Journal Syifa Sciences and Clinical Research (JSSCR)
Volume 7 Nomor 2, 2025
Journal Homepage: http://ejurnal.ung.ac.id/index.php/jsscr, E-ISSN: 2656-9612 P-ISSN:2656-8187
DOI : https://doi.org/10.37311/jsscr.v7i2.31584

Community Insights on Ethnomedicine Use for Stunting Prevention: Evidence from Gorontalo, Indonesia

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ABSTRACT

This cross-sectional observational study investigates community perceptions of stunting, its prevention, and the use of ethnomedicine in Huyula Village, Mootilango District, Gorontalo Regency, Indonesia. Stunting remains a major public health concern due to its long-term impact on child development and productivity. In rural areas, ethnomedicine traditional health practices rooted in cultural beliefs continues to be widely practiced and may influence public responses to child nutrition and health interventions. Data were collected from 246 community members selected through purposive sampling using a structured questionnaire that had been tested for validity and reliability. The instrument assessed perceptions in three key domains: understanding of stunting, support for prevention strategies, and beliefs regarding ethnomedicine. Univariate descriptive analysis was used to interpret the data. The findings indicated that 69.9% of respondents had a positive perception of stunting as a health issue, 80.5% supported prevention efforts such as early complementary feeding and hygiene practices, and 74.4% held favorable views toward the use of ethnomedicine in addressing child growth problems. Analysis also revealed perceptual differences based on demographic factors including gender, education level, and occupation. These results reflect the coexistence of biomedical awareness and traditional health belief systems in the community. The study underscores the importance of integrating culturally sensitive approaches into public health education. It is recommended that stunting prevention programs engage traditional health actors, enhance community-level communication, and promote collaboration between modern and traditional systems to improve acceptance and effectiveness of interventions in rural Indonesian settings.

Keywords:
Stunting; Ethnomedicine; Community Perception; Stunting Prevention; Gorontalo

Received:	***Accepted:***	***Online:***
2025-05-11	*2025-07-20*	*2025-07-25*

1. Introduction

Stunting is a chronic public health problem that impairs the optimal growth and development of children, particularly during the first 1,000 days of life—from conception to two years of age. It is commonly identified by low height-for-age and reflects long-term nutritional inadequacies, repeated infections, and inadequate psychosocial stimulation [1]. Beyond physical appearance, stunting is associated with delayed cognitive development, reduced educational performance, diminished economic productivity, and increased morbidity and mortality in childhood [2].

Data from the 2021 Indonesian Nutrition Status Survey (SSGI) indicate a declining trend in national stunting prevalence from 27.7% in 2019 to 24.4% yet

significant regional disparities persist, particularly in remote and underserved areas [3]. In these communities, health practices are often shaped by cultural beliefs and traditional systems, such as ethnomedicine, which encompasses indigenous knowledge, the use of medicinal plants, healing rituals, and culturally informed interpretations of health and illness [4].

Despite government efforts through national strategies such as the *Strategi Nasional Percepatan Pencegahan Anak Kerdil (Stunting)* [3], misconceptions about the causes of stunting remain prevalent. In many rural areas, including Gorontalo, stunting is still commonly attributed to hereditary or spiritual factors rather than modifiable environmental or nutritional conditions. These divergent beliefs affect community participation in public health programs and highlight the importance of understanding local perceptions [5],[6],[7].

Perception itself is influenced by individual experiences, socio-cultural context, and access to health information, shaping how communities interpret and respond to health challenges [4]. The role of community beliefs becomes critical in the implementation of health interventions, particularly when traditional practices remain central to household decision-making on child nutrition and treatment. Studies suggest that aligning health promotion strategies with local wisdom can significantly improve program acceptance and sustainability [7].

In this context, ethnomedicine as part of the community's adaptive strategy to health—can serve as both a facilitator and barrier to child nutrition programs. The need to examine how ethnomedicine is perceived and utilized in stunting prevention becomes especially urgent in areas like Huyula Village, Mootilango District, where traditional knowledge systems coexist with formal health services.

Therefore, the aim of this study is to explore community perceptions of ethnomedicine use in the prevention of stunting, particularly in rural Gorontalo. Understanding these perceptions will provide valuable insights into how culturally informed interventions may be designed to support stunting reduction efforts more effectively.

2. Methods

This study employed a quantitative observational design with a cross-sectional approach to explore community perceptions on the use of ethnomedicine in stunting prevention. Data were collected at a single point in time without repeated measures, aligning with the principles of cross-sectional methodology [8], [9].

Study Area and Population

The study was conducted in Huyula Village, Mootilango District, Gorontalo Regency, Indonesia—a rural setting characterized by limited access to modern healthcare but a strong reliance on traditional health systems. The target population comprised 642 community members aged 18 to 59 years who were permanent residents of the village.

Sample Size and Sampling Technique

The minimum sample size was determined using the Slovin formula with a 5% margin of error, resulting in a sample of 246 respondents, calculated as follows:

$$n = \frac{N}{1 + N.e^2} = \frac{642}{1 + 642.(0.05)^2} = 246$$

Explanation:
n = Sample Size
N = Population Size
e = Margin of Error (0.05)

Respondents were selected using a purposive sampling technique, which allows for the deliberate inclusion of individuals who meet specific criteria relevant to the study [10], [11], [12]. This method was chosen to ensure the sample reflected the sociocultural profile of the community and their familiarity with ethnomedicine practices.

Inclusion and Exclusion Criteria

In this study, participants were selected based on predefined inclusion and exclusion criteria to ensure the validity and relevance of the data collected. The inclusion criteria required that respondents be permanent residents of Huyula Village, aged 18 years or older, and legally married, as these individuals were considered to have sufficient household experience related to child health and nutrition. Furthermore, only those who voluntarily agreed to participate and provided written informed consent after receiving a full explanation of the research objectives and procedures were included in the study.

On the other hand, individuals who were unable to read or write were excluded due to the self-administered nature of the questionnaire, which required basic literacy. Additionally, respondents who submitted incomplete responses were also excluded from the final analysis to maintain data integrity and consistency in variable measurement.

Data Collection Instrument

Data were obtained using a structured questionnaire developed based on previous literature and validated through a pilot study. The questionnaire consisted of three main sections: perception of stunting, perception of stunting prevention, and perception of ethnomedicine use.

Validity and Reliability Testing

Validity testing was performed using the Pearson Product-Moment correlation, where items with a correlation coefficient (r) greater than the critical value ($r\text{-}table \geq 0.361$) were considered valid [17,18]. Reliability was assessed using Cronbach's alpha, with a threshold of ≥ 0.60 indicating acceptable internal consistency[13],[14]. The final instrument showed Cronbach's alpha values of 0.640 (stunting perception), 0.683 (stunting prevention), and 0.791 (ethnomedicine use), indicating moderate to high reliability.

Data Processing and Analysis

The data processing steps included editing, coding, entry, and tabulation using statistical software. Univariate analysis was employed to describe the frequency distribution of variables such as gender, age, education, occupation, marital status, number of children, income, experience with stunted children, and perceptions toward the three domains of interest [13],[15],[16].

Ethical Consideration

This study received ethical approval from the Health Research Ethics Committee of Universitas Negeri Gorontalo, with approval number 220/UN47.B7/KE/2024, issued on October 18, 2024. All participants were provided with detailed information regarding the study objectives and procedures and gave their written informed consent prior to data collection. The research was conducted in accordance with the principles outlined in the Declaration of Helsinki and institutional guidelines for human subject research.

3. Results and Discussion

Instrument Validity and Reliability

The validity and reliability tests were conducted to ensure the measurement instrument accurately captured respondents' perceptions regarding stunting, its prevention, and the use of ethnomedicine. Validity testing employed the Pearson

Product-Moment correlation coefficient, with a critical *r-table* value of 0.361 at a significance level of 5%. Any item with a correlation coefficient (*r-count*) exceeding this threshold was deemed valid [17], [18]. As presented in **Table 1**, the validity results showed that most items in the instrument met this criterion, although two items under both the stunting perception and stunting prevention categories, and three items under the ethnomedicine perception domain, were identified as invalid and subsequently excluded from further analysis.

Table 1. Results of the Validity and Reliability Tests for the Three Perception Variables

Category	Number of Questions	Validity Test (*r-count* > *r-table*)	Reliability Test (Cronbach's α ≥ 0.6)	Notes
Perception of Stunting	10	>0.500	0.640	2 items invalid
Perception of Stunting Prevention	11	>0.500	0.683	2 items invalid
Perception of Ethnomedicine Use	15	>0.500	0.791	3 items invalid

Source: Processed SPSS Data, 2025

In terms of reliability, internal consistency was assessed using Cronbach's alpha. According to established standards, a Cronbach's alpha value between 0.60 and 0.70 indicates moderate reliability, while values between 0.70 and 0.90 suggest high reliability [19], [20]. The analysis revealed Cronbach's alpha coefficients of 0.640 for stunting perception, 0.683 for stunting prevention, and 0.791 for ethnomedicine use. These results indicate that the instrument demonstrated acceptable to high internal consistency, thus confirming the reliability of the measurement tools used in this study.

These findings support the robustness of the instrument and align with previous methodological studies which affirm that instruments with Cronbach's alpha above 0.60 are generally considered acceptable in social science research [19], [20]. As such, the refined questionnaire items used for further analysis were both statistically valid and reliable in capturing the targeted constructs.

Respondent Demographic Characteristics

A total of 246 respondents from Huyula Village participated in this study. Their demographic characteristics are summarized in **Table 2**. The majority of participants were female (74.4%), with males comprising only 25.6%. This gender distribution reflects greater availability and accessibility of women, particularly housewives, during data collection. Women are often central in family nutrition and caregiving decisions, making their perspectives crucial in understanding community-level responses to child health issues such as stunting [21], [22], [23].

The dominant age group was early adulthood (26–35 years), representing 32.9% of respondents, followed by those aged 36–45 years (24.4%). These age ranges coincide with productive phases of life when individuals are typically responsible for child-rearing and household nutrition, which in turn may influence their awareness and perception of child growth and health interventions[24], [25].

In terms of education level, 59.3% of respondents had completed senior high school, while only 11.8% had a university degree. Educational attainment is a key factor in health literacy, often shaping how individuals perceive the causes of stunting and the role of interventions such as ethnomedicine [26], [27].Occupationally, over half of the respondents (53.3%) were housewives, followed by farmers (30.9%). This distribution is consistent with the socio-economic structure of rural Gorontalo and underscores the

relevance of traditional knowledge in health decision-making [28], [29], [30]

Most respondents were married (92.7%), aligning with the inclusion criteria. Marital status has been linked to greater household stability and collaborative parenting, both of which influence the nutritional well-being of children [31], [32], [33]. Regarding family composition, nearly 43% of respondents came from families with 2–3 members, and 47% from families with 4–5 members. Family size and structure are known to affect resource distribution, parenting time, and overall household food security [34],[35],[36].

Table 2. Demographic Characteristics of Respondents (N = 246)

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	63	25.6%
	Female	183	74.4%
Age	18–25 years	46	18.7%
	26–35 years	81	32.9%
	36–45 years	60	24.4%
	46–55 years	42	17.1%
	56–67 years	17	6.9%
Education Level	Elementary School (SD)	38	15.4%
	Junior High School (SMP)	27	11.0%
	Senior High School (SMA)	146	59.3%
	Diploma (D3)	6	2.4%
	Bachelor's Degree (S1)	29	11.8%
Occupation	Housewife	131	53.3%
	Farmer	76	30.9%
	Entrepreneur	25	10.2%
	Contract Worker	14	5.7%
Marital Status	Married	228	92.7%
	Widow	11	4.5%
	Widower	7	2.8%
Number of Children	1 child	93	37.8%
	2 children	69	28.0%
	3 children	58	23.6%
	4 children	24	9.8%
	5 children	2	0.8%
Family Size	2–3 members	104	42.3%
	4–5 members	116	47.1%
	≥6 members	26	10.6%
Monthly Income	< Rp 2,550,014	188	76.4%
	≥ Rp 2,550,014	58	23.6%
Experience with Stunted Children	Yes	7	2.8%
	No	239	97.2%

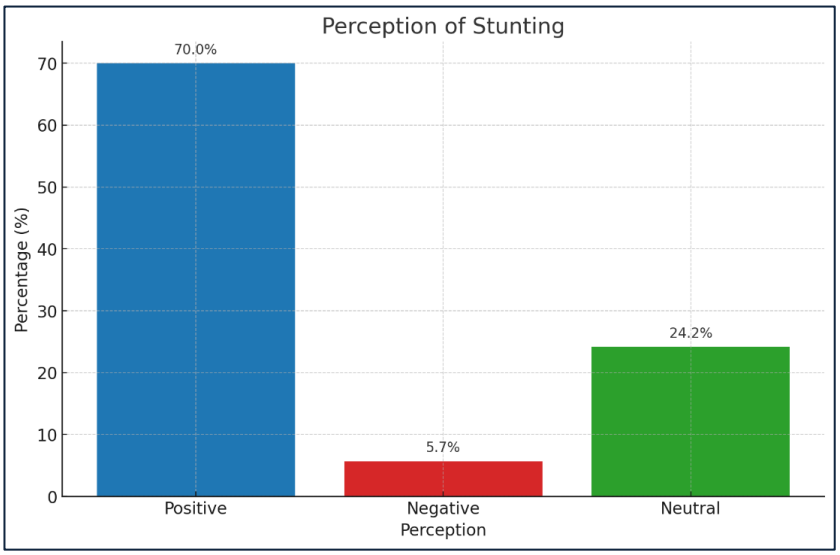
Source: Primary Survey Data Processed with SPSS, 2025

Income level is also a critical factor, with 76.4% of households earning less than the regional minimum wage (Rp 2,550,014). This economic vulnerability has been shown to correlate with limited access to diverse and nutritious food, contributing to stunting risk [37],[38],[39],[40]. Finally, only 2.8% of respondents had prior experience caring for children diagnosed with stunting, while the vast majority (97.2%) did not. This finding suggests that community understanding of stunting may still rely heavily on social beliefs and public health messaging rather than direct caregiving encounters. Taken together, these characteristics provide a socio-cultural context that shapes the

communitys perception of stunting, prevention strategies, and the acceptance of ethnomedicine as part of child health management [41], [42], [43].

Community Perception of Stunting

Community understanding of stunting plays a vital role in the success of intervention programs aimed at improving child nutrition and health outcomes. As illustrated in **Figure 1**, the perception of stunting among the 246 respondents in this study was predominantly positive, with 172 individuals (69.9%) expressing favorable views, 60 individuals (24.4%) remaining neutral, and only 14 individuals (5.7%) indicating negative perceptions. These results suggest that the majority of the community possesses a basic awareness of stunting and its implications.



Note: Chart shows 69.9% positive, 24.4% neutral, and 5.7% negative perceptions
Source: Primary Data Processed with SPSS, 2025

Figure 1. Frequency Distribution of Respondents Based on Their Perception of Stunting

Positive perception in this context refers to the community's acknowledgment that stunting is not merely a hereditary trait or natural variation in height, but rather a preventable condition rooted in prolonged nutritional deficiency. This is an important finding, considering that earlier field observations in the village indicated widespread belief that stunting was inherited and unrelated to environmental or dietary factors. The improved awareness revealed in this study may reflect the impact of recent public health campaigns and community education efforts conducted at the village level.

This finding aligns with national trends reported by Indonesia's Ministry of Health, which shows growing awareness of stunting as a public health concern, particularly following the launch of the National Strategy for the Acceleration of Stunting Prevention (Stranas Stunting) [3]. However, while public knowledge is improving, the persistence of 24.4% neutral responses suggests that significant information gaps remain. These respondents may be aware of the term "stunting" but lack sufficient understanding of its causes, consequences, and preventive measures.

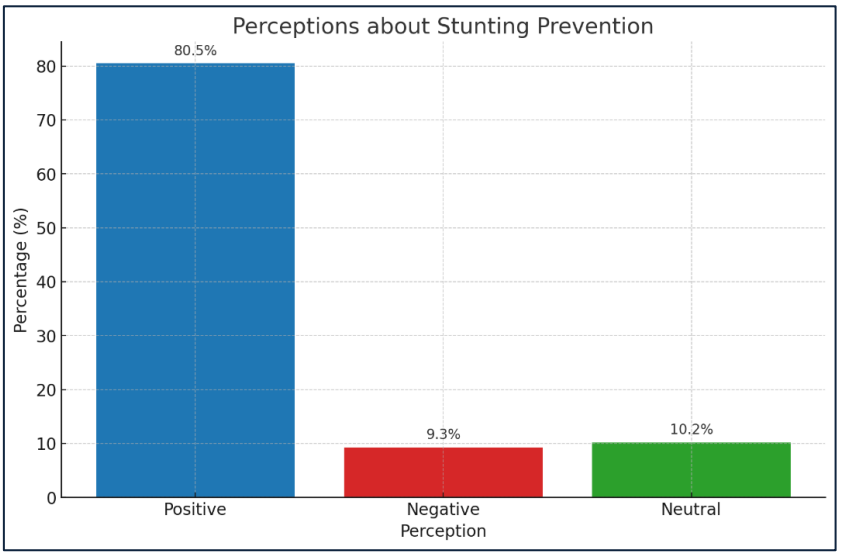
Comparatively, a study by Hasibuan and Prihanani (2022) in another rural Indonesian context also reported moderate to high levels of community awareness regarding stunting, although misconceptions particularly attributing short stature to genetics or fate—were still prevalent [5]. Similarly, research by Sumanti (2022) highlighted that perceptions are strongly influenced by cultural narratives and informal

social learning rather than formal education alone [6].

In this context, the role of community perception is not only indicative of knowledge levels but also acts as a predictive factor for health behaviors, including dietary practices, child feeding routines, and receptiveness to public health initiatives. As explained in health behavior theories such as the Health Belief Model, perceived severity and susceptibility influence the likelihood of individuals engaging in preventive action. Hence, a positive perception of stunting as a serious but preventable issue may foster proactive parenting behaviors and engagement with health services [7]. Nonetheless, the presence of a minority (5.7%) with negative perceptions highlights the ongoing challenge of combating deep-rooted beliefs and fatalistic attitudes, especially in traditional or low-literacy settings. Therefore, culturally sensitive education strategies are essential not merely providing biomedical information, but framing stunting in locally relevant narratives that resonate with community values and practices.

Community Perceptions of Stunting Prevention

Perceptions regarding stunting prevention are critical indicators of a community's readiness to adopt and sustain behavioral changes in child health practices. Based on the results shown in **Figure 2**, the majority of respondents demonstrated a positive perception toward stunting prevention, with 198 individuals (80.5%) falling into this category. Meanwhile, 25 respondents (10.2%) had a neutral view, and 23 respondents (9.3%) expressed negative perceptions.



Note: Chart shows 80.5% positive, 10.2% neutral, and 9.3% negative perceptions)
Source: Primary Data Processed with SPSS, 2025

Figure 2. Frequency Distribution of Respondents Based on Their Perception of Stunting Prevention

These findings suggest a generally favorable attitude toward the importance of stunting prevention among community members. Positive perception in this context reflects a basic understanding that stunting can be avoided through adequate maternal nutrition, exclusive breastfeeding, appropriate complementary feeding, environmental hygiene, and timely health service utilization during pregnancy and early childhood.

The high percentage of positive perception may reflect the impact of various community-level interventions and educational programs implemented in recent years. Nationally, the Indonesian government has emphasized early-life interventions through

the *1000 Hari Pertama Kehidupan (HPK)* strategy and integrated health posts (*Posyandu*), which promote maternal and child nutrition as well as behavior change communication [3]. The relatively strong positive perception in this study indicates that such strategies may be having a visible impact at the grassroots level, including in rural areas like Huyula Village.

Moreover, the central role of mothers in stunting prevention was evident in the data. As previously noted, over 53% of respondents were housewives, which implies that they are directly responsible for child-feeding decisions and household food choices. Studies have shown that maternal knowledge and agency are among the strongest predictors of child nutritional outcomes, especially in rural and low-income settings [28],[41].

However, the presence of 10.2% neutral and 9.3% negative responses cannot be overlooked. These figures may reflect residual misconceptions, lack of access to information, or competing priorities within the household. For instance, a study by Handayani et al. (2022) in Garut found that mothers who lacked knowledge of stunting prevention were more likely to rely on traditional practices or delay seeking care [7]. Similarly, Sumanti (2022) emphasized that behavior change takes time, especially when knowledge dissemination does not adequately account for cultural context and household economics [6].

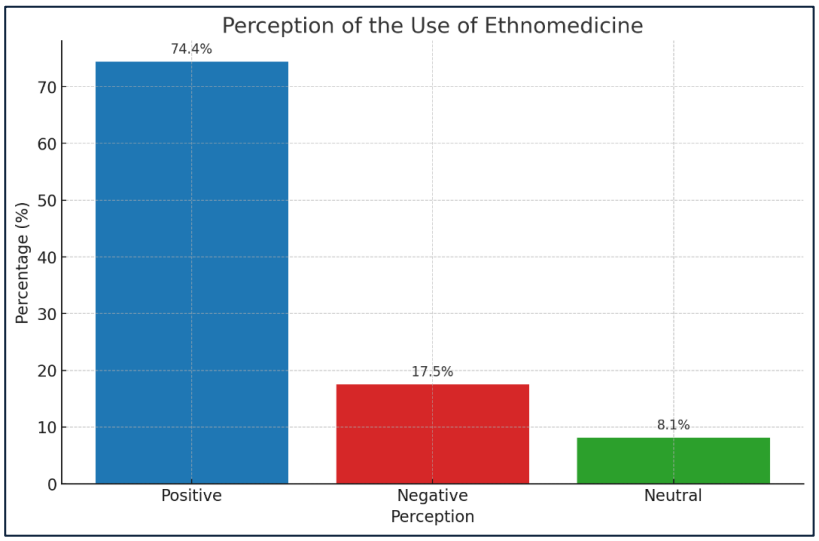
These findings underscore the importance of strengthening behavior-focused, culturally sensitive health promotion efforts. Integrating family-based counseling and leveraging trusted community actors such as midwives, health volunteers (*kader*), and local leaders could enhance the effectiveness of prevention programs. In addition, improving access to affordable, nutritious foods and sanitation facilities remains essential to translate perception into consistent preventive practice.

Community Perceptions of Ethnomedicine Use

The use of ethnomedicine—defined as traditional healing practices embedded in local knowledge systems—remains an integral part of community health behavior in rural Indonesian settings. In this study, perceptions regarding the role of ethnomedicine in stunting prevention were assessed and are illustrated in Figure 3. The majority of respondents (74.4%) held a positive perception, 17.5% were neutral, and 8.1% held negative perceptions.

The high proportion of positive responses reflects the enduring cultural relevance of traditional medicine in community health management. In Huyula Village, local ethnomedical practices include the use of herbal decoctions, postnatal massage, dietary taboos, and traditional birth attendants all of which are often passed down through generations. While these practices are not inherently targeted at stunting prevention, they are frequently used during pregnancy, infancy, and early childhood, indirectly influencing maternal and child health.

Importantly, the community's positive perception of ethnomedicine suggests an openness to integrating local wisdom with modern health programs. This is consistent with findings from ethnobotanical and medical anthropology research, which affirm that culturally embedded practices can enhance community trust and engagement when appropriately acknowledged by health authorities [4],[9].



Note: Chart shows 74.4% positive, 17.5% neutral, and 8.1% negative perceptions
Source: Primary Data Processed with SPSS, 2025

Figure 3. Frequency Distribution of Respondents Based on Their Perception of Ethnomedicine Use

However, the 17.5% neutral and 8.1% negative responses highlight a critical nuance: despite its cultural value, some community members remain uncertain about the effectiveness or relevance of ethnomedicine in preventing a biomedical condition like stunting. This reflects a potential disconnect between traditional beliefs and scientific understanding of child growth, particularly where stunting is misunderstood as a genetic condition or spiritual consequence as previously observed during fieldwork.

Studies by Geresomo et al. (2017) and Handayani et al. (2022) emphasize that reliance on traditional practices while culturally meaningful can be problematic when it delays access to formal health services or substitutes essential nutritional interventions [7],[43]. Therefore, a balanced approach is needed: one that respects traditional practices but also educates communities about evidence-based stunting prevention strategies.

In the context of Indonesia national stunting reduction initiatives, community-based strategies that bridge ethnomedicine and biomedical health promotion are increasingly seen as effective. For example, public health campaigns that involve local healers and traditional birth attendants as partners rather than competitors—have shown promise in improving maternal and child outcomes in rural areas [3],[6]. Such integration requires not only scientific communication but also cultural humility and participatory engagement.

In summary, while the positive perception of ethnomedicine underscores its relevance within the cultural health framework of the community, further efforts are needed to contextualize its role within scientifically supported stunting prevention programs, ensuring that traditional knowledge supports rather than substitutes critical health interventions.

The study reveals that most respondents held positive perceptions toward stunting (69.9%), its prevention (80.5%), and the use of ethnomedicine (74.4%). These findings align with national trends reported in the 2021 SSGI and reflect increasing community awareness following the implementation of the *National Strategy for Stunting Prevention* [3]. However, the persistence of neutral and negative responses suggests remaining misconceptions, particularly around genetic versus nutritional causes of stunting, as noted by Sumanti [6] and Hasibuan & Prihanani [5].

In terms of prevention, Handayani et al. [7]. emphasized that knowledge alone is insufficient; behavioral change also requires support systems and contextualized health messaging. The continued reliance on ethnomedicine supports previous findings that traditional practices remain influential in rural health behavior [4], but may also pose risks when they delay access to formal care, as highlighted by Geresomo et al. [43]. Overall, the findings indicate that while community perceptions are increasingly aligned with national stunting prevention goals, information gaps and cultural nuances remain. Addressing these requires not only strengthening formal health systems but also leveraging trusted local structures to support more inclusive and contextually grounded interventions.

This study is subject to several methodological limitations. Its cross-sectional design captures perceptions at a single point in time, preventing any inference of causality or temporal shifts in community attitudes. The reliance on self-reported questionnaires introduces the possibility of response bias, particularly given the sensitivity of health behavior and cultural practices. Furthermore, the sample was geographically limited to one rural village in Gorontalo, potentially affecting the broader generalizability of the findings. The absence of qualitative exploration also constrained the ability to capture deeper sociocultural dynamics and nuanced motivations behind community health beliefs.

4.Conclusion

This study demonstrates that the community in Huyula Village holds generally positive perceptions toward stunting, its prevention, and the use of ethnomedicine, indicating a promising foundation for community-based health interventions. Nonetheless, the presence of neutral and negative perceptions reflects persisting knowledge gaps and cultural barriers that may hinder effective prevention practices. To address this, health promotion strategies should not only strengthen biomedical messaging but also integrate culturally rooted practices such as ethnomedicine in a supportive, evidence based manner. It is recommended that future programs involve local actors such as traditional healers and health volunteers as partners in promoting maternal and child health, while expanding educational efforts to reach vulnerable groups with clear, contextually adapted information.

Acknowledgments:

The authors would like to express their sincere gratitude to the Department of Pharmacy, Faculty of Sports and Health Sciences, Universitas Negeri Gorontalo, for providing the necessary institutional support and research facilities throughout the course of this study. Special appreciation is extended to faculty members, academic mentors, and laboratory staff whose contributions and technical guidance were invaluable. The authors also thank the local government and residents of Huyula Village, Mootilango District, Gorontalo Regency, for their cooperation and participation during the data collection process. Lastly, the authors acknowledge the contributions of previous researchers whose work and scientific insights have served as important references in shaping this study.

Conflicts of Interest:

The authors declare no conflict of interest regarding the publication of this article.

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