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Research Article

The Correlation Between Feeding Parenting Practices and Infectious Diseases with The Incidence of Stunting Among Children Aged 24–59 Months (in The Working Area of Lampihong Public Health Center)

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Abstract: Stunting is a chronic nutritional problem that remains a public health challenge. The prevalence of stunting in the working area of Lampihong Health Center in 2024 was 21.05%This study aimed to analyze the relationship between feeding parenting practices and infectious diseases with the incidence of stunting among children aged 24–59 months. This study was an analytic observational study using a cross-sectional design. The population consisted of all children aged 24–59 months in the working area of Lampihong Health Center, with a sample of 87 children. Data were collected through anthropometric measurements, interviews using the Child Feeding Questionnaire (CFQ), and assessment of infectious disease history. Data analysis was conducted using the chi-square test with a 95% confidence level. The results showed that the prevalence of stunting was 37.9%. Most children were aged 24–35 months (57.5%) and were male (63.2%). Appropriate feeding practices were identified in 55.2% of respondents, while 65.5% of children had a history of infectious diseases. Bivariate analysis demonstrated a significant association between feeding parenting practices and stunting ($p < 0.001$), as well as between a history of infectious diseases and stunting ($p < 0.001$). It was concluded that inappropriate feeding parenting practices and infectious diseases play a significant role in the occurrence of stunting among children aged 24–59 months. It is expected that health workers will be more active in addressing the stunting problem by improving health education activities and conducting regular growth monitoring at *posyandu*.

Keywords: Feeding Practices; Infectious Diseases; Lampihong Health Center; Stunting; Toddlers Aged 24–59 Months.

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1. Introduction

Stunting is a chronic nutritional problem that remains a public health issue, particularly among toddlers. Stunting is defined as a condition of impaired growth and development in children characterized by height-for-age below -2 standard deviations based on the WHO growth curve (Stocks, 2016). This condition reflects long-term linear growth disorders resulting from imbalanced nutritional intake and suboptimal management from an

early age (Kemenkes RI, 2022). Stunting generally begins during pregnancy and is not fully detected until the age of two, and has long-term impacts on a child's future health, intelligence, and productivity (Kemenkes RI, 2016).

Globally, the prevalence of stunting in 2022 reached 22.3%, or approximately 148.1 million children under five (WHO). In Indonesia, although there was a decline in stunting prevalence from 21.6% in 2022 to 19.8% in 2024, this figure remains high and requires ongoing mitigation efforts (SSGI, 2024). In South Kalimantan Province, the stunting prevalence in 2024 was recorded at 22.9%, higher than the national average. Balangan Regency is one of the areas with a significant stunting prevalence, reaching 15.4%, and Lampihong District is recorded as the area with the highest prevalence (Binkes Kabupaten Balagan, 2024).

Data from the Lampihong Community Health Center shows that the majority of stunting cases occur in toddlers aged 24–59 months. This finding aligns with previous research, which found that toddlers aged 24–59 months have a higher risk of stunting than younger age groups (Sujianto et al., 2021). This suggests that the problem of stunting is cumulative and becomes more pronounced as children age.

Based on the UNICEF (2020) conceptual framework, the determinants of stunting consist of direct, intermediate, and supporting factors. Important direct factors include dietary patterns and the incidence of infectious diseases. Dietary patterns encompass breastfeeding practices, complementary feeding (MP-ASI), frequency and variety of foods, and utilization of health services (Tasnim & Muslimin, 2022). Data from the Lampihong Community Health Center (Puskesmas) in 2024 showed that exclusive breastfeeding coverage was still below the national target, as was the quality of MP-ASI provision. This condition indicates problems in toddler dietary patterns that potentially increase the risk of stunting. Several studies have shown that inadequate dietary patterns are significantly associated with stunting, even increasing the risk up to sixfold (Handayani et al., 2019; Dayuningsih, 2020; Maigoda et al., 2023).

In addition to poor dietary habits, infectious diseases are also a direct contributing factor to stunting. Infections can inhibit metabolism and nutrient absorption, as well as disrupt a child's linear growth (Millward, 2017; Afrinis et al., 2021). Data from Balangan Regency and the Lampihong Community Health Center show an increase in cases of infectious diseases such as acute respiratory infections (ARI), pneumonia, diarrhea, and pulmonary tuberculosis (TB) among toddlers in the past two years. Various studies confirm that toddlers with a history of infectious diseases have a higher risk of stunting than those without infections (Audiena & Siagian, 2021; Safitri et al., 2021).

Based on the high prevalence of stunting in toddlers aged 24–59 months, the low quality of parenting patterns, and the increasing incidence of infectious diseases in the working area of the Lampihong Community Health Center, further research is needed regarding the relationship between parenting patterns and infectious diseases with the incidence of stunting in toddlers aged 24–59 months in the area.

2. Preliminaries or Related Work or Literature Review

Stunting

Definition of Stunting

Stunting is a condition in which a toddler does not grow normally due to persistent malnutrition. The main characteristic is a child's height being smaller than expected for their age. A toddler is considered stunted or severely stunted if their Length-for-Age (H/A) or Height-for-Age (H/A) index falls below the growth standards established by the World Health Organization (WHO) through the Multicentre Growth Reference Study (WHO-MGRS).

Characteristics of Stunting

1) The child has an inappropriate height when compared with other children his age. A child is said to be short if the child's body length or height based on his age has a Z-Score value of less than -2 of the standard deviation.
2) Children generally find it more difficult to concentrate and remember learning materials, accompanied by a decline in cognitive abilities and academic achievement at school.
3) Children become vulnerable to illness, especially infectious diseases, because stunted children tend to have metabolic disorders and a weakened immune system. Stunted children have a harder time recovering from illness. As adults, stunted children are prone to non-communicable diseases such as diabetes mellitus, hypertension, obesity, and others.
4) Children's tooth growth slows down due to inadequate nutritional needs, which can interfere with tooth growth.
5) The face looks younger than children of the same age due to the influence of growth disorders.
6) When children are between 8 and 10 years old, they become less active and find it difficult to make eye contact with other people.
7) When weighed, the weight of a toddler decreases or remains the same.
8) Delays in physiological development in adolescence, such as late menstruation.
9) Toddlers who are stunted will not reach their full potential and will have low cognitive abilities.
10) Children who are stunted generally experience problems with being underweight but still look proportional.

Malnutrition and the Impact of Stunting

Nutritional disorders and the impacts that occur in toddlers who experience stunting include:

1) The occurrence of obstacles in brain growth and development which has an impact on decreasing the child's intellectual abilities.
2) There are problems with the growth and development of bones and muscles which cause the height to be shorter than for the age, which is usually called short or stunting.
3) The occurrence of disorders in the growth and development of various body organs, such as the heart, kidneys, pancreas, and other organs which in adulthood can increase susceptibility to non-communicable diseases, including diabetes mellitus, heart disorders, high blood pressure, and other chronic diseases.

Stunting Classification

The nutritional status of toddlers is typically assessed using anthropometric methods. Nutritional anthropometry encompasses measurements of various body measurements and composition related to the child's age and nutritional status. Anthropometric assessments in toddlers should be conducted according to applicable standards, including the Length-for-Age (PB/U) or Height-for-Age (H/U) index to assess the appropriateness of length and height growth for the child's age (Samsuddin et al., 2023).

The results of this index calculation are used to classify children as stunted or severely stunted. Meanwhile, cases of children with normal height are relatively rare in Indonesia and may be influenced by endocrine disorders. Based on Minister of Health Regulation Number 2 of 2020, the anthropometric standards for children aged 0–60 months in Indonesia refer to the WHO recommendations, namely the Child Growth Standards, as shown in Table 1.

Table 1. Classification of Nutritional Status Based on Height/Age.

Nutritional status	Threshold (Z-Score)
VeryShort (severely stunted)	<-3 SD
Short (stunted) Normal	-3 SD sd <-2 SD
Tall	-2nd elementary school to +3rd elementary school
	>+3 SD

Source: Regulation of the Minister of Health of the Republic of Indonesia Number 2 of 2020

Factors that Influence the Occurrence of Stunting

1) Family Factors
2) Additional/Complementary Food Factors
3) Breastfeeding Factors
4) Disease Factors

The Concept of Parenting and Eating Patterns

1) Definition

Feeding parenting is an aspect of childcare that emphasizes how food is provided, including the mother's behavior and attitude in preparing, serving, and accompanying the child during mealtimes. This parenting pattern is related to nutritional status and can be interpreted as various practices carried out by mothers in regulating the method and atmosphere of eating, including responding to the child's nutritional needs and the child's involvement in mealtime activities (Rofiqoh et al., 2021).

2) Toddler Feeding Patterns

Table 2. Toddler Feeding Patterns.

Age	Food Forms	Frequency
0 – 6 months	exclusive breastfeeding	As often as possible at least 8 times/day.
6 – 9 months	Mashed / soft food	2 times / day, 2 tablespoons each time.
9 – 12 months	Soft food	3 times / day, plus 2 snacks.
13 years old	Family meals: 1 – 1.5 plates of rice 2 – 3 medium pieces of animal protein. 1 – 2 medium pieces of vegetable protein. 1/2 bowl of vegetables. 2 – 3 pieces of fruit. 1 glass of milk	3 times / day, plus 2 snacks.
3 – 5 years	1 – 3 plates of rice 2 – 3 pieces of animal side dishes 1 – 2 pieces of vegetable side dish 1 – 1.5 bowls of vegetables 2 – 3 pieces of fruit 1 – 2 glasses of milk	3 times / day, plus 2 snacks.

(Source: Wulandar Ratih, 2020)

Providing healthy food from an early age plays a crucial role in a child's development. Besides helping achieve optimal growth, healthy eating habits also contribute to reducing the risk of chronic diseases in adulthood. In instilling good eating habits, mothers play a key role in selecting and providing a variety of healthy foods for their children. However, busy work and daily activities often cause parents, especially mothers, to pay less attention to the quality and sources of the food their children consume. This can lead children to choose less healthy foods or snacks due to a lack of understanding of the negative impacts.

Factors Influencing Food Choice

1) Concern for health
2) Convenience/comfort
3) Familiarity

4) Feeling
5) Sensory appeal
6) Price
7) Food composition
8) Risk Perception
9) Religion

Infectious Diseases

Definition

Infectious diseases are one of the health problems frequently experienced by toddlers and have a direct impact on nutritional status. Infections in toddlers can disrupt digestion and nutrient absorption (Puspitasari & Herdiani, 2021). Infections can lead to decreased food intake, impaired nutrient absorption, increased nutrient loss, and increased metabolic needs. There is a reciprocal relationship between nutritional status and infectious diseases, where malnutrition can increase susceptibility to infection, while infection can worsen nutritional status. If this condition persists for a long time, the risk of stunting in children will increase (Pratama et al., 2019).

Types of Infectious Diseases

Infectious diseases are a direct factor affecting the nutritional status of toddlers (Puspitasari & Herdiani, 2021). In Indonesia, toddlers are estimated to experience infectious diseases 3–6 times a year, indicating that disease outbreaks in this age group are relatively common (Colman, 2012 in Bria et al., 2022). Common infections experienced by toddlers include gastrointestinal infections such as diarrhea caused by viruses, bacteria, or parasites, acute respiratory infections (ARI), and worm infections (Pratama et al., 2019).

Impact of Infectious Diseases

Infectious diseases can worsen nutritional status, while suboptimal nutritional status can increase susceptibility to infection. The impacts of infection include decreased appetite, impaired nutrient absorption in the digestive tract, and increased nutrient needs as the body recovers (Ariati, 2019). Toddlers suffering from infections generally experience decreased appetite, resulting in insufficient energy and protein intake, typically used to support growth, (Marni, 2020). Furthermore, infections cause the body to use more energy to fight disease than to support growth and development, which can ultimately stunt a child's growth and increase the risk of death (Marni, 2020; Sahitarani et al., 2020).

3. Materials and Method

Types of research

This study is an analytical observational study, which involves observing the relationship between independent and dependent variables without providing treatment or intervention to the subjects. The independent variables in this study include parenting patterns

and infectious diseases, while the dependent variable is the incidence of stunting in toddlers aged 24–59 months (Notoatmodjo, 2010).

Research Design/Plan

The study used a cross-sectional design, where independent and dependent variables were measured simultaneously at a specific point in time. This design aimed to determine the relationship between dietary patterns and infectious diseases with the incidence of stunting in toddlers aged 24–59 months in the Lampihong Community Health Center (Puskesmas) working area.

Place and Time of Research

The study was conducted in the Lampihong Community Health Center (Puskesmas) working area in Balangan Regency, which includes several villages with the highest stunting prevalence. The study period was from October to November 2025.

Research Population and Sample

Population

The population in this study was all toddlers aged 24–59 months in the working area of the Lampihong Health Center, Balangan Regency, with a total of 643 toddlers based on data from June 2025.

Sample

The study sample consisted of toddlers aged 24–59 months, with mothers as respondents. The sample size was determined using the Slovin formula with a 10% error rate, resulting in a minimum sample size of 87 respondents (Notoatmodjo, 2010). Sampling was conducted by selecting three villages with the highest stunting prevalence based on the July 2025 EPPGBM report: Mundar Village, Matang Hanau Village, and Sungai Awang Village, resulting in a total sample size of 89 toddlers.

Research Variables and Operational Definitions

Research Variables

The independent variables are parenting patterns and infectious diseases, while the dependent variable is the incidence of stunting in toddlers aged 24–59 months (Notoatmodjo, 2010).

Operational Definition

The incidence of stunting is determined based on the height-for-age (H/U) indicator referring to WHO standards, with the stunting category if the z-score value is < -2 SD (Minister of Health Regulation No. 2 of 2020). Parenting patterns are defined as feeding practices in toddlers that include a history of exclusive breastfeeding, complementary feeding, type, quantity, frequency, and sanitation hygiene practices, which are measured using the Child Feeding Questionnaire (CFQ) (Tri Hestu Haryani, 2024). Infectious diseases are defined as a

history of infectious diseases experienced by toddlers in the last six months, which is obtained through interviews and verification of e-Puskesmas data (Rusma Yulfaizah, 2022).

Method of collecting data

Data Types

The data collected consisted of primary and secondary data. Primary data included toddler characteristics, feeding patterns, and infectious disease history, obtained through direct interviews with respondents. Secondary data included stunting data, toddler nutritional status reports, KIA books, the EPPGBM application, and the profile of the Lampihong Community Health Center.

Data Collection Method

Primary data collection was conducted through interviews using a structured questionnaire at integrated health post (Posyandu) locations. Toddler height was measured using a stadiometer, then analyzed using the EPPGBM application. Infectious disease data was verified using the e-Puskesmas application.

Data Processing and Analysis

Data processing

Data processing is carried out through the stages of editing, coding, entry, cleaning, and tabulating to ensure the completeness, consistency, and accuracy of the data before analysis.

Data analysis

Univariate analysis was used to describe the distribution of respondent characteristics and research variables in the form of frequency tables and percentages. Bivariate analysis was conducted to determine the relationship between parenting patterns, infectious diseases, and stunting incidence using the Chi-Square test with a significance level of 0.05 (Notoatmodjo, 2010).

Ethical Clearance

This research has obtained ethical approval from the Health Research Ethics Committee of the Ministry of Health Polytechnic of Banjarmasin with Number 706/KEPK-PKB/2025, so that all research procedures are carried out in accordance with the ethical principles of health research.

4. Results and Discussion

Results

Univariate Analysis

1) Mother's Characteristics

a) Age of Mother of Toddler

Distribution of respondents based on maternal age in the Lampihong Community Health Center work area is as in the following table:

Table 3. Distribution of Respondents Based on Maternal Age in the Working Area of the Lampihong Community Health Center in 2025.

Mother's Age	Amount	
	n	%
<20	2	2.3
20 – 35	74	85.1
>35	11	12.6
Amount	87	100

Based on Table 3, it is known that the majority of mothers of toddlers are aged 20-35 years, namely 65.5%, and a small proportion are aged <20 years, namely 2.3%.

b) Mother and Toddler Education

Distribution of respondents based on maternal education in the work area of the Lampihong Health Center is as in the following table:

Table 4. Distribution of Respondents Based on Mother's Education Level in the Work Area of Lampihong Health Center in 2025.

Level of education	Amount	
	n	%
Base	2	2.3
Intermediate	75	86.2
Tall	10	11.5
Total	87	100

Based on Table 4, it is known that the majority of mothers of toddlers have a secondary education level, namely 86.2%, and mothers with a primary education level, namely 2.3%.

c) Mother's Job

Distribution of respondents based on mother's occupation in the Lampihong Health Center work area is as shown in the following table:

Table 5. Distribution of Respondents Based on Mother's Occupation in the Work Area of Lampihong Health Center in 2025.

Mother's Job	Amount	
	n	%
Doesn't work	83	95.4
Work	4	4.6
Total	87	100

Based on Table 5, it is known that the majority of mothers of toddlers do not work, namely 95.4%, and the majority of mothers of toddlers who work are 4.6%.

2) Toddler Characteristics

The respondents in this study were 87 mothers who had toddlers aged 24 – 59 months in the Lampihong Community Health Center Working Area.

a) Toddler Age

Distribution of respondents based on the age of toddlers in the Lampihong Health Center work area is as shown in the following table:

Table 6. Distribution by Age of Toddlers in the Working Area of the Lampihong Health Center in 2025.

Toddler Age	Amount	
	n	%
24 – 35 Months	50	57.5
36 – 59 Months	37	42.6
Amount	87	100

Based on Table 6, it is known that the most toddlers are aged 24 – 35 months, namely 57.5%.

b) Toddler Gender

Distribution of respondents based on the gender of toddlers in the Lampihong Health Center work area is as shown in the following table:

Table 7. Distribution by Gender of Toddlers in the Working Area of the Lampihong Community Health Center in 2025.

Gender	Amount	
	n	%
Woman	32	36.8
Man	55	63.2
Amount	87	100

Based on Table 7, it is known that the majority of toddlers are male, namely 63.2%.

c) Stunting Incidents in Toddlers

Distribution of respondents based on the incidence of stunting in toddlers in the work area of the Lampihong Health Center is as shown in the following table:

Table 8. Distribution of Respondents Based on the Incidence of Stunting in Toddlers in the Working Area of the Lampihong Community Health Center in 2025.

Stunting Incident	Amount	
	n	%
No Stunting	54	62.1
Stunting	33	37.9
Amount	87	100

Based on Table 8, it is known that the majority of toddlers do not experience stunting, namely 62.1%.

3) Research Variables

a) Parenting Eating Patterns

Distribution of respondents based on Eating Patterns in the work area of the Lampihong Health Center is as in the following table:

Table 9. Distribution of Respondents Based on Eating Patterns in the Working Area of the Lampihong Community Health Center in 2025.

Parenting Eating Patterns	Amount	
	n	%
Appropriate	48	55.2
Not exactly	39	44.8
Total	87	100

Based on Table 9, it is known that the pattern of parenting for toddlers' eating tends to be appropriate with a percentage of 55.2%.

b) Infectious Diseases

Distribution of respondents based on Infectious Diseases in the Lampihong Health Center work area is as in the following table:

Table 10. Distribution of Respondents Based on Infectious Diseases in the Working Area of the Lampihong Community Health Center in 2025.

Infectious Diseases	Amount	
	n	%
Once	57	65.5
Never	30	34.5
Total	87	100

Based on Table 10, it is known that the highest percentage of toddlers who have a history of infectious diseases is 65.5%.

Bivariate Analysis

1) The Relationship between Parenting and Eating Patterns and the Incidence of Stunting in Toddlers Aged 24-59 Months in the Working Area of the Lampihong Community Health Center.

The distribution of parenting patterns and the incidence of stunting in toddlers aged 24-59 months in the Lampihong Community Health Center work area can be seen in the following table:

Table 11. Distribution of Parenting Patterns and the Incidence of Stunting in Toddlers Aged 24 – 59 Months in the Working Area of the Lampihong Community Health Center.

Parenting Eating Patterns	Stunting Incident				Amount	
	No Stunting		*Stunting*			
	n	%	n	%	n	%
Appropriate	46	85.2	2	6.1	48	55.2
Not exactly	8	14.8	31	93.9	39	44.8
Total	54	100	33	100	87	100

Based on Table 11, it can be seen that the toddlers who have the most appropriate eating parenting patterns are in the non-stunting category, namely 85.2%, and the toddlers who have the most inappropriate eating parenting patterns are in the stunting category, namely 93.9%.

Based on the results of calculations using the chi-square test, a p-value of <0.001 was obtained, so it can be stated that there is a relationship between parenting patterns and the incidence of stunting in toddlers aged 24-59 months in the working area of the Lampihong Health Center.

2) The Relationship between Infectious Diseases and the Incidence of Stunting in Toddlers Aged 24 – 59 Months in the Working Area of the Lampihong Community Health Center.

The distribution of infectious diseases with the incidence of stunting in toddlers aged 24-59 months in the Lampihong Community Health Center work area can be seen in the following table:

Table 12. Distribution of Infectious Diseases with Incidence of Stunting in Toddlers Aged 24 – 59 Months in the Working Area of the Lampihong Community Health Center.

Infectious Diseases	Stunting Incident				Amount	
	No Stunting		*Stunting*			
	n	%	n	%	n	%
Never	30	55.6	0	0	48	55.2
Once	24	44.4	33	100	39	44.8
Total	54	100	33	100	87	100

Based on Table 12, it can be seen that the highest number of toddlers who have never experienced infectious diseases are in the non-stunting category, namely 55.6%, and the highest number of toddlers who have experienced infectious diseases are in the stunting category, namely 100%.

Based on the results of calculations using the chi-square test, a p-value of <0.001 was obtained, so it was stated that there was a relationship between a history of infectious diseases and the incidence of stunting in toddlers aged 24-59 months in the work area of the Lampihong Health Center.

Discussion

Univariate Analysis

1) Characteristics of Mothers of Toddlers

a) Age of Mother of Toddler

Based on research in the Lampihong Community Health Center (Puskesmas) area, the majority of mothers with toddlers are between 20 and 35 years old (85.1%). This high percentage is influenced by the local social and cultural conditions, which generally lead to marriage and family formation at this age, considered the ideal age, both physically and emotionally. Traditional values also encourage couples to have children soon after marriage, thus increasing the chances of having a toddler at this age.

Mothers of toddlers aged <20 years old constitute the smallest group (2.3%). Data from the Lampihong District Office of Religious Affairs (KUA) in 2024 shows that marriages are still dominated by those aged >20, although early marriage practices persist. This situation has the potential to pose health risks to mothers and children, including unhealthy pregnancies and nutritional problems for toddlers.

The role of health workers is crucial in promotive and preventive efforts, but the implementation of reproductive health education still faces obstacles, particularly budget constraints and suboptimal outreach. Recommendations to delay pregnancy for prospective brides under 20 are often poorly received due to cultural factors, family pressure, and limited understanding of health risks. Therefore, a more comprehensive educational approach involving families, community leaders, and cross-sector collaboration is needed.

The results of this study are in line with the research of Pusmaika et al. (2022) which showed a significant relationship between maternal age and the incidence of stunting (p-value 0.035), and supported by Wardani (2022) who stated that mothers aged 20–35 years have better physical and mental readiness in pregnancy and childcare, so that maternal age is an important factor in the risk of stunting in toddlers.

b) Mother and Toddler Education

Based on research in the Lampihong Community Health Center (Puskesmas) area, the majority of mothers of toddlers have a secondary education (86.2%). This high proportion is influenced by the availability of adequate educational facilities and increasing public awareness of the importance of education as a basic need to improve quality of life. Primary education is the lowest level of education (2.3%), indicating that many mothers of toddlers still have limited access to formal education due to past economic and environmental factors.

A mother's education level plays a significant role in her ability to receive, understand, and apply health information. Mothers with less education tend to have difficulty understanding health messages, which can impact parenting practices, feeding practices, and disease prevention efforts in children. Conversely, mothers with higher education generally have better critical thinking skills, are more open to behavioral change, and are able to implement healthier parenting practices.

This finding aligns with research by Wasi'ah (2024), which states that maternal education influences children's eating habits, including food variety and quality, as well

as access to nutrition and health information during pregnancy and breastfeeding. This opinion is supported by Mustiamin et al. (2018), who emphasized that maternal education levels influence children's nutritional knowledge and feeding behavior. However, low education levels do not always hinder nutritional fulfillment, as other factors such as maternal employment and increased family income can also contribute to children's nutritional status and growth (Wanimbo et al., 2020).

c) Jobs of Mothers of Toddlers

Based on research in the Lampihong Community Health Center (Puskesmas) area, the majority of mothers of toddlers are unemployed (93.3%). This situation is influenced by local customs and lifestyles that place mothers in a domestic role, limited employment opportunities, and the dominance of the agricultural and small business sectors, which provide few job opportunities for mothers with caregiving responsibilities. Family support also encourages mothers to focus more on home and childcare.

Working mothers of toddlers constitute the smallest group (4.6%), due to limited job opportunities, educational attainment, and mothers' preference for prioritizing childcare. The demands of relatively long working hours are also a major consideration, leading many mothers to choose not to work or to find more flexible employment.

Unemployed mothers have more time to care for their children, monitor their diet, hygiene, and growth, and participate in health activities such as integrated health posts (Posyandu). However, the availability of time does not always guarantee optimal quality care, as it depends heavily on the mother's level of knowledge and awareness regarding nutrition and child health. Therefore, the role of health workers remains crucial in providing education and support so that free time can be utilized effectively.

These findings align with research by Amelia (2020) and Astuti et al. (2021), which showed a significant association between maternal employment status and stunting. Children raised by working mothers are at higher risk of stunting, primarily due to limited time for care and nutritional monitoring. Although employment is not a direct cause of stunting, it is a factor that influences feeding practices and parenting patterns.

2) Characteristics of Toddlers

a) Toddler Age

Research in the Lampihong Community Health Center (Puskesmas) area shows that the majority of stunted toddlers are in the 24–35 month age group (57.5%). The high incidence of stunting at this age is related to the growth phase, which is characterized by increased motor activity, resulting in increased energy and nutrient needs. However, these increased needs are often not matched by adequate food intake due to irregular eating patterns, decreased appetite, and picky eating behavior, which can lead to inadequate nutritional intake and increase the risk of growth disorders.

In contrast, stunting in toddlers aged 36–59 months was relatively low (42.6%). This is thought to be because children at this age have developed independent feeding skills, more mature digestive and immune systems, and a better acceptance of a variety of foods. Furthermore, the influence of the social environment and developing sensory abilities contribute to improved eating behavior.

These findings align with research by Rina (2025), which states that stunting is most common in children aged 24–35 months due to the transition from liquid to solid diets, which affects nutritional intake. These findings are also supported by Aprilia (2022), who explains that increased activity and susceptibility to infection at this age, if not accompanied by adequate nutritional intake, can impact a child's height growth.

b) Gender of Toddlers

Research in the Lampihong Community Health Center (Puskesmas) area shows that the majority of stunted toddlers are male (63.2%). This is supported by the larger proportion of males compared to females, as well as interviews showing higher stunting rates among male toddlers. Biologically, boys tend to have higher nutritional needs and faster growth rates, making them more susceptible to stunting when nutritional intake is inadequate. Furthermore, male toddlers are also more susceptible to infections, which can interfere with nutrient absorption.

In contrast, relatively fewer female toddlers (36.8%) experience stunting. This is attributed to biological factors, such as faster and more stable physical and immune system maturation, as well as more efficient hormone and metabolic regulation, which means girls have a lower risk of stunting even though nutritional intake is not always optimal.

These findings align with research by Hafid et al. (2024), which found that boys are 2.2 times more likely to experience stunting than girls. Similar findings were also reported by Eliati et al. (2020), who found that male toddlers are 3.410 times more likely to experience stunting, primarily due to differences in nutritional needs and biological vulnerabilities between the sexes.

3) Variables

a) Stunting Incident

Research in the Lampihong Community Health Center (Puskesmas) area shows that the majority of toddlers aged 24–59 months do not experience stunting (62.1%). This is influenced by family factors, such as mothers' relatively secondary education levels, understanding of nutritional needs and good parenting practices, as well as the availability of clean water and food hygiene habits.

However, the prevalence of stunting remains relatively high, at 37.9%, and has not yet reached the Balangan Regency stunting reduction target (19.8%) or the 2025 national target (18.8%). The high prevalence of stunting is related to low achievement of nutritional indicators, particularly exclusive breastfeeding coverage (44.8%) and the provision of appropriate complementary foods (66%). Inadequate breastfeeding and complementary foods have the potential to hinder children's growth and development and increase the risk of stunting.

The Lampihong Community Health Center has implemented various stunting prevention and management programs, such as growth monitoring through integrated health posts (Posyandu), nutrition counseling, provision of locally sourced food-based nutritional supplements (PMT), immunizations, deworming medication, and education on clean and healthy living behaviors. However, the program's effectiveness remains hampered, particularly in the implementation of locally sourced food, as many toddlers

do not finish their meals due to picky eating habits and a lack of habituation to diverse food consumption at home.

This situation results in suboptimal nutritional intake from PMT, thus hindering efforts to improve nutritional status. Therefore, innovative strategies are needed, including modifying PMT menus to suit toddler preferences, increasing parental education, and strengthening the role of integrated health post (Posyandu) cadres in supporting PMT consumption. These findings align with those of Rahayu (2018) and Widiyaningsih et al. (2021), who emphasized that stunting is influenced by inadequate nutritional intake, parenting patterns, and inappropriate complementary feeding practices.

b) Parenting Eating Patterns

Research in the Lampihong Community Health Center (Puskesmas) area shows that the majority of mothers of toddlers (55.2%) have implemented appropriate feeding practices. This is reflected in the high percentage of complementary feeding (98%) for infants aged >6 months and the implementation of hygiene and sanitation in food preparation and serving (95.4%). These practices contribute to preventing infectious diseases and supporting optimal toddler growth.

However, 44.8% of mothers still practice inappropriate parenting practices. This is characterized by low rates of exclusive breastfeeding (55.2%) and Early Initiation of Breastfeeding (IMD) (63.2%), which are still far below the 2025 national target of 80%. Furthermore, children's eating habits are also poor, such as irregular mealtimes, low fruit and vegetable consumption, and the persistence of children not finishing their meals.

The low prevalence of exclusive breastfeeding, early initiation of breastfeeding (IMD), and balanced diets indicates that mothers' understanding of early feeding is suboptimal. Inappropriate feeding practices result in inadequate nutritional intake, especially during the child's golden period of development, increasing the risk of growth and developmental disorders and stunting. These findings align with Riska (2024) and are reinforced by Grasiela (2020), who stated that feeding practices are influenced by maternal knowledge and food availability, and play a crucial role in determining the nutritional status and growth of toddlers.

c) Infectious Diseases

Research in the Lampihong Community Health Center (Puskesmas) area shows that the majority of toddlers aged 24–59 months have experienced an infectious disease in the past three months (65.5%). The most common type of infection was Acute Respiratory Tract Infection (ARI) at 54.3%, followed by pneumonia (14%), colds/flu (7%), diarrhea (7.2%), and cases of tuberculosis and gastroenteritis (3.5% each). Toddlers generally experience one or two illnesses with an average duration of around seven days.

High frequency and duration of illness can potentially disrupt toddler growth due to decreased appetite, increased energy requirements for healing, and impaired nutrient absorption. With repeated infections, the body prioritizes the immune response over growth, increasing the risk of impaired linear growth and stunting. A toddler's susceptibility to infection is influenced by an immature immune system, inadequate

nutritional intake, incomplete immunizations, and environmental exposure and social interactions.

In contrast, 34.5% of toddlers did not experience any infectious diseases in the past three months, indicating the adoption of clean and healthy lifestyles, proper immunization, and attention to nutritional intake. These findings underscore the importance of integrated efforts through nutritional improvement, infectious disease prevention, and increased parental education to support optimal growth and reduce the risk of stunting.

The results of this study align with those of Rosha et al. (2020) and Yuldifa & Mega (2022), who stated that infectious diseases, particularly acute respiratory infections (ARI), are significantly associated with nutritional status and increase the risk of stunting in toddlers.

Bivariate Analysis

1) The Relationship between Parenting and Eating Patterns and the Incidence of Stunting in Toddlers Aged 24-59 Months in the Working Area of the Lampihong Community Health Center.

   The analysis results show a significant relationship between feeding practices and stunting in toddlers aged 24–59 months. Poor feeding practices, such as suboptimal exclusive breastfeeding, poor-quality complementary feeding, inappropriate meal frequency and portion sizes, and a lack of dietary diversity, contribute to stunting. This finding aligns with UNICEF's (2020) conceptual framework, which identifies feeding practices as a direct determinant of stunting.

   Eating patterns that begin in infancy, particularly exclusive breastfeeding for the first six months of life, play a crucial role in supporting growth and boosting a child's immune system. Breast milk contains a balance of macro and micronutrients and immunological components that can protect children from infectious diseases (Handayani et al., 2019). The low coverage of exclusive breastfeeding in the Lampihong Community Health Center area indicates persistent issues in early care practices that could potentially have long-term impacts on child development.

   In addition to breast milk, the quality of complementary feeding (MP-ASI) also plays a crucial role in preventing stunting. MP-ASI that does not meet the principles of timely, sufficient, safe, and diverse feeding can lead to suboptimal nutrient intake. Research by Dayuningsih (2020) shows that toddlers with poor feeding practices have a risk of stunting approximately six times greater than those raised with good eating habits. This reinforces the findings of this study that improving feeding practices is a key factor in reducing stunting.

2) The Relationship Between Infectious Diseases and the Incidence of Stunting in Toddlers Aged 24-59 Months in the Work Area of the Lampihong Community Health Center

   Research also shows a link between infectious diseases and stunting in toddlers aged 24–59 months. Toddlers with a history of infectious diseases, such as acute respiratory infections (ARI), diarrhea, pneumonia, and tuberculosis, tend to have a higher risk of stunting than toddlers without infections. Infectious diseases can cause decreased

appetite, increased energy needs, and impaired nutrient absorption, thus directly impacting a child's linear growth (Millward, 2017).

Repeated infections over a long period of time can worsen a child's nutritional status and hinder growth. This condition is exacerbated when infections occur in children with already inadequate nutritional intake. Research by Afrinis et al. (2021) indicates that infectious diseases are a direct factor contributing to stunting, particularly in toddlers living in environments with poor sanitation and hygiene.

The findings of this study align with those of Audiena and Siagian (2021) and Safitri et al. (2021), which found that toddlers with a history of infectious diseases have a higher risk of stunting. The high incidence of infectious diseases in the Lampihong Community Health Center area indicates that environmental factors and clean and healthy living behaviors remain issues that require serious attention in stunting mitigation efforts.

Research Limitations

Overall, the results of this study indicate that stunting in toddlers aged 24–59 months is influenced by a combination of factors, including parenting patterns, diet, and infectious diseases. These two factors interact and amplify their impact on child growth. Therefore, stunting prevention efforts need to be comprehensive and sustainable, focusing not only on nutritional intake but also on infectious disease prevention and environmental improvement.

Possible interventions include improving nutrition education for mothers and families, promoting exclusive breastfeeding and high-quality complementary feeding (MP-ASI), and strengthening infectious disease prevention programs through improved environmental sanitation and the adoption of clean and healthy lifestyles. This approach aligns with the recommendations of the Indonesian Ministry of Health (2022) and the UNICEF conceptual framework (2020), which emphasize the importance of multidimensional interventions in reducing stunting prevalence.

5. Conclusion

Based on the results of research in the working area of the Lampihong Community Health Center, it is known that the prevalence of stunting in toddlers aged 24–59 months is still relatively high, namely 37.9%. The majority of toddlers are in the 24–35 month age group (57.5%), with male gender as the largest group (63.2%). The characteristics of mothers of toddlers are dominated by mothers aged 20–35 years (65.5%), with the highest level of education being secondary (86.2%), and the majority are unemployed (93.3%). From the parenting aspect, more than half of respondents (55.2%) have implemented appropriate feeding patterns, but the majority of toddlers (65.5%) have a history of infectious diseases. The results of statistical analysis show a significant relationship between feeding patterns and the incidence of stunting in toddlers aged 24–59 months, as well as a significant relationship between a history of infectious diseases and the incidence of stunting, with a p value <0.001. These findings confirm that feeding practices and children's health conditions play an important role in the incidence of stunting in the working area of the Lampihong Community Health Center.

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