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The Effectiveness of Awareness-Based SBCC Through Parenting Patterns and Intensive Nutrition in Handling Stunting in Ropang Subdistrict

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ABSTRACT

Introduction. Stunting is a public health indicator that reflects the quality of human resources and remains a significant challenge in various regions of Indonesia, including Ropang District, Sumbawa Regency. This study aims to evaluate the effectiveness of an awareness-based Social Behavioral Change Communication (SBCC) approach through improved parenting and intensive nutrition in efforts to address stunting. **Methods.** The study used a mixed-method design with a quasi-experimental pretest-posttest approach involving 12 mothers with stunted children. The intervention was conducted over two months through face-to-face education, printed and digital educational media, and a community-based approach. Quantitative data analysis used the Wilcoxon test and paired t-test, while qualitative data was obtained from in-depth interviews and field observations. **Results.** The results showed a significant increase in parenting patterns (p=0.046) and eating patterns (p=0.025), while the increase in nutritional knowledge was not significantly different (p=0.564). Anthropometrically, there were significant differences in height (p=0.014) and weight (p=0.037) between the pre- and post-intervention periods. **Conclusion.** This improvement indicates that changes in parenting behavior and feeding practices, delivered through the SBCC approach, contributed to improvements in children's nutritional status.

1. Introduction

Child health and growth are key indicators of a nation's development success. Malnutrition in children remains a global health issue that impacts the quality of human resources.[1] Stunting is a growth problem in children caused by poor nutrition, recurrent infections, and inadequate stimulation. Globally, WHO data from 2024 show that 150.2 million children under the age of 5 are stunted.[2] In Indonesia, the prevalence of stunting has decreased from 37.6% in 2013 to 19.8% in 2024, indicating significant improvements in nutrition nationwide.[1,3]

Stunting is caused by many factors, including diet, parental education, recurrent infections, parenting patterns, and economic conditions.[4] In Ropang District, based on a preliminary analysis, mothers' knowledge of dietary patterns and children's nutritional needs at each stage of development remains limited. For example, some parents allow their children to consume snacks high in salt and sweet drinks, which have very little nutritional value. Additionally, some parents allow their children to consume tea or coffee, both of which contain substances that can inhibit nutrient absorption. Given these conditions, parenting styles and children's eating habits are closely related.[5]

This study offers a novel approach to addressing stunting through an awareness-based Social Behavioral Change Communication (SBCC) approach combined with optimized parenting and intensive nutrition programs.[6] Topically, SBCC is still rarely studied in Indonesia for stunting prevention. This study offers a new perspective by emphasizing social behavior change based on communication that not only focuses on nutritional interventions, but also on increasing public awareness in implementing parenting patterns that support optimal child growth and development.[7,8] This approach reinforces the role of education and family empowerment in understanding and adopting appropriate nutritional practices to prevent and reduce stunting rates, which have thus far been focused more on medical aspects and direct intervention.

Communication with the community, primarily with parents, aims to change people's mindsets and behaviors. Communication will be carried out using

the social and behavioral change communication (SBCC) approach.[9] This approach has great potential to overcome health challenges, especially by changing people's knowledge, attitudes, and behaviors, which, in this case, is expected to alter parenting and feeding patterns in children.[7] Efforts to change behavior through the SBCC approach will also be supported by providing supplementary food for children, which can serve as an example of good food for them to consume and help meet their daily nutritional needs.[10]

This study offers novelty by developing an integrated intervention model that combines awareness-based Social and Behavioral Change Communication (SBCC), structured parenting strategies, and intensive nutrition programs within a specific local context. Unlike previous studies that primarily focus on single-component interventions, this study emphasizes a comprehensive approach that simultaneously targets knowledge improvement, behavioral change, and child feeding practices to address stunting more effectively. Therefore, the objective of this study is to evaluate the effectiveness of awareness-based SBCC in improving parenting and feeding patterns through intensive nutrition to manage stunting in Lebangkar Village, Ropang District.

2. Methods

This study employed a mixed-methods design, using a quasi-experimental one-group pretest–posttest design combined with qualitative inquiry to obtain a comprehensive understanding of the intervention effects. The quantitative component assessed changes in maternal knowledge, parenting practices, feeding patterns, and child nutritional status before and after the intervention, while the qualitative component explored social and cultural factors influencing caregiving behaviors and supported interpretation of the quantitative findings. Ethical approval was obtained from the Research Ethics Committee of LPPM STIKES Griya Husada Sumbawa (No. 85/LPPM/S.GHS/V/2025), and all participants provided informed consent prior to participation.

The study was conducted in Lebangkar Village, Ropang District, Sumbawa Regency, Indonesia, from July to August 2025. The study population consisted of mothers with children aged 6–59 months identified as stunted. A total sampling technique was applied, in which the sample size equals the population size, and all eligible subjects were included (n = 12). The sample size was determined based on the total number of stunting cases in the study area; therefore, this study is considered exploratory, and the findings should be interpreted with caution regarding statistical power and generalizability.

Inclusion criteria were mothers of children aged 6–59 months who were stunted (HAZ < -2 SD) according to World Health Organization standards, willingness to participate in the entire SBCC intervention, and residence in Ropang District for at least 1 year. Exclusion criteria included children with chronic comorbidities affecting nutritional status (e.g., congenital heart disease, tuberculosis), mothers with communication barriers, and participants who relocated during the intervention period. Based on these criteria, data from the Ropang District Health Center indicated that 12 children in Lebangkar Village had stunting, and all children and their parents or guardians met the eligibility criteria; therefore, all were included as study participants.

The main variables included maternal nutritional knowledge, parenting practices, and feeding patterns. Maternal knowledge was measured using a structured questionnaire on child nutrition and feeding practices. Parenting practices were defined as caregiving behaviors related to feeding, hygiene, and responsiveness to children's needs, assessed using a checklist. Feeding patterns were evaluated based on food type, frequency, and dietary diversity using a 24-hour dietary recall. Child nutritional status was determined using height-for-age z-scores (HAZ) based on WHO Child Growth Standards, with stunting defined as HAZ < -2 SD. Anthropometric measurements were conducted using standardized procedures and calibrated instruments.

The intervention consisted of an awareness-based Social and Behavioral Change Communication (SBCC) program delivered over two months through face-to-face education, printed and digital media (WhatsApp), and community-based approaches including home visits and integrated health service posts (*Posyandu*). The intervention focused on improving maternal knowledge, parenting practices, and child feeding behaviors, supported by supplementary feeding as a practical demonstration of appropriate nutrition.

Quantitative data were collected using structured questionnaires and anthropometric measurements before and after the intervention. Qualitative data were obtained through in-depth interviews with mothers, community health cadres, and local health workers using semi-structured interview guides, as well as through document review of maternal and child health records (KIA books). Quantitative data were analyzed using normality testing ($p > 0.05$ indicating normality), followed by paired-samples t-tests or nonparametric alternatives as appropriate.[11] Qualitative data were analyzed using thematic analysis, including transcription, coding, categorization, and theme development, with data triangulation applied to enhance validity.

3. Results

Lebangkar Village, Ropang Subdistrict, is known to be one of the stunting locations in Sumbawa Regency. The results of the pretest and posttest assessments of mothers related to nutrition knowledge, parenting patterns, and eating patterns are presented in detail in this study in Table 1.

Table 1 shows a significant increase in the categories of parenting and feeding patterns. Feeding patterns are important habits or practices that can affect a person's health and nutritional status. Field findings show that parents pay less attention to their children's feeding patterns during the complementary feeding period. Three main findings were used as references for diagnosing children's eating patterns: parental complaints, nutritional status, and the implementation of feeding rules. In this study, monitoring and assistance for parents continued to be actively carried out through home visits every 2 weeks. The results of the intervention are presented in Table 2.

The anthropometric measurements presented in Table 2 show changes in nutritional status and stunting classification among children under 5 years of age following intensive nutrition-based interventions and the optimization of parenting practices through the Social Behavioral Change Communication (SBCC) approach. Before the intervention, all respondents were classified as stunted and severely stunted, indicating linear growth disorders due to long-term chronic malnutrition. This condition reflects a deficit in essential nutrient intake as well as suboptimal environmental and parenting factors.

Table 1. Results of pre-test and post-test assessment of mothers related to nutrition knowledge, parenting, and eating patterns

Research Variable		Frequency (n)	Percentage (%)
Nutritional Knowledge			
Pretest	Low Knowledge	3	25.0
	Good Knowledge	9	75.0
	Total	12	100.0
Posttest	Low Knowledge	2	16.7
	Good Knowledge	10	83.3
	Total	12	100.0
Parenting Category			
Pretest	Poor Parenting	5	41.7
	Good Parenting	7	58.3
	Total	12	100.0
Posttest	Poor Parenting	1	8.3
	Good Parenting	11	91.7
	Total	12	100.0
Dietary Pattern Category			
Pretest	Poor Dietary Pattern	5	41.7
	Good Dietary Pattern	7	58.3
	Total	12	100.0
Posttest	Good Dietary Pattern	12	100.0
	Total	12	100.0

Table 2. Results of anthropometric data measurements of children before and after intervention

Initials	Gender	Age (months)	Pretest		Pretest	Posttest		Posttest
			Height (cm)	Weight (kg)	Stunting Classification	Height (cm)	Weight (kg)	Stunting Classification
NJ	Female	47	82.6	12.2	*Stunted*	89	12.2	*Stunted*
HF	Male	60	98.1	14.7	*Stunted*	98.6	15.3	Normal
MY	Female	48	91.1	15.5	*Stunted*	92	15.4	Normal
LL	Female	34	76.6	9.2	*Severely Stunted*	82.2	8.9	*Stunted*
YS	Female	60	92	12.9	*Severely Stunted*	97.6	13.6	*Stunted*
FD	Male	33	80.2	10.9	*Severely Stunted*	86	13.1	Normal
MA	Male	31	81.9	10.7	*Stunted*	83.2	10.7	*Stunted*
AS	Female	38	84.2	11.6	*Stunted*	93.1	11.7	Normal
KL	Male	18	76	9.2	*Stunted*	77	9.8	Normal
AM	Male	31	73	12.2	*Stunted*	99.4	14.4	Normal
NT	Male	60	74.4	9	*Severely Stunted*	97.4	13.5	*Stunted*
MZ	Male	48	87.3	10.9	*Severely Stunted*	88.9	11.8	*Severely stunted*

Table 3. Results of the paired T-test of anthropometric data of children

Variable	Pre-test (Mean ± SD)	Post-test (Mean ± SD)	Difference (Mean ± SD)	T	df	p-value
Height (cm)	83.12 ± 7.79	90.37 ± 7.27	-7.25 ± 8.62	-2.912	11	0.014*
Weight (kg)	11.58 ± 2.07	12.53 ± 2.07	-0.95 ± 1.39	-2.369	11	0.037*

* Statistically significant

Table 4. Results of the Wilcoxon test for research variables before and after intervention

Variable	Z Calculate	p-value (Asymp. Sig. 2-tailed)	Conclusion
Nutritional Knowledge	-0.577	0.564	No significant difference
Parenting Pattern	-2.000	0.046	Significant difference
Dietary Pattern	-2.236	0.025	Significant difference

The implication of these results is the need to strengthen family-based intervention programs that focus on behavioral change and improving household nutritional resilience. Participatory interventions involving health workers, posyandu cadres, and community consultations have been proven to improve children's anthropometric status more effectively.[12] Therefore, this approach has the potential to serve as a best-practice model for accelerating the reduction in stunting prevalence in the study area.

The results of the normality test using the Shapiro-Wilk test showed a significance value above 0.5, so the test was continued with a paired T-test, and the data are presented in Table 3. The results of the Paired t-test indicate a significant difference in toddlers' height before and after the intervention (t = -2.912; p = 0.014). Similarly, toddlers' weight increased significantly after the intervention compared with before (t = -2.369; p = 0.037). Thus, the nutritional intervention was shown to be effective in improving toddlers' growth status, both in height and weight.

The process of measuring knowledge, eating, and parenting variables was also conducted during the SBCC intervention. The measurement data were collected as a pretest and a posttest. The data obtained was first tested for normality. The Shapiro-Wilk normality test indicated that the data were not normally distributed; therefore, the Wilcoxon test was used (Table 4).

Based on the Wilcoxon test results, there was no significant change in respondents' nutritional knowledge before and after the intervention (p = 0.564). However, there were significant changes in parenting practices (p = 0.046) and children's eating patterns (p = 0.025) after the two-month SBCC intervention. Thus, the Social Behavioral Change Communication (SBCC) intervention conducted in this study proved to be effective in improving parenting practices and children's eating patterns among stunted children, but did not show a significant effect on improving mothers' nutritional knowledge.

4. Discussion

Feeding children not only meets their nutritional needs, but also teaches them to appreciate and choose healthy foods, with the aim of meeting their nutritional needs and the amount of food they eat.[13] Three main findings are used as a reference in diagnosing children's eating patterns, namely parental complaints, nutritional status, and the application of feeding rules. Based on these three main findings, eating problems can be classified into inappropriate feeding practices, poor eating patterns, incorrect parental perceptions, and food preferences (picky eaters and selective eaters). Inappropriate feeding practices are the most common cause of eating pattern problems.[14]

There were no significant differences in the knowledge category. In general, respondents had good knowledge prior to the intervention regarding stunting in children, but a greater influence came from mothers' good knowledge and its implementation in child-rearing practices, in this case, food selection for children, so that the nutritional needs for child growth and development were met.[15] Although the majority of mothers had good knowledge, knowledge alone does not determine whether their behavior, in this case, their parenting patterns towards their children, is good. This aligns with Suryani's research, which found that good knowledge on the part of mothers, if still limited to knowing and has not reached the stage of implementation, will not have any effect.[16]

The parents' jobs, in this case, the mothers, are mostly farmers, but based on the interviews conducted, this does not mean that the children lack interaction with their mothers, because farmers in Ropang Subdistrict only plant and harvest twice a year, and the mothers do not go to the fields all the time. Therefore, they have plenty of time to seek information, study, interact with their children, and take care of them. The mothers' work as farmers does not hinder the family's finances, as interviews with the mothers indicate that all heads of households work in small-scale mines, whose income is sufficient to meet their daily needs. In addition, according to information from the village government, the purchasing power of the people of Lebangkar Village is also quite high, so economic factors do not significantly influence stunting incidence in the

village. With the availability of time and economic capacity, in addition to improving parenting practices, increasing parents' awareness of their children's nutritional status is crucial.

The knowledge indicators shown in Table 1 are not directly proportional to parenting and feeding patterns in children, ultimately leading to stunting. Upon further investigation, it was found that the majority of parents did not care what their children consumed outside the home, even though children spent more time with relatives and neighbors outside the home. Therefore, through the SBCC approach, researchers monitored and improved knowledge, parenting, and feeding practices, and encouraged mothers to be more aware of what their children consumed and of their growth and development over an intensive two-month period. This was also based on several studies that show that the better the mother's feeding practices, the lower the risk of stunting.[5]

In the early stages of initiating intensive communication with parents, counseling is provided on stunting awareness, parenting patterns, feeding patterns for children with stunting, and the provision of food to support nutritional fulfillment in children. Initial monitoring is then conducted through home visits by trained cadres. Through these home visits, it was found that there had been no significant changes in the patterns.

Parents are unable to increase their children's consumption of food provided by mothers at home during mealtimes because they consume too many snacks purchased from street vendors. As a result, the quality of nutrition provided to children is inadequate. This aligns with Nesa et al. (2019), who found that energy intake is a major risk factor for stunting. Therefore, the government is expected not only to provide information about nutritional intake but also to assist parents so that the intervention is continuous and provides examples of how to implement the knowledge provided.[4]

Home visits every two weeks with the health team and cadres are expected to make parents feel more cared for and to assist them in resolving their children's health problems, so that mothers will become aware and concerned that their children's current condition needs improvement. These home visits are also more effective on a personal level than visits to health centers or other health facilities.[17] As a result, in the final stage of the intervention, there was a trend towards changes in children's nutritional status, although these results need to be interpreted with caution, given the relatively short intervention duration and the chronic nature of stunting.

Improving children's nutritional status depends not only on nutritional interventions but also on changes in parenting behaviors and sustainable environmental support.[18] The increase in the proportion of children with normal nutritional status is associated with the implementation of SBCC-based interventions, which have the potential to increase family awareness and capacity regarding the importance of nutrition and child health. The implications of these findings are the need to strengthen family-based intervention programs that focus on behavioral change and improving household nutritional resilience. Participatory interventions involving health workers, posyandu cadres, and community consultations have been proven to improve children's anthropometric status more effectively.[12] Therefore, this approach has the potential to serve as an alternative intervention strategy, although further research with a more robust design is still needed to confirm its effectiveness in reducing stunting prevalence.

Health problem-solving carried out with SBCC packages mostly results in positive changes. A study by Maulidiyanti et al. (2024) found that social and behavioral change communication, applied through various methods, is highly effective in encouraging positive behavioral change.[9] SBCC, applied through a combination of mass media, interpersonal communication, and community mobilization, and focused on motivation related to barriers to healthy eating, will maximize the intervention's effectiveness.[19]

Measurement of knowledge, dietary, and parenting patterns was also conducted during the SBCC intervention. The Social Behavior Change Communication (SBCC) intervention in this study improved parenting practices and dietary patterns among children with stunting, but did not significantly change maternal nutritional knowledge. A community-based communication model and multisectoral involvement are needed to ensure that the resulting behavioral changes are sustainable.[20]

Theoretically, these findings are consistent with social behavior change theory, which states that behavior change is determined not only by knowledge but also by social reinforcement, role models, and direct experiences that shape self-efficacy beliefs.[21,22] In the context of this study, improvements in parenting and feeding patterns occurred due to the social learning process between mothers, cadres, and health workers during the intervention. This participatory approach created a mechanism of observational learning that encouraged the implementation of better parenting and feeding practices.[23]

Knowledge is a prerequisite for behavioral change, but it does not always directly result in changes in practice without the support of other motivating factors, such as motivation, social support, and real-life experience.[24] Thus, even though knowledge levels did not increase significantly, significant results in parenting and eating patterns show that behavioral change can occur through habit formation and social reinforcement, not just through information transfer.[25,26] Nutrition-sensitive and specific interventions that integrate education,

interpersonal communication, and family involvement can create more sustainable behavioral changes in stunting prevention.[27] This shows that the effectiveness of SBCC programs is not solely measured by increased knowledge, but by the extent to which new behaviors are successfully internalized and maintained by respondent families.

The implementation of stunting management must be convergent, holistic, integrative, and of high quality through multisectoral cooperation. This includes aspects that need to be considered in relation to parenting and nutritional interventions.[28] Awareness-based Social Behavioral Change Communication (SBCC) plays an important role in stunting management efforts through a communication approach that aims to change community behavior. This strategy focuses on education about optimal parenting and intensive nutrition. Good parenting includes early stimulation, monitoring child growth and development, and implementing nutrition-based parenting practices.[29]

The strategic aspects applied in SBCC rely on various communication media, such as focus group discussions (FGDs), social media campaigns, direct counseling, and community-based assistance.[8] Health workers and posyandu cadres are also involved to ensure that information is conveyed properly and applied sustainably by the families of children suffering from stunting. Intensive nutrition is provided through targeted and sensitive nutritional interventions, animal protein supplementation, and education on exclusive breastfeeding and on the quality of complementary foods for children.[30] The key strategy in the SBCC approach to intensive nutrition-based stunting management is communication and behavioral change among mothers, emphasizing balanced nutrition and child hygiene.[6] Thus, the awareness-based SBCC approach shows potential to support improvements in children's nutritional status, but cannot be directly concluded to be the cause of the decline in stunting rates, given the limitations of the research design.

5. Conclusion

The awareness-based Social Behavior Change Communication (SBCC) approach has shown potential in improving parenting and feeding practices among mothers of stunted children in Lebangkar Village, Ropang Regency. This intervention demonstrated changes in children's height and weight, suggesting that changes in family behavior may contribute to improved nutritional status, although a direct causal relationship cannot be established. Although nutrition knowledge has not improved significantly, the continued implementation of nutrition and parenting practices is a key factor in reducing stunting. However, these findings are preliminary and should be interpreted cautiously, given the limitations of the study design, including the lack of a control group, a small sample size, and a relatively short intervention duration. Further research is needed with longer intervention durations, larger sample sizes, and the integration of environmental and economic components to better understand the mechanisms of behavior change and strengthen evidence of the effectiveness of the community-based SBCC intervention model.

6. Author Contribution

All team carried out the research concept. Ana Lestari wrote the manuscript. Luh Putu and Ana Lestari performed the project administration. Luh Putu Yuliastuti and Atri Wahyu Tarikawati collected the data. Atri Wahyu Tarikawati performed an intervention. Evaluating and data analysis was performed by Ana Lestari.

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