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# Relationship between breastfeeding and the incidence of diarrhoea in children aged 6-24 months

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## ABSTRACT

**Background:** Diarrhoea is still a global problem with high mortality. Children who are malnourished or have impaired immunity have the highest risk of diarrhoea. Exclusive breastfeeding in infants is known could protect the babies against diarrhoea.
**Objective:** This study aims to determine the relationship between exclusive breastfeeding with the incidence of diarrhoea in children aged 6-24 months.
**Methods:** This is an observational study where the data collected during August-November 2017 at Padang Bulan Primary Health Care. The subjects are a mother who has children between 6-24 months. The primary data was obtained through interviews using a validated structured questionnaire. The relationship between exclusive breastfeeding and the incidence of diarrhoea were analysed using Chi-square. Statistical analysis was performed in 95% coefficient interval (α=0,05).
**Results:** Amongst 98 children, 53.1% are female. Children who have received exclusive breastfeeding were 53 children (54.1%). The number of children who had diarrhoea was 68.4% while many diarrhoea frequencies were 49%. Only 29 children (29.6%) had diarrhoea with exclusively breastfeeding, while 38 children (38.8%) had diarrhoea without exclusive breastfeeding. There is a relationship between exclusive breastfeeding to the incidence of diarrhoea in children aged 6-24 months (p= 0,002).
**Conclusion:** There is a significant relationship between exclusive breastfeeding and the incidence of diarrhoea in children aged 6-24 months.

***Latar Belakang:*** *Penyakit diare masih merupakan masalah global dengan derajat kematian yang tinggi. Anak-anak yang kekurangan gizi atau memiliki gangguan imunitas memiliki resiko tinggi mengalami diare. Pemberian Air Susu Ibu (ASI) eksklusif diketahui dapat melindungi bayi terhadap diare.*
***Tujuan:*** *Penelitian ini bertujuan untuk mengetahui hubungan antara pemberian ASI eksklusif dengan kejadian diare pada anak usia 6-24 bulan.*
***Metode:*** *Penelitian ini adalah penelitian cross sectional yang dilakukan pada bulan Agustus-November 2017 di Puskesmas Padang Bulan. Subyek penelitian ini ibu yang memiliki anak berusia 6-24 bulan. Data diperoleh melalui wawancara menggunakan kuesioner terstruktur yang telah divalidasi. Data yang diperoleh dianalisis menggunakan Chi Square untuk melihat hubungan antara ASI eksklusif dengan angka kejadian diare. Uji statistik dilakukan dengan taraf kepercayaan 95% (α=0,05).*
***Hasil:*** *Penelitian ini adalah penelitian cross sectional yang dilakukan pada bulan Agustus-November 2017 di Puskesmas Padang Bulan. Subyek penelitian ini ibu yang memiliki anak berusia 6-24 bulan. Data*

*diperoleh melalui wawancara menggunakan kuesioner terstruktur yang telah divalidasi. Data yang diperoleh dianalisis menggunakan Chi Square untuk melihat hubungan antara ASI eksklusif dengan angka kejadian diare. Uji statistik dilakukan dengan taraf kepercayaan 95% (α=0,05).*

***Kesimpulan:*** *Terdapat hubungan yang signifikan antara pemberian ASI eksklusif dengan angka kejadian diare pada anak usia 6-24 bulan .*

## INTRODUCTION

Diarrhoea is still a global problem with high mortality in many countries, especially in developing countries such as Indonesia. According to The United Nations Children Fund (UNICEF), diarrhoea is the second leading cause of mortality in children worldwide.[1] Children who are malnourished or have impaired immunity have the highest risk of diarrhoea, and it is even life-threatening.[2] Exclusive breastfeeding (0- 6 months) in infants is believed could protect children against diarrhoea through the antibodies obtained from maternal.[3] Generally in cities, many babies are bottle fed instead of breastfeeding by their mother. Meanwhile, in the countryside in Indonesia, many infants who are still one month old have been given bananas or porridge in addition to breast milk.[4]

Based on the health profile of North Sumatera Province, the percentage of exclusively breastfed infants from 2004-2012 tended to decrease.[5] However, in 2008, the number of exclusive breastfeeding infants have increased compared to 2007. It is shown that the awareness of mother in this area regarding their babies' nutrition is relatively low. Meanwhile, the government data also described that the most significant proportion of diarrhoea occurred in the age group 6-11 months (21.65%), and in the age group 12-17 month (14.43%).[6] These, shown that those group of babies is a group of age that still required breast milk.

Exclusive breastfeeding should be given at the age of 0- 6 months. To see the role of exclusive breastfeeding in preventing diarrhoea after the periode of 6 months, we conducted study in 6-24 month children. This study was also undertaken to provide information about the relationship between exclusive breastfeeding with the incidence of diarrhoea in 6-24 month children.

## METHODS

### Subject

This research was approved by the Health Research Ethical Committee Medical Faculty of Universitas Sumatera Utara (Number: 154/TGL/KEPK FK USU-RSUP HAM/2017) before the data were collected. This research was conducted in Padang Bulan Primary Health Care, Medan from of August to October 2017. This study used a cross sectional design with a consecutive sampling technique. The study population were all children in the 6-24 months age range. Ninety eights children have met the inclusion and exclusion criteria for this research. Inclusion criteria for this study are a mother who is having children in the age range of 6-24 months and willing to be the respondents. The exclusion criteria were children who born prematurely (<37 weeks), low birth weight (<2500 gr) and children with severe diseases .

### Data collection

Data were collected using questionnaires that have been validated and interview guides. The frequency of diarrhoea was assessed by the history of diarrhoea from born till the time of the interview. The frequency of diarrhoea was categorised as frequent diarrhoea (more than one history of diarrhoea), rare diarrhoea (less than one history of diarrhoea) and never had diarrhoea.

### Data analysis

Data were performed in percentage. Chi-square test was performed to analyse the correlation between frequency of diarrhoea in the time of children (aged <6 months and >6 months) were exclusively breastfeed and also non-exclusively breastfeed. Chi-square test was also performed to analyse the correlation between exclusive breastfeeds with the incidence of diarrhoea. P<0.05 was considered significant.

Table 1. Distribution of subject characteristics.

| CHARACTERISTICS | n (%) |
|---|---|
| **Gender** | |
| Male | 46 (46,9) |
| Female | 52 (53,1) |
| **Mother's Education Level** | |
| Did not pass elementary school | 1 (1,0) |
| Graduated from elementary school | 6 (6,1) |
| Passed junior high school | 11 (11,2) |
| Graduated from senior high school | 35 (35,7) |
| Graduated D3/S1 | 45, (45,9) |
| **Family Monthly Income** | |
| <Rp. 1.000.000 | 17 (17,3) |
| Rp 1.000.000-3.000.000 | 45 (45,9) |
| >Rp 3.000.000 | 36 (36,7) |
| **Exclusive Breastfeeding** | |
| Yes | 53 (54,1) |
| No | 45 (45,9) |
| **Diarrhoea** | |
| Yes | 67 (68,4) |
| No | 31 (31,6) |
| **Diarrhoea frequency** | |
| Never | 31 (31,6) |
| >1x | 48 (49,0) |
| <1x | 19 (19,4) |

## RESULTS

Table 1 provide that most subject are females (52.1%). The average children age were 14.56 ± 6.601. Regarding mothers' education, 45 of them (45.9%) are highly educated, and only one mother (1%) is uneducated. Family income more than three million rupiahs are 36 families (36.7%) and less than a million rupiahs were 17 families (17.3%). Respondents who were exclusively breastfed were 53 children (54.1%). Those who were not given exclusive breastfeeding (45 children or 45.9%). History of diarrhoea can be found in 67 subjects (68.4%).

Tabel 2. Distribution of diarrhoea duration based on exclusive breasfeeding.

| Exclusive Breastfeeding | Diarrhoea (x/day) n (%) | | | | Total n (%) |
|---|---|---|---|---|---|
| | 0 | 2-5 | 6-9 | >10 | |
| **Yes** | 24 (45,3) | 18 (34,0) | 9 (17,0) | 2 (3,8) | 53 (100) |
| **No** | 7 (15,6) | 19 (42,2) | 16 (35,6) | 3 (6,7) | 45 (100) |

From Table 2, it was found that children who were not given exclusive breastfeeding had severe diarrhoea (6.7%) and moderate diarrhoea (35.6%) than exclusively breastfed children

at (3.8% and 17.0%) respectively. Children exclusively breastfeed and did not had diarrhoea were 45.3% (24 children) while children who were not breastfed and did not have diarrhoea were 15.6% (7 children).

Table 3. Correlation between frequency of diarrhoea while children are aged <6 months and > 6 months who were exclusively breastfeed.

| Child's Age | Diarrhoea | | | Total n (%) | p value |
|---|---|---|---|---|---|
| | Never n (%) | Frequent (>1x) n (%) | Rare (<1x) n (%) | | |
| **<6 months** | 42 (79,2) | 5 (9,4) | 6 (11,3) | 53 (100) | 0,012 |
| **>6 months** | 28 (52.8) | 15 (28,3) | 10 (18,9) | 53 (100) | |

Based on Table 3, it was found that children aged 0-6 months (from 53 exclusively breastfeed children) 79.2% never experienced diarrhoea. After the age of 6 months, 52.8% (28 children) never experienced diarrhoea while 28.3% (15 children) often experienced diarrhoea. Analyses using Chi-square shows that there is a correlation between frequency of diarrhoea history with exclusive breastfeeding (p-value = 0.012).

Table 4. Correlation between frequency of diarrhoea while children are aged <6 months and > 6 months who were non-exclusively breastfeed.

| Child's Age | Diarrhoea | | | Total n (%) | p value |
|---|---|---|---|---|---|
| | Never n (%) | Frequent (>1x) n (%) | Rare (<1x) n (%) | | |
| **<6 months** | 13 (28,9) | 24 (53,3) | 8 (17,8) | 45 (100) | 0,094 |
| **>6 months** | 21 (46,7) | 14 (31,1) | 10 (22,2) | 45 (100) | |

Table 4 shows that children aged 0-6 months who were not exclusively breastfeed experienced more frequent diarrhoea compare with aged >6 month (53.3% and 31.1%). At the age of 0-6 months, 28.9% (13 children) never experienced diarrhoea while after the age of 6 months 46.7% (21 children) never experienced diarrhoea. Analyses using Chi-square it was found that no relationship between the frequency of diarrhoea occurrence with non-exclusive breastfeeding (p value = 0.094).

Table 5. Correlation between exclusive breastfeeding and the frequency incidence of diarrhoea

| Exclusive Breastfeeding | Diarrhoea | | | Total n (%) | p value |
|---|---|---|---|---|---|
| | Never n (%) | Frequent (>1x) n (%) | Rare (<1x) n (%) | | |
| **Yes** | 24 (45,3) | 20 (37,7) | 9 (17,0) | 53 (100) | 0,006 |
| **No** | 7 (15,6) | 28 (62,2) | 10 (22,2) | 45 (100) | |

Based on Table 5, exclusively breastfeed children who had rare diarrhoea were 17% (9 children) and often diarrhoea was 37.7% (20 children). Children who were not exclusively breastfeed and having a rare diarrhoea were 22.2% (10 children) and 62.2% (28 children) experienced a frequent diarrhoea. Percentage of children who often experience of diarrhoea was more than those who rarely had diarrhoea. Only 7.14% of children who were exclusively breastfeed and did not have diarrhoea. Chi-square shows there is correlation between exclusive breastfeeding with the incidence of diarrhoea in children age 6-24 months (p-value = 0,006).

Table 6. Correlation between exclusive breastfeeding and the occurance of diarrhoea

| Exclusive Breastfeeding | Diarrhoea | | Total n (%) | p value |
|---|---|---|---|---|
| | Yes , n (%) | No, n (%) | | |
| **Yes** | 24 (45,3) | 20 (37,7) | 53 (100) | 0,006 |
| **No** | 7 (15,6) | 28 (62,2) | 45 (100) | |
| **Total, n (%)** | 67 (68,4) | 31 (31,6) | 98 (100) | |

Table 6 described that the majorityof respondents who have been given an exclusive breastfeeding and never experienced diarrhoea were 24.5% (24 children). While seven children (7.1%) did not experience diarrhoea although not exclusively breastfeed. Chi-square shows that there is a significant relation between exclusive breastfeeding with the incidence of diarrhoea for children aged 6-24 months (p=0,002).

## DISCUSSION

The results showed that there is a relationship between exclusive breastfeeding to the incidence of diarrhoea in children aged 6-24 months. The existence of this meaningful relationship is probably because of the level of knowledge of mothers about the benefits of breastfeeding is still inadequate. Medan is a city where most of the mothers are a working mother. Therefore most likely mothers choose not to breastfeed their children because of limited time.

Not only children who were not exclusively breastfeed had diarrhoea but children who were exclusively breastfeed had diarrhoea either rarely or frequently as well. This happened because of several factors, either the child factor or the mothers' behavior factor. According to the study by Sukut et al., the main cause of diarrhoea from infant factors was the infection (either bacterial, viral, or parasitic).[7] Mother's behaviour can also lead to increase the risk of diarrhoea such as not washing hands after disposing of faeces or before eating and feeding the child.[8] The percentage of children who are not exclusively breastfeeding and often experience diarrhoea are more than those who rarely have diarrhoea. This is influenced by several factors such as hygiene in milk preparation, hygiene of milk or complementary food storage, allergies, and children's imperfect process of digestion.[9]

Rohmah et al. study clarified that out of 48 infants who were not being exclusively breastfeeding, 77.1% (37 children) had diarrhoea, while children who were exclusively breastfed and had diarrhoea was 44.4%.10 Mohamad et al. also said that the proportion of infants who were not breastfed exclusively were more affected by diarrhoea compared to non-diarrhoea (81.4% compared with 28.6%). While the proportion of infants exclusively breastfeed and did not experience diarrhoea was 71.4%.[11]

The incidence of diarrhoea in exclusively breastfed infants is less than children who are not exclusively breastfeeding. This is because breast milk is a safe and clean intake for infants and contains essential antibodies presented in colostrum. This makes the germs challenging to enter the baby's body and cause diarrhoea. At birth until a few months later, babies are not able to form their immunity correctly. Therefore mother's milk is a component that has a good immunity system for babies.[12]

Breast milk has been known to contain several bioactive components that can prevent the baby from having diarrhoea. Some of these components are immune components such as immunoglobin A (IgA) and Epidermal Growth Factor (EGF) that can protect infants from infections. Immunoglobin A can activate a complement system through alternative pathways and together with macrophages to phagocytosis variety incoming microorganisms.[13]

The limitations of this study include a possibility that there are other factors than

exclusive breastfeeding that affect the incidence of diarrhoea in children such as incomplete immunization status, poor environmental sanitation and no clean water source availability. The same study was conducted by Kamilla et al. (2012) which concluded that multivariate variables are the dominant risk factors for infant diarrhoea events such as good food processing practices and latrine ownership.[14] Also, it is known that children over six months have started to move and crawl around actively. This causes the children to put whatever they see or dirty hands in their mouth, therefore, it is more susceptible to diarrhoea despite exclusively breastfeeding.

## CONCLUSION

We concluded that there was a relationship between exclusive breastfeeding to the incidence of diarrhoea in children aged 6-24 months. Health workers of Posyandu and Puskesmas are expected to provide guidance and motivation to breastfeeding mothers to offer exclusive breastfeeding more frequent as this is the best need for babies to reduce the incidence of diarrhoea in children. In the next research with a similar topic, it is suggested that investigations increase the type of variables so that there will be in-depth information about the other risk factors in the incidence of diarrhoea in children.

## CONFLICT OF INTEREST

None declared.

## Acknowledgement

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## REFERENCES

1. Unicef. Diarrhoea | Health | UNICEF. https://www.unicef.org/health/index_92007.html. Published 2016.
2. WHO. Diarrhoeal disease. http://www.who.int/en/news-room/fact-sheets/detail/diarrhoeal-disease. Published 2017.
3. Yilgwan C, Okolo S. Prevalence of diarrhoea disease and risk factors in Jos University Teaching Hospital, Nigeria. Annala African Medicine. 2012;11(4):217.
4. Rahmawati R. Gambaran pemberian MP-ASI pada bayi usia kurang dari 6 bulan di wilayah kerja puskesmas kecamatan Pesanggrahan tahun 2014. 2014.
5. Dinas Kesehatan Provinsi Sumatera Utara. Profil Kesehatan Provinsi Sumatera Utara Tahun 2012. Medan; 2012.
6. Pusat Data dan Informasi Kemenkes RI. Situasi diare di Indonesia. Buletin Jendela Data dan Informasi Kesehatan. 2011;Triwulan I:6-12.
7. Sukut SS, Arif YS, Qur'aniati N. Faktor kejadian diare pada balita dengan pendekatan teori Nola J.Pender di IGD RSUD Ruteng. Jurnal Pediomaternal. 2015;3(2):230-49.
8. Direktorat Jenderal Pengendalian Penyakit dan Penyehatan Linkungan. Buku saku petugas kesehatan: Lintas diare. 2011:6-12.
9. Maharani O. Pemberian makanan pendamping ASI dini berhubungan dengan kejadian diare pada Bayi umur 0 – 12 bulan di kecamatan Dampal Utara, Tolitoli, Sulawesi Tengah. Jurnal Ners dan Kebidanan Indonesia. 2016;4(2):84.
10. Rohmah H, Hafsah T, Rakhmilla LE. Role of exclusive breastfeeding in preventing diarrhoea. Althea Medical Journal. 2015;2(1):78-81.
11. Mohamad I, Abdullah T, Prawirodiharjo L. Hubungan pemberian ASI eksklusif dengan kejadian diare pada bayi 0-11 Bulan di Puskesmas Galesong Utara. 2014.
12. Habibah U. Hubungan ASI eksklusif dengan kejadian diare pada bayi usia 0-12 bulan di Rumah Sakit Syarif Hidayatullah tahun 2013. 2013. Universitas Islam Negeri Jakarta.
13. Ibrahim TJ, Manoppo JIC, Rompis J. Hubungan riwayat pemberian ASI eksklusif dengan kejadian diare akut pada anak di RSUP Prof. Dr. R.D. Kandou. 2013. Universitas Islam Negeri Jakarta.
14. Kamilla L, Suhartono S, Wahyuningsih NE. Hubungan praktek personal hygiene ibu dan kondisi sanitasi lingkungan rumah

dengan kejadian diare pada balita di puskesmas Kampung Dalam kecamatan Pontianak Timur. Jurnal Kesehatan Lingkungan Indonesia. 2013;11(2):138-43.