

Factors Related to Stunted in East Java Province in 2019: An Ecological Analysis

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Abstract

East Java Province has a high prevalence of stunted. The study aimed to analyze the factors associated with stunted in East Java Province. The study was conducted using secondary data sourced from the 2019 East Java Province Health Profile report. The study was designed with an ecological analysis approach. All 38 regencies/cities in East Java Province were analyzed. Apart from the prevalence of stunted toddlers as the dependent variable, 4 other variables were analyzed as independent variables, namely the coverage of toddler health services, Universal Child Immunization (UCI) village coverage, coverage of families accessing healthy latrines, and percentage of samples of drinking water facilities that meet the requirements. The results showed that the trend of regencies/cities with low coverage of toddler health services has a high prevalence of stunted toddlers. There was a tendency for regencies/cities that have a higher level of immunization coverage which tends to have a lower percentage of stunted toddlers. Meanwhile, the trend of regencies/cities that have better coverage of families accessing healthy latrines has a lower prevalence of stunted toddlers. Finally, regencies/cities with a high percentage of babies receiving exclusive breastfeeding have the lowest prevalence of babies receiving exclusive breastfeeding. It could be concluded that there is a tendency for a negative relationship between the independent variables analyzed and the prevalence of stunted toddlers. The higher the coverage on the independent variable, the lower the tendency for the coverage percentage to be stunted in East Java Province.

Keywords: *Ecological analysis, secondary data, stunted, community nutrition.*

Introduction

Stunted in toddlers is a nutritional problem that is a world issue, including in Indonesia. Stunted is a condition in which toddlers have less length or height compared to age. This condition is measured by a length or height that is more than minus two standard deviations from the WHO median growth standard for children¹.

Based on the 2019 Health Profile of East Java Province report, East Java Province still has a fairly high

prevalence of stunted. In 2016 the prevalence of stunted was 26.10%, while in 2017 it increased to 26.70%, and in 2018 it decreased to 22%². Meanwhile, based on the 2018 Basic Health Survey, the record of the prevalence of stuntedness in East Java Province is even higher, higher than the national average. The prevalence of stunted toddler in East Java Province is 19.9%, while the national rate is 19.3%. The prevalence of severely stunted in East Java Province is 12.9%, while the national one is 11.5%³.

Stunted is known to be one of the main causes of morbidity in children under five years of age^{4,5}. Children who are stunted can have a higher risk for chronic diseases such as obesity and hypertension⁶. The final impact, stunted can reduce the quality of human resources which can result in decreased welfare of

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society. Stunted can lead to long-term effects including cognitive impairment and physical development, lower performance, lower per capita income, increased risk of poverty, increased risk of pregnancy disorders and asphyxia during childbirth, as well as increased risk of degenerative diseases such as obesity, diabetes mellitus, heart disease, stroke, hypertension, and cancer^{7,8}.

HL Blum stated that the factors that affect health are divided into four elements, including environment, heredity, lifestyle, and health services⁵. Stunted as one of the national health problems that are now a concern requires an in-depth analysis of the causative factors in prevention and overcoming efforts. When viewed using the Blum theory, several variables that can be analyzed include the coverage of under-five health services and the Universal Child Immunization (UCI) village coverage which is one of the elements of activity of the determinants of health services. Besides, there is a variable percentage of babies who are exclusively breastfed as one of the variables of parenting/behavior that can be analyzed. The coverage of households that have access to healthy latrines is the chosen variable to analyze environmental factors against stunted. Based on the background description, this study aims to analyze the factors related to stunted in East Java Province in 2019.

Materials and Method

The study was designed using an ecological analysis approach. Ecological studies focus on comparisons between groups, not individuals. The data analyzed is aggregate data at a certain group or level, which in this study is the regency/city level. The variables in an ecological analysis can be aggregate measurements, environmental measurements, or global measurements^{9,10}.

The study was conducted using secondary data from the 2019 East Java Provincial Health Profile report. A total of 38 regencies/cities in East Java were involved in this analysis. The dependent variable in this study was the prevalence of stunted toddlers. There are 4 independent variables analyzed, namely the coverage of under-five health services, the coverage of UCI villages, the coverage of households that access healthy latrines, the percentage of infants receiving exclusive breastfeeding. All variables are categorized into 3 parts of the same size. Data were analyzed by univariate and bivariate. Bivariate analysis was performed using cross-tabulations. The entire analysis process utilizes SPSS 21 software.

Results and Discussion

Table 1 shows the descriptive statistics of the variables in the ecological analysis of stunted toddlers in East Java. Table 1 shows the distribution of stunted as the dependent variable with positive values in the low category and negative in the high category. In general, the target of stunted performance is to reduce its prevalence in the community. The 5 independent variables include the percentage of infants receiving exclusive breastfeeding, the coverage of under-five health services, UCI village coverage, the percentage of families accessing healthy latrines. The sample was 38 regencies/cities in East Java Province. Based on the table, it is found that the figure is more than 100% due to regencies/cities reporting coverage that exceeds the target set at the beginning of the evaluation year. The lowest prevalence of stunted toddler was in Tulungagung Regency at 5.3% and the highest was in Batu City at 25.4%. The average prevalence of stunted toddlers from 38 regencies/cities was 13.72%.

Table 1. Descriptive Statistics of Stunted Toddlers in East Java Province in 2019

	Prevalence of Stunted Toddler	Toddler Health Service Coverage	UCI Village Coverage	Percentage of Households that Have Access to Healthy Latrines	Exclusive Breastfeeding Coverage
N	38	38	38	38	38
Mean	13.7211	89.9079	90.4395	92.8474	78.0316
Median	13.0000	91.2000	92.0500	96.2000	78.8000
Mode	15.30 ^a	90.90 ^a	100.00	100.00	78.70 ^a
Std. Deviation	4.99492	7.40388	9.81258	9.14185	9.54953
Variance	24.949	54.818	96.287	83.573	91.194

	Prevalence of Stunted Toddler	Toddler Health Service Coverage	UCI Village Coverage	Percentage of Households that Have Access to Healthy Latrines	Exclusive Breastfeeding Coverage
Range	20.10	38.10	48.80	34.10	49.50
Minimum	5.30	63.00	51.20	66.20	46.90
Maximum	25.40	101.10	100.00	100.30	96.40

Source: The 2019 Health Profile of East Java Province

Table 2. Cross-tabulation between Stunted Toddler Prevalence and Health Service Coverage for Toddlers in East Java Province, 2019

Toddler Health Service Coverage	Stunted Toddler					
	Low (5.30-11.00%)		Middle (11.10%-16.10%)		High (16.11%-25.40%)	
	N	%	N	%	n	%
Low (63.00%-89.90%)	3	23.1	3	23.1	6	50.0
Middle (89.91%-92.30%)	8	61.5	8	61.5	5	41.7
High (92.31%-101.10%)	2	15.4	2	15.4	1	8.3
Total	13	100	13	100	12	100

Source: The 2019 Health Profile of East Java Province

Table 2 shows the cross-tabulation between the prevalence of stunted toddlers and the coverage of toddler health services. The analysis showed that the trend of regencies/cities with a high prevalence of stunted toddler had low coverage of health services for children under five. The trend shows that the coverage of toddler health services contributes to reducing the percentage of stunted toddlers. Information in Table 2 shows that regencies/cities with low coverage of health services for children under five tend to have higher rates

of stuntedness. This is in line with previous research which states that there is a relationship between the higher the quality of health services the better impact on child growth and stunted¹¹. The inability of families to reach health services due to lack of knowledge, financial capacity, or other causes can affect the nutritional status of children. Health services for children can be associated with changes in nutritional status that lead to stunted^{1,6}.

Table 3. Cross-tabulation between Stunted Toddler Prevalence and Universal Child Immunization (UCI) Village Coverage in East Java Province, 2019

Village Coverage of UCI	Stunted Toddler					
	Low (5.30-11.00%)		Middle (11.10%-16.10%)		High (16.11%-25.40%)	
	N	%	N	%	N	%
Low (51.20%-89.00%)	3	23.1	3	23.1	7	58.3
Middle (89.01%-96.90%)	3	23.1	6	46.2	4	33.3
High (96.90%-100.00%)	7	53.8	4	30.8	1	8.3
Total	13	100	13	100	12	100

Source: The 2019 Health Profile of East Java Province

Table 3 is the result of cross-tabulation between stunted toddler prevalence and UCI village coverage in East Java Province. Table 3 shows the tendency for

regencies/cities with the highest percentage of stunted toddlers to regencies/cities with high UCI Village coverage, namely 53.8%. It can be seen that there is a

tendency that regencies/cities that have higher levels of immunization coverage tend to have a lower percentage of stunted. Previous studies reported that cases of stunted toddler and wasting were found to be more in children with incomplete immunization status^{12,13} i.e., BCG;

measles; polio 3; and Diphtheria, Tetanus toxoids, and Pertussis, i.e., DTP3. Apart from having an impact on the nutritional status of children under five, immunization is needed because it is an effort to reduce child morbidity and mortality¹⁴.

Table 4. Cross-tabulation between Stunted Toddler Prevalence and Coverage of Household Accessing Healthy Latrines in East Java Province, 2019

Household Coverage that Accesses Healthy Latrines	Stunted Toddler					
	Low (5.30-11.00%)		Middle (11.10%-16.10%)		High (16.11%-25.40%)	
	N	%	n	%	N	%
Low (66.20%-92.80%)	1	7.7	5	38.5	3	23.7
Middle (92.81%-98.20%)	3	23.1	4	30.8	4	33.3
High (98.20%-100.30%)	9	69.2	4	30.8	5	41.7
Total	13	100	13	100	12	100

Source: The 2019 Health Profile of East Java Province

Table 4 shows the cross-tabulation between stunted toddler prevalence and coverage of households accessing healthy latrines in East Java Province. The apparent trend is that regencies/cities with a low percentage of stunted toddlers are found in regencies/cities with high coverage of households accessing healthy latrines. The information presented in Table 4 shows the trend of regencies/cities with better coverage of families accessing healthy latrines having a lower percentage of stunted. This shows that access to sanitation has an impact on the percentage of stunted in the community. This tendency is in line with the results of previous studies which state

that there is a relationship between latrine use and being stunted in children⁷. In previous studies, hygiene and sanitation have been shown to have a linear relationship with growth in children¹⁵. Poor sanitation increases the risk of infectious diseases and impaired absorption of nutrients. Research states that health problems due to poor sanitation are associated with growth problems that can result in stuntedness^{16,17} broader efforts are needed that reach beyond the nutrition sector to tackle the underlying determinants of undernutrition. There is growing interest in how water, sanitation and hygiene (WASH).

Table 5. Cross-tabulation between Stunted Toddler Prevalence and Percentage of Babies Receiving Exclusive Breastfeeding in East Java Province, 2019

Percentage of Babies Receiving Exclusive Breastfeeding	Stunted Toddler					
	Low (5.30-11.00%)		Middle (11.10%-16.10%)		High (16.11%-25.40%)	
	n	%	n	%	n	%
Low (46.90%-75.90%)	5	38.5	5	38.5	3	25.0
Middle (75.91%-81.40%)	3	23.1	4	30.8	7	58.3
High (81.41%-96.40%)	5	38.5	4	30.8	2	16.7
Total	13	100	13	100	12	100

Source: The 2019 Health Profile of East Java Province

Table 5 is a cross-tabulation between stunted toddler prevalence and coverage of babies receiving exclusive breastfeeding in East Java Province. The cross-tabulation results show that the prevalence of high-category stunted toddlers is most dominant in city districts that have coverage of middle-category ASI, while regencies/cities with a high percentage of babies receiving exclusive breastfeeding have the lowest stunted toddler prevalence. In line with this trend, several previous studies have also informed that one of the factors that influence the incidence of stunted is exclusive breastfeeding¹⁸. Stunted toddlers are more common in babies who are not exclusively breastfed. Thus, exclusive breastfeeding is highly recommended^{18,19}.

This research, which was conducted using the ecological analysis approach, has limitations in its use as a policy basis because the data used is aggregate data at the provincial level. Further study is needed at the individual level to obtain more accurate information in choosing intervention policy.

Conclusions

Based on the results of the study, it could be concluded that the coverage of toddler health services, UCI village coverage, coverage of households accessing healthy latrines, and coverage of infants receiving exclusive breastfeeding were factors related to the prevalence of stunted toddlers in East Java Province in 2019.

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Ethical Clearance: The study was conducted by utilizing secondary data from published reports. For this reason, ethical clearance is not required in the implementation of this study.

Conflicting Interests: Nil

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