

Original Research Article

Hubungan Pemberian ASI dan atau Susu Formula dengan Kejadian Diare pada Bayi Usia 0 – 12 Bulan di Puskesmas Batuputih Kecamatan Batuputih di Kabupaten Timor Tengah Selatan Provinsi Nusa Tenggara Timur**Yolanda Ruth Magang¹, Retno Dwi Wulandari², Aily Soekanto³**¹Mahasiswa Program Studi S1 Kedokteran
Universitas Wijaya Kusuma Surabaya²Dosen Program Studi S1 Kedokteran
Universitas Wijaya Kusuma Surabaya³Dosen Program Studi S1 kedokteran
Universitas Wijaya Kusuma Surabaya

Jl. Dukuh Kupang Barat I no. 168 Surabaya Jawa Timur

email: yolandaruthmagang@gmail.com

Phone: 081337633503

Abstract

Breast milk is the main intake for infants because it has balanced and complete nutrients for growth and development in infants. Diarrhea is a major cause of death due to loss of fluids and electrolytes in the body during excessive bowel movements. Diarrhea is more prone to occur in malnourished children or infants, although it is classified as mild. However, because diarrhea often occurs with a lack of appetite, it can cause the body to become weak, which is very dangerous for infants and children. One of the factors that influence the occurrence of diarrhea due to breast milk is behavioral factors. Where breastfeeding and hand washing habits are behavioral factors that influence the spread of enteric germs so that the risk of diarrhea can occur. Objective: To determine the relationship between breastfeeding and or formula milk with the incidence of diarrhea in infants 0-12 months. Research Methods: Using observational analytics with a cross sectional approach. Sample: The sample in this study were all breastfeeding mothers in infants aged 0-12 months at the Batuputih Health Center who met the criteria of the researchers, namely 39 people. The sampling technique of this study used nonprobability sampling. This study uses primary data, namely questionnaires. Research Variables: Research variables: Independent variables (Independent) breast milk and formula milk. Dependent variable Diarrhea. Data processing in this study used the Spearman correlation test. Research Results: from the results of the Spearman correlation test, the results were not significant at the 0.01 level (2-tailed), namely $p\text{-value} = 0.165 > 0.05$, so the research hypothesis was rejected. Conclusion: There is no relationship between breastfeeding and or formula milk with the incidence of diarrhea in infants aged 0 - 2 months at the Batuputih Health Center.

Keywords: ASI, formula milk, baby, Health center Batuputih

Hubungan Pemberian ASI dan atau Susu Formula dengan Kejadian Diare pada Bayi Usia 0 – 12 Bulan di Puskesmas Batuputih Kecamatan Batuputih di Kabupaten Timor Tengah Selatan Provinsi Nusa Tenggara Timur

Abstrak

Air susu ibu merupakan asupan utama yang baik pada bayi karena mempunyai nutrisi yang seimbang dan lengkap untuk pertumbuhan dan perkembangan pada bayi. Diare menjadi penyebab utama kematian dikarenakan kehilangan cairan dan elektrolit didalam tubuh ketika buang air besar yang berlebihan. Diare lebih rentan terjadi pada anak atau bayi kurang gizi, meski tergolong ringan. Namun karena diare sering terjadi dengan kurangnya nafsu makan dapat menyebabkan kondisi tubuh menjadi lemah, kondisi ini sangat berbahaya pada bayi dan anak. Faktor yang mempengaruhi terjadinya diare karena ASI, salah satunya adalah faktor perilaku. Dimana pemberian ASI dan kebiasaan mencuci tangan merupakan faktor perilaku yang berpengaruh dalam penyebaran kuman enterik sehingga risiko terjainya diare bisa terjadi. Tujuan: Untuk mengetahui hubungan pemberian ASI dan atau susu formula dengan kejadian diare pada bayi 0 – 12 bulan. Metode Penelitian: Menggunakan analitik observasional dengan pendekatan cross sectional. Sampel: Sampel dalam penelitian ini adalah seluruh ibu menyusui pada Bayi Usia 0 – 12 Bulan di Puskesmas Batuputih yang memenuhi kriteria dari peneliti yaitu sebanyak 39 orang. Teknik pengambilan sampel dari penelitian ini menggunakan nonprobability sampling. Penelitian ini menggunakan data Primer yaitu Kuisisioner. Variabel Penelitian: Variabel penelitian: Variabel bebas (Independent) ASI dan susu formula. Variabel bebas (Dependent) Diare. Pengolahan data pada penelitian ini menggunakan uji korelasi Spearman. Hasil Penelitian: dari hasil uji korelasi Spearman didapatkan hasil yang tidak Signifikan 0,01 level (2-tailed) yaitu p-value = 0,165 > 0,05 maka hipotesis penelitian ditolak. Kesimpulan: Tidak ada hubungan dengan pemberian ASI dan atau susu formula dengan kejadian diare pada bayi usia 0 – 2 bulan di Puskesmas Batuputih.

Kata Kunci: ASI, Susu Formula, Bayi, Puskesmas Bauputih

Received: _____ Revised: _____ Accepted: _____

INTRODUCTION

The World Health Organization (WHO) says that, diarrhea is defined as three bowel movements per day with a change in form from solid to liquid or more liquid (more often than usual) (WHO, 2017). Diarrhea is an endemic disease, especially in developing countries such as Indonesia, and the disease can experience extraordinary events (KLB) that can be fatal (Beyer et al., 2020).

Until now, diarrhea is still a public health problem in developing countries, given the increasing morbidity and mortality rates in infants and children (MOH RI, 2011). Overall, there are nearly 1.7 billion cases of diarrhea in

infants each year (WHO, 2017). According to the Indonesian Ministry of Health 2020, the number of extraordinary events data in 2016 with a percentage of 3.03%. In 2017 to 2018 the incidence of diarrhea decreased to 1.14%, but in 2019 to 2020 it increased again. up to 4.00% (Apriani, 2022).

Diarrhea is a leading cause of death due to the loss of fluids and electrolytes in the body during excessive bowel movements. Diarrhea is more prone to occur in malnourished children or infants, although it is classified as mild. However, because diarrhea often occurs with a lack of appetite, it can cause the body to become weak, which is very dangerous in infants and children.

Breast milk is the main intake that is good for infants because it has balanced and complete nutrients for growth and development in infants (Putra, 2016). Breast milk has antibodies that are not found in formula milk, breast milk can protect babies from various diseases such as allergies, constipation and diarrhea. Breastmilk given together with formula is very different, breastmilk has more unsaturated fatty acids, calories and carbohydrates when compared to the composition of formula. Infants who are given formula milk before six months of age, can be exposed to various risks of disease, such as diarrhea (Putra, 2016).

Newborn babies have immune substances from their mothers through the placenta, but the level of substances does not last long after the birth of the baby, the baby is only born for a few months, can not form its own immune system. So it becomes slow and there is an immune gap. The immune gap can be overcome if the baby is breastfed (Habibah, 2013). One of the factors that influence the occurrence of diarrhea due to breast milk is behavioral factors. Where breastfeeding and hand washing habits are behavioral factors that influence the spread of enteric germs so that the risk of diarrhea can occur (Utami et al., 2016).

Infants who drink formula milk are more likely to get diarrhea, because formula milk has lactose in the milk. Babies who are fed formula continuously can get diarrhea. Babies need lactase, an enzyme to digest lactose. If the baby cannot produce enough lactase enzyme, the baby cannot tolerate foods containing lactose and then experiences diarrhea (Herawati & Murni, 2018).

According to the Indonesian Ministry of Health (2019), diarrhea is the fourth leading cause of death in Indonesia (12.3%), especially in infants. In 2018, the incidence of diarrhea in infants in East Nusa Tenggara Province was 44,782 cases (Riskasdes NTT, 2019).

Based on the above background, this study was conducted to determine the

relationship between breastfeeding and formula milk with the incidence of diarrhea.

RESEARCH OBJECTIVES

The purpose of this study was to determine the relationship between the provision of breast milk and or formula milk with the incidence of diarrhea in infants aged 0-12 months at the Batuputih Community Health Center in Batuputih Subdistrict, South Central Timor District, East Nusa Tenggara Province.

MATERIALS AND METHODS

This study uses quantitative type with observational analytic method, to see the relationship between one variable and another variable using cross sectional approach. This study will look for the relationship between breastfeeding and formula milk with the incidence of diarrhea in infants aged 0-12 months. Cross sectional research design is a study to find the relationship between independent variables and dependent variables.

The sample of this study used nonprobability sampling, namely purposive by looking at several considerations of the sample, namely several criteria set by the researcher (inclusion and exclusion criteria). The predetermined sample is all infants aged 0-12 months experiencing diarrhea who go to the Batuputih Health Center who meet the criteria of the researcher.

Inclusion Criteria

Medical record data of all infant patients 0-12 months old with diarrhea who went to Batuputih Health Center for treatment.

Exclusion Criteria

1. Infants over 12 months.
2. Infants who do not have complete medical records

RESULTS

The working area of Puskesmas Batuputih which is located in Batuputih

Subdistrict, South Central Timor Regency consists of a delivery room, counter, postpartum room, breastfeeding room, immunization room, MTBS (Integrated Management of Sick Toddlers) room, MCH Polyclinic room, family planning room, emergency room, General Polyclinic room, Dental Polyclinic room, Nutrition room, Promkes room, Sanitation room, Laboratory room, Pharmacy room, Medicine Warehouse, Sterilization room. Activities at the BATuputih Health Center itself consist of the Elderly Posyandu.

The results of this study were taken based on the characteristics of respondents which included the age of the mother, the mother's last education, the mother's occupation, the age of the baby, the sex of the baby, the frequency of diarrhea in the baby, In this study there were 39 respondents, with mothers aged < 20 (7.7%) years as many as 3 people, aged 20 - 35 years as many as (71.79%), and 36-40 years old (20.51%). As shown in table 5.1 below:

Table 5.1 Distribution of Respondents by age at Batuputih Health center Working Area, South Central Timor Distric

Category	Status	Estrogen Level
<20	3	7,7 %
20 – 35	28	71,79%
35 – 40	8	20,51%
Total	39	100%

Source: Primary Data February - March 2023

Based on the latest education data, 1 (2.6%) respondent did not attend school, as many as 13 (33.3%) respondents education last elementary school, as many as 10 (25.6%)

as many as 5 (12.9%) respondents had the last education D3 / S1 / S2. As shown in the table 5.2 below

Table 5.1 Distribution of Respondents by education in the Batuputih Health Center Working Area, South Central Timor Regency

Education	Number (n)	Presentage (%)
Not in school	1	7,7 %
SD	13	71,79%
SMP	10	20,51%

SMA/SMK	10	25,6
D3/S1/S2	5	12,9%
Total	39	100%

Source: Primary data from February - March 2023.

Based on the occupation of the respondents, with 35 respondents as housewives (90%), as well as 4 respondents as working mothers (10%). As shown in table 5.3 below.

Table 5.3: Distribution of Respondents According to Work in the Batuputih Work Area in South Central Timor District

Occuoation	Number (n)	Percentage (%)
House mom stairs	35	90%
Working mom	4	10%
Total	39	100%

The distribution results below are taken based on the level of maternal knowledge related to breastfeeding and preparation of breast milk, formula milk and supplementary feeding.

Based on respondents' understanding of exclusive breastfeeding, 7 (17.9%) respondents did not understand breastfeeding (poor) while 31 (79.5%) respondents understood breastfeeding (moderate), and 1 (2.6%) respondent understood the importance of breastfeeding (good). As shown in table 5.4 below.

Table 5.4 Distribution of Respondent According to the Level of Knowledge of Mothers Regarding Exclusive Breastfeeding

Mother's Knowlegde Level	Number (n)	Presentation (100%)
Good	1	2,6%
Less	31	79,5%
Low	7	17,9%
Total	39	100%

Based on the respondents understanding of cleanliness when feeding

breast milk and/or formula milk, 5 (12.9%) respondents had a good level of cleanliness in the preparation of breast milk / formula milk, while as many as 12 (30.7%) respondents had a fairly good (medium) level of cleanliness in the preparation of breast milk / formula milk, and as many as 22 (56.4%) respondents still did not understand (poor) about the preparation of good breast milk / formula milk. As shown in table 5.5 below.

Table 5.5 Distribution of Respondents According to the Level of Mother's Hygiene in the Preparation of Breast Milk / SUFOR

Mother's Hygiene Level	Number (n)	Presentage (%)
Good	5	12.9%
Less	12	30,7%
Low	22	56,4%
Total	39	100%

Based on breastfeeding, formula milk, and infants who received a mixture of breast milk and formula milk, infants who received received exclusive breastfeeding as many as 17 (44%) infants, 9 (23%) infants who received formula milk, and 13 (33%) infants who received a mixture of breast milk and formula milk. As shown in table 5.6 below.

Table 5.6: Distribution of Respondents According to Breastfeeding and/or Formula Milk in the Work Area Working Area at Wilaya Batuputih Working Area District Timor Central South.

Breastfeeding	Number (n)	Presentage (%)
Breastfeeding	17	44%
Breast milk	9	23%
Blended	13	33%
Fomula		
Total	39	100%

Based on the results of research on the incidence of diarrhea in the Batuputih Puskesmas Working Area, 24 (61.50%) infant

respondents experienced diarrhea, while the rest did not experience diarrhea. As shown in table 5.7 below.

Table 5.7: Distribution of respondents according to the incidence of diarrhea in infants aged 0-12 months in the Batuputih Health Center Working Area, South Central Timor District.

Incidence of Diarrhea	Number (n)	Percentage (%)
Diarrhea	24	44%
No diarrhea	15	23%
Total	39	100%

The data obtained from the research questionnaire was analysed using a computer with normality and spearman tests. The analysis results are described as follows.

Spearman analysis conducted, based on the output above, it is known that the significant value or sig. (2-tailed) of 0.165 > greater than 0.05 or 0.01, meaning that there is no significant relationship between the incidence of diarrhoea in infants who are given breast milk and or formula milk.

DISCUSSION

Based on the results of the study, most of the respondents understood that breastfeeding for infants is an important thing to do. The respondents said that breastfeeding is still done until the age of the baby at 6 months with a mixture with formula feeding is also influenced by the mother's routine, especially for mothers who are busy with their work so they cannot provide optimal breastfeeding (Humune et al., 2020).

This study looked at age, education level, occupation, the mother's level of knowledge about breastfeeding, as well as the mother's hygiene when giving breast milk and formula milk. Based on the age distribution of mothers, the age of most mothers is at the age of 20 – 35 years, the age of 20 - 35 is the age of early

adulthood. Based on research conducted by A. Sari et al., 2013 mothers aged 20 – 35 years are the age for someone to get motivation as knowledge. With increasing age, understanding and mindset.

Education is an important factor to determine how much a person understands about a disease event. In this study, the highest level of maternal education was at the elementary level and the lowest was mothers who did not go to school or did not receive education. Education is one way to gain knowledge. Existing knowledge is expected to be applied in everyday life, but not everyone is willing and able to practice the knowledge they get, this is based on the results of research from the mother's education level, high maternal education has good access to information about health (Ji et al., 2022).

A mother's job can affect her knowledge and opportunities to provide breast milk and formula milk. Working mothers often rarely breastfeed their babies because they are busy working. This study also examined. Mother's occupation at the Batuputih Health Center, South Central Timor District. Mothers who work as housewives are more than mothers who work. This is in line with research conducted by A. Sari et al., 2013, which states that working mothers have good access to information on breastfeeding, but sometimes when giving breast milk or formula milk, mothers are in a hurry because they have to go back to work. Mothers who work as housewives will be more supportive in breastfeeding babies.

This study also examined how mothers' knowledge about breastfeeding. The level of knowledge in this study is the most respondent mothers have less knowledge about the importance of breastfeeding to infants.

In this study, the level of hygiene of mothers in Batuputih sub-district, South Central Timor district, was at a poor level during the preparation of breastfeeding and formula milk for infants. From the results of interviews with respondents, it was found that many respondents before giving breast milk to babies,

mothers washed their hands with running water only. There were respondents who sometimes forgot to wash their hands when they were about to give breast milk to the baby. Respondents with infants who were given formula milk mostly did not boil or soak milk bottles with boiling water, sometimes there were respondents who washed milk bottles only with plain water.

The reason why mothers rarely boil baby milk bottles is because in the area used by researchers as research material, they still use firewood as a material to produce fire, where the process also sometimes takes quite a long time. Mother also sometimes do not wash their hands before giving formula to the baby.

Based on the results of the Spearman Rank test obtained from the SPSS for windows computer program from the results of the study of the Relationship between Breastfeeding and or Formula Milk with the Incidence of Diarrhea at the Batuputih Health Center, South Central Timor Regency. The p-value obtained is $p = 0.165$ which indicates that there is no relationship between breastfeeding and or formula milk with the incidence of diarrhea.

The results of this study are in line with research conducted by Wardani et al., 2022, on the effect of exclusive breastfeeding and formula milk on the incidence of diarrhea. The results obtained $p \text{ value} = 0.264 > 0.05$ which indicates statistically unrelated results.

Based on research that has been conducted in the Batuputih Health Center working area, the results show that there is no relationship between breastfeeding and formula feeding in children. This study is in line with research conducted by Hatta, 2020, which states that there is no significant relationship between maternal education, exclusive breastfeeding history and the incidence of diarrhea in infants.

CONCLUSION

There is no association between breastfeeding and/or formula feeding and the incidence of diarrhea in infants 0-12 months at the Batuputih Health Center, Batuputih

Subdistrict, South Central Timor District, East Nusa Tenggara Province.

ADVICE

1. For future researchers, it is hoped that research - research further can conducting research by looking at variables - other variables with other methods.

2. For Health Institutions and for Health Workers

The results of this study are expected to provide some information and benefits for the Batuputih Community Health Center to improve counseling related to the importance of breast milk and hygiene when breastfeeding mothers. It is also expected to be used as additional knowledge for health workers (nurses) in terms of controlling the incidence of diarrhea in infants aged 0-12 months.

3. For the Community

The results of this study are expected to be a basic reference for mothers regarding the prevention of diarrhea in infants and it is hoped that mothers will gain more insight related to breastfeeding and hygiene during breastfeeding.

LIMITATIONS OF THE STUDY

In carrying out this research, the researcher recognizes the weaknesses and shortcomings that allow the existing results to be not optimal or perfect. The limitations of the researcher are located on the mother respondents who have hearing limitations and mother respondents who do not understand what the researcher will research, so that the researcher is quite long in interviewing several mother respondents.

REFERENCES

Adiputra, I. M. S., Trisnadewi, N. W., Oktaviani, N. P. W., & Munthe, S. A. (2021). Health Research Methodology.

Apriani, D. G. Y. D. M. F. S. P. and N. S. W. (2022). An overview of the level of maternal knowledge about diarrhea in toddlers in Baler Bale Agung Village, Jembrana Regency in 2021. *Journal of Health and Medical Science*, 1, 15-26.

Balqis. (2020). The Relationship between Exclusive Breastfeeding and the Incidence of Diarrhea in Infants 0-6 Months of Age in the Sudiang Health Center Area. *Kaos GL Dergisi*, 8(75), 147-154.

<https://doi.org/10.1016/j.jnc.2020.125798>
<https://doi.org/10.1016/j.smr.2020.02.002>
<http://www.ncbi.nlm.nih.gov/pubmed/810049>
<http://doi.wiley.com/10.1002/anie.197505391>
<http://www.sciencedirect.com/science/article/pii/B9780857090409500205>

Beyer, M., Lenz, R., & Kuhn, K. A. (2020). Health Information Systems. In *IT - Information Technology* (Vol. 48, Issue1). <https://doi.org/10.1524/itit.2006.48.1.6>

Dodiet & Wiwik. (2021). Study Epidemiology with a Spatial Analysis Approach to Risk Factors Associated with the Incidence of Diarrhea in Children in Karangmalang District, Sragen Regency. In monograph book (Vol. 4, Issue 1).

E. Susanti. (2018). THE RELATIONSHIP BETWEEN KNOWLEDGE AND ATTITUDES OF MOTHERS WITH FORMULA FEEDING IN INFANTS 0-6 MONTHS AT THE PRATAMA DOA IBU PEACE CLINIC, STABAT, LANGKAT REGENCY IN 2018. 2, 1- 52. <https://www.ptonline.com/articles/how-to-get-better-mfi-results>

El Izhar. (2022). Comparison between the Development of Infants aged 0-6 months who are exclusively breastfed with those who are fed with Formula Milk at the

- Kebayoran Baru sub-district health center, South Jakarta City. (Issue 8.5.2017).
- Engel. (2019). Benefits of exclusive Engel. (2019). Benefits of exclusive of Documents, 1-4.
- Fajri, N., Rahayuningsih, S. I., Nizami, N.H., & Rizkia, M. (2020). Needs and constraints of health cadres in helping breastfeeding mothers succeed. *Sel Journal of Health Research*, 7(2), 89-97. <https://doi.org/10.22435/sel.v7i2.4389>
- Habibah, U. (2013). RELATIONSHIP OF BREASTFEEDING EXCLUSIVE WITH THE INCIDENCE OF DIARRHEA IN INFANTS AGED 0-12 MONTHS AT SYARIF HIDAYATULLAH HOSPITAL IN 2013.
- Harahap, F. M. (2015). Definition.
- Hatta, H. (2020). Relationship History of Exclusive Assessment of Diarrhea Events Children in Limboto Public Health Center Gorontalo District. *World Journal o Nutrition*, 3(1), 59-66.
- Herawati, R., & Murni, C. (2018). The relationship between formula feeding and the incidence of diarrhea in infants aged 0-6 months in Koto Tinggi Village, Rambah District, Rokan Hulu Regency. *Journal of Maternity and Neonatal*, 2(5), 309-317 <https://e-journal.upp.ac.id/index.php/akbd/arti-e/view/1601>
- Humune, H. F., Nugroho, K. P., & Tampubolon, R. (2020). Overview of exclusive breastfeeding and formula milk on the incidence of obesity among toddlers in Salatiga Muhammadiyah Nursing Journal, Special Edition, 24-29.
- Ji, O. P., Cahyani, S. D., & Sari, D. (2022). WORK OF THE HEALTH CENTER OF MALANG CITY.2,166-172
- Indonesian Ministry of Health. (2019). main results of Riskesdas.
- Khairunnisa, D. F., Zahra, I. A., Ramadhania, B., Amalia, R. (2020). Risk factors for diarrhea in infants and toddlers in Indonesia: a systematic review. *Journal of the National Seminar on Public Health*, 11(1), 172-.