

ORIGINAL ARTICLE

ANALYSIS OF POVERTY RATE AND STUNTING PREVALENCE IN THE PROVINCE OF ACEH

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ABSTRACT

This study aims to classify districts in Aceh Province based on poverty rates and stunting prevalence indicators. The data used is cross-section data for 2022 which includes the poverty severity index, poverty depth index, the percentage of poor people, and the prevalence of stunting from the 2022 SSGI results. The method used is cluster analysis, using poverty percentage data (PO) to determine clusters and analyze differences in district clusters with an average stunting rate. Based on the results of the analysis it can be concluded that poverty at the district level is grouped into three categories. Group 1 consists of districts such as Aceh Besar, Aceh Jaya, Aceh Tamiang, Central Aceh, Southeast Aceh, Bireuen, Banda Aceh, Langsa, Sabang, and East Aceh. Group 2 includes the districts of West Aceh, Southwest Aceh, North Aceh, Nagan Raya, Lhokseumawe and Subussalaam. Group 3 consists of Singkil, Bener Meriah, Gayo Lues, Pidie, Pidie Jaya, and Simeulu Regencies. Cluster analysis shows that districts with lower poverty rates are in group 1, while group 2 shows moderate poverty, and group 3 has a high poverty index. Furthermore, the results of the correlation analysis show that there is a positive correlation between the percentage of stunting prevalence and the percentage of poverty with a real relationship and the correlation is significant. This study concluded that a cluster analysis of poverty rates with stunting prevalence showed that lower poverty percentages were associated with lower stunting rates, while higher poverty rates were associated with higher stunting rates. The government needs to take real steps to overcome the problem of poverty and stunting in Indonesia. By focusing on areas with a high prevalence of stunting and involving various sectors, it is hoped that the government can achieve its goal of improving the quality of life of the Indonesian people.

Keywords: poverty severity index, poverty depth index, percentage of poor people, stunting prevalence

INTRODUCTION

Poverty is one of the main problems worldwide¹. According to several studies, poverty is often interpreted as the inability of individuals or groups to meet their basic needs, such as food, clean water, proper housing, and access to health and education². Despite numerous efforts to overcome poverty, it remains an unresolved issue in many countries³. Another study reveals that poverty is not limited to a lack of financial resources but also encompasses deficiencies in health, education, and other social needs that certain individuals or groups cannot fulfill⁴. Poverty assessment plays a crucial role in developing policies and strategies to reduce poverty problems¹. The assessment is a two-step process involving the identification of individuals or households living in poverty and the collection of relevant poverty data⁵. The first step entails identifying those considered to be living in poverty using a poverty index analysis⁶. The second step involves obtaining the aggregate poverty index of the population, which is important for policy analysis and designing effective poverty reduction strategies⁷. The importance of accurate poverty data supports poverty reduction strategies. With available data, the government can make informed decisions for

poverty alleviation. Additionally, the data enables the government to compare poverty rates across different years. Apart from the number and percentage of poor people, information on the poverty profile is also crucial. Policy makers rely on this information to address the issue of poverty. With this information, efforts to empower the poor can be carried out efficiently, effectively, and with targeted precision. In Indonesia, poverty is the main factor contributing to the prevalence of stunting in children under five^{8,9}. According to data from September 2019, approximately 24.79 million people in Indonesia live in poverty, accounting for around 10% of the country's population^{10,11}. These findings emphasize the urgent need for poverty alleviation programs to effectively address stunting among Indonesian children^{8,12,13}. Against this backdrop, the authors are interested in grouping districts/cities in Aceh Province based on three poverty indicators and analyzing the average difference in the prevalence of stunting among districts/cities. The aim is to contribute to the government and policymakers in implementing targeted programs.

This study uses secondary data obtained from the Central Bureau of Statistics, for the variables used in this study, namely poverty depth index,

poverty severity index, percentage of poor people, Gini ratio, data taken in 2022. The analysis carried out in this study is descriptive analysis. using map chart and cluster analysis. Prevalence data per district in Aceh province uses secondary data from the 2022 Indonesian Nutrition Status Survey (SSGI) with the number of SSGI 2022 samples for Aceh province is 1,678 samples. The sample consisted of 1,222 samples of toddlers and 456 samples of pregnant women.

Cluster analysis is a multivariate method that aims to group objects based on similar characteristics ¹⁴. This method classifies objects so that each object that has the closest similarity to other objects will be in the same cluster ¹⁵. In this study, a combination of two methods was used, namely the hierarchical method and the non-hierarchical method. First, the analysis was carried out using the hierarchical method, then followed by the non-hierarchical method. In this study, a one-way ANOVA.

RESULT

Distribution of Poverty Percentage (P0), Poverty Depth (P1), Poverty Severity (P2), Gini Ratio, and Stunting Prevalence in Districts/Cities of Aceh Province

Descriptive statistics, represented using map charts, are used to visualize the distribution of the depth index, severity index, percentage of poor people, Gini ratio, and stunting prevalence rate in Aceh Province. Figure 1 illustrates the distribution of the poverty depth index, ranging from 1.31 to 3.8. The analysis reveals that South Aceh District has the lowest poverty depth index (1.31), whereas Aceh Singkil District has the highest poverty depth index (3.8). Additionally, other districts in Aceh Province with high poverty depth index values are Bener Meriah (3.54), Sabang (3.30), Pidie (3.10), and Nagan Raya (3.06) Figure 2 shows the poverty severity index in Aceh

Province. The districts with the highest poverty severity index were Bener Meriah (1.09), Sabang (1.08), Nagan Raya (0.76), Pidie (0.75) and Aceh Singkil (0.74). The district with the lowest poverty severity index is South Aceh District.

Figure 3 illustrates the distribution of the percentage of poor people in Aceh Province. Based on the map chart, it can be seen that the district with the least percentage of poor people is Langsa City (10.62). Regencies with the highest percentage of poor people were Aceh Singkil (19.18%), Gayo Lues (18.87%), Pidie (18.79%), Pidie Jaya (18.45%) and Bener Meriah (18.39%). The Gini ratio in Aceh Province. The higher the Gini ratio of a district/city in Aceh province, the darker the color degradation will show. Based on the map chart, it can be seen that the district with the lowest Gini ratio is Pidie Jaya Regency (0.223). The district with the highest gini ratio is Banda Aceh City (0.391). Figure 4 depicts the prevalence of stunting in Aceh province. The higher the prevalence of stunting in districts/cities in Aceh Province, the darker the color degradation will show. Based on the map chart, it can be seen that the district with the lowest prevalence of stunting is Aceh Jaya District (19.9%). The district with the highest prevalence is Subussalam City (47.9%).

Districts in cluster 2 are districts with an average poverty percentage value. The average percentage of poor people is 14.09%. Cluster 2 consists of 5 districts (Table 1). The average percentage of stunting prevalence is 28.43% with a standard deviation of 8.11 in cluster 2 districts. The average percentage of poor people in cluster 3 is 18.67%. Districts in cluster 3 are districts with the highest average poverty percentage indicator. Cluster 3 consists of 6 districts (Table 1). The average percentage of stunting prevalence is 34.24% with a standard deviation of 3.52.

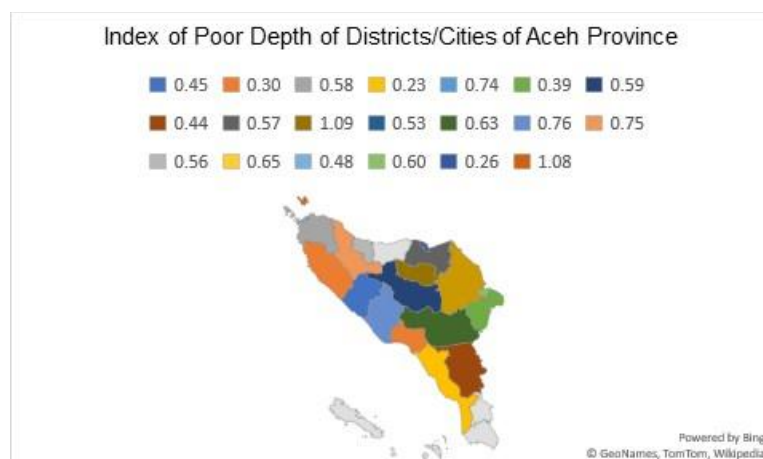


Figure 1. Index of Poor Depth of Districts/Cities of Aceh Province

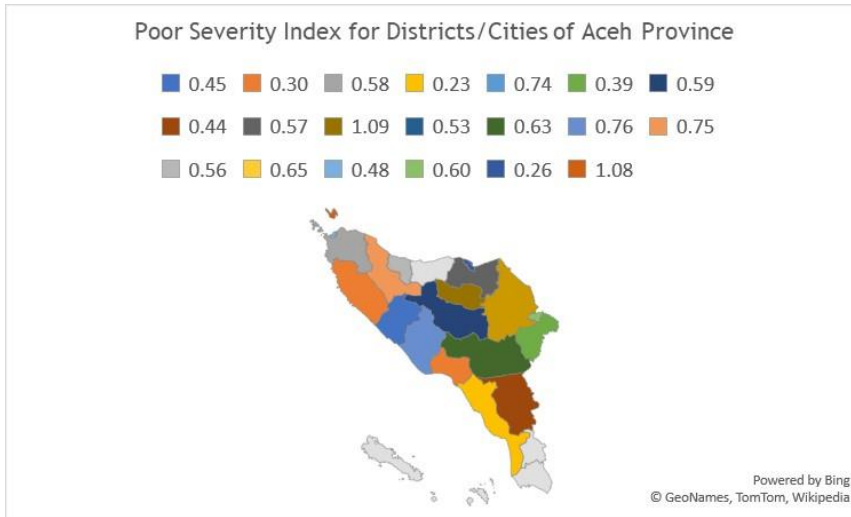


Figure 2. Index of Poor Severity of Districts/Cities of Aceh Province

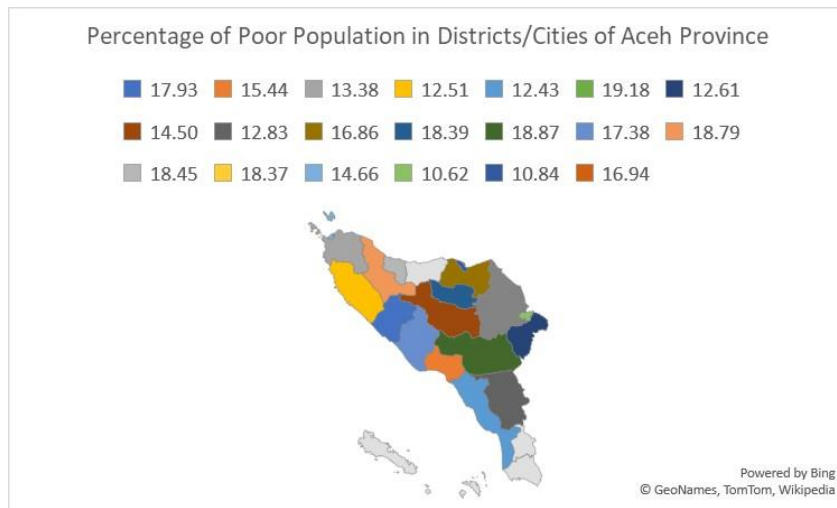


Figure 3. Percentage of Poor Population in Districts/Cities of Aceh Province

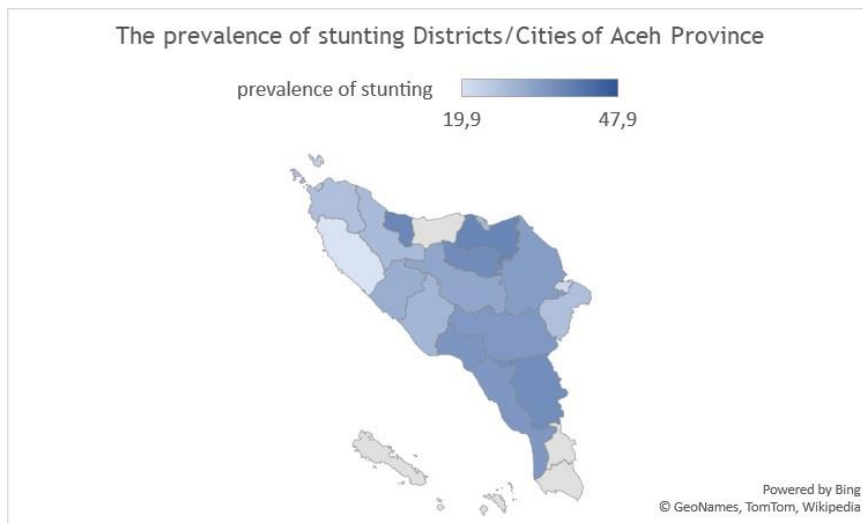


Figure 4. Percentage of prevalence of stunting in Districts/Cities of Aceh Province

Table 1: Districts in Cluster 1 Based on Poverty Percentage (P0) and Stunting Prevalence

District	Cluster	P0 (%)	Average P0 (%)	Stunting Prevalence	Stunting Prevalence Average (%)	SD Stunting Prevalence
Aceh Besar	1	13,38	12.95	27	27,75	5,17
Aceh Jaya	1	12,51		19,9		
Aceh Selatan	1	12,43		34,8		
Aceh Tamiang	1	12,61		27		
Aceh Tengah	1	14,50		32		
Aceh Tenggara	1	12,83		36,7		
Biruen	1	12,51		23,4		
Banda Aceh	1	14,66		25,1		
Langsa	1	10,62		22,1		
Sabang	1	14,66		23,4		
Aceh Timur	1	13,91		33,6		
Lhokseumawe	1	10,84		28,1		
Aceh Barat	2	17,93	14,09	30,4	28,43	8,11
Aceh Barat Daya	2	15,44		25,2		
Aceh Utara	2	16,86		38,3		
Nagan Raya	2	17,38		28,8		
Subussalam	2	16,94		47,9		
Singkil	3	19,18	18,67	34	34,24	3,53
Bener Meriah	3	18,39		37		
Gayo Lues	3	18,87		34,6		
Pidie	3	18,79		27,8		
Pidie Jaya	3	18,45		37,8		
Simeulu	3	18,37		37,2		

Table 2: Correlation of Poverty Percentage (P0) and Stunting Prevalence

		% Kemiskinan	% Stunting
% Poverty	Pearson Correlation	1	0.519*
	Sig. (2-tailed)		0.011
	N	23	23
% Stunting Prevalence	Pearson Correlation	0.519*	1
	Sig. (2-tailed)	0.011	
	N	23	23

DISCUSSION

Based on the results of the analysis, it can be concluded that cluster 1 is the district group with the lowest poverty rate, cluster 2 is the district group with moderate poverty rates and cluster 3 is the district group with the highest poverty rate. There is a relationship between poverty and stunting rates. Poverty can affect the availability and accessibility of adequate food, access to health services, sanitation, education, and other factors that play a role in the growth and development of children. Based on the results of the analysis, it can be concluded that cluster 1 is the district group with the lowest poverty rate, cluster 2 is the district group with moderate poverty rates and cluster 3 is the district group with the highest poverty rate. There is a relationship between poverty and stunting rates. Poverty can affect the availability and accessibility of adequate food, access to health services, sanitation, education, and other factors that play a role in the growth and development of

children The average percentage value of poor people is 13.14% with an average percentage prevalence of stunting of 25.41% with a standard deviation of 5.4 in District 1, the average percentage value of poor people is 13.14% with an average percentage prevalence stunting is 25.41% with a standard deviation of 5.4 in cluster 2 districts, and the average percentage of poor people in cluster 3 is 18.67% with an average percentage prevalence of stunting of 34.24% with a standard deviation of 3.52. The results of the analysis of the 3 clusters show that there is a significant relationship between poverty and the prevalence of stunting in the three clusters. Lower poverty rates tend to be associated with lower stunting rates, while higher poverty rates tend to be associated with higher stunting rates. To reduce stunting, it is important to comprehensively address poverty and related factors within each cluster.

The government continues to strive to eradicate poverty in Indonesia, by running programs designed to overcome poverty. The following are several government programs in overcoming poverty IN Indonesia ¹⁶: 1) Regular social assistance, such as the Family Hope Program and Staple Food Cards, 2). Special social assistance, such as Village Fund Cash Direct Assistance (BLT DD), Cash Social Assistance, Presidential Social Assistance, regular social assistance Top Up. 3). Provision of National Health Insurance Contribution Assistance. 4). Social assistance and rehabilitation for groups with special needs such as the elderly, children and persons with disabilities 5). Increasing access to work, through the laborIntensiveprogram, individual/group assistance, as well as the provision of facilities and infrastructure. 6). Increasing the capacity of human resources, through vocational and training programs. 7). Increasing access to productive assets, access to capital loans, and access to land use. 8). Assistance and strengthening of entrepreneurship, through increasing access to finance and markets as well as mentoring and strengthening entrepreneurship. 9). Development and guarantee of ultra micro and micro business sustainability. 10). Fulfillment of basic services, such as increasing access to education services and infrastructure, health services and infrastructure, and proper drinking water sanitation infrastructure. 11). Increasing connectivity between regions, such as the development and improvement of transportation facilities and the development of road infrastructure.

The table 2 shows that between the percentage prevalence of stunting and the percentage of the poverty rate, there is a correlation coefficient (r) of 0.519 with a significance of 0.011. This means that there is a positive correlation between the percentage of stunting prevalence and the percentage of poverty with relationship and the correlation is significant because $p < 0.05$ (0.011 < 0.05).

According to a study by Aryastami et al, there is a relationship between socioeconomic status and the prevalence of stunting in Indonesia ¹⁴. These findings strengthen the general hypothesis that poverty causes low birth weight and stunting. Stunting, a condition in which children have low height for their age, is a significant consequence of poverty and malnutrition ¹⁷⁻¹⁹. In Indonesia, poverty is the main factor causing the prevalence of stunting in children under five ^{8,9}. According to data from September 2019, Indonesia has around 24.79 million poor people, which is about 10% of the country's population ^{10,11}. Children from low-income families are more likely to be stunted than those from higher economic backgrounds, as noted in a study which found such children were 4.13 times more likely to be stunted. ²⁰

This highlights the urgent need for poverty

alleviation programs to effectively address stunting among Indonesian children. ^{8,12,13}. Additional Factors Causing Stunting Apart from poverty, other risk factors must be considered in preventing stunting in children under five in Indonesia. ^{8,20,21}. This research has anticipated for the biases by using method analysis data of Central Bureau of Statistics and SSGI. The limitation of this research is that only using secondary data and analysis descriptively about poor population and stunting prevalence, to this research we need do the retrospective research to identify if the poor population has the stunting children.

CONCLUSION

From the results of the analysis, it is known that there are still many districts in Aceh province that have a high index of depth, severity and percentage of poor people. Cluster hierarchical analysis using poverty percentage indicators classifies districts in Aceh Province into 3 groups. The district group has a low percentage of poor (cluster 1), the district group is medium (cluster 2) and the district group has the highest poverty (cluster 3). Cluster analysis of the poverty rate with the prevalence of stunting shows that a lower poverty percentage tends to be associated with a lower stunting rate, while a higher poverty rate tends to be associated with a higher stunting rate. The government needs to take real steps to overcome the problem of poverty and stunting in Indonesia. By focusing on areas with a high prevalence of stunting and involving various sectors, it is hoped that the government can achieve its goal of improving the quality of life of the Indonesian people.

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Conflict of interest

The authors declare no potential conflict of interest.

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