

Stunting prevention behaviors through the health action model in Maluku: a case study

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Abstract

Purpose: This study aims to explore stunting prevention behaviors in Sawai Village, Central Maluku District, using the health action model. **Methods:** A qualitative case study was conducted in April 2024, involving 25 participants purposively selected from various groups, including parents, caregivers, pregnant women, health workers, village officials, and cadres. Data were collected through interviews and observations, and analyzed using framework analysis supported by Opencode software. **Results:** Stunting prevention efforts in Sawai Village involve various stakeholders. The analysis identified nine key themes that shape stunting prevention behavior: 1) stunting prevention behaviors; 2) belief systems; 3) motivation systems; 4) normative systems; 5) knowledge; 6) skills; 7) physical environment; 8) socio-economic factors; and 9) socio-cultural factors. While community practices generally align with child health efforts, they are not explicitly aimed at stunting prevention. The involvement of fathers is minimal, cadres have limited technical capacity, and traditional beliefs, economic barriers, and lack of targeted knowledge hinder effective prevention. **Conclusion:** Although stunting prevention in Sawai Village involves multiple actors, it remains suboptimal. A comprehensive behavior change intervention based on the HAM framework is needed, along with Posyandu revitalization to enhance community participation and knowledge.

Keywords: community behavior; health action model; stunting prevention

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INTRODUCTION

Stunting is a serious global health issue caused by chronic and recurrent malnutrition during the first 1,000 days of life (HPK). Its impact extends beyond impaired physical growth, including reduced cognitive ability, decreased productivity, and a higher risk of degenerative diseases. These effects ultimately hinder national economic development. In Indonesia, the financial loss due to stunting is estimated at 10.5% of the Gross Domestic Product (GDP), equivalent to 286 trillion rupiah [1–4].

According to the 2022 Indonesian Nutrition Status Study (SSGI), the national prevalence of stunting reached 21.6%. Maluku Province remains one of the regions with a high stunting rate at 26.1%. Although the figures have shown a slight decline, all districts and cities in Maluku are still categorized as “high prevalence” areas (20%–<30%) based on World Health Organization (WHO) standards [5]. The provincial government aims to reduce this rate to 14% by 2024, but its geographic structure—comprising numerous islands—presents significant challenges in implementation [6].

Efforts to address stunting must prioritize promotive and preventive strategies, particularly by improving health services and promoting behavioral changes that prevent stunting. Stunting prevention behaviors involve actions to eliminate risk factors and mitigate long-term impacts during the first 1,000 days of life [7,8]. A family-based approach and community empowerment—especially involving mothers—are vital. However, the father's role, environmental conditions, and local government support are also significant in shaping these behaviors. This is because communities function as interconnected systems, in which each component must fulfill its role effectively [9–11].

Although community participation is essential, there is a lack of studies specifically examining stunting prevention behaviors in Maluku Province. A contextual situation analysis that adopts a systems perspective is urgently needed to identify the local behavioral, environmental, and socio-cultural determinants related to nutrition in early childhood [4]. Central Maluku District is one of the high-stunting areas, recording a prevalence of 27% in 2022 [5]. North Seram Sub-district had the highest prevalence at 38.36%, with only 6 out of 20 villages excluded from the stunting intervention locus. One such village is Sawai, which, despite its limited access to healthcare, reports a relatively low prevalence of stunting [12,13].

This study aims to explore and analyze stunting prevention behaviors in Sawai Village using the Health Action Model. This model provides a theoretical framework that links belief systems, motivation, and norms with the enabling factors that transform intention into behavior, including knowledge, skills, and the physical, socio-economic, and socio-cultural environment. It also considers external facilitators and barriers to health behavior [14,15].

The study focuses not only on parents, caregivers, and pregnant women, but also includes village officials, health cadres, and healthcare workers involved in local stunting prevention programs. The findings are expected to provide policymakers and practitioners with comprehensive insights, serving as a foundation for effective health promotion interventions that address stunting and improve child well-being in island communities, particularly in Central Maluku.

While numerous studies in Indonesia have explored stunting and its determinants, few have applied the Health Action Model (HAM) to examine stunting prevention behaviors in island or remote village contexts. This research contributes to filling that gap by using HAM to capture both individual and environmental factors that influence behavior. Moreover, by involving

multiple stakeholders—including families, community leaders, and health providers—this study offers a holistic view of behavior patterns in a unique setting with limited resources but promising health outcomes. These insights are crucial for designing context-specific, sustainable interventions to prevent stunting in geographically challenging regions.

METHODS

This study employed a qualitative research design using a case study approach to explore stunting prevention behaviors in Sawai Village, located in North Seram Sub-district, Central Maluku District. Sawai Village was purposely selected because it is not part of the designated stunting intervention locus and has geographical characteristics that represent many island-based villages in Maluku Province, such as limited access to health services.

Participants were selected using purposive sampling with a maximum variation strategy to capture diverse perspectives in line with the study objectives and the constructs of the health action model). The main participants included pregnant women, parents, and caregivers of children aged 0–2 years who had resided in Sawai Village for at least two years. Supporting participants consisted of local government officials (village head and secretary), health center staff (including those responsible for nutrition and health promotion programs), village midwives, and health cadres who had been active in stunting-related programs for at least two years. A total of 25 participants were included, comprising 16 main participants and 9 supporting participants.

Information about eligible main participants was obtained through preliminary discussions with the village midwife and the head of the village Human Empowerment Cadre (KPM). After confirming eligibility, researchers visited each potential informant to explain the study's purpose and obtain informed consent. Among the main participants were six pregnant women, five mothers of young children (including one who was also pregnant), four fathers, and one grandmother.

Data were collected in April 2024 through in-depth interviews and participant observation. Interviews were conducted using a culturally sensitive family-centered approach, with assistance from a resident who acted as a research assistant and translator when needed. Observations were carried out daily as researchers immersed themselves in village life. The observation checklist included aspects such as childcare practices (e.g., breastfeeding, complementary feeding, hygiene, health-seeking behavior, and child stimulation),

Posyandu implementation, environmental sanitation, availability of clean water, and household food sources.

Data were analyzed using the framework analysis method, which allows for a systematic examination of large qualitative datasets. The process began with repeated reading of transcripts to identify key meanings. Relevant phrases were coded, categorized, and thematically grouped based on the HAM framework. Inductive analysis was also applied to capture emerging themes beyond the predefined model. Interview data were processed using Open Code software version 3.04, while observation data were synthesized into narrative descriptions to support and triangulate the interview findings. This study has received ethical approval from the Ethics Commission of the Faculty of Medicine, Public Health and Nursing (FK-KMK), Gadjah Mada University, with letter number KE/FK/0405/EC/2024, dated March 19, 2024.

RESULTS

Characteristics of participants

Table 1 presents a total of 25 participants, comprising 16 main participants (parents, pregnant women, and caregivers) and nine supporting participants (village officials, health workers, and cadres). Most of the prominent participants were women aged between 36 and 45 years, and the majority had completed secondary education. A significant proportion of them had more than two children and were housewives, although a few worked as traders, teachers, or fishermen. Among the supporting participants, most were female, with a balanced distribution of age across three groups: 26–35, 36–45, and over 45 years. Their educational backgrounds varied, with almost half having completed higher education. Most supporting participants had less than five years of service, although a few had served for over a decade. These characteristics reflect a diverse range of perspectives relevant to stunting prevention efforts in the village, encompassing both the views of community members and program implementers.

Theme and sub-theme findings

We identified nine main themes related to stunting prevention behavior in Sawai Village and its shaping factors based on the Health Action Model (HAM) framework: 1) Stunting prevention behavior; 2) Belief system; 3) Motivation system; 4) Normative system; 5) Knowledge; 6) Skills; 7) Physical environment; 8) Socio-economic; 9) Socio-cultural. These themes reflect the complexity of factors that influence stunting prevention behavior in Sawai Village.

Table 1. Characteristics of participants (n=25)

Main participant characteristics	Frequency	
	n	%
Age (years)		
26-35	5	31.25
36-45	10	62.5
> 45	1	6.25
Education		
Primary education (elementary-junior high school)	1	6.25
Secondary education (senior high school equivalent)	12	75
Higher education	3	18.75
Number of children		
≤ 2	5	31.25
> 2	11	68.75
Work		
Housewife	8	50
Trader	4	25
Teacher	1	6.25
Fisherman (father's participant)	3	18.75
Supporting participants characteristics		
Gender		
Female	8	88.89
Male	1	11.11
Age (years)		
26-35	3	33.3
36-45	3	33.3
> 45	3	33.3
Education		
Primary education (elementary-junior high school)	1	11.11
Secondary education (senior high school equivalent)	4	44.44
Higher education	4	44.44
Length of employment (years)		
<5	6	66.67
5-10	0	0
>10	3	33.3

Stunting prevention behaviors

We found that the community in Sawai Village exhibits various behaviors that align with efforts to prevent stunting. All of these behaviors (Table 2) are not aimed at preventing stunting, but rather at maintaining the health of pregnant women and children in general. Meanwhile, efforts to prevent stunting are specifically carried out by mothers who have had stunted children, village government, health workers, and health cadres, focusing on improving the nutrition of children aged 0-2 years.

“...I follow what they say, like don't let the kids eat snacks from the store...” (42-year-old mother, housewife)

“...home visits because we thought it was the month of vitamin A and deworming...” (Health worker, 46 years old, 14 years of service)

“...mostly in 2021 to 2022 it is for cages, cage cultivation” (Village government, 33 years old, 2 years of service)

Table 2. Community behaviors that are in line with stunting prevention efforts in 1,000 days of a child's life

Behavior community	Participant perspective	Quotation
Healthy habits during pregnancy	Pregnant mothers	<i>"...I often drink milk, take vitamins given by the midwife, maintain my diet and sleep pattern. I do all these good things for my health and my child's health..." (age 40, trader).</i> <i>"I join the posyandu..." (35 years old, housewife)</i>
Safe delivery with an assisted medical officer	Health worker	<i>"...for Sawai Village the ANC activities are going well, many deliveries are also done at health facilities" (age 46, length of service 14 years).</i>
Taking care of children's health	Mother of 0-2-year-old child	<i>"I prevent the child from eating ice, sweets, bathe him with hot water in the morning. I'm afraid this child is prone to flu. So, I prevent it and take care of it" (36 years old, Teacher)</i>
Collaboration in services maternal health	Pregnant mothers	<i>"There was advice from Mama Biang because right now I am 43 years old, so if I want to give birth, I should be next to a doctor or a midwife" (43 years old, housewife).</i>
	Health worker	<i>"...follow the rules we have (medical rules). Don't follow Mama Biang's procedures (traditional birth attendants), they immediately understand and accept..." (age 49, length of service 10 years).</i>

However, there are still behaviors that are not in line with stunting prevention efforts, such as the fulfillment of improper nutrition in pregnant women and children aged 0-2 years, as well as limited participation or involvement of fathers in these efforts, because of the father's duty as a breadwinner for the family.

All father participants also did not have a direct role in childcare, including in stunting prevention because they did not have an understanding of stunting. One of the father participants did not know that his child was stunted because he was busy working.

"I don't eat fish, I don't like the smell..." (Pregnant mother, 35 years old, housewife)

"...everything related to the child is all the mother takes care of" (Father, 37 years old, Merchant)

Belief system

All parent participants believed that children's health is their top priority, including working parents. This belief raises concerns among parents, regarding the diagnosis of stunting in children, because there is a negative stigma about stunting in the community. Stunting is considered a condition of poor nutrition, caused by parents' inability to nurture and care for children.

"Health is important, because if children are sick everything that is our responsibility will be hampered..." (Mother, 36 years old, Teacher)

"...if I still get stunting, I am ashamed" (Mother, 42 years old, housewife)

Motivational system

The findings of this study show that most of the main participants' motivations are related to general maternal and child health. The motivation to prevent stunting was only possessed by mothers who had had stunted children, as well as supporting participants who were involved in stunting prevention efforts. The main motivation that encourages mothers to prevent stunting tends to be self-esteem as parents, and not fully realizing the adverse effects of stunting on children.

"Important, very important for our children, because in the future we want to get good achievements (Father, 37 years old, Fisherman)

"...Other people can smile if their children are said to be stunted, but if mama doesn't want to, that means we failed. I'm embarrassed" (Caregiver, 53 years old, Retired Teacher)

Normative system

The normative system of the main participants, especially the mothers, was strongly related to the influence and support of their families. This can be seen in the mother's behavior during pregnancy and childbirth, as well as childcare. This is especially true for the food consumed during pregnancy, breastfeeding, and complementary feeding for children. During pregnancy, some mothers are prohibited from consuming certain types of food that are believed to hurt the mother. The prohibition must be followed by the mother, as a form of respect for the parents.

“...they came to tell me that they have fed the child because the in-laws said this, the mother-in-law said this. So, we can't do anything about it” (Health worker, 49 years old, 10 years of service).

Knowledge factor

The findings of this study show that participants' knowledge about stunting is related to the condition of poor nutrition in children, due to nutritional deficiencies since pregnancy. In addition, there is an assumption that stunting has an impact on the potential for bullying in children, due to short posture. The perception of stunting prevention is only owned by mother participants with stunted children, namely by improving children's nutritional intake.

“...yes, maybe some kind of malnutrition, only (only) know that much (Father, 37 years old, Trader)

“...looks like a hungry person” (47 years old, 14 years as a cadre)

In addition, there are perceptions about the permissibility of breastfeeding along with formula milk, and early complementary feeding, and that pregnancy supplements are not the same as birth control pills that must always be taken, and other health problems experienced by mothers and children are not related to stunting. On the other hand, various aspects become obstacles to providing education about stunting, as well as barriers for the community in accessing this information.

“...we are in the village, what I used to take care of my children I apply again, for my grandchildren” (caregiver, 53 years old, retired teacher).

“...I usually shout to the mothers and sometimes I get angry...” (45 years old, 4 years as a cadre).

Efforts to increase the capacity of cadres through training held at the Community health center have not been able to reach all cadres, due to limited funds, participant quotas, long-distance factors, and large transportation costs. Representatives of cadres (cadre leaders) who have attended training also never share the knowledge and skills gained with other cadres. This condition makes the cadres only able to play a technical role, such as inviting mothers to the posyandu, and tends to scold those who are reluctant to attend.

“The chairperson used to come because the training was in the sub-district and she had a vehicle to go there. But she did not say anything...” (45 years old, 5 years as a cadre)

Physical environmental factors

We found that there are physical environmental factors that support and hinder community behavior in preventing stunting in Sawai Village. Supportive factors include the availability of natural resources (one of which is the potential source of protein from fish) and basic health facilities available in the village (Sub-community health center and Posyandu, as well as a collaboration of maternal health services by traditional healers and village midwives). However, there are still obstacles in shaping the community's healthy behavior in managing waste and environmental sanitation, as well as challenges in accessing advanced health facilities.

“...if we remove all the garbage (garbage in the sea under the village pier), maybe this whole village will be full of garbage...” (33 years old, 2 years of service).

“...at the beginning, I was sometimes worried (to check the advanced health insurance) because I had two miscarriages...” (Pregnant mother, 35 years old, housewife).

Socio-economic factors

Socioeconomic conditions also influence community behavior in preventing stunting. It was found that the majority of villagers are in the middle and low economic categories (poor), there are problems of debt and credit and a consumptive culture that creates a pragmatic attitude in the community, where they will be involved in the health agenda if there are benefits obtained, such as in the form of material. These conditions influence some people's decisions about choosing healthcare. The findings of this study show that there are still community groups that choose traditional services to treat children's illnesses (including stunting) because they are relatively more affordable.

“We force people to come, the main thought is money, money, money to sit and others...The point is that for me economic factors are the cause of stunting...” (33 years old, 2 years of service).

“...Mama Biang (traditional birth attendants) it's voluntary, it's up to them how much they want to give, while for the midwives, there is usually 400,000 per person” (37 years old, 14 years as a cadre).

Socio-cultural factors

We found dietary restrictions for mothers during pregnancy, beliefs in local traditions related to child health and maternal breastfeeding behaviors, such as that children must experience febrile seizures when they are 6 to 9 months old, and beliefs in 'Naga' or birthmarks that prevent mothers from breastfeeding their children because these marks have a negative aura that will affect

the child's health. In addition, there are traditional medicine practices that are rampant in the community to maintain or treat children's illnesses, including treating stunting.

"... my children are also not breastfed because I have a dragon..." (45 years old, 5 years as a cadre).

"... Finally we have these ultimate moves (traditional medicine) coming out, making anything here and there..." (Village government, 47 years old, 2 years of service).

Table 2 illustrates various community behaviors in Sawai Village that align with recommended practices for stunting prevention during the first 1,000 days of life. These behaviors include regular attendance at Posyandu, provision of vitamin A and deworming for children, and parental efforts to control children's snack consumption. Some families also demonstrated good hygiene practices and used available health services for maternal and child care. However, while these actions support overall child health, they are often carried out without explicit awareness of their connection to stunting prevention. In most cases, these behaviors were driven by general health promotion efforts rather than a targeted understanding of stunting risks. Notably, mothers who previously had stunted children tended to be more proactive and specific in their nutrition-related practices, indicating that personal experience influenced more decisive preventive actions.

DISCUSSIONS

Stunting prevention behavior in the first 1,000 days of life is closely linked to positive health practices, such as regular pregnancy check-ups, iron tablet consumption, exclusive breastfeeding, and vitamin supplementation [7,16]. However, in Sawai Village, most of these behaviors were not specifically aimed at stunting prevention, except among mothers who had previously experienced stunting in their children. Even then, the actions were mainly focused on improving nutrition.

These behaviors are influenced by individual belief systems and motivations, where children's health is seen as a priority. However, the link between this belief and specific stunting prevention efforts remains weak. Prior studies have shown that personal perception of vulnerability and benefits significantly influences preventive behavior [17–19]. Without sufficient knowledge, behavioral changes may lack consistency and may even shift in irrelevant directions [20].

Stunting prevention should go beyond nutrition improvements to include a wide range of health actions, such as routine growth monitoring, exclusive

breastfeeding, and timely introduction of complementary feeding [10]. In Sawai, the involvement of fathers remains minimal. This is consistent with studies that emphasize the importance of paternal support in enabling maternal health behaviors and decisions related to child care and nutrition [21]. Therefore, educational interventions targeting men—such as through male forums or community leaders—are necessary to enhance their role [18,22].

The study also revealed that pregnant women often avoided fish due to nausea and odor, despite fish being a rich source of essential nutrients during pregnancy [23,24]. Given Sawai Village's abundant marine resources [25], efforts should be made to promote culturally acceptable and accessible strategies for increasing fish intake during pregnancy and early childhood.

Another concern is the early introduction of formula and complementary foods before six months of age, largely due to lack of knowledge and inadequate breastfeeding support. Cadres were unable to provide effective counseling, and routine education at Posyandu was lacking. This is problematic, as improper breastfeeding and feeding practices are linked to poor nutritional outcomes and increased stunting risk [26–29]. Integrated health education on breastfeeding and appropriate complementary feeding, along with family support, especially from fathers, is crucial to prevent stunting [30,31].

Although the stunting prevalence in Sawai is relatively low, the underlying behavioral and structural challenges indicate potential future risk. Addressing these gaps through active community engagement and government-led initiatives such as Posyandu revitalization is essential. According to Ministry of Home Affairs Regulation No. 18/2018, Posyandu plays a strategic role in ensuring health services across life stages [32,33]. With available resources—such as village funds, health workers, and midwives—Sawai Village can optimize Posyandu services to deliver consistent education, monitor child development, and implement integrated nutrition programs.

The findings of this study have practical implications for public health, particularly in remote and island communities. They highlight the importance of designing behavior change interventions that are not only knowledge-based but also consider cultural, social, and environmental factors influencing health actions. Strengthening the capacity of health cadres, increasing male involvement, and revitalizing community-based health platforms like Posyandu can serve as effective strategies for sustainable stunting prevention.

However, this study has limitations. The data primarily reflect perspectives at the village level and do

not capture district-level program implementation or convergence policies. Additionally, findings are context-specific and may not be generalizable to other settings with different cultural or geographic characteristics. Despite these limitations, the study offers valuable insights into behavior-based approaches for improving child nutrition and preventing stunting in resource-limited environments.

CONCLUSION

This study revealed that stunting prevention behaviors in Sawai Village involve various stakeholders, including parents, health workers, cadres, and village authorities. While some community behaviors align with general child health practices, they are not yet explicitly directed toward stunting prevention. The father's role remains limited, and knowledge gaps, socio-cultural beliefs, and logistical barriers continue to hinder effective behavioral change. The health action model helped illustrate how belief systems, motivation, normative influences, knowledge, and environmental factors shape community behaviors in this context.

To strengthen stunting prevention efforts, a comprehensive behavior change intervention based on the Health Action Model is recommended. This should include targeted education for mothers and fathers, capacity building for health cadres, and community-based strategies that consider local beliefs and socio-economic realities. In particular, revitalizing Posyandu as an integrated health service platform can improve access to information, support child growth monitoring, and foster stronger community participation. Collaboration between health services and local government is essential to ensure long-term sustainability and improved child health outcomes in remote island communities.

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