Factors Affecting Stunting, a Literature Review

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Abstract. Stunting is a condition of failure to thrive in children under five (babies under five years) resulting from chronic malnutrition so that the child is too short for his age. Children experience stunting as a result of malnutrition, especially during the first 1000 Days of Life (HPK). Stunting during the toddler years is generally not realized by the family and after 2 years it becomes visible. Stunting has the potential toslow down brain development and have long-term impacts in the form of mental retaldation and can eve result in delth. Nationally, it shows that the impact of stunting can hamper economic growth and reduce labor market productivity, resulting in aloss of 11 percent of GDP (Gross Domestic Products) and reducing the income of adult workers by upto 20 percent. Apart from that, stunting can also contribute to widening inequality, thereby reducing 10 percent of total lifetime income and also causing intergenerational provety. It is important to prevent stunting as early as possible to avoid long-term detrimental impacts. Therefore, the goverment's contribution in terms of spending to overcome stunting is really needed. This research analyzes the factors that influence stunting in Indonesia using descriptive analysis.

Keywords: Stunting, GDP, government expenditure on education and health

1 Introduction

Stunting is a major public health problem in Indonesia. Stunting is a severe problem because it is associated with a greater risk of illness and death, obesity and non-communicable diseases in the future, poor cognitive development and low productivity and income; in other words, stunting will affect the quality of human resources in the future (Paramashanti et al., 2016).

Stunting in children is caused by malnutrition, especially during the first 1000 Days of Life (HPK). Currently, the number of children under five in indonesia is around 22.4 milion. every year there are 5,2 Milion women in Indonesia who become pregnant and the average number of babies born each year is 4,9 milion. there out of ten toddlers in Indonesia are stunted or have a height lower than their age standard. The domino effect on toddlers who experience stunting is more complex. Apart from physical problems and cognitive development, stunted toddlers also have the potential to face other problems beyond that (Ministry of Health of the Republic of Indonesia, 2018).

Stunting at the age of toddlers, in general, is often not realized by families. After 2 years, it is only seen and impacts cognitive abilities and long-term productivity, which can even impact death (Oktarina & Sudiarti, 2014). Indonesia, compared to other countries, is included in the group with a relatively high stunting prevalence of 30 - 39

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per cent. Indonesia is a one of the countries that has a fairly high prevalence of stunting, rangking 5th in the world. Indonesia's position is only better than India, China, Nigeria and Pakistan (Trihono et al., 2015).

Based on Nutritional Status Monitiring (PSG) data, the prevalence of stunting has increased from 2016 to 2017. The prevalence of stunting in 2016 was 27.5 percent and increased in 2017, namely 29.6 percent. the prevalence of stunting in Indonesia tends to be static. The result of Basic Health Research (Riskendas) in 2007 showed that the prevalence of stunting in Indonesia was 36,8 percent. In 2010 there was a slight decrease, namely 35.6 percent. however, the prevalence of stunting increased again in 2013, namely 37.2 percent (Data and Information Center of the Indonesian Ministry of Health, 2018).

There have been no reports in Indonesia reporting trends in the prevalence of underweight, stunting and overweight in children aged 2.0-4.9 years, along with associated risk factors. A better understanding of the double burden of malnutrition in Indonesia, especially in early childhood, will help decision-making on potential strategies to address the problem (Rachmi et al., 2016).

Stunted children in Indonesia are not only experienced by poor and underprivileged households/families because stunting is also experienced by households or families that are not poor who are above 40 per cent of the level of social and economic welfare (TNP2K, 2017). Indonesia is ranked fifth in the world, with more than 7.6 million children whose growth is not optimal. Over one-third of children under five in Indonesia experience body growth that does not meet international standards for height versus age (USAID, 2010 & UNICEF, 2013).

Riskesdas data shows that the incidence of stunting in toddlers grew from 35.6 per cent in 2010 to 37.2 per cent in 2013. Some provinces that have stunting problems above the national prevalence with the highest to lowest prevalence order, namely East Nusa Tenggara, West Sulawesi, West Nusa Tenggara, North Sumatra, South Kalimantan, West Papua, South Sulawesi, Central Sulawesi, Lampung, and North Maluku (Balitbangkes 2010 &; Balitbangkes, 2013).

According to the World Bank (2006) in Repositioning Nutrition as Center for Development, the period of the First 1,000 Days of Life (HPK) is crucial for mothers and toddlers, so it is called the golden period or sensitive period, and the World Bank calls it the "Window of Opportunity". The results of several studies show that all problems of short, obese, and Non-Communicable Diseases (NCDs) begin in the process of fetal growth and development in the womb until the child is two years old. If the mother and fetus are malnourished, the growth and development process will be disrupted, resulting in abnormalities in the shape of the short body. However, gene factors in cells show the potential to grow normally (Barker, 2007).

The incidence of stunting in toddlers can cause Intelligence Quotient (IQ) disorders. Children suffering from severe malnutrition (stunting) have an average IQ score 11 points lower than normal children (UNICEF, 2005). Stunting also increases the risk of obesity and degenerative diseases. If the state of overweight and obesity is allowed to last a long time, the risk of degenerative disease events can increase (Anugraheni, 2012). In a longitudinal study of children in Brazil, Guatemala, India, the

Philippines, and South Africa on reduction in schooling, stunted children at the age of two will experience a delay in completing school for almost a year (Martorell et al., 2010; Adair et al., 2013).

Stunting can hinder economic growth and reduce labour market productivity, resulting in an 11 per cent loss of GDP (Gross et al.) and reducing adult income by up to 12 per cent. In addition, stunting can also contribute to widening inequality, reducing 10 per cent of total lifetime income and causing intergenerational poverty (Kusharisupeni, 2002). The World Bank (2016) states that stunting can cause economic losses of 2-3 per cent of Gross Domestic Product (GDP) per year in the long run. If Indonesia's GDP is Rp.13,000 trillion, it is estimated that potential losses due to stunting can reach Rp.260 trillion-390 trillion per year.

A meta-analysis of 45 longitudinal studies in the United States showed a significant association between high career success and salary in the work environment. A person with a height of six feet or 1.82 m earns an average salary over a 30-year career of about $166,000 higher than someone with a height of five feet five inches or 1.55 m (Judge &Cable, 2004). This shows that a person's height affects the type of work, income, and work productivity. Therefore, government contribution in terms of expenditure is urgently needed. Government spending reflects government policy; if the government establishes a policy to buy goods and services, then government spending reflects the costs that the government must incur in implementing the policy (Sudartomo, 2014).

Government policy for regional spending is prioritized to improve human quality through community services. Based on Law No. 32 of 2004 concerning Regional Government, regional spending is prioritized to protect and improve the quality of life of the community to fulfil regional obligations, which are manifested in the form of improving essential services, education, providing health service facilities, social facilities and decent public facilities and developing social security by considering the analysis of spending standards, price standards, performance benchmarks and minimum service standards which are determined by laws and regulations (Kuncoro, 2013).

2 Literature Review

2.1 Stunting

Children with stunting must have short stature, but not all children with short stature are stunted sufferers. Stunting is a condition of failure to thrive in children under five years old due to chronic malnutrition, so children are too short for their age. Malnutrition occurs when the baby is in the womb and in the early days after the baby is born (the first 1000 days of life), but stunting conditions are only clearly visible after the baby is 2 years old. Short (stunted) and very short (severely stunted) toddlers are toddlers with body length (PB / U) or height (TB / U) according to their age lower than the standard WHOMGRS (Multicentre et al. Study). At the same time, the definition of stunting according to the Ministry of Health (Kemenkes) is a child under five with a z-

score value of less than -2SD / standard deviation (stunted) and less than -3SD (severely stunted), (TNP2K, 2017).

In 2015-2017, stunting showed the highest prevalence compared to other nutritional problems (Atmarita, et al., 2018). Stunting is caused by multi-dimensional factors and is also caused by poor nutrition experienced by pregnant women and children under five, there fore treatment is needed to reduce the prevalence of stunting. Intervention can be carried out in the First 1.000 Days of Life (HPK) of children under five.

The factors that cause stunting are poor parenting patterns, especially exclusive breastfeeding, this is due to the low level of parental knowledge, poor environmental conditions such as access to sanitation and clean water, low access to health services and the family's economic level. Stunting can cause long-term impacts and short-term impacts include body posture that is not optimal asan adult (shorter than in general), increased risk of obesity and other diseases, decreased reproductive health, less than optimal learning capacity and reformance during school and less than optimal productivity and work capacity. Meanwhile, the short-term impact can cause dealth, suboptimal cognitive, motor and verbal development in children and increased health costs (Atmarita, et al., 2018).

2.2 GDP (Gross et al.)

According to Sukirno (2010: 34), Gross Domestic Product (GDP) is the overall value of all goods and services produced within the region in a certain period (usually per year). Gross Domestic Product calculates the output of an economy regardless of who owns the factors of production. GDP can indicate a country's economic growth, calculated based on the total value added produced by all production activities and calculated with the circular flow concept. The boundary of the GDP calculation area is one country (Domestic Economy). The following is a theory of economic growth according to Boediono, 1999 which is as follows:

2.2.1 Classical Theory

David Ricardo expresses his views on economic development in his book *The Principles Of Political Economy And Taxation*. David revealed that labour, capital fertilization and foreign trade are essential factors in economic growth. Like modern economists, Ricardo's theory emphasizes saving for capital formation. Compared to taxes, David Ricardo prefers to cultivate capital through savings. Savings can be obtained by saving expenses; producing more can increase profits and reduce the price of goods.

2.2.2 Harodd-Domar theory

The Harodd-Domar growth model is built on the experience of developed countries. Harodd-Domar plays a crucial role in investment in economic growth due to the dual nature of investment. First, by creating income; second, by increasing agricultural production capacity by increasing capital stock; therefore, as long as net investment continues, real income and output will always increase. Harodd-Domar developed a

Keynesian analysis emphasizing the need for investment in economic growth. Every business must save a certain proportion of national income to increase the capital stock used in new investments (Suryana, 2000).

2.3 Government Expenditure on Education

Baldacci et al. stated, "But a greater share of investment in human capital should be channelled toward primary education." The problem that the government must further consider is the uneven distribution of education. On the other hand, the relationship between human resource investment (education) and economic development are two interrelated links (Sunarni, 2017).

Education is the right of every citizen. This is stated in Article 31 of the 1945 Constitution. The article also discusses the state's obligation to ensure availability for every citizen (BPS, 2018). Currently, the government budgets education at least 20 per cent of the state budget. This is stated in Law No. 23 of 2003 Article 49 paragraph 1, which states that education funds other than educator salaries and education fees are allocated at least 20 per cent of the State Budget (APBN) in the education sector and at least 20 per cent of the Regional Budget (APBD), (BPS, 2018).

2.4 Government Expenditure on Health

Health is very important because without health society cannot achieve productivity. A country's economic activities will run well if there is health insurance for every resident. Health spending can improve human development through two channels, namely economic growth and reducing death retes (Aviyati & Susilo, 2016).

Sources of financing for health are divided into two: sources of financing from the government and the private sector. Government funding sources include the central, provincial, district/city governments and foreign aid. The private sector includes private companies / SOEs that are used to provide their employees, health insurance organizing agencies and non-government institutions carrying out health activities that are social and community (Wasisto & Ascobat, 1986).

3 Discussion

3.1 Government Expenditure on Education on Stunting

The level of education has a negative relationship and significantly affects the number of stunting; the probability value is 0.0005, and the coefficient value is -1.772971. This value means that if there is an increase of 1%, the number of stunting in the 10 highest regions of Indonesia will decrease by 1.772971. Thus, these results are following the research hypothesis. The results of this study are also by Cholifatun's research (2015); the higher a person's education level, the more knowledge will be obtained, such as parenting style for his child, reducing the number of stunting.

3.2 Government Health Expenditure on Stunting

Gupta et al. (1998) stated that government spending on the health and education sectors can positively affect human capital, which in turn can encourage economic growth and, at the same time, increase equality and reduce poverty. Grafton et al. (2004) explain that when the government uses the benefits of economic growth to finance essential health services and access to education for all, it will bring double benefits to people with low incomes, namely better health and education levels and increase their consumption.

Children's health is critical in reducing the stunting incidence rate. Linear growth is the best overall indicator of a child's well-being and gives a good sign of misalignment in individual development. This is reflected in many children who still need to achieve their potential in linear growth. This is due to their health condition needing to be more optimal, and nutrition needs to be qualified and cared for so that they experience severe physical and cognitive damage accompanied by poor growth. (Onis &; Branca, 2016). The results of Hasanah's research (2017) show that inequality in income distribution, per capita income and government expenditure in the health sector simultaneously affects the health sector in Indonesia.

3.3 Government Expenditure on Education to GDP (Gross et al.)

Jatmiko (2013) researched the Effect of Changes in the State Budget in the Education Sector on Indonesia's GDP. The results of this study illustrate that there is indeed a relationship between changes in state spending in the education sector and Indonesia's GDP, not only a positive relationship where, over time, the nominal state budget in the education sector and Indonesia's GDP both have a positive trend but also an inverse relationship between the value of changes in two variables each year.

This is due to several factors such as inflation, fiscal policy on other types and functions of state spending in addition to spending in the education sector, which certainly has specific priorities, and the most likely is the efficiency and use of expenditure funds on education development which are channelled through government programs such as School Operational Assistance (BOS), BSM and Bidik Misi, In this study the budget expenditure in the field of education has a positive and significant effect. It has a close relationship with GDP in Indonesia; it can be interpreted that expenditure on education and other budgets impacts GDP in Indonesia (2013).

According to (Puspitasari et al., 2018), government spending in the health sector has a positive and significant influence on Gross Domestic Product (GDP); this statement is also supported by research conducted (Anggraeni, 2017) where government spending in the health sector has a positive effect on GDP.

Based on Peacock and Wiseman's theory, increasing GDP will lead to more significant government revenue, and government spending on education and health must be followed by an increase in economic growth every year (Mangkoesoebroto, 2018). This theory is supported by (2019), that government spending on education and health positively affects economic growth. This is reinforced by a statement (Septiani, 2019) with research results showing that government spending on education and health positively and significantly affects economic growth.

3.4 GDP (Gross Domestic Product) Against Stunting

Economic growth is a measure of changes in the size of GDP. The greater GDP means that income also increases, which will affect purchasing power, then affect the level of consumption and nutritional intake, ultimately affecting stunting: the more significant the economic growth, the smaller the incidence of stunting (2020).

The Economic Growth Rate has a negative relationship and significantly affects the number of stunting, a probability value of 0.0042 and a coefficient value of -0.356753. This value means that if there is an increase of 1 per cent, the number of stunting in the 10 highest regions in Indonesia will decrease by 0.356753. Thus, this result is by the research hypothesis (Soleh, 2015).

An economy is said to experience growth when the level of economic activity is higher than what has been achieved before. New growth is created when the amount of goods and services produced in the economy becomes more considerable in the following years. The rate of economic growth in the 10 highest regions of Indonesia during the period 2010-2019 has increased continuously (Soleh, 2015).

Research by Kusumawardhani and Martianto (2011) shows a negative slope value between GDP and the prevalence of malnutrition under five, which means that the higher the GDP value of a country, the lower the prevalence of malnutrition in the country. This is because a considerable GDP value indicates the ability of significant economic resources and vice versa (Kusharisupeni, 2007).

The results of this study are also to the research of Harniwita (2008) and Wahyuni (2020). The Increasing Economic Growth Rate will encourage wider employment opportunities to increase people's income, which will eventually cause stunting to decrease.

4 Conclusion

Based on the literature review discussed earlier, researchers concluded that there is a direct influence between government spending on education and health on stunting. Meanwhile, government spending on education and health indirectly affects stunting through Gross Domestic Product (GDP).

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