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Analysis of providing complementary feeding practice to stunted and non-stunted children aged 6-24 months in Natuna Regency, Indonesia: A qualitative study

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ABSTRACT

Background: Stunting was a growth disorder that occurred as a result of chronic malnutrition and repeated infections. Its prevalence had increased due to suboptimal complementary feeding (CF) practices.

Objectives: The objective of this study was to describe the attitudes and confidence of mothers in the practice of providing CF among children aged 6–24 months.

Materials and Methods: A descriptive qualitative study with a phenomenological approach was conducted through semi-structured interviews at Serasan and Serasan Timur Health Centers, Natuna Regency, from September to November 2024. The study explored maternal attitudes and self-confidence in complementary feeding (CF) practices. Participants included 18 primary informants in focus group discussions (9 mothers of stunted and 9 of non-stunted children) and 4 key informants in in-depth interviews (2 heads of community health centers and 2 nutritionists). Data were analyzed thematically using NVivo 12.0 software.

Results: This study identified four main themes. First, maternal attitudes in facing challenges, such as food rejection and the selection of appropriate food types. Second, maternal attitudes in the practice of providing complementary feeding (CF). Third, maternal confidence in determining suitable food textures. Fourth, maternal confidence in managing picky eating during CF practices. Most mothers demonstrated a positive attitude toward CF, including preparing food themselves, considering it healthier and more economical. However, some mothers of stunted children tended to purchase instant foods more often due to practicality. The majority showed high confidence, supported by Posyandu education, internet resources, and nutritionists. Nevertheless, several mothers of stunted children still lacked confidence due to limited information on CF nutritional adequacy.

Conclusion: Mothers of stunted children tended to have lower attitudes and self-confidence compared to those of non-stunted children in complementary feeding (CF) practices. Continuous education and supportive policies facilitating access to nutritious foods were essential. Additionally, family support enhanced maternal confidence in providing CF.

Keywords: Attitude; children; complementary feeding; self confidence; stunting

BACKGROUND

Stunting is a condition of growth failure in children due to chronic malnutrition, repeated infections, and inadequate stimulation, especially during the first 1,000 days of life. This condition is characterized by a child's height being lower than the age standards set by the WHO or the Ministry of Health of the Republic of Indonesia.[1] Based on data from the United Nations (UN), more than 22% or 149 million children under five worldwide experience stunting, of which 6.3 million are Indonesian children.[2]

The 2021 Indonesian Nutrition Status Survey (SSGI) data shows that the prevalence of stunted toddlers in Indonesia is 24.4%[3], Meanwhile, the results of the SSGI in 2022 indicated that the prevalence of stunted children under five in Indonesia was 21.6%[4] and the results of the Indonesian Health Survey in 2023 showed a figure of 21.5%, which is a decrease of 2.9% from the last three years.[5] Although there has been a decrease in stunting rates, the prevalence of stunting is still quite high and has not yet reached the national target set by the government, which is 14% by 2024. The stunting rate in Natuna Regency has increased over the past three years, with prevalences of 11.77%, 11.93%, and 16.10% in 2021, 2022, and 2023, respectively.[5–7] The prevalence of stunting in Natuna Regency is already below 14%, but in the last three years, there has been an

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increase in its prevalence. Therefore, it is very important to identify the issues that have caused the prevalence of stunting to continue to rise in the last three years in Natuna Regency.[5]

Based on the 2023 Survey, the practice of Complementary Feeding (CF) in the Riau Islands province is still not good, and many children are not given sufficient and appropriate complementary feeding according to conditions such as the status of minimal food frequency not being met (35.1%), the status of minimal food diversity not being diverse (46.8%), the status of minimal diet not being met (63.1%), and the status of not consuming animal protein (14.6%) in children aged 6-24 months. The issue of maternal confidence and the child's difficulty in consuming complementary foods are the main causes of the increasing stunting rates in Natuna Regency.[5] It has been found that maternal knowledge and attitudes are significantly associated with the incidence of stunting among toddlers. Mothers with negative attitudes are four times more likely to have children who experience stunting compared to mothers with positive attitudes.[8] It has been shown that maternal self-efficacy is significantly associated with the incidence of stunting among toddlers. Mothers with low self-efficacy have an eight times greater likelihood of having toddlers who experience stunting compared to mothers with high self-efficacy. These findings indicate that maternal attitudes and self-efficacy are the key psychosocial factors influencing child feeding practices. Negative attitudes and low self-efficacy may lead to poor complementary feeding behaviors, which contribute to inadequate nutrient intake and increase the risk of stunting. Strengthening these factors through education and family support can help reduce stunting incidence.[9]

Research has demonstrated that maternal education, knowledge, socio-cultural norms, and economic conditions significantly influence complementary feeding practices.[10] Additionally, there are other factors that are most dominant in influencing the practice of CF such as the attitude of the toddler's mother.[11] Based on the low coverage of Infant and Young Child Feeding (IYCF) practices in Natuna Regency, issues of knowledge, attitudes, self-confidence, and involvement in providing CF can pose a risk of increasing stunting rates in Natuna Regency. The objective of this study is to examine the attitudes and self-confidence related to the practice of CF in stunted and non-stunted children aged 6-24 months in Natuna Regency.

MATERIALS AND METHODS

Study Design

This was a qualitative with a phenomenological study design, conducted through Focus Group Discussions (FGD) and in-depth interviews. This was part of the Natuna Complementary Feeding Practice (NaCoF) Study, which was a mixed-method study examining the knowledge, attitudes, involvement, self-confidence, and practices of mothers in providing Complementary Feeding (CF) to stunted and non-stunted children aged 6-24 months. In addition, this study also examined various determinant factors that influence the practice of complementary feeding among that group. This research was conducted in the working area of the Serasan and Serasan Timur Health Centers on Serasan Island, Natuna Regency, The Riau Islands Province. The research was conducted from September to November 2024 in the stunting locus area based on the stunting data provided through the Electronic Community-Based Nutrition Recording and Reporting Application (e-PPGBM) by the Natuna District Health Office.[12] This study focused on mothers' attitudes and self-confidence in providing CF, particularly related to the challenges faced, strategies for dealing with children's rejection, and factors influencing the choice of food types. The attitude and self-confidence of mothers played a crucial role in determining the success of providing optimal complementary feeding for children. Table 1 showed the themes and sub-themes that form the basis of this research. Ethical approval for this study was obtained from the Health Research Ethics Committee of the Faculty of Health Sciences, Universitas Alma Ata (Komite Etik Penelitian Kesehatan, Fakultas Ilmu-Ilmu Kesehatan, Universitas Alma Ata), with approval number 107/E5/PG.02.00.PL/2024. All participants provided written informed consent prior to data collection.

Table 1 presents the themes and sub-themes that underpin this research. These themes were identified during the preliminary phase of the study and served as a guide in developing the interview questions. Although the questions did not explicitly state each theme, these themes were carefully designed to explore the thematic areas in depth. For example, to explore the theme of maternal self-confidence, participants were asked questions such as: "How do you feel when your child refuses to eat?" or "What do you usually do when your child rejects the food you prepared?" Likewise, the theme of attitudes toward complementary feeding was explored through questions like: "What do you consider most important when feeding your child?" or "What kind of food do you prefer to give, and why?" This approach ensured that participants' responses reflected the core themes while allowing for a natural and conversational flow during the interviews and FGDs.

Table 1. Theme dan Sub-theme of the study

No	Theme	Sub-theme
1	The mother's attitude in facing challenges such as rejection from the child and the selection of food types in the practice of providing complementary feeding to the child.	a. The obstacles faced by mothers in providing CF practice. b. Mother's strategy in dealing with the child's rejection of CF practice. c. Factors influencing the selection of CF food types.
2	The mother's attitude towards feeding practices in the administration of CF to children.	The pattern and habits of mothers in providing CF.
3	A mother's confidence in providing CF, such as determining the texture of food for the children.	a. The level of the mother's confidence in providing CF. b. The mother's confidence in adjusting the texture of CF according to the child's age.
4	A mother's confidence in handling a picky eater in the practice of providing CF to children.	Mother's strategy in dealing with a picky eater child.

Data Collection Procedures

In this study, informants were selected using the non-probability sampling approach combined with the purposive sampling method. Two categories of participants were selected to ensure a comprehensive perspective. Main informants comprised mothers of stunted and non-stunted children aged 6–24 months who resided within the catchment areas of the Serasan and Serasan Timur Community Health Centers on Serasan Island, Natuna Regency; were physically and mentally healthy; able to communicate effectively; and willing to participate voluntarily. Key informants consisted of nutritionists working at the same community health centers and the heads of those centers. Mothers who satisfied the inclusion criteria but did not complete their participation were excluded from the study.

The qualitative research included 18 main informants: Nine mothers of stunted children (children with height-for-age z-scores [HAZ] < -2 SD) and nine mothers of non-stunted children (HAZ ≥ -2 SD), aged 6–24 months, were included as main informants. Four key informants two heads of community health centers and two nutritionists from each centre were also involved. The main informants were selected and interviewed through Focus Group Discussions (FGDs).The number of informants in this study was determined using the principle of data saturation, which is commonly applied in qualitative research. Informants were selected purposively to ensure balanced representation from both mothers of stunted and non-stunted children. Data collection continued until the point at which no new information, themes, or patterns were observed during the interviews and FGDs. This approach ensured that the data obtained were rich, relevant, and sufficient to answer the research questions. The aim of this division for main informants was to better understand the disparities in children's experiences, attitudes, self-confidence, and other aspects that influence their nutrition requirement between stunted and non-stunted children. By comparing these two groups, the study can uncover risk factors and determinants that influence the practice of CF and the occurrence of stunting, as well as issues that can avoid or alleviate this condition. In addition, this section found broader insights into the problems and techniques used by each group for practicing complementary eating for their children.

Key informants were selected using purposive sampling, and data were collected through in-depth interviews. The selection was based on specific criteria such as their strategic roles, professional responsibilities, and direct involvement in addressing nutritional issues of each community center. Nutritionists had knowledge and experience in providing education and nutritional interventions, while the head of the community health center had a broader insight into policies, programs, and challenges in the implementation of health services. The selection of these key informants aimed to obtain a comprehensive perspective on the factors influencing children's nutritional status, the effectiveness of the programs that have been implemented, and the challenges faced in the prevention and management of stunting. With information from both roles, the research can identify more effective strategies in efforts to improve children's nutritional status at the community level.

Interview Guide

This interview guide was independently compiled by the author with reference to various relevant theories, in order to ensure that the questions posed have a strong scientific basis.[21] This guide was designed with the aim of exploring mothers' attitudes and confidence in the practice of providing CF to stunted and non-stunted children aged 6–24 months. With a systematic approach, this interview was expected to probe the underlying factors influencing mothers' decisions in providing complementary feeding, as well as the challenges they encountered throughout the process. Here is the question that was asked:

1. What are the biggest obstacles or challenges you face when providing complementary feeding?
2. How should a mother react if her child refuses to be given complementary food?
3. How does the mother choose the types of food for the child's complementary feeding?
4. When providing complementary feeding, do you make it yourself or buy it?
5. How confident is the mother in providing appropriate complementary feeding according to the child's nutritional needs?
6. How is the mother's confidence in dealing with the child when they are having difficulty eating?
7. How are you sure that the texture of the complementary food given is appropriate for the child's age?

The in-depth interview guide for key informants, such as health center heads and nutritionists, was developed based on the research objectives and relevant literature. This guide aimed to explore institutional perspectives on maternal practices, the availability of support systems, and the challenges in implementing CF programs. The questions were designed to elicit detailed information on health service strategies, community engagement, and barriers encountered in promoting CF practices. Example questions included: "What kind of support is provided to mothers regarding complementary feeding?" and "What are the main challenges faced in improving CF practices in your area?" The guide ensured that key themes were systematically explored while allowing flexibility for probing and clarification during the interviews.

Data Analysis

All interviews were conducted by the first author using the Indonesian and local language. The transcription process was carried out by the principal researcher (ADN) and the third (SN), fourth (MH), and fifth (HHM) researchers. The thematic analysis method is used to allow the use of deductive themes determined based on literature as well as inductive themes identified from the interview process. Thematic analysis is a qualitative method that focuses on the identification and description of both explicit and implicit ideas, which goes beyond merely counting words or phrases explicitly.[13]

The interview transcripts were read together with four researchers (ADN, SN, MH, and HHM) to gain a deeper interpretation of the phenomenon and ensure that the emerging themes were consistent. To find patterns of meaning in the data set, four researchers (ADN, SN, MH, and MMH) used several stages of thematic analysis: 1) Transcribing the results of FGDs and in-depth interviews; 2) Creating coding; 3) Creating themes; 4) Reviewing themes; 5) Compiling the report. The data obtained from various sources from primary informants and key informants were then reduced using Nvivo 12 software. Then, the data was presented in the form of brief descriptions or narrative texts and concluded or verified to ensure credibility (level of trust). This research also uses triangulation examination techniques, namely source triangulation by interviewing nutritionists and heads of community health centers as key informants.

This study had passed the ethical evaluation by the research ethics committee of Universitas Alma Ata with the number KE/AA/VII/10112000/EC/2024. The researchers in this study had adhered to the applicable ethical principles, including ensuring that each research subject signs an informed consent form before participating. In addition, the confidentiality of the information provided by the subjects is fully maintained and will not be disclosed. The data collected will only be used for the purposes of this research and will not be used for any other purposes.

RESULT

Participant's Characteristics

FGD was conducted with 18 mothers of children aged 6-24 months, and in-depth interviews were conducted with two nutritionists (AG) and two heads of community health centers (KP) from each health centers, aged 31-42 years with the majority having a bachelor's degree as their highest education. It was known that the main informants were followed by nine mothers from the stunted children group (IS) and nine mothers from the non-stunted children group (IN). The majority of the informants reside in Serasan Timur, with the

youngest being 19 years old and the oldest being 46 years old, and the majority (61.1%) had completed high school education. The characteristics of the main and key informants are presented in Tables 2 and 3.

Table 2. Main informant's characteristics

Code	Domicile	Age (year)	Education Level	Occupation
IS1	Serasan Timur	25	Junior High School	Homemaker
IS2	Serasan Timur	24	Senior High School	Homemaker
IS3	Serasan Timur	21	Senior High School	Homemaker
IS4	Serasan	28	Senior High School	Homemaker
IS5	Serasan	26	Senior High School	Homemaker
IS6	Serasan	36	Senior High School	Homemaker
IS7	Serasan	43	Senior High School	Homemaker
IS8	Serasan	37	Primary School	Homemaker
IS9	Serasan	43	Junior High School	Homemaker
IN1	Serasan Timur	20	Senior High School	Homemaker
IN2	Serasan Timur	27	Senior High School	Homemaker
IN3	Serasan Timur	26	Diploma	Homemaker
IN4	Serasan Timur	33	Bachelor	Homemaker
IN5	Serasan Timur	19	Junior High School	Homemaker
IN6	Serasan Timur	29	Senior High School	Homemaker
IN7	Serasan Timur	38	Senior High School	Private employee
IN8	Serasan Timur	46	Senior High School	Homemaker
IN9	Serasan Timur	39	Junior High School	Homemaker

SD, elementary school; SMP, junior high school; SMA, senior high school; IS, mothers from the stunted children group; IN, mothers from the non-stunted children group.

Tabel 3. Key informant characteristics

Code	Domicile	Age	Gender	Education Level	Position
AG-1	Puskesmas Serasan Timur	31	M	Bachelor	Nutritionist
AG-2	Puskesmas Serasan	32	F	Bachelor	Nutritionist
KP-1	Puskesmas Serasan Timur	42	F	Bachelor	Head of the health center
KP-2	Puskesmas Serasan	40	F	Bachelor	Head of the health center

AG, nutritionist; KP, head of the health center (puskesmas), M, male; F, female.

The obstacles faced by mothers in providing CF

The results of the FGD indicate that the main challenge faced by the group of mothers with stunted children when providing complementary feeding is the child refusing to eat, either due to crying or during a fever or sick.

"The challenge is that sometimes the child cries" (IS 9)

"The biggest obstacle or challenge I face when giving complementary feeding is when the child has a fever or sick or doesn't want to eat (IS 4)."

In the group of mothers with non-stunted children, the challenges they face include children refusing to eat by closing their mouths or being anxious, as well as the child's desire to eat independently and not wanting to sit during meals.

" The child shows food refusal by closing their mouth or turning their head away during feeding" (IN 5)

"Likes to be anxious, wants to eat alone." doesn't want to sit (IN 7)

From the results of the interview with key informants, it was explained that the obstacles in providing CF vary for each mother. According to the nutritionist's opinion, a child refusing to be given complementary feeding is also influenced by factors from the mother.

"Well, there are many obstacles, the first being that the toddler's mother is not diligent. In some cases, this may be due to a lack of knowledge about appropriate feeding practices or limited awareness of the importance of nutrition in early childhood, and there are also mothers who are busy either with formal

work in an office or informal jobs outside the home, so their creativity tends to lean towards choosing something instant. The child follows what the mother says, so if the provision is late or not appropriate, the child won't eat certain ingredients, thus refusing to be fed." (AG 1)
"The main obstacles are the most numerous, because we have a lot of stunting and malnutrition." The main obstacle is that the child doesn't want to eat, it's difficult. close their mouth, don't want to eat, after that they only want instant stuff, like the snacks from the stalls, those instant packaged snacks, they want that. (AG 2)

Mother's strategy in dealing with the child's rejection of CF practice

From the FGD results, it shows that there is a difference in handling children who refuse to eat between the group of mothers with stunted children and the group of mothers with non-stunted children. The group of mothers with stunted children persuades their children to eat by feeding them while giving them food and watching TV. Meanwhile, mothers with non-stunted children focus more on creating menus to encourage their children to eat again.

"I invited the child to watch TV while being fed." (IS 9)
"Be patient and keep trying, and if you don't want to, just let it be, eat while playing." (IS 2)
"My attitude remains calm, being more creative in determining the types of food given to the child, perhaps by being creative in making variations of complementary feeding." (IN 2)

There are different approaches to handling children who refuse to eat by simply letting them be, as done by mothers in the stunted children group, as stated below:

"If the child refuses to eat, I will wait until the child wants to eat," (IS 4)
"Not really, there isn't a specific way because if the child doesn't want to eat, it's hard to make them eat." (IS 8)
"Just let it be until the child wants to eat." (IS 3)

The results of in-depth interviews with key informants, nutritionists explain that the mother's attitude should be that if the child refuses to eat, the mother of the toddler should keep trying and not give up.

"Yeah, it has to be made possible, still" (AG 1).
"Yes, you have to keep trying, if I usually counsel like this, 'Ma'am, don't lose hope, keep giving, keep providing for the child, keep pursuing the child, keep changing the pattern' like that." (AG-2)

Factors influencing the selection of CF food types

From the FGD results, most groups of mothers with both stunted and non-stunted children chose four types of nutritious food ingredients for complementary feeding, which include protein, carbohydrates, vegetables, and fruits. Mothers with stunted children place more emphasis on the diversity of food components, while the group of mothers with non-stunted children focuses on selecting good and nutritious food. Here is the quote:

"I choose the types of food for complementary feeding; it must include protein, carbohydrates, vegetables, and fruits. For example, when we give it, it must have those four components." (IS 4)
"Of course, I choose types of food that are good and nutritious like rice, fish, vegetables, eggs, and fruit." (IS 5)

From the FGD results, it was also explained that there are differing opinions among the groups of mothers with stunted and non-stunted children regarding the mention of less than four types of food ingredients given for CF. Although there are differences in how food ingredients are chosen. Some mothers rely more on the food available at home or that is easy to find, such as rice, fish, and vegetables. Meanwhile, other mothers focus on diversity and nutritional content, paying attention to complete nutrition such as protein, vegetables, and fruits. Here is the quote:

"I choose the type of food depending on availability. For example, if there are vegetables, I make baby food using them. Sometimes it's hard to find vegetables here, so sometimes the complementary food is just rice and fish." (IS 8)
"Usually, I give my child food that is nutritious and healthy, such as side dishes, rice, and fruit." (IN 9)

Based on the results of in-depth interviews with key informants, the nutritionist explained that they have previously provided education on the selection of types of food ingredients that should be given for CF, as stated:

"Yes, it's already done, the target is mothers with toddlers under 2 years old, and pregnant mothers as well." (AG 1)
"I also counsel on what good food ingredients are, so if I say here, 'Ma'am, there must be carbohydrates, then there must be animal protein, then there must be plant protein and fruits and vegetables for completeness,' 'Then for undernourished children, I emphasize, or for stunted children, I definitely emphasize, like this, 'Ma'am, the animal protein must be two, ma'am,' something like that." (AG 2)

The pattern and habits of mothers in providing CF

The results of the FGD showed that all informants from the group of mothers with stunted children as well as mothers with non-stunted children chose to make their own complementary foods, citing reasons such as being more economical, healthier, and having more freedom to be creative in menu preparation. Here are their statements:

"I made it myself; the reason is to save money and to keep it cleaner." (IN 2)
"Making it myself, cost-effective, free to choose the menu, knowing if the food could cause allergies in babies" (IN 7)
"I make it myself because I like cooking, it saves money, and because I also enjoy cooking." (IS 4)

There is one informant from the group of mothers with stunted children who said they more often buy complementary foods rather than make them, citing convenience as the reason. Here is her statement:

"Most people buy instant foods rather than made it by itself because it's more practical and easier." (IS 3)

This is not in line with the results of the interviews with key informants; the nutritionist said that most mothers of toddlers prefer to buy rather than make it themselves, even though the nutritionist has already provided education on the importance or benefits of making CF themselves compared to buying. Here is the statement:

"Yes, it's been mentioned several times that if a child is not introduced from a young age, they might not want it even when they grow up." "Always reminded, especially those whose food is still soft, to use instant products." (AG 1).
"Yes, that happens a lot. In reality, many people here give instant food because it's more practical." That's why I always say, "Mom, making it yourself has more complete nutritional value compared to instant foods, it's tastier, so it won't be hard to eat later," I always say it like that. (AG 2).

The level of the mother's confidence in providing CF

From the FGD results, it was found that the majority of informants showed a high level of confidence in providing complementary feeding that meets the nutritional needs of children. This is influenced by the education they have received through posyandu, information from the internet, and direct guidance from nutritionists regarding the proper provision of complementary feeding for children. Here is an excerpt from the interview:

"Yes.. I am very sure because it aligns with what I know from the posyandu, pediatrician, and midwife." Very sure." (IS 4)
"Yes, I'm sure." Sure, because in my opinion, it is appropriate for the child's age. (IS 9)
"I am very sure because I often see it on the internet and have also been informed by the community health center." (I have been very sure because I often see it on the internet and was also informed by the community health center.)

There is a mother from the group of stunted children aged 12-24 months who expressed her doubts about the adequacy of the complementary feeding given to her child. This happens due to the lack of information obtained regarding the provision of complementary feeding that meets the needs, resulting in the mother having a limited understanding of child nutrition.

"I'm not very sure because I don't really understand child nutrition." Not sure if it's appropriate for the child's age. (IS 7)

From the results with key informants, the nutritionist explained that healthcare workers have made various efforts to boost mothers' self-confidence through support and education. Here is an excerpt from the interview:

"I can't be sure about this, I never really confirm it. Sometimes I give the menu to the mother, but the toddler doesn't follow it either, except when I visit their house." (AG 1)
"if we usually have a screening instrument for assessing breast milk and complementary feeding specifically for toddlers aged 0-2 years, there is indeed a screening, so it will be known whether the complementary feeding is good or not, usually conducted every 3 months" (AG 2)

The mother's confidence in adjusting the texture of CF according to the child's age

The FGD results show that the majority of mothers, whether they have stunted children or not, feel confident that they have provided CF textures appropriate for their child's age. This confidence is supported by the education received from nutritionists, posyandu, as well as information obtained through social media such as Facebook, Instagram, and X. Here is an interview excerpt:

"Yeah, I'm sure because I saw it on FB (Facebook)." Yeah, sometimes at first they don't want to eat, but eventually they start eating. (IS 9)
"I am already sure it is age-appropriate because I myself am a toddler cadre." The reaction of the first child will be to refuse and close their mouth. (IN 7)
"Yes.. it's already appropriate because I followed the nutritionist's advice." The child still likes it and still wants to eat it. (IND 4)
"mmm.. I'm sure the texture of the complementary food I provide is appropriate for my child's age." For the child's reaction, they were definitely surprised but still willing to accept the food. (IS 5)

However, there is one informant from the group of mothers with stunted children aged 12-24 months who is not sure if the texture of CF given to her child is appropriate for the child's age due to the mother's lack of knowledge and understanding.

"I'm not sure about the texture because I don't really understand it." If I feel it's not hard, then I'll just give it. The reaction was just normal, but they still wanted to eat. (IS 8)

From the results of the key informant interview, the nutritionist stated that the healthcare workers have made efforts to boost the mothers' confidence by educating them about this complementary feeding practice. Here is the interview excerpt:

"I also always educate and consult, for example, ma'am, like this, ma'am, for children aged 6-9 months, the food should be strained, made by steaming all the ingredients first and then blending them. For children aged 9-11 months, the food should be rice porridge with chopped side dishes. And for children over 12 months, it should be the family's daily food available at home." (AG 1)
"That was done using counseling and education, umm, it was explained that children aged 6-8 months, umm... their stomachs or digestion are still not strong, so give them strained food first so it's easy to digest. Likewise, when they get older, they are introduced to soft food, and children start learning to eat slightly harder food. Later, we are afraid that the child will not get used to eating hard food, so the child is given complementary feeding to learn to taste food." (AG 2)

Mother's strategy in dealing with a picky eater child

From the FGD results, it was found that some informants came from the group of mothers with stunted and non-stunted children aged 6-8, 9-11, and 12-24 months, who expressed confidence in handling children who are difficult to feed, although some mothers did not have specific strategies to manage them.

"I am confident." There is no special strategy. (IS 2)
"Yes.. I have to be confident even though the child is having trouble eating." The strategy is to feed while carrying. (IN 8)
"If the child has difficulty eating, as a mother, you must remain confident." The strategy is usually to feed them while carrying them. (IN 5)

From some other informants, who are mothers of stunted children of all age groups, they expressed a lack of confidence in handling children who are difficult to feed. Some have strategies such as feeding the child while playing, while others do not have any specific strategies for dealing with children who are difficult to feed, so they just wait until the child is willing to eat again.

"It's hard to be confident when a child is a picky eater, yeah, I'm also confused when a child is a picky eater and if forced to eat, they will definitely spit it out." As for strategy, there isn't any special strategy... so just let it be. (IS 8)

"Not very confident because if the child has a hard time eating, it's difficult to force it." There is no special strategy. (IS 6)

"When my child has difficulty eating, I lack confidence." Yes, there are... by turning on the television or taking them outside, umm... taking them to play. (IS 4)

From the results of in-depth interviews with key informants, the nutritionist has also made efforts to boost the mother's self-confidence. Here is an interview excerpt:

"Umm, I always say it like this, you know... I always educate or counsel or WhatsApp like this, I always say, ma'am, just take it slow, give it slowly, but with the condition that you don't need to give the child snacks, don't give excessive milk, the pattern should be at home." Eat first, then breastfeed, like that. They shouldn't eat too many sweets, like that. If the child refuses, don't force them, just let them be for 30 minutes and then continue, like that. Basically, motivate them, like, "You can do it, ma'am, you can do it." (AG 1)

"Usually, they need to be encouraged and educated that their mother should be diligent, creating a pleasant atmosphere, maybe taken out somewhere..." (AG 2)

DISCUSSION

Description of attitudes towards the practice of providing CF to stunted and non-stunted children aged 6-24 months

The main challenge in providing CF is the child's reluctance to eat, whether due to taste, texture, or lack of appetite. Children also often refuse to be spoon-fed and want to eat by themselves. In addition, health issues such as diarrhea or respiratory infections can reduce appetite, making it even more difficult for mothers to provide complementary feeding. This condition was particularly reported by mothers with stunted children, who stated that their children frequently experienced reduced appetite during illness, which often disrupted feeding routines. Mothers with lower education levels also expressed limited knowledge on how to manage food refusal, indicating a possible connection between maternal education and feeding strategies. Ningrum et al. showed a similar finding that environmental factors and family eating habits influence children's eating patterns.[14] It has also been found that an inconsistent diet may hinder children's acceptance of new foods.[15] Previous research suggests that family support, particularly paternal involvement, plays a crucial role in addressing challenges related to complementary feeding.[16]

Nutritionists in the public health center report that the main challenge in feeding is that children tend to refuse to eat, choose certain types of food, or lose their appetite. The low motivation of mothers and the lack of creativity in presenting food also have an impact. In addition, the limited variety and presentation of food make it difficult to meet children's nutritional needs. Previous research suggests that maternal creativity in food presentation plays an important role in overcoming children's food rejection. In this study, mothers who are more creative in designing appealing and varied meal menus for their children tend to be more successful in reducing food rejection and ensuring their children receive adequate nutrition. The lack of creativity and food variety can be one of the main factors in the failure to provide a balanced diet.[17] Recent research supported the importance of a mother's creativity in presenting food and found that picky eaters were at risk of malnutrition. In response to food refusal and to meet children's nutritional requirements, several practical mechanisms were reported by mothers in this study. These include modifying food texture according to the child's developmental stage, serving previously rejected foods in small portions and with repeated exposure, and combining familiar foods with new ingredients to gradually increase acceptance. Additionally, mothers applied creative plating techniques, such as shaping food into attractive forms, using colorful and diverse ingredients, and arranging meals in a visually appealing way to stimulate interest. Some mothers also involved their children in food preparation, which helped increase their engagement and willingness to eat. These

strategies proved effective in improving children's eating behavior while supporting adequate nutritional intake.[18]

Mothers with non-stunted children are more creative in presenting food, while mothers with stunted children tend to feed them while engaging in other activities, using a variety of colors, shapes, and textures to increase their children's interest in eating. In contrast, mothers with stunted children were often observed feeding their children while simultaneously performing other tasks, which may reduce the quality of interaction and attention given during feeding. Eating while being distracted or multitasking can lower a child's awareness of food and interfere with the development of healthy eating habits. Nutritionists recommend that complementary feeding should be continued even when the child refuses to eat, with appropriate adjustments in food variety and texture. It has been emphasized that stunted children often experience a loss of appetite, necessitating more sensitive and individualized feeding strategies. These include repeated exposure to new foods, portion size adjustments, and the creation of a calm and engaging mealtime environment.[19] Research-based recommendations highlight the importance of introducing healthy foods early to establish positive eating habits and reduce food selectivity in children. Mothers should apply effective feeding strategies, such as providing positive reinforcement, avoiding distractions like television or mobile phones during meals, and maintaining consistent mealtime routines. In addition, offering a variety of textures, colors, and flavors can help attract children's attention and support adequate nutritional intake.[20]

Most informants, whether they have stunted or non-stunted children, choose complementary foods with balanced nutritional content, including protein, carbohydrates, vegetables, and fruits. However, there is a difference in approach between mothers with stunted children; they focus more on food diversity to meet nutritional needs, while mothers with non-stunted children emphasize high quality and nutrient content. There appears to be an effort among mothers of stunted children to increase food diversity as a strategy to improve nutritional adequacy. However, this does not necessarily indicate a direct causal relationship between food diversity and the absence of stunting. In many cases, the increased attention to food variety emerges after the child has already been diagnosed with stunting, serving as a corrective action rather than a preventive measure. Therefore, while these mothers may report a greater focus on dietary diversity, it does not directly correlate with better nutritional outcomes prior to the onset of stunting. Instead, it reflects their attempt to recover or improve their child's nutritional status post-diagnosis. It has been found that maternal awareness of the importance of high-quality foods is significantly associated with children's nutritional status. Mothers of non-stunted children tend to have a better understanding of the role of nutrient-dense foods, particularly animal protein and green leafy vegetables, in supporting optimal growth and preventing stunting. This suggests that nutritional awareness plays a preventive role in reducing the risk of stunting, as it influences mothers' decisions in providing diverse and nutrient-rich complementary feeding.[17]

The majority of informants, both those with stunted children and those without, tend to use fewer than four food ingredients in complementary feeding. However, nutritionists recommend that CF should include a variety of food ingredients, such as carbohydrates, animal and plant proteins, vegetables, and fruits to meet the child's nutritional needs. They also recommend avoiding high-fat foods that can reduce nutritional diversity. A variety of foods that include all these elements is important to support the optimal growth and development of children. In this study, mothers with stunted children reported more frequent reliance on limited household food availability, such as rice and fish, especially in rural or remote areas where access to diverse foods was restricted. In contrast, mothers with non-stunted children many of whom had higher education levels and better access to health information tended to include more variety in their children's diets.[21] Food diversity is important for children's nutritional adequacy, at least covering four main groups: carbohydrates (grains and tubers), proteins (legumes, dairy products, meat, eggs), as well as fruits and vegetables rich in vitamin A (carrots, spinach, sweet potatoes, papayas, and mangoes), ensuring such variety is especially crucial in regions where children rely heavily on breastmilk, and complementary foods must fill the nutritional gap. This varied diet improves nutritional quality, especially for children who are exclusively breastfed.[19]

The majority of mothers with non-stunted children choose to prepare complementary foods themselves because it is more economical, healthier, and more flexible. This choice reflects a higher level of nutritional awareness, which may be related to better educational backgrounds and greater exposure to health information. Previous research suggests that homemade complementary foods are generally healthier than commercially manufactured products. Moreover, they can be adapted to meet the specific nutritional needs of young children more effectively.[22] In contrast, mothers with stunted children more often opt for instant complementary foods

due to their practicality and time-saving benefits. This tendency can be linked to their daily workload, lower levels of nutritional knowledge, and limited family support, especially from spouses. Nutritionists recommend homemade complementary foods, but many mothers still choose instant ones due to factors such as knowledge, family support, work, and experience. Most mothers with stunted children in this study had lower education levels (mostly junior or senior high school), which may influence their understanding of proper complementary feeding practices. Mothers who are more knowledgeable about nutrition tend to make homemade complementary foods because they are considered more nutritious and suitable for the child's needs.[23] Mothers with stunted children more often choose instant complementary foods because they are practical, while nutritionists recommend homemade complementary foods. Both instant complementary foods and homemade ones can meet the nutritional needs of infants if given appropriately. [23] Despite the preference differences, both instant complementary foods and homemade ones can fulfill the nutritional needs of infants if given appropriately. However, the tendency to rely on instant products without adequate knowledge may negatively impact the quality and consistency of complementary feeding. Previous research has shown a significant difference in infant weight gain between those receiving instant complementary foods and those fed with homemade preparations.[24] Previous research has emphasized the importance of maternal knowledge in preparing appropriate complementary foods. It has also been highlighted that the quality and pattern of complementary feeding have a greater impact on child growth than the type of food provided.[25]

Educating mothers of toddlers about creative complementary feeding (CF) practices and the concept of small but frequent portions is essential**,** particularly for children who experience feeding difficulties. In this study, mothers of non-stunted children who generally had higher educational backgrounds and better nutritional knowledge were more likely to implement these strategies effectively. They demonstrated creativity in designing meal menus using simple but nutritious ingredients and applying appropriate cooking techniques. Homemade complementary feeding was preferred by these mothers because it was considered more economical, healthier, and flexible in meeting their children's specific nutritional needs**.** It has been found that variations in food shape, texture, and cooking methods can facilitate children's acceptance of food.[17]

This study, conducted in a 3T (frontier, outermost, and underdeveloped areas) region, further highlights the role of contextual limitations such as remote geography, limited food access, and uneven health education in shaping maternal feeding practices. Mothers of stunted children, often with lower education and less health exposure, faced greater challenges in applying these strategies, underlining the importance of tailored interventions in underserved areas.

Description of confidence in providing complementary feeding practice to stunted and non-stunted children aged 6-24 months

The majority of respondents expressed strong confidence or belief in giving CF that matches the nutritional demands and texture appropriate for the child's age. Informants recognise the necessity of supplying adequate portions of carbohydrates, protein, fat, energy, and vitamins. This confidence was especially prominent among mothers with non-stunted children, most of whom had higher levels of education (senior high school or above) and had better access to health information. This confidence was especially prominent among mothers with non-stunted children, most of whom had higher levels of education (senior high school or above) and better access to health information, even within the limitations of a 3T region**.** This understanding is substantially supported by the education of healthcare professionals such as paediatricians, nutritionists, community health workers, and public health center personnel. In contrast, mothers with stunted children who often had lower educational attainment or limited access to reliable health information expressed more hesitation and relied more on guidance from family traditions or informal sources. Some mothers with stunted children were unwilling to confront the obstacles of feeding their children because they lack experience. Advice from healthcare professionals might increase their confidence in offering healthful complementary feeding. Non-diverse CF raises the risk of stunting by 1.72 times when compared to diverse complementary feeding. Meta-analyses study showed that providing quality complementary feeding, particularly in terms of diversity and frequency, can considerably lower the incidence of stunting in children aged 6-59 months.[26] Previous research suggests that the consumption of local, nutrient rich complementary foods is associated with better nutritional outcomes in children compared to instant products.[27] The mother's understanding of CF was obtained from community health posts, community health centers, nutritionists, and social media. This knowledge helps recognize the child's response to food texture. However, some mothers with stunted children are still confused about determining the right texture. Lack of knowledge and confidence often leads to poor feeding practices.[28]

Some mothers feel confident and have strategies to deal with children who are picky eaters, such as giving them toys, turning on the television, or taking them outside. However, mothers with stunted children tend to be less confident and confused in facing this situation. Continuous education and support through community programs, such as training at health centers (posyandu or puskesmas), can enhance mothers' knowledge and confidence. A practice-based and evidence-based approach is also important to correct misconceptions in feeding.[29] Several studies have found that mothers' strategies for coping with children who are picky eaters vary according to their level of knowledge and confidence. It has been found that mothers with strong nutritional knowledge are more likely to adopt active feeding strategies, such as creating a pleasant eating environment and introducing varied food textures.[30] In contrast, previous research suggests that mothers of stunted children often experience insecurity and confusion when dealing with feeding difficulties, which may result in the absence of specific feeding strategies.[31] Therefore, an intervention approach that combines theory and practice based on scientific evidence is essential to help mothers understand optimal feeding strategies and correct the misconceptions that are still prevalent in society.

Some mothers have strategies to deal with children who are picky eaters, such as giving them toys, turning on the television, or taking them outside. However, there are also those who lack confidence and are confused in facing this situation. Education on responsive feeding techniques, gradual introduction of foods, and consistency in meal schedules can boost mothers' confidence.[32] Mothers with good nutritional knowledge are more capable of implementing effective strategies in feeding.[30] Meanwhile, mothers with stunted children tend to lack confidence, thus requiring further education. Support through community programs, such as training at health centers (posyandu or puskesmas), as well as practice-based approaches, can help improve mothers' success in addressing children's eating problems.[31]

A mother's confidence plays an important role in ensuring her child's nutritional needs are met. Confident mothers are more active in creating healthy eating patterns, managing resources, and overcoming challenges in feeding their children.[33] Mothers with low self-efficacy are 8.3 times more likely to have stunted children compared to mothers with high self-efficacy. Furthermore, maternal self-efficacy in providing complementary feeding plays a crucial role in ensuring proper nutritional intake for the child, which can ultimately prevent stunting. These results are consistent with previous findings that emphasized that maternal self-efficacy not only influences feeding patterns, but also the success in creating an environment that supports healthy eating behaviors for children.[34]

Mothers with high self-confidence are more responsive to healthcare workers' advice and proactive in addressing the challenges of complementary feeding. Strengthening self-confidence through education and psychosocial support is important to support children's health[35]. A mother's confidence plays an important role in parenting, especially in providing complementary foods. Confident mothers not only provide food, but also serve as role models in healthy eating habits. Their positive attitude created an environment that supports balanced eating habits, which has a long-term impact on the child's health and development.[36] A mother's confidence plays an important role in providing complementary feeding and forming healthy eating habits in children. Confident mothers not only provide food but also serve as role models in balanced eating patterns, which influence the health and development of their children. Mothers with high self-efficacy are more capable of managing their children's nutritional intake and preventing stunting.[34] Confident mothers are more consistent in introducing new foods and maintaining their children's eating schedules. Therefore, education that boosts mothers' confidence can be an effective strategy in supporting children's growth and development.[32]

Low self-confidence in mothers contributes to stunting in children. It has been reported that 32.7% of mothers with stunted children have low confidence in managing complementary feeding. Other factors such as low education, lack of nutritional knowledge, and economic limitations also affect this condition. Low income limits mothers' access to nutritious food and healthcare services, thereby hindering the fulfillment of children's nutritional needs. Research shows that empowerment through education and economic improvement can reduce stunting by enhancing mothers' ability to provide appropriate nutrition for children's growth.[37] Stunting prevention relies heavily on a mother's trust in giving a CF. Previous research suggests that poor maternal self-efficacy increases the risk of stunting in children, largely due to inadequate nutrition knowledge and educational background.[34] It has been shown that mothers with high resilience are better equipped to overcome challenges related to feeding and fulfilling their children's nutritional needs.[38]

Strength and Limitation of Study

Our study presents a detailed account of mothers' views and confidence in the practice of CF. The mothers' perspectives and experiences indicate the current status of CF practices, highlighting the need for further assistance and education to boost mothers' confidence in delivering optimal CF for their children. Semi-structured individual interviews allow mothers to openly express their opinions and experiences. This is one of the first studies to look at mothers' views and confidence in the practice of CF in Indonesia.

There are various limits to this study, including the number of informants willing to participate, however data saturation has been attained, showing that this number is adequate to explain the phenomenon under investigation. Although this study was conducted in one of the 3T locations and may not reflect all 3T regions in Indonesia, the findings are consistent with previous studies on the problems of providing CF in areas with low food resources and information. As a result, these findings may reflect general challenges encountered by parents in 3T areas as well as regions with similar constraints across countries. In Indonesia, "3T regions" refers to areas classified as "Terdepan" (frontier), "Terluar" (outermost), and "Tertinggal" (least developed), essentially signifying the most remote, border-adjacent, and underdeveloped regions of the country; essentially meaning the furthest and least developed areas of Indonesia.

Furthermore, this study focusses on mothers' attitudes and self-confidence in the practice of complementary feeding, as well as the opinions of healthcare providers and other parties involved in offering complementary feeding education, which may limit the study's breadth. Finally, since this study was conducted in a specific 3T area Serasan and Serasan Timur in Natuna Regency, categorized by the Indonesian government as frontier, outermost, and disadvantaged regions the findings may not fully represent the conditions experienced by parents in other 3T areas across Indonesia.

CONCLUSIONS

Most mothers with stunted and non-stunted children have a good attitude, although some mothers with stunted children still exhibit less favourable attitudes in the practice of CF. Additionally, mothers from both groups have high self-confidence, but some mothers with stunted children still lack confidence. It is important to strengthen the confidence and positive attitude of mothers through education and ongoing support, in order to ensure the proper implementation of CF practices and support child growth, especially for those with stunting status. Support for easier access to nutritious food is also important to consider. Additionally, with family support, mothers will be more confident in providing CF to their children.

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