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Sekolah Pascasarjana Universitas Airlangga
Jalan Airlangga No. 4-6, Surabaya - 60286
Telp. : (031) 5041566, 5041536
Email : adj@journal.unair.ac.id
Website : https://e-journal.unair.ac.id/ADJ

THE EFFECT OF THE GREAT PARENTS SCHOOL (SOTH) PROGRAM ON STUNTING

Anis Kartikawati, Rudi Purwono
If the author's name is more than one, the author's email address is given an asterisk (*).
Lamongan Government Agency, Postgraduate School of Airlangga University
Jl. KH. Ahmad Dahlan, Kauman, Sidoharjo, Lamongan District, Lamongan Regency, East Java 62214
* Email: aniskartikawati@lamongankab.go.id ; anis.kartikawati-2021@pasca.unair.ac.id ; rudipurwono@feb.unair.ac.id

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***ABSTRACT* (TNR Bold 10, 1 cm from left and right margin)**
Stunting is one of the major health problems faced by developing countries, particularly Indonesia. Various programs established to reduce stunting. School for Great Parents (SOTH) is a new program which targets parents/caretakers on stunting alleviation. This study aims to analyze the effect of SOTH on stunting in Lamongan Regency, Indonesia. We utilize panel data analysis at village level. We found that SOTH did not affect stunting directly. On the other hand, the multiplier effect of this program could potentially increase the understanding of child fostering. Therefore, promoting this program is necessary to complement the existing stunting alleviation program in Indonesia

Keywords *: Data Panel, Great Parents School, Stunting*

INTRODUCTION

Stunting is one of the major health issues faced by the entire world. *The World Health Organization, United Nations Children's Fund (UNICEF) & World Bank* (2021) reported that in 2020 there were 149.2 million children under five years old who suffered from stunting worldwide. Most children under five years old who suffer from stunting are in low and middle income countries. Indonesia is also one of the countries with high cases of stunting. Data from the Ministry of Health of the Republic of Indonesia (2022) shows that the average percentage of stunting in children under five years old in 2016 - 2020 was 26 percent. In addition, data from the Ministry of Health of the Republic of Indonesia (2022) also shows that in 2018 the percentage of stunting in Indonesia reached 30.8 percent. This can be interpreted that 1 in 4 children under five years old in Indonesia suffers from stunting.

Children who suffer from stunting will experience obstacles in achieving optimal height growth and cognitive development. This causes the child to have limitations in achieving adequate education, resulting in lower income and participation in economic activities than normal children (Amiri & Linden, 2016; McGovern et al., 2017; Nasser et al., 2022) . In addition, children who suffer from stunting have lower levels of health in the future and a higher risk of death (De Sanctis et al., 2021; Prendergast & Humphrey, 2014) . Thus, stunting has a negative impact on the welfare of a country.

Stunting is caused by chronic nutritional deficiencies in children. This is related to the low quality of food provided, the low quality of maternal health, and the lack of breastfeeding (Beal et al., 2018; De Sanctis et al., 2021) . Tiwari et al. (2014) for a study in Nepal reported that food insecurity and lack of breastfeeding were associated with an increased chance of children under five years of age suffering from stunting. Torlesse et al. (2016) for a study in Indonesia reported that households with minimal diet and food variety and low breastfeeding were associated with a high chance of suffering from stunting in children aged 0-23 months. Rachmi et al. (2016) for a study in Indonesia reported that children who did not receive breast milk for six months had a 3.16-fold greater chance of suffering from stunting. Mardani et al. (2022) reported that breastfeeding can provide health benefits and reduce the risk of stunting in children under five years of age in several developing countries.

Households with malnourished children often have low socioeconomic conditions. This causes the household to be unable to meet the needs of the child, so that the risk of stunting increases (Best et al., 2008; Chowdhury et al., 2020; Fernald et al., 2012; Ramli et al., 2009) . On the other hand, malnutrition in children is also caused by low parental understanding of child care patterns. This is related to the level of education and ability to care for the mother and father as parents. Parents with higher education have better capacity in making decisions related to fulfilling children's nutrition (Imai et al., 2014; Menon et al., 2018) . Mondal et al. (2014) for a study in Bangladesh reported that the level of father's education has a positive effect on child immunization, while the level of mother's education has a positive effect on child height. Pillai & Maleku (2019) for a study in India reported that mothers with higher education were associated with reduced stunting. Laksono et al. (2021) for a study in Indonesia reported that mothers with secondary education and above were 1.17 times more likely to provide exclusive breastfeeding, while mothers with tertiary education were 1.23 times more likely to provide exclusive breastfeeding.

The National Population and Family Planning Agency (BKKBN) has a Toddler Family Development (BKB) program that aims to improve knowledge and skills in parenting. This program is in line with the "National Strategy for Accelerating Stunting Prevention 2018 - 2024" as an effort to prioritize stunting prevention in Indonesia. Furthermore, BKKBN introduced the Great Parents School (SOTH) program which began in 2021 as an intensification of BKB. SOTH focuses on fostering parents in improving nutritional fulfillment skills in children, clean and healthy living behaviors (PHBS), character formation in children, and so on (National Population and Family Planning Agency (BKKBN), 2020) . Lamongan Regency was chosen as *a pilot project* for SOTH even though the prevalence of stunting is below the national average. Lamongan Regency was given the trust to run this program.

This study aims to estimate the effect of the Sekolah Orang Tua Hebat (SOTH) program on stunting in Lamongan Regency, East Java, Indonesia. Various programs similar to SOTH have been carried out in various countries in the world. On the other hand, some of these programs do not have a direct impact on reducing stunting. Christian et al. (2020) conducted a study aimed at evaluating the impact of a comprehensive nutrition program on the health of children aged 6-23 years in rural Malawi. The results of this study were that the program did not have a significant impact on increasing the average height of children. However, this program had a significant positive impact on dietary diversification scores and upper arm size and a significant negative impact on malaria incidence. Elisaria et al. (2021) conducted a study aimed at evaluating the impact of integrated nutrition interventions on stunting in Tanzania.

The results of this study were that the program did not have a significant impact on reducing stunting. Hurley et al. (2021) conducted a study aimed at evaluating the longitudinal impact of a comprehensive nutrition program on reducing stunting in children aged 6-23 months in rural Malawi. The result of this study is that the program improves children's growth patterns. The structure of this study is as follows: 1) Introduction; 2) Method; 3) Results and Discussion; 4) Conclusion

METHOD

Place and time of research (TNW 12, initial letter of the first word capital, Bold)

This study utilizes secondary data obtained from the Lamongan District Health Office and the Central Statistics Agency (BPS). The Great Parents School (SOTH) program was implemented in 2021 and 2022 in several villages/sub-districts in Lamongan Regency. The villages/sub-districts that held SOTH in 2021 were Blajo in Kalitengah District, Jetis in Lamongan District, Beru in Sarirejo District, Randubener in Kembangbahu District, and Balungtawun in Sukodadi District. The villages/sub-districts that will hold SOTH in 2022 are Tunjungmekar in Kalitengah District, Sendangharjo in Brondong District, Banjarejo in Sukodadi District, Nguwok in Modo District, Jatidrojok in Kedungpring District, Karangwungu Lor in Laren District, Deket Kulon in Deket District, and Sidokumpul in Lamongan District.

Method

This study uses panel data analysis. Panel data or longitudinal data is data that has *cross-section* and *time series dimensions* , namely data that contains information about individuals, households, firms, districts that are the same across time (Baltagi, 2005; Gujarati & Porter, 2009; Wooldridge, 2013) . Panel data has advantages compared to *cross-section* and *time series data* , namely overcoming the problem of *omitted variable bias* due to heterogeneity in the data (Baltagi, 2005) . The estimation model in this study is as follows:

$$Y_{it} = \beta_0 + \beta_1 T_{it} + \gamma X_{it} + \varepsilon_{it}$$

Where *Y* is the stunting ratio of a village/sub-district. The stunting ratio variable is formed by dividing the number of toddlers suffering from stunting in by the number of toddlers in the village/sub-district. *T* is *a dummy variable* if the village/sub-district has a Great Parents School (SOTH) program. *X* are various control variables, namely *dummy* sources of drinking water and types of toilets, distance to the nearest health center, number of health workers, *dummy* urban areas and agricultural areas, *dummy* village head education, and population (in logarithm).

Table 1. Descriptive Statistics

	Mean/Prop.	SD	Min.	Max.
Stunting (%)	6.55	5.88	.00	57.14
D u m my Great Parents School (Yes = 1)	.01			
D u m my Safe Drinking Water (Yes = 1)	.85			
D u m my Proper Sanitation (Yes = 1)	.88			
Distance to Nearest Public Health Center	2.82	3.26	.00	16.40
Sum of Health Workers	3.61	5.97	.00	69.00
Dummy Urban (Yes = 1)	.13			
Dummy Agriculture (Yes = 1)	.95			
Du mmy Village Head Education (High School or Higher = 1)	.96			
Logarithm of Population	7.79	.57	5.66	9.88

Source: Author's estimation.

RESULTS AND DISCUSSION (TNW 12 BOLD, CAPITAL LETTERS)

Table 2. Estimated Results on Stunting (%)

VARIABLES	(1) OLS	(2) Fixed Effect	(3) Random Effect
Constant	14.48***	18.27	11.51***
	(3,258)	(11.33)	(3,654)
D u m my Great Parents School (Yes = 1)	0.0325	-0.958	-0.619
	(1,502)	(1,769)	(1,490)
Control	Yes	Yes	Yes
FE District	Yes	Yes	
Year FE	Yes	Yes	
Observations	948	948	948
R-squared	0.224	0.016	
Number of Village/Sub-district		474	474

Notes: ***, **, and * denote statistical significance at 0.01, 0.05, and 0.1 respectively. Control variables are dummy safe drinking water, dummy proper sanitation, distance to nearest public health center, sum of health workers, dummy urban, dummy agriculture, dummy village head education, and logarithm of population.
Source: Author's estimation.

Table 2 presents a comparison of the results of *Ordinary Least Square* (OLS), *Fixed Effect* (FE), and *Random Effect* (RE) estimates of the influence of the Great Parents School Program (SOTH) on the stunting ratio. In panel estimation, a test of the selection of analysis models is needed to determine the best estimation results. Gujarati & Porter (2009) stated that the *Ordinary Least Square* analysis technique on panel data has a weakness, namely that *the intercept* of each observation is considered the same, so it does not capture the variation of each sample. Thus, it is only necessary to test *the Fixed Effect* and *Random Effect* . To test *the Fixed Effect* and *Random Effect models* , the Hausman test is needed. The null hypothesis (H0) of the Hausman test is that individual characteristics are not correlated with the regressor. If H0 is not rejected , then both estimation techniques give equally good results, but *Random Effect* is more efficient. If H0 is rejected , then *Fixed Effect* gives better and more efficient results.

Table 3. Hausman Test Results

Chi square	2.73
Prob > Chi square	0.6036
α	5%

Source: Author's estimation.

Table 3 presents the results of the Hausman test. The results of the Hausman test indicate that H0 is not rejected . Thus, the results of *the Random Effect estimation* are more efficient and are therefore selected as the best model.

The estimation results show that the SOTH program has a negative effect on stunting, although not significant. The SOTH program is relatively new because it has only been running for two years in eight villages/sub-districts. This affects the estimation results. In addition, the

SOTH program does not directly affect stunting. This is because the main objective of this program is to improve parents' understanding of toddler care. These results are in line with the findings of Christian et al. (2020) and Elisaria et al. (2021) where the stunting alleviation program does not directly reduce the prevalence of stunting, but through increasing the understanding of parents/caregivers and improving parenting patterns.

The SOTH program also provides *a multiplier effect* where participants/parents will disseminate information about parenting patterns to the community. This can indirectly increase the probability of reducing stunting in the area. Thus, the SOTH program needs to be implemented massively and periodically.

CONCLUSION

This study analyzes the effect of the Sekolah Orang Tua Hebat (SOTH) program on stunting in Lamongan Regency, East Java Province. The estimation results indicate that this program has the potential to reduce stunting. Therefore, promoting this program massively and periodically is needed to increase the effectiveness of reducing stunting.

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Attachment

Sub-district with Village/Sub-district of Great Parents School Program