

Stunting Prevention Behaviors and Local Wisdom Among the Kokoda Indigenous Community in Southwest Papua, Indonesia: A Qualitative Study

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ABSTRACT:

Background. Stunting among Indigenous populations is shaped by the interaction of nutritional, health, social, environmental, and cultural factors. Evidence regarding stunting prevention behaviors and relevant local wisdom among the Kokoda Indigenous community in Southwest Papua remains limited. This study aimed to explore behaviors and local wisdom related to stunting prevention among the Kokoda people.

Methods. A qualitative study using a descriptive phenomenological approach was conducted in Sorong City and Sorong Regency from January to February 2025. Twenty informants were purposively selected, comprising mothers of children under two years of age, customary leaders, integrated health post cadres, health workers, policymakers, and a nutrition academic. Data were collected through semi-structured in-depth interviews, transcribed verbatim, and analyzed thematically. Trustworthiness was strengthened through source triangulation and data collection until thematic saturation was reached.

Results. Five main themes were identified: (1) an incomplete understanding of stunting and the use of the local term Ottora Itiki; (2) social, economic, environmental, behavioral, and health-service access barriers; (3) community support through health cadres, participation in integrated health posts, and the communal value of nabusara; (4) the dual nature of local wisdom, including potentially harmful practices such as udia bibia and discarding colostrum, alongside the nutritional potential of local foods; and (5) the need for sustained support through integrated health posts, home visits, visual media, and the involvement of families and customary leaders.

Conclusions. Stunting prevention among the Kokoda people requires interventions that are not only grounded in nutrition evidence but are also responsive to local social and cultural structures. A support model that integrates health cadres, families, customary leaders, health services, and local foods may improve program acceptability and sustainability.

Keywords: stunting; local wisdom; prevention behaviors; Indigenous populations; Kokoda people

Introduction

Stunting is a form of chronic undernutrition defined as a length- or height-for-age below -2 standard deviations from the median of the child growth standards. It develops from prolonged nutritional deprivation, particularly from pregnancy through the first two years of life. Its consequences extend beyond physical growth to cognitive development, learning capacity, productivity, and an increased risk of noncommunicable diseases in adulthood (Black et al., 2013; UNICEF, 2021; World Health Organization, 2025). Globally, approximately 150.2 million children under five years of age, or 23.2%, were affected by stunting in 2024. In Indonesia, the 2024 Indonesian Nutritional Status Survey reported a stunting prevalence of 19.8%, whereas the prevalence in Southwest Papua was approximately 30.5%, substantially higher than the national average (Kementerian Kesehatan Republik Indonesia and Badan Kebijakan Pembangunan Kesehatan, 2025; UNICEF, World Health Organization and World Bank Group, 2025). This burden underscores the need for strategies tailored to the geographical, social, and cultural characteristics of local communities.

Stunting prevention encompasses nutrition-specific and nutrition-sensitive interventions, including improved maternal nutrition, exclusive breastfeeding, appropriate complementary feeding, immunization, growth monitoring, access to safe water and sanitation, and family education. However, intervention effectiveness is also influenced by social norms, belief systems, caregiving practices, food security, access to health services, and community cultural practices (Beal et al., 2018; Astuti et al., 2024). Consequently, standardized approaches that disregard local contexts may have limited acceptability and sustainability. The Kokoda people are an Indigenous community in Southwest Papua with distinct caregiving practices, social support systems, customary leadership, and patterns of local food use. Local wisdom can function as a health-promoting resource, for example through community solidarity and the use of fish, shellfish, sago,

tubers, and local vegetables. At the same time, some practices may conflict with health recommendations, such as introducing foods before six months of age or restricting certain foods during pregnancy. Understanding both dimensions is essential for designing interventions that are scientifically sound and socioculturally acceptable.

Research on stunting prevention behaviors and local wisdom among the Kokoda people remains limited. This study aimed to explore community behaviors related to stunting prevention, identify barriers and enabling factors, examine cultural practices and local foods, and identify community needs as a foundation for developing a locally grounded nutrition support intervention.

Methods

Study design and setting

This qualitative study used a descriptive phenomenological approach to understand the experiences, perceptions, and practices of the Kokoda people regarding stunting prevention. The study was conducted from January to February 2025 in Kokoda settlements in Sorong City and Sorong Regency, Southwest Papua Province. The sites were purposively selected because of their concentrations of Kokoda residents, variation between urban and rural contexts, and relevance to the regional burden of stunting.

Participants and sampling

Informants were individuals with direct experience, knowledge, or roles related to the care of children under two years of age, nutrition services, stunting prevention programs, and the sociocultural life of the Kokoda community. Purposive sampling was used to capture diverse perspectives from service recipients, service providers, policymakers, and community social actors. Data collection ended after the twentieth interview, when information became repetitive and no substantively new themes emerged. The composition and selection criteria of the informants are presented in Table 1.

Table 1. Informant composition and selection criteria

Informant group	n	Sex (F/M)	Age range (years)	Main selection criteria
Mothers of children under two years	5	5/0	465-475	Kokoda women caring for a child under two years of age who had experience with child feeding and the use of child health services.
Traditional leaders	2	0/2	465-475	Individuals who understood Kokoda values, norms, and cultural practices and held social influence within the community.
Health Office officials	3	2/1	465-475	Individuals involved in nutrition policy and programme implementation or stunting prevention programmes in Sorong City or Sorong Regency.
Primary health centre nutrition personnel	4	4/0	465-475	Personnel actively providing nutrition services and involved in stunting prevention programmes.
Integrated health-post cadres	5	5/0	465-475	Community health volunteers with experience providing maternal and child health services to Kokoda communities.
Nutrition academic	1	1/0	36	An academic with expertise and experience in public health nutrition and stunting.

Data collection instrument

Data were collected using a semi-structured interview guide developed from the study objectives. Open-ended questions explored understandings of stunting, current caregiving and feeding behaviors, barriers and enabling factors, cultural practices and local foods, experiences of accessing health services, and preferred forms of support. The guide was used flexibly, allowing the interviewer to probe informants' responses and contextual experiences. Field notebooks, a mobile phone, an audio recorder, participant information sheets, and consent forms supported the data collection process.

Data collection procedures

The researchers first coordinated with the local health offices, primary health centers, health cadres, and community leaders to identify potential informants. Each potential informant received an explanation of the study purpose, procedures, potential benefits, confidentiality safeguards, and the right to refuse or discontinue participation. Interviews were

conducted after written informed consent had been obtained. Each interview lasted approximately 45 minutes and took place at a mutually agreed location that ensured privacy. With the informants' permission, all interviews were audio-recorded and supplemented with field notes on the context, nonverbal responses, and salient information arising during the interaction. Personal identifiers were excluded from transcripts and reports.

Data analysis

Audio recordings were transcribed verbatim and read repeatedly to develop a comprehensive understanding of the data. Thematic analysis followed six stages: familiarization with the data, generation of initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report (Nowell et al., 2017). Coding was iterative and linked meaning units to categories, subthemes, and themes. Constant comparison across transcripts and informant groups was used to identify recurring patterns and variations in perspectives. NVivo 12 Plus was used to organize transcripts, codes, categories, and relationships among themes;

final interpretation remained the responsibility of the researchers and was guided by the study objectives and sociocultural context.

The credibility of the findings was strengthened through source triangulation by comparing information from mothers of children under two years of age, integrated health post cadres, customary leaders, health workers, policymakers, and a nutrition academic. Data saturation was assessed throughout data collection and analysis; interviews ended when the same codes and themes recurred without generating meaningful new insights. Field notes and the coding trail in NVivo documented the analytical process, enabling the links among data, categories, and interpretations to be traced.

Results

Participant characteristics

Twenty informants participated in the study. Their ages ranged from 21 to 56 years; 17 informants (85%) were women, and 13 (65%) were from Sorong City. Informants comprised five mothers of children under two years of age, two customary or community leaders, three local health office officials, four nutrition personnel from primary health centers, five integrated health post cadres, and one nutrition academic. This diversity provided perspectives from household, community, health-service, and policy levels.

Thematic findings

The analysis generated five main themes illustrating how knowledge, caregiving practices, environmental and service conditions, social capital, and local culture interact in stunting prevention among the Kokoda people.

Theme 1: Understanding of stunting and sources of information

Understanding of stunting varied between informants who did not fully understand the concept and those who associated it with nutritional deficiency and impaired growth. Some mothers recognized stunting only as short stature or had never heard the term. Community members used the local expression *Ottora Itiki*,

meaning 'short legs.' Although this expression helped describe an easily recognized physical sign, it did not encompass the causes, long-term consequences, or preventive factors associated with stunting.

"...I had heard about it from a nurse, but I did not understand it..." (Mother of a child under two years, 35 years).

"Stunting is when a child is short, when the child's height is not appropriate for their age...people here usually call it *Ottora Itiki*, meaning short legs." (Integrated health post cadre, 35 years).

Information about stunting was obtained primarily from health workers, health cadres, educational sessions at integrated health posts, and primary health centers. Health workers were regarded as the most authoritative sources, whereas cadres served as socially accessible links to the community's everyday life.

"...usually from the nurses at the primary health center..." (Mother of a child under two years, 37 years).

"...the nurses come to provide education; they gather the mothers and explain it to them..." (Integrated health post cadre, 35 years).

Theme 2: Barriers to stunting prevention

Barriers to stunting prevention were multidimensional. At the individual and family levels, informants highlighted limited education and health literacy, inconsistent clean and healthy living practices, smoking inside the home, early pregnancy, and economic constraints. At the environmental level, settlements in swampy areas, flooding, inadequate sanitation, and household crowding increased children's vulnerability to infection.

"...hygiene and sanitation are very poor...the area often floods, and clean and healthy living practices are also inadequate..." (Primary health center nutrition worker, 42 years).

"...the house is already unhealthy, and many people inside smoke; sometimes they even hold the child while smoking..." (Primary health center nutrition worker, 33 years).

Early feeding practices also represented a barrier. Colostrum was sometimes discarded because it was considered salty or spoiled, exclusive breastfeeding was not consistently practiced, and foods such as banana or *papeda* were introduced before six months of age. Uneven cadre capacity, inaccurate targeting of supplementary feeding, lack of health insurance, and limited food access also affected program implementation.

"...the first breast milk, the yellow one...it is usually washed away until the white milk comes, and only then is it given to the baby." (Integrated health post cadre, 54 years).

"...at two or three months, the baby is already given banana because they say it is a customary practice..." (Primary health center nutrition worker, 40 years).

Access to integrated health posts and health facilities was influenced by mothers' work activities, spousal support, time, distance, travel conditions, and perceptions of the urgency of care. Some mothers prioritized work or sought health services only when their child became ill.

"...I usually take my child with me to sell goods at the market, so I do not attend the integrated health post..." (Mother of a child under two years, 31 years).

"...a mother was already at the integrated health post, but her husband came and told her to go home, so the child was not weighed." (Integrated health post cadre, 35 years).

Theme 3: Enabling factors and community social capital

Despite the barriers, community members showed enthusiasm for integrated health post activities and health programs. Cadres actively reminded families of schedules, called on households, and conducted door-to-door outreach. Their close relationships with community members facilitated the delivery of information and follow-up care.

"When the integrated health post is active, many people attend...the cadres often visit homes, call the parents, and remind them the day before." (Integrated health post cadre, 35 years).

The communal value known as *nabusara* constituted an important form of social capital. The practice of living collectively facilitated the rapid dissemination of information, decision-making during health problems, and support for families in need.

"...the sense of togetherness is very strong; if one person eats, everyone should eat, and if one person is sick, everyone helps." (Health policymaker, 42 years).

"...they enjoy living in groups, which enables them to make decisions quickly when a pregnant woman experiences an emergency." (Nutrition academic, 36 years).

Theme 4: Local wisdom, caregiving practices, and local foods

Local wisdom had two contrasting dimensions. Several practices transmitted across generations could hinder stunting prevention, including *udia bibia*, or giving banana to infants before six months of age, discarding colostrum, introducing infant formula early, and observing certain food taboos during pregnancy. Informants considered these practices deeply rooted and unlikely to change through a single educational session.

"...complementary feeding sometimes begins before six months; at three or four months, infants are already given banana or papeda. This tradition still exists and is difficult to change." (Integrated health post cadre, 36 years).

*"...at two months, the baby is already given banana. This customary practice is called *udia bibia*, which means feeding banana." (Integrated health post cadre, 29 years).*

Conversely, the Kokoda environment provides a wide range of local foods. Skipjack tuna, Indian mackerel, tilapia, tuna, and *bia* or shellfish are sources of animal protein; sago, cassava, and taro provide energy; and water spinach, *gedi*, *katuk*, moringa, spinach, and ferns provide vitamins and minerals. However, these foods were not always used for child feeding because the catch was often sold to meet the family's economic needs.

"...there are many animal-source foods, such as skipjack tuna, Indian mackerel, and shellfish...they could support nutrition, but because of economic pressures, the catch is sold." (Integrated health post cadre, 35 years).

"...water spinach, *gedi*, *katuk*, moringa, and then seafood; fish and shellfish are easy to obtain here." (Integrated health post cadre, 36 years).

Customary leaders and village heads held strategic positions in fostering community acceptance. Their involvement facilitated community mobilization, the provision of venues for activities, and the legitimization of health messages considered culturally sensitive.

Theme 5: Preferred forms of support, media, and messengers

Community members expected support to be regular, practical, and close to the household. Integrated health posts remained the preferred center for activities but needed to be complemented by home visits to reach families who rarely attended. The involvement of husbands, health cadres, health workers, village heads, customary leaders, and religious leaders was considered important so that messages were not directed solely to mothers.

"...provide education from house to house." (Primary health center nutrition worker, 40 years).

"We hope the government will collaborate with customary institutions embedded in the community." (Customary leader, 56 years).

Visual media, including illustrated books or modules, leaflets, posters, photographs, and videos, were considered easier to understand and could be reused at home. Nevertheless, informants still preferred direct explanations that allowed them to ask questions and discuss how the messages could be applied in everyday life.

"...a book would be useful for reading, especially one with pictures." (Mother of a child under two years, 29 years).

"...it would be better to distribute books that mothers can read at home, so they will continue to remember the information." (Customary leader, 44 years).

The most trusted messengers combined technical and social legitimacy: health workers, female health cadres, village heads, and customary chiefs. This finding indicates that effective communication depends on collaboration between the formal health system and local leadership structures.

Table 2. Main themes and subthemes identified in the analysis

Theme	Key subthemes	Programmatic implications
Understanding of stunting	Limited understanding; stunting perceived as short stature; the local term <i>Ottora Itiki</i> ; health workers and community health volunteers as sources of information.	Education should be simple, visual, and repeated, and should connect local terminology with the causes and consequences of stunting.
Barriers to prevention	Low health literacy; inadequate clean and healthy living practices and sanitation; smoking; discarding colostrum; early complementary feeding; and limitations related to household finances, cadre capacity, health insurance coverage, and access to services.	Interventions should be multisectoral and family-centred, integrating education, water, sanitation, and hygiene (WASH), strengthened health services, and social protection.
Supporting factors	Participation in integrated health posts; active community health volunteers; a culture of gathering; solidarity; and <i>nabusara</i> .	Social capital can be used to mobilise communities, disseminate messages, support monitoring, and strengthen mutual assistance among families.
Local wisdom	<i>Udia bibia</i> , discarding colostrum, and food taboos; a diversity of fish, shellfish, sago, tubers, and local vegetables; and the role of traditional leaders.	Potentially harmful practices should be addressed through culturally sensitive reconstruction, while local foods and traditional leadership should be strengthened.

Theme	Key subthemes	Programmatic implications
Community expectations	Integrated health posts and home visits; involvement of husbands and traditional leaders; visual media; and messages delivered by health workers, community health volunteers, village leaders, and tribal leaders.	Support should be multimodal, collaborative, sustained, and delivered through trusted figures.

Discussion

This study demonstrates that stunting prevention among the Kokoda people is shaped by interactions among knowledge, caregiving practices, economic and environmental conditions, access to services, social support, and cultural practices. The five themes underscore that family behavior cannot be separated from community structures and local resources. Therefore, interventions that deliver nutrition information without addressing the social and cultural context are likely to have limited effects.

An understanding of stunting centered on the visible sign of short stature indicates a gap between recognition of the term and comprehensive health literacy. *Ottora Itiki* may serve as a culturally relevant entry point for communication, but it should be linked to explanations of chronic undernutrition, infection, caregiving practices, sanitation, and long-term consequences. Maternal education is associated with the risk of stunting among children under two years of age, but formal education is not the sole determinant; exposure to information, communication quality, family support, and access to services also play important roles (Laksono et al., 2022; Titaley et al., 2019). These findings support educational approaches that avoid reliance on technical terminology and instead use local language, illustrations, familiar food examples, and repeated messages.

Health workers and cadres were the principal sources of information. Health workers offered professional legitimacy, whereas cadres provided social proximity and continuity of interaction. Nutrition training for health workers and cadres

can improve the quality of counseling and caregivers' feeding practices (Sunguya et al., 2013; Sukmawati et al., 2025). Because some messages were still delivered unidirectionally, communication should shift toward dialogue that enables families to explain their beliefs, barriers, and realistic options. Involving customary leaders may further strengthen the acceptability of messages, particularly when educational content addresses practices transmitted across generations.

The identified barriers align with conceptual frameworks in which stunting arises from immediate, underlying, and basic causes. Limited health literacy, food insecurity, access to services, feeding practices, household conditions, sanitation, and economic constraints reinforce one another (Beal et al., 2018; Danaei et al., 2016; UNICEF, 2021). Behaviors such as nonattendance at integrated health posts or early introduction of complementary foods should therefore not be interpreted solely as maternal noncompliance. Such decisions may reflect work demands, a husband's permission, household income, distance, family norms, and the support provided by the health-service system.

Discarding colostrum, providing banana or *papeda* before six months of age, and suboptimal exclusive breastfeeding are important findings during the most critical period of child growth. Infant-feeding practices develop within a context of family norms, food availability, intergenerational experience, and access to counseling; therefore, behavior change requires more than a one-time transfer of information (Stewart et al., 2013; Sirkka et al., 2022). Educational strategies should acknowledge the cultural meanings of these practices, explain

risks without judgment, and offer feasible alternatives for families.

Poor sanitation, flooding, inadequate handwashing, and exposure to tobacco smoke further increase the risk of infection and impaired growth. Improvements in water, sanitation, and hygiene may reduce exposure to pathogens and intestinal dysfunction associated with stunting (Mbuya and Humphrey, 2016). Household tobacco-smoke exposure has also been associated with stunting among rural and socioeconomically disadvantaged families in Indonesia (Muchlis et al., 2023). In practical terms, nutrition support should be integrated with promotion of smoke-free homes, hand hygiene, safe water management, and healthy household environments.

The value of *nabusara*, the culture of gathering, and active health cadres indicate that the Kokoda community possesses social capital that can strengthen interventions. Social capital facilitates information sharing, mutual assistance, and rapid decision-making. Evidence from Indonesia suggests that community participation and social networks may strengthen environmental and food-security pathways for stunting prevention (Prayitno et al., 2025; Setianingsih et al., 2024). Community-based approaches should not treat residents merely as program recipients but should involve them in planning, message selection, monitoring, and evaluation.

Local wisdom in this study was ambivalent. Udia *bibia* and the discarding of colostrum may increase risk, whereas seafood, sago, tubers, and local vegetables provide nutrients relevant to maternal and child nutrition. Animal-source foods are associated with child growth and may contribute to stunting prevention when available and consumed regularly (Headey et al., 2018). However, catches are often sold to meet household economic needs, meaning that environmental availability does not automatically ensure household consumption. Local-food interventions should consider affordability, intrahousehold food allocation, preparation methods, age-appropriate textures, and meal

combinations that provide adequate dietary diversity.

Preferences for integrated health posts, home visits, illustrated media, and family involvement are consistent with evidence that community-based nutrition counseling and family support can improve feeding practices (Kulwa et al., 2014; Mistry et al., 2019). Visual media can benefit communities with varying literacy levels, but should function as tools for interaction rather than substitutes for counseling. Combining illustrated modules, demonstrations of local-food preparation, group discussions, and home visits would allow messages to be tailored to each family's circumstances.

These findings have programmatic and policy implications. A support model could be established through three complementary channels: routine integrated health post services, home visits by cadres and health workers, and community forums involving village heads, customary leaders, and religious leaders. Content should prioritize exclusive breastfeeding, timely and appropriate complementary feeding, the use of local foods, clean and healthy living practices, sanitation, smoke-free homes, and growth monitoring. Cadres require training, supervision, user-friendly educational media, and clear referral pathways. At the same time, husbands and other family members should be involved so that responsibility for stunting prevention is not placed solely on mothers.

Strengths and limitations

A strength of this study was its inclusion of multiple stakeholder perspectives, comprising mothers of children under two years of age, customary leaders, health cadres, health workers, policymakers, and a nutrition academic, across the contexts of Sorong City and Sorong Regency. This triangulation enabled a more comprehensive understanding of the relationships among household behavior, health services, and culture. Nevertheless, the findings were derived from purposively selected participants in specific communities and locations; their transferability to other Indigenous populations should therefore be

considered cautiously. The data were based primarily on experiences reported during interviews and were not supplemented by direct observations of feeding practices or household conditions. The researchers' positionality and the language used during interviews may also have influenced how informants expressed, and researchers interpreted, their experiences.

Conclusions

Stunting prevention among the Kokoda people is influenced by incomplete understanding, caregiving and feeding practices that do not consistently align with recommendations, economic constraints, poor sanitation, limited access to services, and variable capacity among community-level implementers. At the same time, participation in integrated health posts, active health cadres, the value of *nabusara*, customary leadership, and the diversity of local foods represent important resources. The most contextually appropriate intervention is sustained nutrition support that combines integrated health post services, home visits, visual media, local-food demonstrations, strengthened cadre capacity, and the involvement of husbands, families, health workers, and customary leaders.

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Data availability

The interview data are not publicly available to protect participant confidentiality. Requests for access to de-identified data may be considered by the corresponding author, subject to ethical approval and institutional requirements.

Ethics approval

Ethical approval was obtained from the Research Ethics Committee of the Faculty of Public Health, Hasanuddin University (No. 3559/UN4.14.1/TP.01.02/2024). All informants provided informed consent after receiving an explanation of the study.

Conflict of interest

The authors declare that they have no conflicts of interest related to the material presented in this manuscript.

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