

# Introducing The Issues of Social Protection During Pandemic Covid-19 to Reduce Stunting in Indonesia

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**Abstract** The COVID-19 is a short-term international emergency with long-term effects. The potential impact of the COVID-19 pandemic on household welfare in Indonesia can be measured through three channels, namely: the transmission mechanism of health and socio-economic impacts on the population; price pathways that may affect the availability of key commodities, and human resource pathways in the long term. One of the health impacts of transmission to children can be seen by the prevalence of stunting. Stunting is one of the three things that affect the growth of children and more broadly as an indicator of malnutrition problems. A social protection approach for reducing stunting as a result of the pandemic can be carried out by focusing on interventions in the health sector for children under five and pregnant women. Nutritional intervention and complete vaccination are urgently needed in overcoming the long-term impact of family income shock during a pandemic.

**Keywords:** social protection, covid-19, stunting

## 1 Introduction

The pandemic of Coronavirus Disease 2019 (COVID-19) has had a significant impact on the health, economy and socio-cultural fields of global society. On March 1, 2020, the World Health Organization (WHO) declared that COVID-19 is a short-term international emergency with long-term effects that are difficult to resolve[1]. The impact of COVID-19 on household welfare can be measured through three channels, namely: the transmission mechanism of health and socio-

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economic impacts on the population; price pathways that may affect the availability of key commodities, and human resource pathways in the long term.

The Indonesian government monitors the impact of COVID-19 by making observations, namely: social media platforms, the socioeconomic impact of COVID-19 on households and the impact on business through survey instruments in May, June, August and November in 2020. The survey results emphasize food security, social protection, health, education and digital transactions. Households have a strategy to deal with economic shocks (coping strategy). Community groups who are at high risk of losing their income are called vulnerable groups[2]. This poor vulnerable group is a priority in addition to the main group below the poverty line (poverty line). Therefore, the right policy response will determine the sustainability and success of this group's coping strategy. Social protection is very much needed for people affected by an economic shock such as in the case of the COVID-19 pandemic. Theoretical concepts to the implementation of practice become an urgent need in reducing the number of poor vulnerable groups who are around the poverty line. There are at least three main things that become serious challenges in the implementation of social protection; targeting accuracy, benefit accuracy and disbursement mechanism[3].

Income and consumption of poor and vulnerable families who have family member's children will be reduced due to insufficient savings. The latest research that by United Nations University-World Institute for Development Economics Research (UNU-WIDER) stated that the economic downturn due to the pandemic could increase the world's poverty level to half a billion people or 8 percent of the world's population.16 Bappenas projections suggest that the probability Indonesia's population fell into poverty rose to 55 percent, with about 27 percent of candidates the middle class is expected to experience greater income insecurity worrying.

Indonesia was previously an example of a country with “three burdens of malnutrition”, far before the COVID-19 pandemic. Indonesia has 7 million children who are stunted. This condition makes Indonesia the fifth country in the world with stunting toddlers the most. More than 2 million children are underweight toddlers (underweight proportional to height) and another 2 million children are overweight underweight or obese. Almost half of the total pregnant women are anemic because of the food consumed does not contain enough vitamins and minerals (micronutrients) required. Indonesia faces complex challenges due to these three burdens which likely to worsen due to the COVID-19 pandemic. Children can experience malnutrition due to various causes (direct causes, pre-existing, and tree). The three most common direct causes of malnutrition are: (i) poor breastfeeding practices inadequate and poor diet, plus inappropriate parenting practices optimal; (ii) inadequate nutrition and care for pregnant women and women; and (iii) the high number of infectious diseases mainly due to the environment in which they live unsanitary and inadequate access to poor health services adequate. These factors are compounded by widespread poverty, unemployment, and low levels of education[4].

There are several issues that pose challenges for Indonesia's development, namely the prevalence of stunting in Indonesia is the highest in ASEAN where 1 in 3 children under the age of 5 years is detected as stunting. Based on the 2020 Indonesia SDGs Roadmap, Indonesian children under the age of 5 years experienced stunting with a prevalence of 30.8% in 2018. Children under 5 years of age are considered stunted when their height is more than two standard deviations below the international reference in the median age. Stunting is one of the three things that affect the growth of children and more broadly as an indicator of malnutrition problems. The indicators of chronic nutritional deficiency are neglected children, stunting and underweight[5]. Stunting at the age of

toddlers is associated with lower cognitive, motoric and socio-emotional development. Children who are stunted will not reach their potential growth and will still be stunted in their teens and adults.

Stunting is the result of low quality consumption in the long term that is chronic in nature and is combined with rates of illness, infectious disease and environmental problems. Parents who are more educated are thought to have more protective abilities for their children than caregivers of less educated children. In some countries, maternal literacy of mothers who have formal education and complete primary school is associated with a reduced risk of stunting in children [6]. This study was conducted by taking data from Indonesia and Bangladesh.

Stunting reflects a variety of environmental conditions that affect a child's growth including conditions that cause intrauterine growth restriction, household socioeconomic conditions and parental education levels, inadequate maternal and child nutrition and frequent infections.

Analysis of inequality in child malnutrition can illustrate how it relates to household income, urban-rural disparities as well as regional differences. Stunting is a long-term accumulation of malnutrition. If the necessary efforts are not carried out immediately, the long-term impact on the level of nutrition can increase the number of stunting and overweight toddlers body weight and obesity in all age groups. Long-term impact of the COVID-19 crisis include a sharp increase in the prevalence of stunting and an increase in the prevalence of overweight body weight and obesity due to limited physical activity and increased food consumption processed continuously that contain high levels of sugar, salt, and fat.

The prevalence of stunting and malnutrition which is getting worse due to this pandemic has become a challenge for the government. The government's ability will be questioned to overcome the problem of community powerlessness. The government is obliged to carry out its function to ensure the welfare of the community by formulating policies to help the poor and vulnerable groups affected by the pandemic. So an appropriate form of social protection is needed. The social protection program is one of the hopes for accelerating economic recovery in the conditions of the COVID-19 pandemic. Increasing consumption through social assistance is expected to accelerate economic recovery through the demand side.

Indonesia grapples with a triple burden of malnutrition – growing levels of obesity on the one hand, and on the other, chronic and acute malnutrition that affect more than nine million children under the age of five. In 2020, COVID-19 increased food insecurity and aggravated existing vulnerabilities among children – including micronutrient deficiencies, undernutrition and wasting – making it vital that nutrition services continued throughout the pandemic. To address this, UNICEF supported the first national survey on the continuity of essential nutrition services during COVID-19. The survey found that provincial and district health authorities had to shift their nutrition budget and human resources to support the COVID-19 response, and that more than a quarter of primary health centres had only delivered half or less nutrition services during the year. The socio-economic impact of the pandemic is severe and puts past progress at risk. The government has largely been able to mitigate the impact on child poverty through expanded social protection programs, which are expected to continue in 2021. Increased investments in the delivery of health and social services will be needed for the recovery. An opportunity for recovery and growth is Indonesia's 'demographic dividend'. Two-thirds of Indonesia's population are 15–64 years old and this large productive-age population can be a powerful engine for development[7].

## **2 Literature review**

Social protection is defined as a public policy taken in response to the level of vulnerability, risk, and deficiency, which is considered socially unacceptable in a particular government and society[8]. In the 1990s, studies on social protection focused on the scope of food, employment and the elderly. In a subsequent development, since the entry into force of the Millennium Development Goals (MDGs) which ended in 2015, social protection has focused on alleviating extreme poverty[9]. Social protection in the form of cash transfers, both unconditional cash transfers and conditional cash transfers in various developing countries does not show a significant impact on the ability of the poorest groups to improve their lives by shifting to a better class[10]. Social protection has grown rapidly in developing countries in the last 20 years. However, being sustainable does not have an impact on reducing poverty. Some of the reasons include political will, low capacity for implementation, neglect of the poor and social stigma associated with the targeted program.

The main objective of this approach is to assess the poverty impact of a social policy compared to measuring poverty before and after policy interventions. Transfer policy, which is carried out by comparison based on the observed gross income distribution by subtracting the transfers received by households. This is called the computational approach. In practice, measuring aggregate poverty is usually a population-weighted average of individual measures. The most widely used is the headcount index, the proportion of the population below the poverty line. High scales will make people poorer. Social protection refers to policies aimed at preventing and reducing poverty, vulnerability and social exclusion throughout the life cycle. Social protection systems often provide benefits to individuals or households to ensure income security and access to health care.

Measures such as cash benefits, old-age pensions, in-kind transfers and disability benefits play an important role in mitigating the impact of the global financial crisis among the most vulnerable, while serving as macroeconomic stabilizers and enabling people to overcome social exclusion and poverty in both developed and developing countries. Social protection can also stimulate demand and increase consumption, thereby contributing to economic growth. During a recession, social protection spending can help revive the economy and stimulate employment. Social protection instruments are generally classified into three categories: 1) social assistance; 2) social insurance; and 3) labor market programs [11]. The occurrence of a global crisis such as this pandemic has a very heavy impact on life, especially for women and children.

Studies of poverty in children have begun to be carried out in relation to long-term consequences during life, and of course also because it is different from poverty in adults. Various perspectives that continue to develop, state that childhood poverty (childhood poverty) and deprivation are interlinked. Therefore, how many indicators of deprivation experienced by children will determine the depth of deprivation experienced. Many studies on multidimensional deprivation in children have been carried out both between countries and cases in a particular country, however, research conducted specifically in Indonesia has not been widely carried out. The adoption of a multidimensional approach to deprivation requires an understanding of the interactions between the different dimensions[12].

A study on the impact of access to basic infrastructure (water, sanitation and electricity) on the Infant Mortality Rate (IMR) under five Child Mortality Rate (U5MR) and the incidence of stunting. The assumption used by the Fay,Leipziger, Wodon,Yepes (FLWY) model is the assumption about functional forms and the implicit assumption of this model that regressors, including infrastructure, are exogenous. The findings of this model:

1. Better access to infrastructure has a major impact on reducing infant and child mortality rates and reducing the incidence of stunting

2. There is a complementary relationship between basic infrastructure and health care.

The FLWY estimation method assumes that the regressors, including the basic infrastructure, are exogenous. Alternative method, to test the same hypothesis with the same data but the assumptions used are weak. What if female schooling is included in the model? The FLWY model follows the formula:

$$M_{iq} = \alpha^M + \beta^M S_{iq} + \gamma^M IN_{iq} + \delta^M H_{iq} + \pi^M X_i + \mu_{iq}^M \quad (1)$$

$$S_{iq} = \alpha^S + \gamma^S IN_{iq} + \delta^S H_{iq} + \pi^S X_i + \mu_{iq}^S \quad (2)$$

$m_{iq}$  is the child mortality (IMR or U5MR) for quantile q in country i, and is the incidence of stunting. is the Infrastructure Index. is the Health care index and is a vector of country-level control variables (including GDP, urbanization rate and female literacy rate). FLWY tests the relationship between IN and H, where the error term d where k = M,S which has three components:

$$\mu_{iq}^k = v_q^k + \eta_i^k + \varepsilon_{iq}^k \quad (3)$$

The data used for the analysis is DHS: Cross-country data of 39 countries with 5 asset quintiles with 195 observations each. To estimate child mortality and stunting, the methods used are: nested random effects estimator. The linear FLWY model finds that urbanization reduces mortality but increases stunting. However, in the log specification, there is no urbanization effect pattern. The problem of endogeneity bias arises from the correlation effect which is not visible at the country level. The estimator allows the country effect to be correlated with the regressor cannot identify the effect of that variable. Therefore, an alternative estimator is needed, namely female schooling. FLWY was unable to find complementary aspects of the impact of basic infrastructure on children's health. Regression with interaction effects between health and infrastructure for U5MR and stunting, does not match with FLWY [13].

### 3 Methodology and Data Analysis

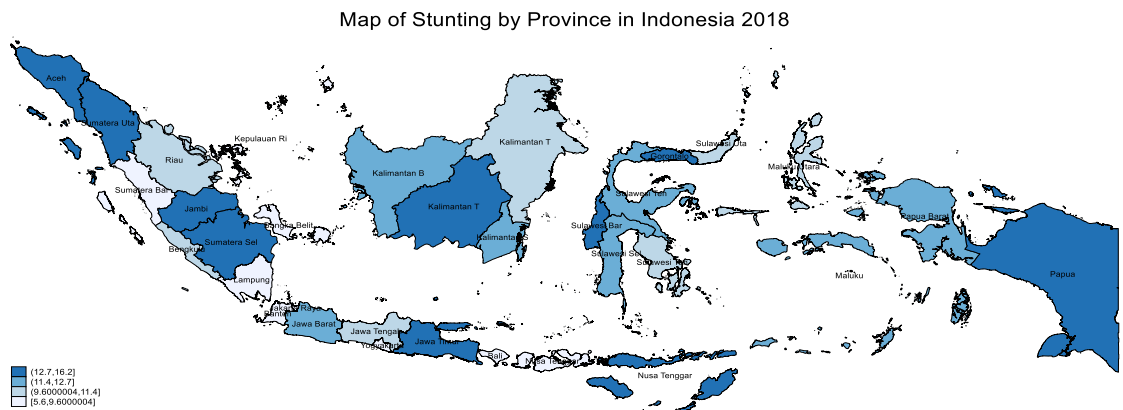
The data used in the analysis is data obtained from the Central Statistics Agency (BPS) in 2015-2018 for all provinces. The dependent variable in this study is the percentage of children under the age of two years being very short. While the independent variables in this analysis are the percentage of urban districts that have immunized up to 80%, the percentage of years of schooling, and the percentage of the population aged 15 years or older who smoke. The analysis was carried out using a panel data regression model. Panel regression models that are widely known are fixed effects (FE) and random effects (RE). Fixed effects are widely regarded as a more reliable tool for estimating the ceteris paribus effect[14] The basic model in this research is:

$$Stunt_{it} = \beta_0 + \beta_1 Vac_{it} + \beta_2 yschool_{it} + \beta_3 smoke_{it} + e_{it} \quad (4)$$

where stunting is the percent of children under two years who are very short, immunity is the percent of districts/cities that complete immunization at least 80% and smoke is the percent of the population aged 15 years or over who smokes. Testing whether to choose the FE or RE model is done with the Hausman test. The large value of the Hausman test statistic results in the rejection of the null hypothesis that individual-specific effects are not correlated with the regressor and the conclusion that FE still exists. It may still be possible to avoid using the FE model. If the regression is correlated with the individual-specific effects caused by omitting the variable, then it is possible to add further regressors, either time-varying or time-invariant (Cameron and Triverdi, 2005).

#### 4 Research Result and discussion

The prevalence of stunting, which is indicated by the percentage of very short toddlers, is still quite high, especially in the Eastern Region of Indonesia. Based on Figure 1, some provinces are detected to have a higher percentage than other provinces in terms of children under two years being very short. For example, the provinces of Aceh, North Sumatra, Jambi and South Sumatra have higher percentages than other provinces on the island of Sumatra. Likewise in several other areas, such as in Java, East Java Province occupies the highest percentage.



**Fig. 1.** Percentage of Indonesian's Children Under 2 Years Old Experienced Stunting in 2018 by Province

The government has made various efforts in handling stunting. Despite the steady economic growth Indonesia recorded during the pre-COVID-19 period, the country still faces several critical issues in food and nutrition security. Although access to food has increased and malnutrition has continued to decline over the past few years, the nutritional status of Indonesians is still low by international standards. The success of stunting management in Indonesia is carried out by measuring the Stunting Handling Index. Table 1 describes the prevalence of stunting by Province.

**Table 1. Stunting Handling Index by Province in Indonesia 2019**

Province	2018	2019	Province	2018	2019
Aceh	58.36	61.95	Nusa Tenggara Barat	70.01	72.97
Sumatera Utara	55.90	58.56	Nusa Tenggara Timur	62.56	64.81
Sumatera Barat	61.88	63.97	Kalimantan Barat	55.36	56.46
Riau	57.95	60.04	Kalimantan Tengah	57.66	58.16
Jambi	61.26	61.03	Kalimantan Selatan	64.40	66.77
Sumatera Selatan	56.96	60.22	Kalimantan Timur	62.66	64.94
Bengkulu	59.41	60.41	Kalimantan Utara	62.63	64.04
Lampung	61.03	64.27	Sulawesi Utara	63.30	64.78
Kep. Bangka Belitung	61.73	60.68	Sulawesi Tengah	63.00	63.83
Kep. Riau	64.02	62.76	Sulawesi Selatan	65.01	66.21
Dki Jakarta	67.63	70.56	Sulawesi Tenggara	58.50	61.66
Jawa Barat	64.65	66.22	Gorontalo	64.94	69.48
Jawa Tengah	69.38	71.17	Sulawesi Barat	64.06	66.03
Di Yogyakarta	78.54	79.94	Maluku	47.35	50.91
Jawa Timur	68.25	70.69	Maluku Utara	52.46	53.42
Banten	62.13	64.32	Papua Barat	52.83	56.45
Bali	67.67	69.71	Papua	40.01	41.70
			Indonesia	63.92	66.08

Source: <https://www.bps.go.id/indicator/30/1949/1>

Each province has a different character in dealing with stunting cases. The stunting management policy will be closely related to regional development priorities as outlined in the central government's work plan and national development priorities. Nationally, every province has a stunting management index of more than 50 percent except for Papua. The regional aspect in stunting handling and deepening of stunting determinants in each region has not received a large portion. The description of the data is in accordance with the conditions in the field, although the availability of this macro data is not yet fully optimal, especially in updating or updating the database related to stunting. Thus, to utilize specifically at the household and individual levels is still very limited. As a first step to bridge the problem of this limitation, several variables selected in this analysis include the percentage of children under two years of age who are very short as the dependent variable, and the other three independent variables are the percentage of districts/cities that complete immunization at 80 percent, the average length of school which is an indicator of knowledge and smoking habits in response to possible health problems in passive smokers.

Model selection is done by Hausman test where obtained a probability (p-value) is less than 0.05 so that the selected model is fixed effects. Based on these results, all variables have a direction of influence that is in accordance with the theory, but not all of them are significant. This could be

caused by some unobserved variables in the model. In addition, things related to spatial characteristics can not be observed perfectly. The average years of schooling is a variable that can explain well the prevalence of stunting. Therefore. This research can be a potential in making further policies regarding stunting. Based on these findings, the government can consider how to improve the social protection system. The results of the panel regression model testing are as follows in table 2.

**Table 2. Regression Result**

	(1) fixed	(2) random
vac	-0.0105 (0.0157)	-0.0399*** (0.0120)
smoke	0.171 (0.157)	0.127 (0.0970)
yschool	12.60*** (2.308)	-0.603 (0.396)
_cons	-104.1*** (17.61)	13.82*** (4.650)
N	132	132
Prob	0,0000	0,0004

Standard errors in parentheses  
\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Based on the sign in front of the coefficient on the variable, years of schooling shows a positive sign. How can this happen? If we return to the data, there is no separation of years of schooling data based on role categories in the family, for example mother's years of schooling will have a different impact on father's years of schooling. Meanwhile, the other two independent variables, namely the fulfilment of immunization up to 80% and the percentage of people smoking over the age of 15 years showed a direction that was in accordance with the theory although it was not significant. Why does this happen? once again that the issue of data will determine the outcome of the analysis. Thus, the community level data was not accurate enough to explain.

## 5 Implication and Suggestion on Future Research

This finding indicates a limitation of macro data for analysis of household and individual characteristics. So that a micro data analysis approach is needed for further research. Although theoretically and empirically it can be tested and proven, however, it has not been able to explain the characteristics of households or individuals. Therefore, it is necessary to expand the analysis using micro data such as survey data to be able to capture changes over time with the same household. This will enrich the analysis, especially the characteristics of households whose children are stunted or malnourished.

Analysis of stunting with an assessment of 13 factors that are thought to have a correlation with stunting, namely: complementary feeding, duration of breastfeeding, frequency of feeding, variety



of food, maternal weight, body mass index (BMI), education, age at marriage, vaccinations for children, access to drinking water sources and sanitation facilities, indoor air quality and household wealth. By using the mutually adjusted logistic regression model method for 18,586 children aged 6-23 months, several variables proved to have a strong influence on stunting, namely maternal weight, family wealth, maternal BMI, lack of variety in food, and maternal education. These findings indicate the need for a comprehensive strategy related to the development of socio-economic conditions as well as specific programs for investment in nutrition for children in South Asia[15].

The special issue that emerges from this research is that the education variable is one of the main factors in reducing poverty and stunting prevalence. Years of schooling mothers based on empirical studies are able to reduce stunting cases. Because, with good knowledge, mothers will realize the importance of fulfilling nutrition for their children. In addition, health services, in this case immunization, are important to increase children's immune system, in order to avoid various diseases. Healthy children will grow well and have better intelligence.

The variable that represents the percent of people who smoke, illustrates that smoking activity will affect the increase in stunting cases, although statistically it has not been fully proven. Thus, further studies are needed with a focus on longitudinal data at the individual and household level. government intervention is urgently needed to deal with stunting. Based on the issues that emerged in this study, a multiple intervention approach should be used in dealing with stunting cases in children. This approach requires great effort, especially to formulate comprehensive policies across sectors, including health, education, and other indicators of household welfare. More concrete social protection efforts are needed in accordance with the diverse socio-cultural conditions of the community. This research has many weaknesses, although it finds important issues related to stunting reduction efforts. At least provide direction on how best to study using macro data that is not strong enough to explain the problem of stunting. Therefore, further studies are needed to obtain empirical or methodological progress that is very useful for formulating policies. What needs to be underlined is that the implementation of SDGs in Indonesia is based on Presidential Regulation No. 59/2017. The roadmap that has been prepared is a blue print for the implementation of the SDGs. In the document, it is stated that in 2018 30.08% of Indonesian children under the age of 5 were stunted. This figure places Indonesia as a country that has a high prevalence of stunting according to the World Health Organization (WHO) classification, and the highest in Southeast Asia based on the FAO Regional Overview of Food Security and Nutrition in 2018.

A multisector approach is urgently needed to accelerate stunting reduction in Indonesia in delivering integrated nutrition interventions at a critical period of 1000 days from the start of life. These interventions include adequate nutrition for pregnant women and children under 2 years of age, exclusive breastfeeding and complementary feeding, growth monitoring, access to good sanitation and drinking water, early childhood development, and promoting parenting practices. The projection prepared by the Indonesian government is that in 2030 the prevalence of stunting is 22.37% and if followed by an intervention scenario, it is estimated that the prevalence of stunting is 10.0%. This achievement projection is a challenge for the government. Therefore, a comprehensive study is needed through cross-disciplinary studies related to both from the perspective of health, economics and social sciences.

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