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## Research Article

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# Does the place of residence affect the achievement of exclusive breastfeeding? A study in Eastern Indonesia

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## ABSTRACT

Eastern Indonesia is a region that often underperforms in the health sector. The study aims to analyze the effect of the place of residence to achieve exclusive breastfeeding in Eastern Indonesia. The study employed data from the 2017 Nutrition Status Monitoring Survey. Toddler (7-59 months) about 8,291 were sampled. Variables included were exclusive breastfeeding status, the place of residence, mother's age, mother's education level, mother's marital status, mother's employment status, toddler's age, and toddler's gender. The final stage employed a binary logistics regression. The research results show that toddlers living in urban areas were 1.149 times more likely than toddlers living in rural areas to achieve exclusive breastfeeding (OR 1.149; 95% CI 1.022-1.291). The results of this analysis indicate that living in rural areas is a risk factor for toddlers not achieving exclusive breastfeeding in Eastern Indonesia. On the other hand, it was also found that all levels of education are more likely than those who do not go to school in Eastern Indonesia. Toddlers with employed mothers had 1.192 times the odds of toddlers with unemployed mothers achieving exclusive breastfeeding (OR 1.192; 95% CI 1.072-1.327). Meanwhile, toddler's age was also found to significantly affect achieving exclusive breastfeeding in Eastern Indonesia. It was concluded that the place of residence affects the achievement of exclusive breastfeeding in Eastern Indonesia. Toddlers who live in urban areas have a better chance of achieving of exclusive breastfeeding.

**Keywords:** breastfeeding, exclusive breastfeeding, place of residence, nutrition education, health education.

## INTRODUCTION

Exclusive breastfeeding (EBF) is a method of feeding infants by breastfeeding only until the age of 6 months. EBF aims to provide complete nutrition for the first six months of a baby's life (Charlick *et al.*, 2019). EBF is the cheapest and simplest method to meet the baby's nutritional needs.

EBF has been shown to have many benefits. This benefit is not only for the baby but also for the mother of the baby. For babies, EBF was identified such as healthier eating habits, reduced length of hospital stay, favorable weight increase, lower body mass index, lower

adiposity, lower total cholesterol values, better cognitive and behavioral development, as well as stability of metabolic levels in children with metabolic disorders. Meanwhile, for mothers, EBF can protect mothers from the risk of ovarian and breast cancer because it is a portion of safe baby food and also reduces obesity (MacVicar, Humphrey and Forbes-McKay, 2018; Fan *et al.*, 2019; Couto, Dias and Oliveira, 2020).

Previous research also informed that quality breast milk will improve sensory and cognitive abilities and will also protect children from infectious and chronic diseases. Poor infant feeding practices are known to have an impact on children's growth and development (Binda, Figueroa-Leigh and Olhaberry, 2019; Pareek, 2019). Meanwhile, another study that synthesized several studies through meta-analysis found that a child who was given breast milk increased in IQ scores of 3.44 points (Horta, Mola and Victora, 2015).

Although it is widely known that EBF has many benefits, the coverage of mothers who provide EBF to their babies is still very low. The Ministry of Health in Indonesia noted that only 35.7% of mothers do EBF (Directorate of Community Nutrition of The Ministry of Health of The Republic of Indonesia, 2017). Meanwhile, at the global level, it is recorded that it varies in the range of 30-50% (Pareek, 2019).

In the Indonesian context, even though there are positive regulations aimed at protecting EBF practices, EBF coverage remains difficult to increase. Previous studies reported that uneducated and working mothers were a barrier to the achievement of EBF (Ratnasari *et al.*, 2017; A.D. Laksono and Wulandari, 2020). This condition is inseparable from health beliefs and the practice of feeding babies by several indigenous Indonesian tribes. Previous studies have informed that the Javanese give sugar solution to babies from the age of several days (Maghfiroh and Laksono, 2020), while another study informed that the Gayo tribe applied honey to the lips of a baby since the baby was only born for a while (Pratiwi *et al.*, 2019).

In Eastern Indonesia, the health program outcomes are often low (National Institute of Health Research and Development of the Ministry of Health of the Republic of Indonesia, 2019), the traditional practice of feeding infants by indigenous tribes is also quite high. In Eastern Indonesia, the practice of giving liquid sago solution is quite popular as an intake for babies who are several days old. Meanwhile, at the age of 2-3 months, babies are introduced to mashed adult food (Kurniawan *et al.*, 2012; Laksono *et al.*, 2014; Laksono, 2015). This traditional practice of feeding infants is a challenge for health workers to promote the practice of EBF in Eastern Indonesia. Based on the background description, this study aimed to analyze the effect of the place of residence to achieve exclusive breastfeeding in Eastern Indonesia.

## **METHODS**

### ***Data Source***

The study employed secondary data from the 2017 Nutrition Status Monitoring Survey. Nutrition Status Monitoring was a national-scale survey using a multi-stage cluster random sampling method conducted by the Directorate of Community Nutrition of the Indonesian Ministry of Health (Directorate of Community Nutrition of The Ministry of Health of The Republic of Indonesia, 2017). The population in this study were all toddler aged 7-59 months in Eastern Indonesia. Eastern Indonesia is a region in eastern Indonesia covering 5 provinces, namely East Nusa Tenggara, Maluku, North Maluku, West Papua, and Papua. A total of 8,291 respondents of mothers under five were employed for the study.

### ***Procedure***

The Nutrition Status Monitoring Survey in 2017 has an ethical license approved by the national ethics committee (ethics number: LB.02.01/2/KE.244/2017). In this survey, informed

consent was used during data collection, which considers aspects of procedures for data collection, voluntary, and confidentiality.

### **Data Analysis**

The dependent variable was exclusive breastfeeding (EBF). EBF was only breastfeeding for the first six months without drinks or other additional food. The place of residence was the type of place of residence. The place of residence is divided into 2 categories, namely urban and rural. Apart from the place of residence, other independent variables involved in the analysis are the mother's age, mother's education level, mother's marital status, mother's employment status, toddler's age, and toddler's gender.

Mother's age is divided into 5 categories, namely < 20, 20-29, 30-39, 40-49, and > 50. The mother's education level was the respondent's acknowledgment of the level of education that a mother has completed. The mother's education consists of 5 levels, ie no education, primary school, junior high school, senior high school, and college. The marital status of mother's divided into 3 categories, ie never married, married, and divorced/widowed. The employment status of mothers was the respondent's acknowledgment of unemployed or employed. Toddler's age was the age in the months. Toddler's gender was divided into 2 categories, ie boy and girl.

Bivariate analysis was done by using the Chi-Square test to analyze dichotomous variables, while for continuous variables the T-test was used. This statistical test was used to assess whether there was a statistically significant relationship between the place of residence variable and another variable. In the final stage, a binary logistic regression test was employed to determine the effect of the place of residence on achieving EBF in Eastern Indonesia. All were performed with the SPSS 22 version software.

## **RESULTS**

Table 1 shows the results of the bivariate analysis between the place of residence and the related variables. It can be seen that in both categories the place of residence is dominated by toddlers who do not reach EBF. Meanwhile, based on the mother's age, both categories of the place of residence were dominated by toddlers with mothers in the 20-29 age group. Based on the mother's education level, the two categories of the place of residence are dominated by toddlers with mothers who are senior high school graduates.

Table 1. Descriptive Statistics of Place of Residence and Related Variables (n=8,291)

Characteristics	Type of Place of Residence				p
	Urban		Rural		
	n	%	n	%	
EBF status					*0.025
- Not EBF	1003	63.0%	4417	65.9%	
- EBF	590	37.0%	2281	34.1%	
Mother's age (in years; mean)					***0.000
- < 20	59	3.7%	387	5.8%	
- 20-29	924	58.0%	4044	60.4%	
- 30-39	510	32.0%	1841	27.5%	
- 40-49	89	5.6%	386	5.8%	
- >49	11	0.7%	40	0.6%	
Mother's education level					***0.000
- No education	63	4.0%	653	9.7%	
- Primary school	207	13.0%	1598	23.9%	

- Junior high school	212	13.3%	1017	15.2%	
- Senior high school	889	55.8%	2930	43.7%	
- College	222	13.9%	500	7.5%	
Mother's marital status					0.255
- Never married	11	0.7%	66	1.0%	
- Married	1559	97.9%	6560	97.9%	
- Divorced/widowed	23	1.4%	72	1.1%	
Mother's employment status					***0.000
- Unemployed	1173	73.6%	4292	64.1%	
- Employed	420	26.4%	2406	35.9%	
Toddler's Age (in months; mean)	1593	(14.30)	6698	(14.44)	***0.000
Toddler's Gender					0.300
- Boy	829	52.0%	3389	50.6%	
- Girl	764	48.0%	3309	49.4%	

Note: Chi-Square used for dichotomous variables and the T-test used for continuous variables. \*p < 0.05; \*\*p < 0.01; \*\*\*p < 0.001.

Table 1 informs that based on the mother's marital status, the two categories of the place of residence were dominated by married mothers. Based on the mother's employment status, the two categories of the place of residence were dominated by unemployed mothers. Based on the toddler's age, toddlers living in rural areas have an average age that is slightly older than toddlers who live in rural areas. Finally, based on the toddler's gender, the two categories of the place of residence are dominated by the boys.

Table 2 shows the results of the binary logistic regression test. In this binary logistic regression test, "Not EBF" was used as a reference. Table 2 shows that toddlers living in urban areas were 1.149 times more likely than toddlers living in rural areas to achieve EBF (OR 1.149; 95% CI 1.022-1.291). The results of this analysis indicate that living in rural areas is a risk factor for toddlers not achieving EBF in Eastern Indonesia.

Table 2. Results of Binary Logistic Regression (n=8,291)

Predictors	Sig.	EBF		
		OR	Lower Bound	Upper Bound
Type of place: Urban	*0.020	1.149	1.022	1.291
Type of place: Rural	-	-	-	-
Mother's age: <20	-	-	-	-
Mother's age: 20-29	0.190	1.156	0.930	1.437
Mother's age: 30-39	0.159	1.175	0.939	1.470
Mother's age: 40-49	0.924	1.014	0.764	1.345
Mother's age: >49	0.608	1.173	0.638	2.156
Mother's Education: no education	-	-	-	-
Education level: primary school	***0.000	1.504	1.236	1.829
Education level: junior high school	***0.000	1.461	1.187	1.798
Education level: senior high school	***0.000	1.420	1.174	1.716
Education level: college	**0.003	1.407	1.120	1.768
Mother's employment: unemployed	-	-	-	-
Mother's employment: employed	**0.001	1.192	1.072	1.327
Toddler's age (months)	***0.000	1.047	1.037	1.057

Note: The reference EBF status category was "Not EBF"; confidence interval of 95% for OR; \*p < 0.05; \*\*p < 0.01; \*\*\*p < 0.001..

Toddlers with mothers with primary school education were 1.504 times more likely than toddlers with no education mothers to achieve EBF (OR 1.504; 95% CI 1.236-1.829). Toddlers with mothers with junior high school education were 1.461 times more likely than toddlers with no education mothers to achieve EBF (OR 1.461; 95% CI 1.187-1.798). Toddlers with mothers with senior high school education were 1.420 times more likely than toddlers who had no education mothers to achieve EBF (OR 1.420; 95% CI 1.174-1.716). Meanwhile, toddlers who had mothers with a college education were 1.407 times more likely than toddlers who had no education mothers to achieve EBF (OR 1.407; 95% CI 1.120-1.768). The results of this analysis indicate that all levels of education are more likely than those who do not go to school in Eastern Indonesia.

Based on employment status, toddlers with employed mothers had 1.192 times the likelihood of toddlers with unemployed mothers achieving EBF (OR 1.192; 95% CI 1.072-1.327). This information shows that toddlers with unemployed mothers have a lower chance of achieving EBF in Eastern Indonesia. Additionally, the toddler's age was also found to significantly affect achieving EBF in Eastern Indonesia.

## DISCUSSION

The results of the study found that living in rural areas is a risk factor for toddlers not achieving EBF in Eastern Indonesia. In the context of Indonesia, living in an urban area provides a better opportunity for access to health services (Laksono, Wulandari and Soedirham, 2019; Laksono, Wulandari and Efendi, 2020), including access to information about health (Weinhold and Gurtner, 2018).

The results of this analysis inform the existence of disparities between urban and rural areas which were also found in previous studies. Urban areas in Indonesia tend to be the focus of development. This has an impact on growth in urban areas which is faster than rural, including development in the health sector (Wulandari and Laksono, 2019). The difference in input and output in the health sector between these two areas should also be a concern of policymakers in the health sector because their job is to ensure equitable access for all people in need (Mubasyiroh, Nurhotimah and Laksono, 2016).

The analysis found that all levels of education are more likely than those who do not go to school in Eastern Indonesia. A better level of education for mothers encourages a better understanding of the benefits of EBF, better understanding of behaviors that provide quality health output. Higher education contributes positively and plays an important role in the breastfeeding process and the success rate of EBF (Glassman *et al.*, 2014; Agho *et al.*, 2016; Bahorski *et al.*, 2019; Hamze, Mao and Reifsnider, 2019).

Meanwhile, several previous studies that took the theme of the health sector other than EBF found a positive effect of education on higher-quality health output (Ipa *et al.*, 2020; Kusriani and Laksono, 2020; Megatsari *et al.*, 2020; Wulandari and Laksono, 2020). Better education also affects women's independence to make decisions related to their health (Laksono, Matahari and Wulandari, 2020; Seran *et al.*, 2020). On the other hand, poor education is often informed as a barrier to achieving better output in the health sector (Agung Dwi Laksono and Wulandari, 2020; Rohmah *et al.*, 2020).

Moreover, the employment status of mothers was also found to affect achieving EBF in Eastern Indonesia. Employed mothers have a higher chance of unemployed mothers from achieving EBF for toddlers. The results of this analysis contradict some of the results of previous studies, which reported that employed are a barrier to achieving EBF (Hendaus *et al.*, 2018; Tadesse *et al.*, 2019). Employed mothers are assumed to tend to have less time and opportunity than unemployed mothers to interact with children. This condition includes

interactions in terms of feeding through breastfeeding (Ratnasari *et al.*, 2017; Bue and Priebe, 2018).

On the other hand, the toddler's age was also found to significantly affect achieving EBF in Eastern Indonesia. The results of this study confirmed the results of previous studies which found that a toddler's age was a determinant of achieving EBF (Benova *et al.*, 2020; Rahman *et al.*, 2020; Salim and Stones, 2020).

## CONCLUSIONS

Based on the results of the study it could be concluded that there was an effect of maternal education on achieving EBF in Indonesia. The mother's education level has a positive effect on EBF toddler status in Indonesia. Other variables were also found to be predictors of EBF in Indonesia, namely mother's age, mother's employment status, under five's age, and place of residence.

### Data Availability

The 2017 Nutrition Status Monitoring Survey data used to support these findings of this study were supplied by the Directorate of Community Nutrition of the Indonesian Ministry of Health under license and so can not be made freely available. Requests for access to these data should be made to the Directorate of Community Nutrition of the Indonesian Ministry of Health.

### Declaration of Conflicting Interests

The authors declare that they have no conflict of interest.

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