Editorial

Solving Stunting in Children as a Medical, Social, Economic, Political, and Emotional Problem

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Growth of Indonesian children has been documented since the start of the 20th century. Stunting is defined as body height/length below 2 standard deviations for age in the WHO standard growth chart, caused by malnutrition or other health problems. Indonesian children are found to be shorter than international standard growth references such as the WHO and CDC growth charts, thus a part of Indonesian children fall within the stunting definition. Solving stunting is a priority of the Indonesian government, due to the high prevalence (30%) of stunting found in the 2018 Indonesian Basic Health Research (IBHR). [1]

Stunting is a concerning problem due to its long-term effects, especially when stunting happens in the first 2 years of life. Stunting is associated with lower cognitive function, worse wellbeing in adulthood, and generally negatively affects the quality of a population's human resource.[2]

In 2013, UNICEF published the Improving Child Nutrition report, which described Indonesia as the country with the 5th highest number of children with moderate or severe stunting after India, Nigeria, Pakistan, and China.[3] This ranking came from the 2013 IBHR data, which reported the stunting prevalence in Indonesia as 37%.[4] IBHR is a general survey and does not specifically look for stunting per definition; IBHR collects data on body height/length separately from data on malnutrition. Therefore, the Indonesian stunting data does not only include children diagnosed with stunting, but also children with normal short stature, leading to an overestimation of stunting prevalence. Furthermore, the body height/length data was plotted against the WHO charts, while the WHO charts may not be suitable for the Indonesian population and have been shown to result in overestimation of stunting numbers due to standards that do not represent growth patterns of children in certain populations.[5-7] Many countries, such as Japan[8], India[9], China[10], and Saudi Arabia[11] do not use the WHO standard growth charts and use their own national charts that better represent the conditions of children in their countries. When the inappropriate monitoring tool is used, interventions can be ineffective. Governments allocate a substantial budget for stunting, but a large portion of that budget goes into nutritional intervention. If a child with normal short stature is categorized as stunting and is given nutritional intervention, that extra nutritional intake will go to waste with no benefits.

Stunting is a problem that needs comprehensive understanding. Data from IBHR 2018 show 6.2% of babies born in Indonesia weighed less than 2500 grams (low birth weight/LBW), and 22.7% had birth length of less than 48 cm.[1] These babies will continue to grow to reach their potential size until they are 4 years old. If measured before their period of catch-up growth is completed, it's possible that they get categorized as stunting, while they will still grow to fulfill their growth potential.

In a large part of the literature, stunting is strongly associated with nutritional status, but this relationship is a subject of current debate. Data from 2013 IBHR show 37.2% of children under 5 were categorized as stunted, but most of these stunted children had normal body weight.[4] Several studies reported nutritional interventions do not significantly improve linear growth.[12-14] A cohort study we performed[15] in Nusa Tenggara Barat, Indonesia, found that giving extra formula milk, high-calorie biscuits, and eggs for 60 days to 23 stunted children did not result in significant improvements in body weight and height after a 10-months follow up. Several experts argue that some of the children who are categorized as stunting are short-statured due to reasons other than nutritional or health problems. Our study[16] in Soe, East Nusa Tenggara, North Sumatera, and Bali, Indonesia, found no relationship between skinfold thickness, a parameter of nutritional status, with body height in children with stunting. These children looked happy, energetic, and healthy, with no clinical signs of malnutrition. Using stunting as an indicator of poor nutritional status can defer attention from actual problems in the children's social environment, which can greatly impact children's growth because the discourse on stunting is too heavily skewed towards problems in nutrition.[17]

It has been argued that stunting is not only a problem of nutrition, but also a social, economical, political, and emotional problem. Social disparities and poor social mobility in communities are postulated to greatly contribute to a community's linear growth.[18] We can look to South and North Korea for an example. The two countries are ethnically similar, but a study from 2009 reported significant differences in body height between children in South and North Korea. Children under five years old in South Korea were 6-7 cms taller than their North Korean counterparts, and this difference persisted until adulthood.[19, 20] A similar finding was reported in Germany. Before the fall of the Berlin Wall, East German men was shorter than men from West German, but after the Wall fell, eventually the height difference was resolved.[21]

Data from Japan showed living conditions in adolescence played a bigger role in influencing adult height compared to living conditions in infancy and childhood. Japanese people who were born near the end of the war, thus experiencing war as babies and enjoyed better living conditions in adolescence after the war ended, had better adult height compared to people who lived through the war in their adolescence.[22]

In Indonesia, linear growth has improved greatly since the era of colonization. In the times of colonization, poverty, famine, and disease contributed to sub-optimal growth of the Indonesian people. But, studies argued that the emotional toll of living under colonizers' rule also played a role in hindering linear growth. After independence, improvement in linear growth was observed, despite slow progress.[23] These

examples show changes in political climate and socioeconomic situations influence linear growth in a population.[24]

Although economic status contributes to how a population grows, it is not an independent factor, because being financially secure does not automatically mean better body height. Our study on 723 children in Kupang, East Nusa Tenggara, Indonesia, found being short and thin was not associated with indicators of malnutrition, but was significantly associated with parents' education. Our findings were supported by similar studies in Calcutta, India.[25, 26]

Genetics indisputably play a role in linear growth. Indonesia is a diverse country with various ethnic groups, which leads to a variety of body height averages in certain communities. We found children in Papua to be shorter than the national average, but this short stature is normal and not caused by stunting. To represent this growth pattern, we developed a separate growth standard for Papua children.[27] In Rampasasa, Flores, East Nusa Tenggara, lives a pygmoid community with an average body height of 150 cm in males and 140 cm in females. Our study found no malnutrition and normal short stature in this community.[28]

Our latest study compared body height and body mass index (BMI) of children in Jakarta and children in Nabire, Papua. Children in Nabire were shorter than children in Jakarta, but the short stature could not be classified as stunting due to lack of evidence of malnutrition or any other health problems. When the WHO and CDC growth charts were used, many children in Nabire were categorized as stunting, but when the Indonesian national growth charts were used, stunting prevalence decreased.[29] This reflects the importance of using suitable growth charts in monitoring growth in specific populations.

International standard growth charts such as the WHO and the CDC charts were based on anthropometric data of children growing in ideal conditions, which may not represent the growth patterns of all children. Many studies illustrate how international standard growth charts do not suit the growth patterns of children in many countries, including China[10], Japan[6], Saudi Arabia[11], and many European countries[11]. These countries use their own growth charts. Despite significant advancements in social and economical status in the last 50 years, average body height of healthy Japanese children is still considered short by WHO standards[30], which shows the role of genetics and importance of appropriate monitoring tools.

Solving stunting and improving general child health in Indonesia needs a comprehensive approach, taking social, economic, political, and emotional factors into account. Prevention and early detection are of paramount importance in growth disorders such as stunting, thus community-based healthcare needs to be properly utilized. Indonesia has Puskesmas, community health centers that focus on health promotion and disease prevention, including monitoring children growth. Community health centers like Puskesmas and similar counterparts in other countries need to be on the forefront of early detection of growth disorders, through routine growth checks using growth monitoring logbooks. In rural parts of Indonesia, access to healthcare providers is still considered a luxury for many, but smartphones are widely used. Technology can help bridge

this gap in access to healthcare through simple applications, such as growth monitoring applications which enable parents to easily plot their children's weight and height and get screening results. Education on children growth and recognizing growth problems need to be disseminated to all healthcare providers and lay people.

In conclusion, prevention and early detection of short stature and stunting is important. Detection using the correct monitoring tools is essential. Due to the complex nature of stunting, interventions including government policy needs to be implemented simultaneously in all sectors.

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