The Relationship between Exclusive Breastfeeding and Tonsillitis in Children aged 0-7 Years

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ABSTRACT

Background: Tonsillitis is a type of acute respiratory infection (ARI) that is most common in children and toddlers. This study aims to determine the relationship of exclusive breastfeeding to tonsillitis in children aged 0-7 years at the Pajang Health Center, Surakarta, Central Java, Indonesia.

Subjects and Method: This was a cross-sectional study conducted at Pajang community health center, Surakarta, Central Java, Indonesia. A total of 30 children aged <7 years was selected for this study. The dependent variable was tonsillitis. The independent variable was the history of exclusive breastfeeding. The data were collected by questionnaire and physical examination. The data were analyzed using the Fischer’s exact test.

Results: Non-exclusive breastfeeding increases the risk of tonsillitis in children aged 0-7 years (OR= 7.00; 95% CI= 1.29 to 37.91; p= 0.024).

Conclusion: Children aged 0-7 years who do not get exclusive breastfeeding are at risk of having tonsillitis than children who get exclusive breastfeeding.

Keywords: tonsillitis, exclusive breastfeeding

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BACKGROUND

Public health is part of the overall human development effort in which the development of public health, among others, starts with children’s health efforts as early as possible (Ministry of Health, 2016).

The level of public health is assessed from various aspects, one of which is the infant mortality rate (IMR). The majority of child deaths in Indonesia occur in the newborn period (neonatal). The possibility of a child dying is 19 per thousand during the neonatal period, 15 per thousand from ages 2 to 11 months and 10 per thousand from ages 1 to 5 years. Nevertheless the cause of death of children due to infection is still the main focus of the government (UNICEF Indonesia, 2012). Until now, ARI is still a serious health problem for the people of Indonesia. The main causes of death of children and toddlers according to Bappenas (2015) are respiratory infections (ARI), diarrhea, neurological diseases and typhoid fever. One type of ARI that often appears is tonsillitis. Tonsillitis is an inflammation of the tonsils caused by bacteria or viruses, the process can be acute or chronic (Riskesdas, 2010; Dorland, 2012; Campisi et al, 2003).

Epidemiological data on ear and throat (ENT) in seven provinces in Indonesia shows that chronic tonsillitis occupies the highest position after acute nasopharyngitis, which is 3.8% (Rukmini, 2003;...
Farokah, 2007; Sapitri, 2013). Tonsillitis is most common in subtropical countries. In cold climate countries, the incidence is higher than in tropical countries, Streptococcus infections occur throughout the year, especially in winter (Rusmarjono, 2003; Desai et al., 2008).

Based on data from the Surakarta City Health Office, tonsillitis is among the 10 most common diseases found in Primary Health Services (Profkes, 2014). In order to reduce morbidity and mortality rates for children, the United Nation Children Fund (UNICEF) and the World Health Organization (WHO) recommend exclusive breastfeeding for at least 6 months, solid food should be given after the child is 6 months old, and breastfeeding continued until the child is two years old (WHO, 2016). In 2003, the Indonesian government changed its long-standing recommendation of exclusive breastfeeding from 4 to 6 months (Ministry of Health, 2014).

Exclusive breastfeeding is not giving infants food or other drinks, including water, other than breastfeeding (except drugs and vitamin or mineral drops) exclusive limits if consumption other than breastfeeding is less than 100g/day. If more than that is called partial. Coverage of exclusive breastfeeding in Surakarta in 2010 was 69. It is 97%, higher than the national average coverage of 55.7% and WHO target of 50% (Surakarta City Health Office, 2010; Ministry of Health, 2016; Pusdatin, 2014; WHO, 2012; Da Costa et al., 2010; Ayton et al., 2015).

Various studies have revealed that exclusive breastfeeding is significantly able to prevent diarrhea, otitis media, multiple sclerosis, and acute respiratory infections. Also prevent insignificantly in diseases of the skin, urinary tract, eyes, and mouth teeth (Stapleton et al, 2012; Ladomenou et al., 2010; Agne et al., 2013; Hanieh et al., 2015). Studies in developing countries show that infants who get formula milk go out more often than those who get exclusive breastfeeding. And infants who did not get breastfeeding were eight times more hospitalized than those who received breastfeeding (Lauer et al., 2006; Rinne et al., 2005; Satku, 2004; Agne et al., 2013; Martin et al., 2016).

Achieving the target of exclusive breastfeeding coverage and the high incidence of tonsillitis is the background of the authors to conduct study whether there is a relationship between the histories of exclusive breastfeeding with the incidence of tonsillitis in children aged 0-7 years.

**SUBJECTS AND METHOD**

1. **Study Design**
   This was a cross sectional study conducted in March 2019 to April 2019, at the Pajang Health Center, Surakarta, Indonesia.

2. **Population and Sample**
   The study population was children aged less than 7 years who come to the Pajang Health Center, Surakarta. A sample of 30 children under 7 years old was selected by consecutive sampling.

3. **Study Variables**
   The dependent variable was tonsillitis. The independent variable was exclusive breastfeeding.

4. **Operational Definition of Variables**
   **A history of exclusive breastfeeding** was a subject where infants aged 0-6 months receive only breastfeeding nutrition without any other food except vitamins, drugs, and minerals. Data obtained through interviews and questionnaires to parents. The measurement scale is categorical, coded 0 for exclusive breastfeeding and 1 for not exclusive breastfeeding.

   **Tonsillitis** was inflammation of the tonsils or tonsils. The diagnosis of tonsillitis is made when there is hypertrophy, detritus,
hyperemia, edema, and exudate in tonsillar examination. Tonsil enlargement can be expressed in T1-T4 size. Cody and Thane divides tonsillar enlargement in the following sizes: T1 = medial tonsil border across the anterior pillar to ¼ anterior-uvula pillar distance; T2 = medial tonsillar border crossing ¼ anterior-uvula pillar distance to ½ anterior-uvula pillar distance; T3 = medial tonsillar border beyond ½ anterior-uvula pillar distance to ¾ anterior-uvula pillar distance; T4 = medial tonsillar border beyond ¾ anterior-uvula pillar distance or more; and The measurement scale is categorical, code 0 is not tonsillitis and 1 tonsillitis.

5. Study Instruments
History of exclusive breastfeeding is obtained through interviews and questionnaires to parents/guardians of children. Tonsillitis is obtained through history taking and physical examination.

6. Data Analysis
Data were analyzed by Fisher's exact test.

RESULTS
1. Sample Characteristics
Table 1 shows that the age of the study subjects obtained a minimum of 9 months, a maximum age of 79 months and an average of 44.33 months. Table 2 shows that there were 11 male children (36.7%) and 19 female children (63.3%).

Table 1. Sample Characteristics of Continuous Data
| Characteristics | N  | Mean  | SD   | Minimum | Maximum |
|-----------------|----|-------|------|---------|---------|
| Age (month)     |    | 30    | 44.33| 18.78   | 9       |

Table 2. Sample Characteristics of Categorical Data
| Gender | Total | Percentage |
|--------|-------|------------|
| Male   | 11    | 36.7%      |
| Female | 19    | 63.3%      |

2. The result of bivariate analysis
Table 3 shows that from 30 respondents there were 12 people (40.0%) who had tonsillitis and 18 people (60%) who did not suffer from tonsillitis. Of the 10 respondents who were not exclusively breastfed there were 7 people (70%) who had tonsillitis and 3 people (30.0%) who did not have tonsillitis, while of the 20 respondents who were given exclusive breastfeeding there were 5 people (25%) who had tonsillitis and 15 people (75.0%) who did not experience tonsillitis.

Table 3. Relationship of exclusive breastfeeding to the occurrence of tonsillitis in children aged 0-7 years at Pajang health center, Surakarta
| Exclusive breastfeeding | Tonsillitis | Total | OR   | CI 95%    | p   |
|-------------------------|------------|-------|------|----------|-----|
|                         | Yes        | No    |      |          |     |
| No                      | 7 (70.0%)  | 3 (30.0%) | 100.0% | 7.00 | 1.29 to 37.91 | 0.024 |
| Yes                     | 5 (25.0%)  | 15 (75.0%) | 100.0% |      |    | 

DISCUSSION
The analysis showed that there was a significant relationship between exclusive breastfeeding and the incidence of tonsillitis in children aged 0-7 years. This study shows that children under 7 years who do not get exclusive breastfeeding have a risk of having tonsillitis 7 times greater than children under 7 years who get exclusive breastfeeding.
The results of this study are in accordance with the theory of Story et al. (2008) where breastfeeding is able to protect infants and children from infectious diseases, including those that have a significant effect, namely diarrhea, otitis media, multiple sclerosis, and respiratory infections. Breastfeeding also contains protein, fat, vitamins, minerals, hormones, enzymes, and growth factors that play a role in preventing infection (Mosca et al., 2017; Nuzrina et al., 2016).

So infants who are exclusively breastfed will be healthier and less sick than infants who are not exclusively breastfed (Dhakal et al., 2017; Kartika et al., 2016; Nannyu, 2008; Widyastuti et al., 2018). Exclusive breastfeeding given to infants properly and correctly provides the immune system or antibodies to the baby's body compared to infants who do not get exclusive breastfeeding so that infants are not susceptible to diseases or infections that often occur in infants, one of them is tonsillitis (Andreas et al., 2015; Khadilkar et al., 2016; Nurjanah, 2015).

The first 1-3 days breastfeeding called colostrum contains 1-17 times more immunity than mature milk in the form of maternal antibodies, in addition there is also complete nutrition for infants, immunoregulators, immunomodulators (Ghodia et al., 2013; Golinelli et al., 2014; Peneau, 2014). Immunomodulator protection from exclusive breastfeeding can increase secretory immunoglobulin A (sIgA). Besides that breastfeeding has a good effect on the good flora in the body of a newborn (Ladomenou et al., 2010; Burke et al., 2014).

These immune substances will protect infants from various diseases such as autoimmune, ear infections, breathing, skin, urinary tract, eyes, digestion, and oral teeth to runny nose (Oktiyani, 2015). The substances contained in breastfeeding are actively able to inhibit and kill bacteria, viruses, fungi, and parasites through a number of immune cells (phagocytes and lymphocytes), antibodies, and immunoglobulins (Nizar et al, 2016; Sulistya-rini, 2013). Breastfeeding also provides long-term protection by stimulating an active immune response that is not present in other food intake (Ladomenou et al., 2010; Mataram 2011).

The results of the study are in accordance with Elfia (2012) that infants who get exclusive breastfeeding will be healthier and rarely experience acute respiratory infection (ARI) compared to infants who do not get exclusive breastfeeding. This study is in line with study which says that exclusive breastfeeding is better because with exclusive breastfeeding children get antibodies from the breastfeeding and prevent ARI in toddlers (Rustam, 2010; Noorhidayah and Widya Sari, 2014).

Regarding the study that has been done, there is a need for Communication, Information and Education (IEC) for health service institutions to be able to provide health education or promotion to mothers especially those who have babies, toddlers and children and further improve quality services. The public also needs to know about health problems, especially regarding tonsillitis, as well as increase knowledge about health sciences to pay more attention to the nutrition of their children in the future. Further study needs to be done with a larger sample, a wider population and more control over external factors that can affect study results.

**AUTHOR CONTRIBUTION**
Hanni Wardhani determined the theme and title of the study, determined the location and issues raised, formulated the concept and design of the study, and analyzed and interpreted the data. Melati Citra Rachmasari calculating sample size and collecting
data. Agustina Puryani collected data and checked the manuscript.

CONFLICT OF INTEREST
We declare that there was no conflict of interest.

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