



Analysis of Toddler Eating Pattern on the Incidence of Stunting in the Coastal Poneo Islands of North Gorontalo District

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Abstract

Malnutrition especially stunting, is a major public health issue in many parts of the world including the Poneo Islands of North Gorontalo. Stunting among toddlers is associated with the dietary patterns adopted in the communities and the accessibility of government relations such as the PMT – Supplementary Feeding Program of 'this area'. Fresh from interviews with health officials, health cadres and parents of stunted children in Ethiopia, the study identified poor dietary diversity and improper feeding schedules as common factors for stunting. Despite enriching enough nutritional support through PMT program, its effectiveness is limited by problems like the erratic implementation and the absence of wide ranging and permanent solutions for the malnutrition problems. The study underscores the necessity of a dual approach, initial nutritional interventions accompanied by a focus on issues affecting pre-school children's access to nutritious foods, availability and procurement authorities vested in caregivers. By addressing these causes, it becomes possible to empower a community to ensure all children when given opportunity grow to their full potential in eliminating stunting.

Introduction

One of the health problems that occurs in all parts of the world is nutritional problems. The growth process in children can be hampered if their nutritional intake is insufficient. Nutrient intake that does not meet the needs of toddlers will cause malnutrition. Toddlers who experience this are at risk of experiencing short stature or what is known as stunting.

The World Health Organization (WHO), United Nations Children's Fund (UNICEF) and The World Bank (2021) report that globally there were 149.2 million children under 5 years suffering from stunting in 2020. More than half of children under 5 years affected by stunting are in Asia and two out of five are in Africa. The Global Nutrition Report (2020) more specifically states that the Southeast Asia region experiences a stunting prevalence of 24.7% (Devi et al., 2023).

Meanwhile in Indonesia in 2019, the national stunting prevalence was 27.67% (SSGBI, 2019). The latest estimates from WHO show that in 2020 Indonesia will be ranked second in the category of high stunting prevalence (31.8%) in the Southeast Asia region after Timor Leste (48.8%). This condition puts Indonesia's stunting prevalence in 115th position out of 151 countries in the world. (WHO, 2021). Based on SSGI data in 2022, the prevalence of editing

in Gorontalo Province is 23.8% and is in the high category. Meanwhile, North Gorontalo Regency, the number of stunting incidents in 2022 is also high, namely 29.3%, Gorontalo Regency has the highest number of stunting incidents in 2022, namely 30.8%, slightly higher in Boalemo Regency, namely 29.9%, then compiled then Bone Bolango Regency was 22.3% and finally Pohuwato Regency was 6.4% (Gorontalo Province Health Office, 2022). Meanwhile, at the Ponelo Community Health Center in 2023, out of 200 toddlers, 43 toddlers experienced stunting in August (Ponelo Community Health Center, 2023).

Methods

This research uses a qualitative research method with a case study approach. Qualitative research method, namely research aimed at describing and analyzing phenomena, events, social activities, attitudes, beliefs, thoughts of people individually and in groups. The researcher chose the case study research method because he wanted to see the eating patterns of toddlers on the incidence of stunting on the Ponelo Islands Coast, North Gorontalo Regency. There were 15 participants involved in this research, namely 1 nutrition officer from the Ponelo Community Health Center, 4 health cadres and 10 parents of toddlers who experienced stunting. Primary data is data collected by the researcher himself. Primary data in this research is data obtained directly from participants when conducting research. Secondary data in this research is data obtained from the Coast of Ponelo Islands, North Gorontalo Regency. Secondary data sources can also be obtained from journals and books which contain information related to research. This research was carried out on the Ponelo Islands Coast, North Gorontalo Regency. From July to August 2023. The reason for choosing this place is that the stunting rate on the Ponelo Islands Coast, North Gorontalo Regency is quite high.

Result and Discussion

Table 1 below shows that there is a worrying gap in parents awareness of the importance of their children's diet, based on the responses recorded. Only three parents consider their child's diet to be "very important," while the majority simply categorize it as "important". This distinction, though it may seem minor, signals a broader issue: it might be a potential underestimation of the influence of the diet on child development and, therefore, on the possibility to prevent stunting. This difference in perception may be due to low standards of nutrition or cultural beliefs that are not so conscious of the importance of diet as compared to other aspects of child-rearing. The implications of this are momentous; if the parents are not fully sensitized to the importance of nutrition as being critical to the wellbeing of the child, more often than not, they cannot be bothered to stick to the strict dietary measures that will help avoid stunting. This implies that any intervention must involve much more than education and has to, somehow, begin a process of changing the culture of the community on food and health.

Table 1. Children's Eating Patterns

Question	Categories	
	Very important	Important
<i>According to the mother, is a child's diet very important for the child's growth?</i>	3 parents said that children's diet was "very important", namely Mrs. L.P, Mrs. S.U, and Mrs. I.M	7 parents said "important" is Mrs y. S.O, Mrs. I.T, Mrs. R.B, Mrs. S.M, Mrs. Y.A, Mrs. S dan Mrs. S.H

Table 2 also brings this out by showing that most parents offered incomplete answers when asked what makes up a desirable dietary habit for toddlers. This may indicate the absence of sound information on AA/FFDN to achieve an optimal consumption of micro-nutrient required to combat the existing high prevalence rates of stunting in the region. That only one parent was able to give what was tantamount to a complete answer was witness to the argument to fashion

better programs for educating parents on nutrition that are not only informative but also involving. This puts them in a disadvantaged position regarding the current state of knowledge to effectively deal with the deep rooted problems associated with poor dietary practices and this is a big indictment of current existing public health approaches.

Table 2. Type of Food

Question	Categories	
	Complete	Incomplete
What type of food do you think is good for toddlers?	1 parent answered completely	while 9 parents gave incomplete answers

Table 3 of the current study, which focuses on the eating frequency, is indicative of the fact that while most of the parents appreciate the importance of eating, there is a serious weakness when it comes to stressing on regularity and quality. The signal that children should eat three to four times a day is quite good, but with no further specification of what these meals should include and at what time that is helpful only to a certain extent. This once more brings us back to the problem of lack of knowledge in some aspects, and the necessity of obtain more specific and clear information that would be easier for the parents to understand and apply. In many circumstances parents are not only aware that frequent meals are required, but also they require knowledge of what are the nutritional requirements of the children and how these can be addressed within some cultural and economical realities of the parents' lives.

Table 3. Eaten frekuensi

Question	Categories	
	<3 everyday	3-3 everyday
In your opinion, how many times a day should your child be fed?	1 parent said it was good for children to eat 3x a day	9 parents said it was good for children to eat 3-4x a day

The data in Table 4 reveals a significant challenge faced by parents in managing their children's diets, with the majority (9 out of 10) finding it difficult to encourage their children to eat properly. This difficulty in food management points to deeper issues that may not be fully addressed by current public health initiatives. The challenge here is not simply one of knowledge but of practical application. Even if parents understand the importance of nutrition, translating that knowledge into daily practice can be hindered by various factors such as children's preferences, availability of diverse food options, and possibly even parental fatigue or lack of time. This suggests that educational programs alone are insufficient. There needs to be a more hands-on approach, perhaps through community support groups or practical workshops that provide parents with strategies for overcoming these challenges. Such interventions could include cooking demonstrations that focus on making nutritious meals appealing to young children, or guidance on how to integrate local and readily available ingredients into balanced meals. The data underscores the necessity of moving beyond theoretical knowledge to provide tangible support that helps parents implement healthy eating practices in a manageable and sustainable way.

Table 4. Managing Food

Question	Categories	
	Easy	Not Easy
How do mothers manage food so that children want to eat?	1 parent answered easily,	9 parents answered very easily

Continuing in the same vein, the data presented in Table 5 reveal that, once more, 9 out of 10 mothers indicated that the children become difficult to cope with when they are picky eaters. What this consistency in difficulty reveals is a problem that is shared and probably cannot be solved through sheer willpower alone. Thus, it indicates that the issue is not only local but is also endogenous to its culture and the milieu of socio-economic development predominant in the region. Therefore, the fact that such a high proportion of parents experience it appears to require more general population interventions. Such may include the parents' groups where parents can exchange ideas, and practices based on their experiences, and parental support programs that may involve local health promoters who offer tailored information on health to the families on a frequent basis. Also, regarding this data, it is possible to state that there may be a presence of such out of school needs as lack of accessibility to food and, thus, there may be the necessity to state that issues connected with children's feeding may be aggravated by this factor. When families cannot produce enough or procure a wide array of nutritious foods, then promoting the consumption of healthy foods becomes highly sensitive. Hence, the interventions need to be directed not only at increasing educational achievements but at enhancing the food choice and availability in the studied community as well.

Table 5. Dealing With Children Who Have Difficulty Eating

Question	Categories	
	Not Easy	Easy
How do mothers deal with children who don't want to eat?	1 mother said it was difficult	9 mothers said it was easy

Extracted Data

From the interview with a nutrition officer, this is a stepwise process to address stunting and involves identifying the affected toddlers through 'by name by address data'. The appeasement of village official-dom and the specific focus on the delivery of PMT at specially-scheduled posyandu sessions also characterise a basically-localised and methodical approach. Despite being systematic, this strategy is essentially interventionist – it tackles stunting after the condition has been observed, not before. The fact that collaboration is relied on for the distribution of PMT implies that the modules of the process are smooth depending on local governance systems and the already-established health systems.

Question: In your opinion, how to overcome stunting in toddlers?

The informant

"answered, how to overcome stunting, the first steps we need by name by address are related to stunting data to find out which toddlers are stunted, then the way to overcome this is collaboration with the village, first in terms of PMT for both toddlers in Posyandu and toddlers are targeted, when toddlers are in posyandu it means all PMT given to toddlers when it means specifically for stunting toddlers" (A.H, 2023).

This statement from the nutrition officer is supported by statements from health cadres, namely:

"Together with the community health center team, we provide education to parents of toddlers about consuming nutritious foods such as fish, vegetables and fruit, and also provide PMT from the village and community health center" (P.Y, 2023/Kader Tihengo Village)

This statement from a health cadre emphasizes the dual approach of education and provision of supplementary feeding (PMT). The focus on educating parents about nutritious foods, particularly locally available items like fish, vegetables, and fruit, highlights an effort to align dietary advice with the local context. The distribution of PMT further supports this educational effort, offering a practical solution to immediate nutritional needs. However, the effectiveness

of this strategy may be limited if the education provided does not lead to lasting behavioral change, or if the reliance on PMT creates dependency rather than empowering parents to provide adequate nutrition independently. The challenge lies in ensuring that educational interventions are robust enough to alter long-term dietary habits, not just provide temporary relief.

Next question: What programs have been implemented to handle stunting?

The informant

"answered, the first program for handling stunting is posyandu where we can unite nutritional or stunting problems in the sub-district, then the second is home visit activities to targets. There we provide PMT from the puskesmas in the form of milk to prevent and treat stunting, usually milk is given namely zee milk to increase height and there is also provision of PMT biscuits for stunting toddlers, then local PMT intervention" (A.H, 2023).

This quote illustrates the structured approach of using posyandu as a central point for addressing stunting issues within the sub-district, coupled with more personalized home visits for targeted interventions. The provision of specific nutritional supplements like milk (zee milk) and PMT biscuits indicates a focus on addressing immediate nutritional deficits. However, the reliance on such supplements raises questions about the sustainability of this approach. While these interventions are crucial for short-term relief, they may not address the underlying causes of malnutrition and stunting, such as food insecurity or inadequate knowledge about nutrition. There is a risk that these programs, while beneficial, might not lead to long-term improvements in nutritional outcomes if they are not accompanied by broader initiatives aimed at improving overall food availability and dietary diversity.

The statement from the nutrition officer above is supported by a similar statement from the health cadre, namely:

"collaboration with the community health center in providing PMT and recommendations to posyandu" (R,H, 2023/Kader Desa Malambe).

This quote underscores the importance of collaboration between various local entities in the fight against stunting. The partnership between community health centers and posyandu highlights a coordinated effort to ensure that nutritional interventions, particularly PMT, reach those who need them most. However, the simplicity of the statement may reflect a broader challenge in ensuring that these collaborations are effective and that the roles and responsibilities of each party are clearly defined and executed. While collaboration is essential, it is equally important to evaluate how these partnerships are functioning in practice and whether they are yielding the desired outcomes in terms of reducing stunting rates.

Next question: Are there any obstacles experienced in dealing with stunting?

The informant "answered that in dealing with stunting as a nutrition officer at the community health center, he did not experience any problems because he already had the aforementioned data, namely by name by address which could be monitored every month" (A.H, 2023).

The nutrition officer's claim of encountering no problems in dealing with stunting because of the availability of detailed data suggests confidence in the existing monitoring system. However, this statement might overlook more subtle or systemic challenges, such as cultural resistance, resource limitations, or the potential for data inaccuracies. While having data "by name by address" is undoubtedly a strength, the absence of reported obstacles might indicate a lack of critical reflection on the complexities of stunting intervention. Effective stunting prevention requires not just data but also a deep understanding of the local context and the ability to adapt strategies to meet changing circumstances.

Next question: How big is the influence of diet on the incidence of stunting?

The informant "answered, when talking about diet, we go back to the family, namely the parents or mother, usually there are toddlers who are cared for by their grandmother or parents' siblings so as a community health center officer I don't know what the toddler's diet is like, but as a nutrition officer I provide education or understanding to parents that the diet for toddlers, especially those who are stunted, must fulfill what is called the contents of my plate, in the contents of my plate we provide lots of menus that are high in protein, education every day provides 1 egg and then try to vary the type of fish food every day and it must come from where you live because it is easy to reach for those of us who are local or on the islands, even though it is difficult to get fruit, so education is also given to use the yard to plant fruit such as papaya or bananas" (A.H, 2023).

This quote emphasizes the central role of family, particularly mothers, in managing the diet of toddlers, with the nutrition officer acknowledging the challenges in ensuring dietary consistency when caregiving responsibilities are shared among extended family members. The recommendation to fulfill the "contents of my plate" with locally available protein sources like fish, and the encouragement to use home gardens to grow fruits, reflects a pragmatic approach to improving dietary quality in a resource-constrained environment. However, the effectiveness of such educational efforts may be limited by the practical realities of food availability, cultural food preferences, and the varying levels of influence that different family members have on the child's diet. The reliance on mothers as the primary agents of dietary change also raises questions about the support systems available to them, particularly in contexts where they may be overburdened with other responsibilities.

The statement from the nutrition officer above is supported by statements from health cadres, namely:

"Yes, it is related because children are encouraged to eat nutritious food that is high in protein" (P.Y, 2023/Kader Tihengo Village).

This statement highlights the use of protein as a critical nutritional intervention for stunted toddlers, with a particular focus on the accessibility of fish as a protein source in coastal communities. The health worker acknowledges that while protein intake is essential, the actual impact on height may not be immediate, emphasizing the importance of sustained dietary changes. The underlying message here is the challenge of ensuring that these nutritional guidelines are actually implemented at home, where parents' and toddlers' dietary practices may vary widely. The health worker's role is portrayed as one of providing information, but the responsibility for dietary change ultimately lies with the parents, which may limit the effectiveness of such interventions if not coupled with broader support mechanisms.

Next question: What types of food are good for stunted toddlers?

The informant "answered, if we talk about stunting, it means that the indicator is TB according to age which is not appropriate, that is our benchmark, then when it is said that stunting is true in toddlers, there are 3Gs, namely growth, development and knowledge or IQ, for example if stunting means we give food that is high in protein even though It doesn't quickly increase height, but the function of protein can increase children's height, especially for people living on the coast where there are many sources of protein that can easily be obtained from various types of fish. However, it comes back to parents and toddlers, what is the consumption of fish like at home, in portions? "What, as a health worker, is just enough to convey that stunted children need protein, which is easy to get from fish on the coast, fish also have a function for the growth of our children," (A.H, 2023).

This quote from a parent reflects the practical challenges that many parents face in implementing the dietary advice provided by health workers. The child's refusal to eat certain healthy foods, unless prepared in a specific way, highlights the difficulty of balancing nutritional needs with a child's personal preferences. This reality underscores the need for flexible and culturally appropriate dietary recommendations that can be adapted to individual tastes while still meeting nutritional requirements. The persistence of such challenges suggests that more personalized and creative solutions may be necessary to help parents successfully navigate these dietary obstacles. This also points to a potential gap in current nutritional education programs, which may not fully address the practicalities of feeding young children who are selective about what they eat.

The nutrition officer's statement above is supported by the statement of the toddler's parents, namely:

"Vegetable fish rice is important but this child doesn't want to eat fish unless it's in sour sauce, he doesn't like vegetables either" (I.T, 2023).

Health Cadre Interview Results

Ideas concerning the necessary frequency of stunted toddlers attending the posyandu for the assessment of their nutritional status can be obtained from Table 6. There is half-half response to this question; stunted toddlers are seen to attend posyandu for health services by three cadres, on the other hand, one cadre from Malambe Village reported that some toddlers hardly ever went to these health centres. This fluctuation in attendance is important since it has potential implications on those problems in both utilisation and access to health services in the various communities in the region.

The fact recorded in this study that majority of cadres attend CHS meetings regularly means that in some areas, there is compliance with recommended health seeking behaviours. However, a report from Malambe Village is that some toddlers hardly attend posyandu which may be due to a failure in service provision or social mobilization. This could be as a result of various reasons, which include; Lack of access to health facilities as a result of geographical isolation, Lack of adequate resources to fund the health facilities, Culture in as much as relating to health services. The low turnout in some of the regions could be as a result of the stunted toddlers not accessing proper monitoring and follow ups which if not addressed will complicate the already dire problem of stunting and hamper nutritional improvement initiatives.

Table 6. Health Cadre Interview Results

Questions	Categories	
	Often go to posyandu	Rarely go to posyandu
In your opinion, do these toddlers (who are stunted) often go to the posyandu to have their nutritional status checked?	3 cadres in this category, namely Mrs. N.L Ponelo Village cadre, Mrs. P.Y Tihengo Village cadre and Mrs. S.T. Otiola Village cadre.	Malambe Village cadre, namely Mrs. R.H is in the second category, namely there are toddlers who rarely go to the posyandu

Diet reflects on the health status of a person especially in the early years of his development where the blueprint of the health status of the person is set. According to Lailiyah (2021), food intake and its portions are central in the anticipation of health future development especially in world where food insecurity is rife and malnutrition is evident. Such a view is in line with the increasing body of evidence on the complex connection between dietary practices and health, especially with regard to the early years of a child's development (Paulson et al., 2021; Banfai-Csonka et al., 2022). Eating is a life-long activity, which starts at birth, and is more than feeding; it is about promoting growth, development and immunization against diseases (Victoria et al., 2021).

In the case of stunting, which is still prevalent in many countries including Indonesia, dietary patterns cannot be overemphasised. The study results of the Ponelo Islands Health Center reveal that the calorie restrained stunted toddlers tend to have a monotonous diet. This is in line with other studies documenting the worldwide poor dietary diversity, and the irregular feeding schedule as some of the key causes of stunting among children (Jones et al., 2021; Pries et al., 2019). Some of the problems that the mothers of children in Ponelo Islands have expressed include the fact that their children always get the same type of foods for example rice most of the times and this exposes their children to nutrient deficiencies most especially during the periods of rapid growth in the early ages of a child. High-energy and micronutrient diverse diets are required to supply energy needs for growth and to avoid development of ‘stunting.’

The government’s PMT or the Supplementary Feeding Program for children 6-59 months old can be conferred as a focused strategy towards these incongruities. In agreement with the program, the use of the instrument in the form of biscuits and nutrient supplements included in the direct nutrition interventions strategies commonly practiced throughout the world (Ministry of Health of the Republic of Indonesia 2017; WHO 2020). However, the implications of such programs have always been a matter of hot debate. by factors such as the quality of the food being used, the frequency of the food distribution and the socio-economic environment in which these interventions are made (Perdijk et al., 2024; Dewey & Adu-Afarwuah, 2008).

Another drawback of relying on supplementary feeding programs is what is increasingly known as “food insulting”, meaning that communities end up being fed instead of having been empowered to produce food sufficiently for themselves. This issue has been raised in the recent works premising a holistic nutrition interventions including food aid, enhancing food diversity and production, and supporting agricultural system (Webb & Tangney, 2022; Hawkes et al., 2020). For instance, even as PMT helps in the immediate sense, in the long-run, there is need to ensure that communities are equipped and encouraged to produce and consume a host of nutrient-rich foods to cushion the impacts of donors’ eventual departure (Headey et al., 2021).

Moreover, the Ministry of Health's technical guidelines emphasize the importance of complementary feeding practices for infants and toddlers, particularly in the critical window between 6-24 months (Ministry of Health of the Republic of Indonesia, 2017). Recent studies have shown that appropriate complementary feeding practices, including the timely introduction of solid foods and the continued use of breast milk, are essential for preventing stunting and other forms of malnutrition (Ruel et al., 2021; Dhimi et al., 2019). However, the practical implementation of these guidelines remains a challenge, particularly in rural and resource-limited settings where food availability and caregiver knowledge are often inadequate (Yanagisawa et al., 2022; Panjwani & Heidkamp, 2022).

The nutritional needs of toddlers, as outlined by Purwanti et al. (2023), highlight the importance of providing sufficient energy and protein to support growth. The recommendations for nutrient-rich foods, such as tempeh, eggs, and fish, align with global dietary guidelines that emphasize the role of high-quality proteins and micronutrients in child development (Kusmann et al., 2023; Matías et al., 2024). However, achieving these nutritional targets requires more than just knowledge; it demands access to a variety of foods and the capacity to prepare them in ways that are culturally acceptable and palatable to young children. In many parts of Indonesia, including the Ponelo Islands, these conditions are not always met, leading to ongoing challenges in meeting the nutritional needs of children (Setiani et al., 2022; Mendonca et al., 2020).

The challenges faced by caregivers in ensuring adequate nutrition for their children are compounded by broader socio-economic factors. Food insecurity, poverty, and limited access to healthcare are all significant barriers to implementing recommended dietary practices (Headey & Alderman, 2019; McWhorter et al., 2022). These barriers highlight the need for

multi-sectoral approaches that address the root causes of malnutrition, including economic empowerment, education, and improved access to health services (Shekar et al., 2017; Black et al., 2021). Without addressing these underlying issues, even the most well-designed nutritional programs are unlikely to achieve sustained success.

Conclusion

The findings from the Ponele Islands Health Center underscore the critical role of dietary patterns in influencing the nutritional status of toddlers, particularly in the context of stunting. The data reveals that inadequate dietary diversity, irregular feeding practices, and challenges in implementing recommended nutrition guidelines contribute significantly to the high prevalence of stunting in the region. While government interventions like the Supplementary Feeding Program (PMT) are essential in addressing immediate nutritional deficiencies, their effectiveness is limited if not supported by broader, more sustainable strategies. These strategies must address the root causes of malnutrition, such as food insecurity, poverty, and limited access to education and healthcare. To achieve long-term success in reducing stunting, it is imperative to integrate nutritional programs with efforts to enhance food security, improve dietary diversity, and empower caregivers with the necessary knowledge and resources. This holistic approach will require coordinated efforts across multiple sectors, including health, agriculture, education, and social protection, to create an environment where all children have the opportunity to thrive. The persistence of stunting in regions like the Ponele Islands serves as a reminder that while short-term nutritional interventions are vital, they must be complemented by sustainable, community-driven solutions that address the broader socio-economic determinants of health.

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