to protect against diarrhea. Maternally

acquired antibodies help to fight off the infectious agents responsible for diarrheal disease.<sup>3</sup>

Data from South Sulawesi Province based on health profile data in 2016 estimated that diarrhea was 464,744 cases, while diarrhea treated was 192,681 cases (41.46%). With the largest incidence in Makassar City with the number of cases being handled, it was reported as many as 22,052 cases out of the total population of 1,469,601 people.<sup>4</sup> Based on Makassar City Health Office data, the total incidence of diarrhea in 2016 was 22,052 cases, with the incidence of under 5 years being 8,886 and in



2017 a decrease of 18,028 with the incidence of under 5 years being 6,882 and in 2018 an increase which is significant, namely 20,600 with an incidence rate of 7,882 under the age of 5 years. The incidence of diarrhea is included in the 10 highest diseases in the city of Makassar.<sup>4</sup> This study aims to determine the relationship between exclusive breastfeeding with the incidence of diarrhea in infants aged 0-6 months in the working area Sudiang health centers in 2019.

## 2. Methods

This research is an analytic survey with a cross-sectional design. This research was carried out at the Sudiang Health Center, Makassar City in the period November 1<sup>st</sup> to December 31<sup>st</sup>, 2019. The determination of the sample was carried out using a purposive sampling technique. The inclusion criteria in this study were mothers who had babies aged 0-6 months in the working area of the Sudiang Health Center, Makassar. The exclusion criteria were mothers with babies with birth weight less than 2.5 kg, mothers with premature babies, and mothers with babies with congenital disorders/defects. This

research has been approved by the Health Research Ethics Committee, Faculty of Medicine and Health Sciences, UIN Alauddin Makassar (No: E.27/KEPK/FKIK/II/2020).

Data was collected using a questionnaire filled out by respondents who visited the Sudiang Health Center. The data was then analyzed using the SPSS For Windows 24.0 application and then presented in the form of a frequency distribution table and percentage accompanied by a narrative explanation.

## 3. Results and Discussion

The number of respondents in this study was 89 mothers with babies 0-6 months. Characteristics of respondents were grouped based on the mother's age, mother's education, mother's occupation, gender of the baby, and family income. Table 1 shows that the majority of respondents are mothers with male babies (61%), the majority of mothers' education is high school graduates (46%), housewives (75%) with family incomes below the minimum wage (56%).

Table 1. Frequency distribution of respondent characteristics in the Sudiang Health Center area in 2019

Characteristics	Frequency	Percentage (%)
Babies gender		
Male	54	61%
Female	35	39%
Mother's education		
Primary school	12	13%
Junior high school	11	12%
Senior high school	41	46%
Bachelor/Diploma	25	28%
Mother's activity		
Housewife	67	75%
Career woman	22	25%
Family income		
Below regional minimum wage	50	56%
Beyond minimum wage	39	44%



Mother's education is a very important factor in the success of exclusive breastfeeding and diarrhea management in children.<sup>5,6</sup> Mothers with low levels of education will not be able to provide proper prevention of diarrheal diseases due to lack of knowledge and lack of ability to receive information. The level of education affects the learning process, the higher a person's education, the easier it is for that person to receive information, both from other people and from the mass media. Apart from

education, background the family's economy most of the lower middle class with family income below the minimum wage. Previous research by Sumampouw et al., (2019), showed that families with low socioeconomic status were at higher risk of suffering from diarrhea than families with children with sufficient income.<sup>7</sup> This is likely to happen because the economic level determines the condition of the house and environmental sanitation.

Table 2. Percentage of exclusive breastfeeding and non-exclusive breastfeeding in the Sudiang Health Center area in 2019

<b>Breastfeeding</b>	<b>Frequency</b>	<b>Percentage %</b>
Exclusive breastfeeding	62	70%
Non-exclusive breastfeeding	27	30%
Total	89	100%

Table 2 shows that most of the respondents in the Sudiang Health Center area gave exclusive breastfeeding (60%). WHO reports that almost 90% of under-five deaths occur in developing countries and more than 40% of deaths are caused by diarrhea

which can be prevented by exclusive breastfeeding.<sup>3</sup> This immunological effect is related to the content of breast milk which is rich in various active factors, especially antibodies.<sup>2</sup>

Table 3. The incidence of diarrhea in the Sudiang Health Center area in 2019

<b>Diarrhea</b>	<b>Frequency</b>	<b>Percentage %</b>
No	60	67%
Yes	29	33%
Total	89	100%

The percentage of infants aged 0-6 months at the Sudiang Health Center who experienced diarrhea was less (table 3). Meanwhile, in table 2 it is described that the majority of infants receive exclusive breastfeeding

(60%). Research conducted by Singh et al., (2018) stated that there was a significant relationship between exclusive breastfeeding and the incidence of diarrhea.<sup>8</sup>



Breast milk contains *Lactobacillus bifidus*, the good bacteria which can prevent the growth of harmful bacteria such as bacteria that lead to diarrhea. Breast milk also contains secretory IgA which is the main immunoglobulin contained in breast milk that functions as an antimicrobial and is secreted through mucous membranes. Secretory IgA antibodies contained in breast milk play a role in fighting *Escherichia coli*. In addition to sIgA, breast milk also contains other antibodies such as lactoferrin, which is a protein-bound to iron, produced by macrophages, neutrophils, and mammary gland epithelium, which is bacteriostatic and bactericidal or inhibits bacterial growth.<sup>10</sup> And Breast milk contains mucin lining membrane of milk

fat and has antimicrobial properties, by binding to bacteria and viruses and eliminate from the body immediately.

Breast milk is also rich in antibacterial and antiviral properties so it can be used as a disinfectant to clean the nipple and the surrounding area before breastfeeding. In addition, breast milk contains oligosaccharides, blocking bacteria by acting as receptors and diverting pathogenic bacteria or toxins closer to the baby's pharynx and intestines.<sup>9</sup> Compared to infants who are fed formula milk, babies who are breastfed tend to avoid infections in the intestines, and in breast milk, some lymphocytes play a role in maintaining immunology in infants.<sup>1</sup>

Table 4. Analysis of the relationship between exclusive breastfeeding and the incidence of diarrhea in infants 0-6 months in the Sudiang Health Center area in 2019

Exclusive breastfeeding	Diarrhea						P-value
	No		Yes		Total		
	n	%	n	%	n	%	
No	11	41%	16	59%	27	100 %	0.001
Yes	49	79%	13	21%	62	100%	

Based on table 4, 27 respondents do not give exclusive breastfeeding, and 62 respondents give exclusive breastfeeding. In the group that did not give exclusive breastfeeding, 16 respondents experienced diarrhea or 59% and did not experience diarrhea, 11 respondents or 41%. In the group that gave exclusive breastfeeding, there were 49 respondents or 79% who did not experience diarrhea and 13 respondents or 21% had diarrhea. From table 4 it can be seen, statistical tests using chi-square also support the relationship between exclusive breastfeeding and the incidence of diarrhea; the chi-square *value p-value* of 0.001 is smaller than the alpha value of 0.05.

**The relationship between maternal nipple hygiene before breastfeeding with the incidence of diarrhea in infants 0-6 months in the Sudiang Health Center area in 2019**

Table 5 shows that the mothers who were included in the unhygienic group on nipple hygiene before following were 52 people, of which 39 babies did not experience diarrhea. or by 75% and babies who have diarrhea as many as 13 people or by 25%. While the mothers included in the hygienic group were 10 people, where the babies did not experience diarrhea as many as 10 people or by 100% and it can be said that all of the babies whose mothers were included in the very good group did not experience



diarrhea. The results of statistical tests using chi-square obtained a *p-value* of 0.075, which is greater than the alpha value of 0.05. It can be concluded that

there is no significant relationship between nipple hygiene and the incidence of diarrhea in infants in the Sudiang Health Center area

Table 5. Analysis of the relationship between nipple hygiene before breastfeeding and diarrhea incidence

Nipple hygiene before breastfeeding	Diarrhea						P-value
	No		Yes		Total		
	n	%	n	%	n	%	
Not Hygienic	39	75%	13	25%	52	100%	0.075
Hygienic	10	100%	0	0%	10	100%	

The study showed that out of 62 mothers who gave exclusive breastfeeding, only 10 mothers knew and realized how to clean their nipples in a good and correct way, by removing a little milk and applying it to the nipple. This could be due to the mother's low education and knowledge. Nipple cleaning before feeding will remove the remaining dry colostrum and help prevent the accumulation and entry of bacteria both into the mother's nipple and into the baby's mouth.<sup>11</sup>

Evaluation of the mother's knowledge level can be used as learning material for health workers and health cadres both at posyandu and puskesmas because the handling of reducing the prevalence of diarrhea is certainly not only curative and rehabilitative efforts but needs to be increased promotive and preventive efforts including educational efforts regarding good nipple cleaning techniques and right before breastfeeding.

Table 6. Analysis of the relationship between hand hygiene before breastfeeding and the incidence of diarrhea

Hand hygiene before breastfeeding	Diarrhea						P-value
	No		Yes		Total		
	n	%	n	%	n	%	
Unhygienic	15	54%	13	46%	28	100%	0.000
Hygienic	34	100%	0	0%	34	100%	

Table 6 shows that the mothers included in the group who did not maintain hand hygiene before breastfeeding amounted to 28 people, where babies who did not have diarrhea did not exist and 13 babies or 46% had diarrhea and 15 babies didn't have diarrhea or 54%. Meanwhile, 34 mothers who were included in the group maintained hand hygiene before breastfeeding, of which 34 infants did not experience diarrhea or 100% and it can be said that

all of the infants whose mothers were in the hygienic group did not experience diarrhea. Statistical test results obtained a *p-value* of 0.000.

The incidence of diarrhea in infants whose mothers wash their hands before breastfeeding tends to be less likely to experience diarrhea than infants whose mothers do not wash their hands before breastfeeding. This is following the theory which states that diarrhea can be transmitted to infants



through the intermediary of the mother because the baby is still dependent on other people. A study conducted by Edward et al. stated that there was a relationship between handwashing behavior in mothers and the incidence of diarrhea in children.<sup>12</sup>

Mothers need to wash their hands with soap and running water before and after breastfeeding. One of the benefits of washing hands is to clean hands from the possibility of dirt, and it is feared that germs can stick to the breast or baby and most mothers do not wash their hands before breastfeeding so that these germs can stick to the mother's breast while the mother's breast is more often in contact with the baby's mouth and Germs can easily enter the baby's mouth, causing infection. Mothers are one of the causes of diarrhea in infants because PHBS is still lacking, namely the habit of washing hands before caring for or preparing for all baby needs, one of which is before breastfeeding their children.<sup>12, 13</sup>

#### 4. Conclusion

The majority of respondents gave exclusive breastfeeding to their babies. There is a relationship between exclusive breastfeeding and the incidence of diarrhea in children aged 0-6 months at the Sudiang Health Center. There is a relationship between hand hygiene and the incidence of diarrhea in children aged 0-6 months at the Sudiang Health Center, Makassar.

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