Poltekita: Jurnal Ilmu Kesehatan
e-ISSN: 2527-7170 | p-ISSN: 1907-459X
Volume 19 Issue 3, 2025, page 548-559
DOI: 10.33860/jik.v19i3.4292
Website:https://ojs.polkespalupress.id/index.php/JIK
Publisher: Poltekkes Kemenkes Palu

Original Article

Development of a Mother and Toddler Class Model Based on Local Wisdom As an Innovation for Stunting Prevention in Limboto District, Gorontalo Regency: a quasi-experimental study

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ARTICLE INFO

Article History:
Received: 2025-10-24
Published: 2025-12-31

Keywords:
Complementary feeding; Parenting; Stunting.

ABSTRACT

Background: Stunting prevention programs based on local wisdom consider socio-cultural factors to ensure sustainability. This study analyzes the impact of a mother and toddler class model incorporating local resources—specifically tilapia fish (porridge and nuggets) and moringa leaves (pudding)—as innovative interventions for stunting prevention in Limboto District, Gorontalo Regency.
Methods: This research is a quantitative study using a quasi-experimental design with a one-group pre-test and post-test research design. Probability sampling was used with a total of 43 samples.
Results: Statistical analysis revealed a significant improvement in maternal knowledge and attitudes regarding local wisdom-based complementary feeding (MPASI), with mean scores rising from 7.44 (SD=1.84) to 9.21 (SD=2.08) with a significance value <0.001 (p<0.05) and a t-score of -1.371. Maternal parenting patterns also improved significantly from a mean of 8.13 (SD=2.12) to 9.51 (SD=2.26) with a significance value of <0.001 (p<0.05) and a t-score of -6.437 at the Limboto Health Center, Gorontalo Regency.
Conclusion: This study is expected to contribute to the understanding of stunting prevention by considering the importance of nutritional interventions, health education, and the reduction of stunting rates.

INTRODUCTION

Stunting is a growth disorder in children caused by prolonged nutritional deficiency (Akbar et al., 2023). characterized by a child's height being shorter than that expected for their age. Stunting can affect a child's growth and development (Mbabazi et al., 2024), which can lead to low-quality human resources (HR), thereby posing a risk to work productivity (Budhwar et al., 2023).

Nutritional problems, especially stunting in toddlers, can hinder child growth and development, with negative impact that will continue into later life, such as reduced intellectual capacity, susceptibility to non-communicable diseases, reduced productivity, leading to proverty and the risk of giving birth to babies with low birth (Modjo et al., 2023).

Based on WHO stunting data for 2020, the prevalence was 22%. According to the 2022 Indonesian Nutrition Status Survey (SSGI), the prevalence was 21.6%, and the percentage of malnourished children in Gorontalo Province was 23.8% in 2022. Gorontalo Regency had the highest stunting prevalence at 30.8%. In 2022, the prevalence of stunting in Gorontalo Regency

decreased by 96 cases, while in 2023 it increased by 150 cases. This shows that the stunting rate is still high and below the government's target.

The stunting prevention intervention program implemented by Indonesia is the Mother Smart Grounding (MSG) program. The Mother Smart Grounding (MSG) program is an effort to prevent stunting through health education for mothers of toddlers by combining several health education methods (Hernita et al., 2021), into a single package that can support nutrition improvement efforts that have a sensitive impact. The implementation of the Mother Smart Grounding program is expected to provide stimulation as an external factor for behavioral change in mothers (Covert Behavior). The Mother Smart Grounding program provides health education about stunting in the form of prevention that can be done early on (Woo et al., 2021).

The stunting prevention program in Gorontalo Regency includes healthy pregnancy campaigns, nutritional initiatives, supplementary feeding for toddlers, nutritional services at integrated health service posts (posyandu), and posyandu services for adolescents. However, the prevalence of stunting in this region remains high, requiring more contextual innovations based on local potential. One approach that can be developed is a mother and toddler class model based on local wisdom. In this study, local wisdom means utilizing the abundant food resources in the Gorontalo region as an nutritional solution. Specifically, this study uses tilapia anda moringa leaves to make complementary foods for breastfeeding. The aim is for mothers to be able to provide nutritious food independently by utilizing what is available in their surrounding environment. The innovation introduced is the Mother and Toddler Class Model, which combines theory and practice directly. In addition to providing materials through visual media such as LCDs and brochures, mothers are also invited to participate in cooking demonstrations (such as making tilapia nuggets and moringa pudding). This innovation not only focuses on food, but also trains better parenting patterns to stimulate child development. This model differs from standard programs in that it is contextual and applicable, rather than simply one-way education. While conventional programs often only provide general information or ready-made food assistance, this model teaches independence through the processing of local ingredients. The use of demonstration methods has proven to be far more effective in changing mothers' behavior and knowledge than the lectures or pictures commonly used in previous programs.

Systematic integration of health education with the specific utilization of Gorontalo's local commodities, namely tilapia fish and moringa leaves, processed into innovative products such as fish nuggets and moringa pudding. Unlike conventional programs that often focus solely on nutritional theory, this "Local Wisdom-Based Mother and Toddler Class" model emphasizes practical demonstrations and the provision of food solutions that are affordable, locally available, and culturally appropriate for the community. The objective of this study is to analyze the effect of developing a local wisdom-based mother and toddler class model on maternal knowledge, attitudes, and parenting patterns for stunting prevention in Limboto District, Gorontalo Regency.

METHODS

This study is a quantitative study using a quasi-experimental design that provides treatment or intervention to research subjects, then measures and analyzes the effects of the treatment. The research design used is a one-group pretest-posttest design approach. This design is used to compare the results of the intervention to develop a mother and toddler class model based on local wisdom for the prevention of stunting in Limboto District, Gorontalo Regency. This research was conducted from July to august and has obtained ethical approval from the Muhammadiyah University of Gorontalo No. 038/KEPK-FIKES/X/2025.

The research was conducted by providing gradual education on various topics related to balanced nutrition (utilizing local resources, namely processed tilapia and moringa leaves) and good parenting practices in preventing stunting. This study was conducted to determine mothers' knowledge using a questionnaire about complementary foods, namely their understanding of the appropriate type, texture, frequency, and nutritional content of complementary foods, including the use of locally-based complementary food products (tilapia porridge, tilapia nuggets, and moringa pudding) in the complementary feeding practices of children aged 6 months to 2 years.

types, textures, frequency, and nutritional content of appropriate complementary foods, including the use of locally-based complementary food products (tilapia porridge, tilapia nuggets, and moringa pudding) in the prevention of stunting, measured through pre-test and post-test scores (Notoadmodjo, 2010); mothers' attitudes towards complementary foods, namely mothers' responses or tendencies in accepting, assessing, and supporting the practice of providing nutritionally balanced complementary foods using local food ingredients Rahmania et al (2022); and mothers' parenting patterns, namely actions in providing nutritious food intake, maintaining hygiene, providing health care, providing stimulation, and emotional attention that supports children's growth and development to avoid stunting (Masita et al., 2018). Data collection was conducted using interviews, observations, questionnaires, and demonstrations of local food preparation.

The intervention was conducted through a structured "Mother and Toddler Class" consisting of four sessions over one month. Local wisdom was integrated by utilizing Gorontalo's specific local food commodities: tilapia fish and moringa leaves. The educational structure included: (1) Theoretical education on nutrition and parenting, (2) Practical demonstrations on processing tilapia fish nuggets and moringa pudding, and (3) Peer-sharing sessions regarding local eating habits. Local wisdom practices were implemented by involving community leaders to validate traditional recipes adapted to medical nutritional standards, thereby enhancing cultural acceptance among participants.

The study population comprised 989 toddlers in Limboto District, Gorontalo Regency. Samples were obtained from 14 villages spread across Limboto District, Gorontalo Regency, then combined into 7 locations by combining two adjacent locations with a total 43 respondents who were mothers of toddlers. The sampling technique used in this study was probability sampling, which is a sampling technique that gives equal opportunity to every element or member of the population to be selected as a sample. The research sample consisted of 43 mothers of toddlers who met the inclusion criteria, namely mothers who had toddlers aged 6-24 months and were willing to be respondents, and the exclusion criteria, namely mothers who were uncooperative, toddlers with special needs, and toddlers undergoing certain treatments. The intervention provided to mothers of toddlers was conducted over a period of two weeks. The researchers compared pretest and posttest results on mothers' knowledge and attitudes regarding complementary feeding for stunting prevention, based on local wisdom and mothers' parenting patterns, before and after the education was provided. In this study, demographic data analysis of respondents used frequency distribution and percentages to present a univariate description. Furthermore, bivariate analysis used the Paired-samples t-test ($\alpha<0.05$) to examine the effects of mothers' knowledge and attitudes regarding complementary feeding on stunting prevention, based on local wisdom and mothers' parenting patterns, before and after education was provided.

RESULTS

This study examines the demographic characteristics of respondents, including the age and education of mothers, as well as the age and gender of children. After that, this study also examines the influence of others' knowledge and attitudes before and after receiving complementary feeding education on stunting prevention, and the influence of mothers' parenting patterns before and after receiving complementary feeding education on stunting prevention.

Table 1. Characteristics of Respondents

Characteristics	n	%
Mother's Age		
26-35 (Early Adulthood)	40	93.0
36-45 (Late Adulthood)	3	7.0
46-55 (Early Old Age)		
>56 (Late Old Age)		
Mother's Education		
Elementary School	8	18.6
Junior High School	5	11.6

Characteristics	n	%
Senior High School	19	44.2
Higher Education	11	25.6
Child's Age		
6 – 8 Months	20	46.5
9 – 24 Months	23	53.5
Childs's Sex		
Male	16	37.2
Female	27	62.8

According to Table 1, the vast majority of respondents belonged to the early adulthood age group (26-35 years), accounting for 40 individuals (93.0%). Regarding educational background, most respondents were high school graduates (44.2%), followed by higher education (25.6%), while the remainder had basic education levels. As for the children's profile, more than half of the toddlers were aged 9–24 months (53.5%), with a majority being female (62.8%).

Table 2. Distribution of Average Knowledge and Attitude Scores of Mothers before and after receiving complementary feeding education in stunting prevention based on local wisdom

Variable	Mean	Standard Deviation
Mothers' knowledge and attitudes		
Before	7.44	1.84
After	9.20	2.08

According to Table 2, there was an increase in maternal capacity where the mean knowledge and attitude score before the intervention was 7.44 (SD=1.84) and rose to 9.20 (SD=2.08) following the education. This 1.76-point increase practically demonstrates that the local food processing demonstration method is highly effective in providing new understanding for respondents who previously did not understand proper complementary feeding.

Table 3. Distribution of Mean Values of Childcare Practices of Mothers of Toddlers before and after Education on Stunting Prevention

Variable	Mean	Standard Deviation
Parenting patterns of mothers of toddlers		
Before	8.14	2.12
After	9.51	2.26

Table 3 shows a change in toddler caregiving behavior with an increase in the mean value from 8.14 (SD=2.12) during the pre-test to 9.51 (SD=2.26) at the post-test. This 1.37-point increase reflects practical significance in the form of improved maternal awareness regarding stimulation, hygiene, and balanced nutrition fulfillment to prevent stunting risks early on.

Table 4. Analysis of the influence of mothers' knowledge and attitudes before and after receiving complementary feeding education in the prevention of stunting based on local wisdom

Mothers' Knowledge and Attitudes	n	Mean	SD	t	Sig
Before	43	7.44	1.84	-1.371	<0.001
after	43	9.21	2.08		

Paired Sample T-Test

Based on the analysis in Table 4, the paired sample t-test results show a significant influence of local wisdom-based complementary feeding (MPASI) education on maternal knowledge and attitudes, with a p-value <0.001 (α<0.05) and a t-score of -1.371. The increase in mean score from 7.44 to 9.21 reflects a magnitude of change of 1.77 points, which practically proves that integrating

Gorontalo's local commodities, such as tilapia and moringa leaves, is effective in enhancing mothers' understanding to independently prevent stunting at the Limboto Community Health Center in Gorontalo Regency.

Table 5. Analysis of the influence of maternal childcare practices before and after receiving education on stunting prevention

Maternal Care Patterns	n	Mean	SD	t	Sig
Before	43	8.13	2.12	-6.437	<0.001
after	43	9.51	2.26		

Paired Sample T-Test

Table 5 presents the statistical analysis results showing a clear influence of stunting prevention education on maternal childcare practices, with a significance p-value <0.001 (α<0.05)and a strong t-score of -6.437. The magnitude of change of 1.38 points (from a mean of 8.13 to 9.51) demonstrates practical significance, where intervention through cooking demonstrations and peer-sharing successfully shifted caregiving habits to be more responsive compared to providing theoretical information alone at the Limboto Community Health Center in Gorontalo Regency.

DISCUSSION

Overview of Knowledge and Attitudes of Mothers of Toddlers Before (Pre-Test) Being Given MPASI Education in Stunting Prevention Based on Local Wisdom

Based on the results of the research (Pre-Test) with statistical testing, a mean value of 7.44 with a standard deviation of 1.84 was obtained. Rahmania et al. (2022) and Erda et al. (2022) showed that health education interventions through visual media (LCD and brochures) significantly improved mothers' knowledge and attitudes toward stunting prevention. This harmony occurs because the use of various media stimulates the senses of sight and hearing simultaneously, making information easier to absorb. However, the fundamental difference between this study and previous studies lies in the integration of local wisdom (tilapia and moringa) in its practical demonstration. While other studies generally focus only on theoretical education, this model provides empirical evidence that a locally-based (contextual) approach has a more tangible impact on changing parenting patterns because the materials used are easily accessible to respondents. From the results of research on the development of a mother and toddler class model based on local wisdom as an innovation for stunting prevention, before education was provided, it was found that on average, mothers of toddlers did not know or understand about complementary foods that could be given, as well as complementary foods made from local foods. Knowledge is the result of human understanding, which simply answers the question "what." Knowledge is a person's mental response in relation to a particular object that is perceived as "existing" or occurring and an object that is perceived as "existing" as it is (Notoadmodjo, 2010)

A person's knowledge is inseparable from their experiences, especially regarding complementary feeding, as most respondents revealed that they did not have in-depth knowledge about complementary feeding. Education about complementary feeding aims to increase mothers' understanding of the importance of providing healthy and nutritious complementary foods after their babies reach six months of age. Stunting is a condition of growth failure characterized by a child's height not being appropriate for their age, generally caused by insufficient nutritional intake in early life. Therefore, providing appropriate complementary feeding that meets nutritional standards is very important in efforts to prevent stunting.

Prevention and mitigation of these problems must be supported by mothers' knowledge about stunting. If mothers do not understand stunting, it will lead to an increase in stunting cases in a region. The main problem faced by Mitra is the lack of knowledge among mothers about the proper provision of complementary foods (MP-ASI). One way to increase mothers' knowledge is by providing health education or counseling aimed at encouraging positive behaviors related to

food and nutrition (Aryana et al., 2022). This is in line with Rahmania et al (2022), who found that another factor influencing mothers' knowledge of the nutritional status of children aged 6-24 months, apart from education, is the source of information. These information sources can include information from individuals, print media, or electronic media such as audiovisual materials.

The results of this study show that the better mothers' knowledge of complementary feeding, the less likely they are to provide inappropriate complementary feeding. Meanwhile, mothers who have poor knowledge will definitely provide inappropriate complementary feeding. Adequate knowledge can help mothers choose the right type, frequency, timing, and method of complementary feeding to support optimal child growth and development. Additionally, complementary feeding based on local foods also plays a significant role in preventing stunting.

Overview of Knowledge and Attitudes of Mothers of Toddlers after (Post-Test) Being Given Education on Complementary Feeding in the Prevention of Stunting Based on Local Wisdom

Based on the results of the (Post-Test) research, it is known that the level of knowledge and attitudes of mothers obtained a mean value of 9.21 with a standard deviation of 2.08 from the results of research on the development of a mother and toddler class model based on local wisdom as an innovation in stunting prevention. After the education was given, it was found that on average, most parents already knew and understood about complementary foods. Therefore, it can be concluded that there was an increase in knowledge before and after the complementary feeding education in the prevention of stunting based on local wisdom.

Good knowledge will have a positive influence on a person's behavior. A mother's behavior regarding breastfeeding and complementary feeding is very important for the growth and development of infants and children, so that they do not experience stunting. A mother's level of knowledge about nutrition is very important in improving her child's nutritional status, from determining, selecting, processing, to serving daily nutritional menus. Lack of knowledge about complementary foods, feeding methods, and habits that are harmful to health, either directly or indirectly, can cause nutritional problems in children. In addition, mothers are also unaware that babies aged 6 months and older need complementary foods in sufficient quantity and quality (Fitri et al., 2021).

Mothers' knowledge about complementary feeding will influence how they feed their babies. Mothers with high and good knowledge will feed their babies according to the baby's condition and age. Factors that can influence the results of respondents' knowledge in the sufficient category are a lack of awareness and interest among mothers to seek more complete information about complementary feeding, whether from the mass media or electronic media, as well as the influence of the environment and individual experiences. In the community, information about complementary feeding can be obtained through health workers at community health centers and health cadres (Indriani & Nazmi, 2023). Research conducted by Kolin & Astuti (2023) explains that there is an increase in mothers' knowledge after participating in virtual counseling on complementary feeding. Education on complementary feeding for mothers with babies aged 6-12 months serves as important information to increase mothers' knowledge, which in turn can motivate mothers to provide complementary feeding appropriately.

The results of this study show that there is a significant difference in the level of knowledge of mothers before and after being given education on complementary feeding in the prevention of stunting based on local wisdom through the media. The media used, namely LCD screens, leaflets, and demonstrations, proved to be effective in increasing mothers' understanding. One of the factors for success was the educational and demonstrative approach that combined the senses of sight and hearing, so that the material was easier to accept and understand.

Description of Mothering Patterns of Toddlers Before (Pre-Test) Being Given Education on Stunting Prevention

Based on the research results (Pre-Test), the mean value before was 8.14 with a standard deviation of 2.12. From the results of research on the development of a mother and toddler class model in stunting prevention, before education was provided, it was found that on average, mothers of toddlers did not know how to provide good parenting. Mothers who apply good

parenting patterns generally have a high concern for their children's health and development, enabling them to detect and prevent the risk of stunting early on. Conversely, poor parenting patterns can have a negative impact on children's growth and development, particularly in terms of nutritional status. Various studies show that most children who experience stunting are cared for by mothers with suboptimal parenting patterns, who tend to neglect important aspects that contribute to nutritional problems.

According to Marlina et al (2023), parenting patterns can influence the incidence of stunting. Both poor and good parenting patterns can be factors in stunting because poor parenting patterns tend to have an impact on stunting due to a lack of emphasis on children's nutritional intake. With good parenting, children's development will also be good. However, there are also mothers of toddlers who have good parenting patterns but experience stunting because of a lack of knowledge, so health education is needed, namely health promotion that can be carried out by health workers. Cooperation and support from stakeholders (across sectors) are needed in community empowerment to improve parenting patterns and efforts to increase mothers' knowledge about balanced nutrition and increase visits to health posts. This study is in line with (Erda et al (2022), which shows that of 60 toddlers, 18 toddlers who experienced stunting had poor parenting patterns (42.9%), while 24 toddlers who did not experience stunting had poor parenting patterns (57.1%). One toddler (5.6%) with stunting had good parenting, while 17 (94.4%) toddlers without stunting had good parenting. There was a significant relationship between maternal parenting and stunting in toddlers aged 12-60 months.

The results of the study show that education on parenting plays a significant role in stunting prevention efforts. Mothers who receive good education tend to be able to apply more appropriate parenting practices, such as providing balanced nutrition, giving appropriate stimulation, and regularly monitoring their children's growth and development. Conversely, mothers who did not receive or did not fully understand parenting education tended to engage in less supportive parenting practices, which could potentially increase the risk of stunting.

Description of Parenting Patterns of Mothers of Toddlers After (Post-Test) Receiving Education on Stunting Prevention

Based on the results of the study (Post-Test), it was found that the mean value before was 9.51 with a standard deviation of 2.26 from the results of research on the development of a model for mothers and toddlers in the prevention of stunting. After being given education, it was found that on average, most parents already knew how to provide good parenting. Thus, it can be concluded that there was an improvement in parenting before and after being given education on parenting in the prevention of stunting.

Parenting styles greatly help children achieve and go through normal growth and development according to their age level. The way parents treat their children will affect their attitudes and behavior. In raising children, parents tend to use certain parenting styles. These personal social skills will be influenced by the parenting style applied by parents to their children. If the parenting style applied is good, the child's personal social skills will be positive. Family care during the first five years of life greatly influences the four domains of development, namely motor, cognitive, language, and socio-emotional development of children. Parents must always provide stimulation to children in all aspects of development, including gross and fine motor skills, language, and personal-social skills. This ensures that children's development is optimal. Lack of stimulation can cause developmental delays. Children can be said to have comprehensive developmental delays when they experience delays in more than two areas of development (Krisdiantini et al., 2021).

Child rearing patterns are the attitudes and practices of mothers or other caregivers in their closeness to children, which include breastfeeding, feeding children, providing a sense of security, protecting children, co-sleeping, bathing and dressing, toilet training, hygiene care, protection from pathogens and disease, prevention and treatment when the child is sick, interaction and stimulation, playing together and socializing, providing affection and a healthy environment, so that the child can grow and develop well (Masita et al., 2018). According to Wibowo et al (2023), parenting styles are significantly associated with stunting in toddlers. Based on the results of the

observations conducted, most respondents had good parenting patterns, such as exclusively breastfeeding their children, always accompanying their children when eating, allowing their children to choose the foods they liked so that they would eat. In addition, they provided encouragement so that their children would eat again if they did not want to eat and occasionally gave rewards and praise when their children finished their meals.

The results of this study show that there is a significant difference in mothers' parenting patterns before and after receiving education on stunting prevention, with a significant increase in mothers' understanding and practice of parenting patterns. Education delivered through visual and demonstrative media was able to increase mothers' awareness of the importance of balanced nutrition, age-appropriate stimulation, and regular growth and development monitoring. This shows that educational interventions are effective in shaping more responsive parenting patterns and supporting efforts to prevent stunting in children.

Analysis of the knowledge and attitudes of mothers of toddlers before (Pre-Test) and after (Post-Test) being given complementary feeding education in stunting prevention based on local wisdom

From the results of the study on complementary feeding, a paired sample T-test statistical value with a p-value of <0.001 was obtained, so it can be concluded that there is a significant effect between the knowledge and attitudes of mothers of toddlers before and after being given education on complementary feeding in stunting prevention based on local wisdom. The results of this study are in line with the research conducted by (Lubis et al., 2023) entitled Complementary Feeding Education and Nutritious Food as a Strategy for Stunting Prevention at the Dahlia Health Center, Campago Guguk Bulek Village, Bukittinggi City.

Mothers' knowledge is crucial in influencing children's growth and development status and in supporting their growth and development process. The community is not yet aware that short stature in children is an impact caused by improper and suboptimal nutrition, because the assumption that short and thin children who can still perform activities well is normal, rather than children who need immediate attention (Harnawati & Zulfiana, 2024).

Improving mothers' knowledge about nutrition and stunting prevention can be done through health education. This education helps the community understand and change behaviors that can reduce the risk of stunting. Previous studies have shown an increase in mothers' knowledge about stunting after receiving health education and a significant difference in children's nutritional status after receiving appropriate complementary feeding (Busura et al., 2025). This is in line with research conducted by Noraini et al (2024), which found that mothers' level of knowledge affects the diversity of complementary food given. Mothers who have good knowledge are more likely to give their children a variety of complementary foods. The better the mother's knowledge, the more diverse the complementary foods she gives her child.

Mothers who have babies must have good knowledge about feeding complementary foods to babies. Mothers' knowledge is an important factor in feeding complementary foods to babies because with good knowledge, mothers know when is the right time to feed their babies. Mothers' lack of knowledge can trigger early feeding of complementary foods or feeding of complementary foods that are not in accordance with the needs of babies (Safitria & Mulyaningsih, 2023).

The results of the study show that providing education on complementary feeding in the prevention of stunting based on local wisdom through LCD media, leaflets, and demonstrations proved to be more effective and memorable than lectures or image presentations alone. This method creates a more interesting and interactive learning atmosphere and is able to increase mothers' attention and understanding. There was a significant difference in the mothers' knowledge levels before and after the education, which demonstrated the success of the educational approach that combined visual and auditory elements. Good knowledge helps mothers determine the type, timing, frequency, and method of appropriate complementary feeding, thereby supporting optimal child growth and development. In addition, the use of local food ingredients in complementary feeding also plays an important role in stunting prevention efforts.

Analysis of parenting patterns of mothers of toddlers before (Pre-Test) and after (Post-Test) receiving education on stunting prevention

From the results of the study on parenting patterns, a paired sample T-test statistical value with a p-value of <0.001 was obtained, so it can be concluded that there is a significant effect between the parenting patterns of mothers of toddlers before and after being given education on stunting prevention. The results of this study are in line with the research conducted by (Suwandewi et al., 2024) entitled The Relationship between Parenting Patterns, Knowledge, and Attitudes of Mothers with Stunting Prevention in Toddlers at the Tunas Segar 4 Posyandu in Kelayan Selatan Banjarmasin.

Parenting is the overall interaction between parents and children, characterized by encouragement from parents to change their children's behavior, knowledge, and values that are considered appropriate for their development so that children can be independent, have a sense of responsibility, have self-confidence, have curiosity, and have a forward-looking orientation. Parenting in relation to stunting refers to the role of mothers in meeting their children's needs and educating them. The needs referred to are the basic needs of toddlers, such as nutrition, stimulation and rest, shelter, and environment (Centis et al., 2024).

Parenting is the ability of parents and families to provide the time, attention, affection, and support that children need to grow and develop physically, mentally, and socially. Parenting can be defined in various ways, one of which is the parenting style of parents in feeding their children. This is because parenting is a factor that is closely related to the growth and development of children under five years of age (Puspita & Aryani, 2023). This is in line with research conducted by (Hidayat, 2023) which explains that mothers who provide attention/support to their children in the practice of feeding, preparation, and storage are related to children's height growth and stunting. Therefore, it can be said that mothers who provide attention and support to their children in this regard will have a positive impact on the nutritional status of their children, as described in the results of this study, which answered "sufficient."

Good and bad parenting patterns where children will experience growth and development according to their age. Parenting patterns consist of: Authoritarian parenting, which is characterized by strict rules from parents. Children's freedom is very limited. Democratic parenting, which is characterized by an open attitude between parents and their children. Permissive parenting, which is characterized by unlimited freedom for children to behave as they wish. Threatening parenting, where threats or warnings given harshly to children are perceived as a challenge to their autonomy and personality. They will violate them to show that they have self-esteem. Reward parenting, which refers to parents using material rewards or promises when telling children to behave as desired (Erda et al., 2022).

There are four important components in parenting that play a significant role, namely feeding, hygiene, health, and psychosocial stimulation. Adequate parenting practices are very important not only for the child's resilience but also for optimizing the child's physical and mental development and good health. Parenting also contributes to the child's overall well-being, happiness, and quality of life. Conversely, inadequate parenting, especially in terms of food security and children's health, can be one of the factors that lead to stunting (Rosuliana et al., 2022)).

The quality of maternal parenting before and after receiving education on stunting prevention through LCD media and leaflets was assessed. Before the educational intervention, the majority of mothers demonstrated inappropriate parenting patterns, especially in terms of meeting children's nutritional needs, providing developmental stimulation, and monitoring growth and development. After the education, there was an increase in understanding and parenting practices that were more in line with the principles of stunting prevention. Mothers became more aware of the importance of stimulation in supporting child development. Thus, education through a combination of LCD media and leaflets proved to be effective in increasing knowledge and parenting practices that support stunting prevention in toddlers.

The practical implication of this research is the availability of an applicable intervention model for primary healthcare workers. The sustainability of this program is highly guaranteed as it utilizes abundant and affordable local commodities (tilapia and moringa) in Gorontalo, allowing

the community to practice it independently without depending on external food aid. In terms of scalability, this mother-class model has great potential to be adopted as a routine program in Posyandu in other regions by adapting the types of local food available in their respective areas

This study has several limitations, including a relatively small sample size (43 respondents) and coverage of only one subdistrict, so caution is needed when generalizing the results to a wider population. In addition, the measurement of parenting patterns largely relied on self-reported data and brief observations, which risked introducing social desirability bias, whereby respondents tended to give answers that were considered socially acceptable. The short duration of the study also limited the researchers' ability to directly monitor the long-term impact of this intervention on the nutritional status (weight/height) of toddlers.

CONCLUSION

The implementation of a mother and toddler class model based on local wisdom significantly improves mothers' knowledge, attitudes, and parenting patterns in efforts to prevent stunting through the use of local resources such as tilapia and moringa leaves. The success of this intervention shows that an educational approach that combines theory with practical demonstrations using easily accessible food ingredients is more effective in changing parenting behaviors than conventional methods. Therefore, it is recommended that health agencies and local governments integrate this contextual innovation model into routine Posyandu programs and encourage local food cultivation at the household level as a sustainable strategy to reduce stunting rates.

Author's Contribution Statement: **Dewi Modjo:** conceptualization, development or design of methodology, creation of models, software, investigation, project administration; **Wiwi Susanti Piola:** validation, formal analysis, data curation, writing – original draft; **Rini Wahyuni Mohamad:** resources, writing-review & editing, supervision, visualiaztion, funding acquisition

Conflicts of Interest: The author declares no conflict of interest.

Source of Funding Statements: The source of this research comes from the Directorate of Research and Community Service, Directorate General of Research and Development, Ministry of Higher Education, Science and Technology, Fiscal Year 2025 with contract number 137/C3/DT.05.00/PL/2025

Acknowledgments: We would like to thank to mothers of toddlers and posyandu cadres for their participation and support. We would also like to express our special thanks to the Limboto Community Health Center in Gorontalo Regency for giving us the opportunity to conduct research in the Limboto Community Health Center's working area. We would also like to thank the rector of Muhammadiyah University Gorontalo and the entire academic community for their support. We would also like to thank the research assistants who helped us in conducting this research.

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