



BREASTFEEDING PRACTICE PROTECT CHILDREN UNDER FIVE YEARS AGE FORM STUNTING

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ABSTRACT

Identification of risk factors stunting is important as prevention and early detection. However, breastfeeding initiation, early exposure to colostrum, exclusive breastfeeding, and duration of breastfeeding as a risk factor of stunting is still inconsistent. This study aimed to analyze the association of breastfeeding practice with stunting in children under five years of age. Observational study with a case-control design was conducted in Sawan, Buleleng District. A total of 48 cases and 48 controls were selected to participate in the study by using cluster sampling. Stunting data were obtained by direct measurements using microtoise and length boards, while variables related to breastfeeding and respondent characteristics variables were obtained by direct interviews using a questionnaire. All item questionnaire were valid (r count > r table (0,367)) and reliabel (cronbach's alpha 0,741). Data were analyzed with chi-square, and multivariate analysis by using logistic regression. The multivariate analysis result showed that variables were associated with stunting among children under five years of age are exclusive breastfeeding (AOR:4.27; 95%CI: 1.663-10.945), and breastfeeding initiation (AOR:3.46;95% CI:1.304-9.176). here is a need to increase the coverage of early breastfeeding initiation and exclusive breastfeeding to prevent an increase in stunting prevalence.

Keywords: breastfeeding; child; stunting

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INTRODUCTION

Stunting is currently a nutritional problem that is often experienced by children. Global Nutrition Targets 2025 states that reducing stunting in children under five years is currently the main target (WHO, 2014). It is estimated that as many as 162 million worldwide are stunted (WHO, 2012). UNICEF reports that the prevalence of stunting in the world is still higher than several other nutritional problems such as underweight, wasting and overweight. The prevalence of stunting in Indonesia has increased from 35.6% in 2010 to 37.2% in 2013 (RI Ministry of Health, 2018). The prevalence in Indonesia is still higher than in several other countries in Southeast Asia, such as Myanmar (35%), Vietnam (23%), and Thailand (16%) (Ministry of Health RI Health Research and Development Agency, 2013). Based on the WHO reference, if the prevalence of health problems reaches 30-39%, it can be presented as a serious health problem (WHO, 2010a). Therefore stunting is an important problem to be addressed immediately.

Stunting is the result of inadequate nutritional problems with long-term impacts on further development such as intellectual decline, vulnerability to non-communicable diseases, and the risk of giving birth to babies with low birth weight (WHO, 2010b). It has been proven by cohort studies conducted in five developing countries that stunting experienced by children has a relationship with delays in motor development and lower levels of intelligence (Martorell, Horta, & LS Adriel, 2010). More than that, stunting also has an impact on uncompetitive work quality so that it affects the economy and national development (RI, 2016).

Studies on factors that increase the prevalence of stunting have been carried out in many places, but studies related to breastfeeding, which is one of the risk factors for stunting, have been found to be inconsistent. Research in several countries has found exclusive breastfeeding, giving colostrum, early initiation of breastfeeding can reduce the risk of stunting in children (Akram, Sultana, Ali, Sheikh, & Sarker, 2018; Edmond et al., 2006; Fosubrefo & Arthur, 2015). Different results were obtained from several studies conducted in Indonesia, where it was reported that exclusive breastfeeding was not associated with stunting (Paramashanti, Hadi, & Gunawan, 2016; Rambitan et al., n.d.; Suhendrawidi, n.d.).

Buleleng Regency is one of the districts with the highest prevalence of stunting in Bali, namely 20% -23% (Bali Bisnis, 2018). However, studies on stunting have never been carried out in Buleleng district. The results of the Monitoring of Nutritional Status (PSG), which is a cross-sectional study with samples from households with toddlers in Buleleng Regency, show that there are five sub-districts that have become locus of stunting, including Sawan, Kubudindingan, Sukasada, Banjar and Gerokgak sub-districts. Most of the locus of stunting villages are in Sawan District (Ministry of Health Republic of Indonesia, 2017). When viewed from nutritional status, Sawan District also has toddlers with the highest number of malnutrition in Buleleng Regency (Buleleng District Health Office, 2017). A study on breastfeeding factors in Sawan District is needed as a prevention effort so that the prevalence of stunting can be reduced.

METHOD

This research is an analytic observational study with a case control design. The case sample are toddlers aged 0-59 months with stunting according to the z-score based on $TB/U < -2 SD$ (WHO, 2010), the control sample is toddlers aged 12-59 months not stunting according to the z-score based on $TB /U > -2SD$. The sample size was calculated at 95% confidence intervals with 80% power with a total sample of 48 cases, 48 control samples (the ratio of cases and controls was 1:1). The sample selection was carried out by cluster sampling based on the name of the stunting village locus in Sawan District. The selection of samples in each cluster is carried out in an arbitrary manner until all samples are met. The sample criteria in this study were toddlers 0-59 months, parents/guardians willing their children to be samples and signing informed consent. The data in this study were obtained by direct interviews with parents of toddlers and individual physical measurements with the help of 5 research assistants. Stunting data was obtained by taking direct measurements by using a microtoise for toddlers over 2 years old, and by using a length board for toddlers under 2 years old. Other variable data were collected by using a questionnaire that had been tested for validity and reliability. The results of validity test obtained that $r \text{ count} > r \text{ table}$ (0,367), meaning that all item are valid. The results of reliability test obtained cronbach's alpha 0,741. The questionnaire in this study consisted of several parts, namely questions related to family demographic data, toddler identity, birth history, breastfeeding, and environmental data where toddlers live. All answers obtained from the questionnaire are then entered into the master data in excel form, cleaned

and given a code. Bivariate analysis was performed by using chi-square to analyze the relationship between breastfeeding and stunting. The value of Exp (B) or OR obtained from the results of the bivariate analysis is an interpretation of the crude OR (COR) value. Multivariate analysis was performed by using logistic regression with the enter method. The value of Exp (B) or OR is interpreted with the adjusted OR (AOR) value. Variables that can be included in the multivariate analysis are those with a p value <0.25. The variables related to stunting can be seen from the p value <0.05. This research has received approval from the STIKES Buleleng Health Research Ethics Commission with No. 015/EC-KEPK-SB/IV/2019.

RESULTS

Tabel 1.
Characteristics of respondents

Characteristics	Case (48) f (%)	Control (48) f (%)	Total (96) f (%)
Sex of the children			
Female	28 (58.3)	22 (45.8)	50 (52.1)
Male	20 (41.7)	26 (54.2)	46 (47.9)
Birth weight			
Low	25 (52.1)	5 (10.4)	30 (31.2)
Normal	23 (47.9)	43 (89.6)	66 (68.8)
Birth height (cm) (mean ± SD)	49.44 ± 1.41	50.00 ± 1.09	
History of infections			
Diarrhea			
Yes	7 (14.6)	2 (4.2)	9 (9.4)
No	41 (85.4)	46 (95.8)	87 (90.6)
Acute respiratory infection			
Yes	18 (37.5)	11 (22.9)	29 (30.2)
No	30 (62.5)	37 (77.1)	67 (69.8)
Mother's education			
< High school	27 (56.2)	20 (41.7)	47 (49.0)
≥ High school	21 (43.8)	28 (58.3)	49 (51.0)
Family income			
< Minimum regional wages	21 (43.8)	20 (41.7)	41 (42.7)
≥ Minimum regional wages	27 (56.2)	28 (58.3)	55 (57.3)
Mother's height			
Short (<155 cm)	35 (72.9)	23 (47.9)	58 (60.4)
Normal (≥155 cm)	13 (27.1)	25 (52.1)	38 (39.6)
Father's height			
Short (<166 cm)	28 (58.3)	19 (39.6)	47 (49.0)
Normal (≥166 cm)	20 (41.7)	29 (60.4)	49 (51.0)
History of anemia in pregnancy			
Yes	11 (22.9)	4 (8.3)	15 (15.6)
No	37 (77.1)	44 (91.7)	81 (84.4)
Tobacco Smoke exposure			
Yes	23 (47.9)	6 (12.5)	29 (30.2)
No	25 (52.1)	42 (87.5)	67 (69.8)

The characteristics of the 98 samples studied can be seen in Table 1. The results of a study conducted on children aged 0-59 months showed that the average age of children in the case sample was not much different from the control sample, which was around 28 months. In the

case sample, most were female (58.3%), while in the control sample some were male. Compared to the control sample, in the case sample, more children were born with low birth weight (52.1%), shorter birth height (average 49.44 cm), had a history of infectious diseases such as diarrhea (14.6%) and acute respiratory infection (37.5%), exposure to cigarette smoke (47.9%) and there is a history of anemia in the mother during pregnancy (22.9%). Judging from the characteristics of the parents, in the sample case mothers under five had more education <senior high education (56.2%), family income <minimum regional wages (43.8%), mother's height <155 cm (72.9%) and father's height < 166 cm (58.3%).

Tabel 2.
Association breastfeeding initiation, early exposure to colostrum, exclusive breastfeeding, duration of breastfeeding and stunting

Variables	Cases (48) n (%)	Control (48) n (%)	Crude OR	p value
Breastfeeding Initiation				
Delayed	29 (60.4)	14 (29.2)	3.71	<0.01
Early	19 (39.6)	34 (70.8)		
Early Exposure to Colostrum				
No	30 (62.5)	19 (39.6)	2.54	0.03
Yes	18 (37.5)	29 (60.4)		
Exclusive Breastfeeding				
No	28 (58.3)	14 (29.2)	3.40	0.01
Yes	20 (41.7)	34 (70.8)		
Duration of Breastfeeding				
>12 months	19 (39.6)	17 (35.4)	0.84	0.67
≤12 months	29 (60.4)	31 (64.6)		

Tabel 2. Shows the association between initiation of breastfeeding, early exposure to colostrum, exclusive breastfeeding, duration of breastfeeding and stunting based on a bivariate test by using chi-square. Based on the results in table 2, breastfeeding initiation (COR: 3.71), early exposure to colostrum (COR: 2.54,) exclusive breastfeeding (COR: 3.40) have a significant relationship with stunting (p <0.05), while the duration of breastfeeding is found statistically not related to stunting (p>0.05).

Tabel 3.
Adjusted OR of breastfeeding initiation, early exposure to colostrum, exclusive breastfeeding and stunting among under-five children

Variables	Adjusted OR	95% CI		p-value
		Atas	Bawah	
Breastfeeding Initiation				
Delayed	Ref	1.304	9.176	0.013
Early	3.46			
Exposure to Colostrum				
No	Ref	0.746	4.491	0.187
Yes	1.83			
Exclusive Breastfeeding				
No	Ref	1.663	10.945	0.003
Yes	4.27			

Based on the results of the bivariate test, there were 3 variables included in the multivariate test, namely breastfeeding initiation, early exposure to colostrum, and exclusive breastfeeding ($p < 0.25$). Based on the results of the multivariate test in table 3, the variables that influence the incidence of stunting in children under five years are exclusive breastfeeding (AOR: 4.27; 95% CI: 1.663-10.945), and breastfeeding initiation (AOR: 3.46; 95% CI: 1.304 -9,176). Meanwhile, exposure to colostrum statistically shows no relationship with stunting in children under five years (AOR: 1.83; 95% CI: 0.746-4.491).

DISCUSSION

As an effort to improve children's health and prevent stunting, WHO recommends that a mother can provide early breastfeeding initiation in the first hour of birth, breastfeed exclusively without other complementary foods for 6 months and continue breastfeeding until the child is 2 years old (WHO, 2014). The results of this study found that only delayed breastfeeding initiation and not exclusive breastfeeding were significantly the risk of stunting. Delayed breastfeeding initiation was found to increase the risk of stunting in under-five children. In line with research in the Republic of Congo, early breastfeeding initiation as a determinant of stunting even though it has lower odds (Kismul, Acharya, Mapatano, & Hatloy, 2018). Early breastfeeding initiation is also said to contribute to health and help children grow optimally (Fosu-Brefo & Arthur, 2015) and has a great opportunity to successfully establish and maintain breastfeeding during infancy (Edmond et al., 2006).

Our study also found that non-exclusive breastfeeding has a risk of stunting 4.2 times compared to exclusive breastfeeding. The results of this study are in line with studies in several countries where non-exclusive breastfeeding has been shown to increase the risk of stunting in children (Akombi et al., 2017; Chirande et al., 2015; Jiang et al., 2015). Exclusive breastfeeding is the cornerstone of children's survival and health because it provides essential nutrients that are irreplaceable for children's growth and development (WHO, 2014). In contrast to the results of research in Rwandan, early breastfeeding initiation and exclusive breastfeeding are not related to stunting and also cannot overcome adverse factors affecting children's health such as infectious diseases, diarrhea and poor nutritional intake (Nsereko et al., 2018).

In this study, giving colostrum to children and duration of breastfeeding did not statistically have a significant relationship with stunting. However, the proportion of colostrum given to the control group was found to be higher (60.4%) compared to the case group. Giving colostrum on the first day of birth has long been considered to provide additional protection because it contains immune and non-immune substances for immunity and body health (Edmond et al., 2006). Although WHO recommends breastfeeding up to the age of two years, in this study we found that the duration of breastfeeding for more than 12 months can increase the risk of stunting in children even though it is not statistically significant. These results are similar to studies in several countries which state that the duration of breastfeeding for more than 12 months can actually increase the risk of stunting in children due to the consequences of inadequate nutritional intake (Akombi et al., 2017; Nsereko et al., 2018; Tiwari, Ausman, & Agho, 2014). This condition may be influenced by the low quality of complementary foods due to cultural and socio-economic influences which should have been given since the age of 6 months (Khanal, Sauer, & ZHao, 2013). Breastfeeding can also be considered as a substitute for additional food until a certain age, so that many children are not given sufficient amounts of other nutritious food and this results in nutritional deficiencies and stunted growth (Akram

et al., 2018). The limitation in this study is that the respondents were interviewed in retrospect which required to recall prior exposures that could introduce recall bias.

CONCLUSION

This study shows that initiation and exclusive breastfeeding are statistically related to the incidence of stunting. The right strategy is needed to continue to increase the scope of early breastfeeding initiation and exclusive breastfeeding so as to prevent an increase in the prevalence of stunting. Further studies regarding the obstacles to the implementation of early breastfeeding initiation and exclusive breastfeeding need to be carried out. Stunting as a multisectoral problem also needs ongoing intervention that covers all aspects and interventions should be carried out when starting to prepare for pregnancy. In addition to the clinical aspects of health and the environment, it is also necessary to study socio-cultural aspects in society, considering that Buleleng Bali is still very thick with its culture. The independent variables related to the incidence of stunting in this study are expected to be taken into consideration in designing stunting prevention and control programs

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