



## Family Socioeconomic Status and Risk of Stunting Among Children Under Five Years of Age

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### ABSTRACT

*Stunting is a chronic nutritional issue among children under five, characterized by a height that is shorter than that of other children the same age. A low family socioeconomic status is a risk factor for stunting, as family finances are closely linked to the ability to secure adequate nutrition, nutritious food, and healthcare services for pregnant women and infants. This study aimed to determine the relationship between family socioeconomic status and the risk of stunting among children under five in Limboto District, Gorontalo Regency. A quantitative, observational-analytic study design with a cross-sectional approach was employed. The sample consisted of 97 children aged 0–24 months, selected using a purposive sampling technique. Data were collected using questionnaires assessing family socioeconomic status and stunting risk. Data analysis was performed using the Chi-square test, yielding a p-value of 0.001 (less than 0.05). These results indicate a significant relationship between family socioeconomic status and the risk of stunting among children under five in Limboto District, Gorontalo Regency. It is hoped that these findings will enhance parents' understanding of how family economic conditions influence stunting risk facilitated by health education at integrated health posts (Posyandu) thereby enabling them to take proactive measures to prevent stunting from an early stage.*

## 1. INTRODUCTION

Stunting is a chronic nutritional problem among children under five years of age, characterized by impaired linear growth resulting in a height-for-age measurement below the standard for children of the same age. Stunting may begin during the prenatal period and can be influenced by inadequate maternal nutrition during pregnancy, inappropriate feeding practices, poor dietary quality, and infections, all of which may impair fetal growth and development (Melati et al., 2021). Low family socioeconomic status is also recognized as an important risk factor for stunting and encompasses parental education, household income, and occupation (Apriastini et al., 2024).

The World Health Organization (WHO), as cited by the Indonesian Ministry of Health (2022), estimated that approximately 22.2%, or 149.2 million, children under five years of age were affected by stunting globally in 2020. Although this represented a slight decline from 22.4% in 2019, when approximately 152 million children were affected, the reduction was only 0.4 percentage points. Asia accounted for the largest proportion of children affected by stunting, with approximately 79 million cases (52.9% of the global total), including 54.3 million cases in Southeast Asia. Africa followed with approximately 61.4 million cases (41.1%), while Latin America accounted for approximately 5.8 million cases (3.8%).

Data from the 2022 Indonesian Nutritional Status Survey (SSGI) showed that the prevalence of stunting in Indonesia was 21.6%, representing a decrease from 24.4% in 2021. Despite this decline, the prevalence remained above the national target of 14% for 2024 and exceeded the WHO threshold of less than 20%. East Nusa Tenggara Province recorded the highest prevalence of stunting in Indonesia, at 35.3%. Gorontalo Province ranked 17th nationally and fifth among provinces on the island of Sulawesi, with a stunting prevalence of 23.8% among children

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under five years of age. This figure represented a substantial decrease from 29.0% in 2021 (SSGI, 2022).

The Indonesian government established a national target of reducing the prevalence of stunting to 14% by 2024, as outlined in the 2020–2024 National Medium-Term Development Plan (RPJMN). In 2021, approximately 6 million children, corresponding to 24.4% of Indonesian children under five years of age, were affected by stunting (SSGI, 2021). Achieving the 2024 target therefore required a reduction of 10.4 percentage points. This national target is consistent with the Sustainable Development Goals (SDGs), particularly the objective of ending all forms of malnutrition. Global nutrition targets include reducing stunting and wasting among children under five years of age, meeting the nutritional needs of adolescent girls, pregnant women, and young children, and implementing other strategies to improve nutritional status (BKKBN, 2023).

Data from the Gorontalo Provincial Health Office indicated that the prevalence of stunting in the province was 26.9% in 2023. Gorontalo Regency recorded the highest prevalence at 34.7%, followed by North Gorontalo Regency (30.5%), Bone Bolango Regency (27.1%), Gorontalo City (23.6%), Pohuwato Regency (18.4%), and Boalemo Regency (16.0%). Gorontalo Regency therefore remains an important area of concern because it has the highest stunting prevalence in Gorontalo Province. Data from the Gorontalo Regency Health Office further indicated that the prevalence of stunting in the service area of Limboto Community Health Center (Puskesmas) remained relatively high. In December 2023, 238 children under five years of age were recorded as being stunted, decreasing to 184 cases by August 2024. The Limboto Community Health Center service area comprises 14 urban villages, each of which has reported cases of stunting among children under five years of age.

Family socioeconomic status, particularly household income, parental education, and occupation, is an important determinant of child nutritional status. Household economic conditions are closely associated with the ability to meet nutritional needs, including access to nutritious food and healthcare services for pregnant women and children. Inadequate nutritional intake is influenced not only by limited access to specific foods and nutrients but also by low socioeconomic status, inadequate environmental sanitation, and insufficient nutritional knowledge. Socioeconomic conditions may also influence healthy lifestyle choices, the selection of complementary and supplementary foods, and feeding schedules. These factors can substantially affect children's growth and development (Aini et al., 2022). Children from families with low socioeconomic status are consequently at greater risk of stunting, a form of malnutrition characterized by impaired linear growth (Herawati et al., 2022).

The consequences of stunting among children under five years of age can be classified as short-term and long-term effects. Short-term consequences include increased morbidity and mortality, impaired cognitive, motor, and language development, and increased healthcare expenditure. Long-term consequences include shorter adult stature, an increased risk of obesity and other diseases, impaired reproductive health, reduced learning capacity and school performance, and decreased productivity and work capacity (Rusliani et al., 2022).

Previous research has demonstrated an association between socioeconomic factors and stunting. Sutarto (2020) reported a significant association between maternal education and family income and the incidence of stunting among children under five years of age ( $p = 0.018$ ). A family's ability to purchase nutritious food is strongly influenced by household income. Higher income provides greater purchasing power to meet the nutritional needs of family members, whereas lower income may restrict access to adequate and nutritious food. Limited purchasing power may subsequently result in inadequate nutritional intake among children. Maternal education may also influence child development, as mothers with lower levels of education may have less knowledge regarding appropriate childcare and stimulation than those with higher educational attainment. Parenting practices, healthy lifestyle behaviors, and household food availability and consumption patterns may therefore be influenced by parental education, particularly maternal education.

Lestari (2022) reported a correlation coefficient ( $r$ ) of 0.696. Because this value exceeded the critical  $r$ -value of 0.098, the null hypothesis ( $H_0$ ) was rejected and the alternative hypothesis ( $H_a$ ) was accepted, indicating an association between parental income and stunting among

children aged 4–5 years in Lubuklinggau City. Socioeconomic status influences a family's ability to meet children's nutritional needs and may affect the selection of supplementary foods, feeding practices, and healthy lifestyle behaviors. These factors may contribute to the occurrence of stunting. Low household income can limit the ability to meet daily nutritional requirements and may consequently increase the risk of malnutrition. Children from low-income families have been reported to have approximately twice the risk of stunting compared with those from higher-income families. When household access to adequate food is compromised, particularly as a result of poverty, the risk of nutritional disorders such as stunting increases.

Amazihono (2021) demonstrated significant associations between stunting and income, occupation, number of children, and the provision of supplementary food, with p-values of 0.001, 0.025, 0.030, and <0.001, respectively. In contrast, no significant associations were observed between stunting and education, knowledge, or age, with p-values of 0.418, 0.197, and 0.493, respectively. Household income is closely related to the ability to meet primary, secondary, and tertiary needs. Higher-income families generally have greater capacity to meet these needs, whereas lower-income families face greater economic constraints. Low income may affect both the quantity and quality of food consumed by household members. Dietary diversity may be limited, while the intake of foods essential for child growth, including sources of protein, vitamins, and minerals, may be inadequate. Such nutritional limitations may increase the risk of malnutrition and stunting among children.

Preliminary observations at Limboto Community Health Center indicated that the Limboto District had a relatively high prevalence of stunting, highlighting the need for local evidence to support more targeted interventions. Interviews conducted by the researchers with six parents of children under five years of age identified three families with low monthly incomes of approximately IDR 500,000, substantially below the Gorontalo Provincial Minimum Wage (UMP), and three families with middle-level monthly incomes of approximately IDR 2,500,000, which was close to the Gorontalo Provincial Minimum Wage. Although previous studies have examined the association between socioeconomic status and stunting, no study has specifically investigated this association in Limboto District, Gorontalo Regency. Therefore, this study aims to analyze the association between family socioeconomic status and stunting among children under five years of age in Limboto District, Gorontalo Regency.

## 2. METHOD

This study was conducted in Limboto District, Gorontalo Regency, from February 3 to 21, 2025. A quantitative cross-sectional design was employed to examine the association between family socioeconomic status and the risk of stunting among children at a single point in time. The study population consisted of 2,859 parents of children aged 0–24 months residing in Limboto District. The sample consisted of parents and children who met the predetermined inclusion and exclusion criteria. The inclusion criteria were residence in Limboto District; registration of the parents and children at Limboto Community Health Center (Puskesmas); parents' willingness to participate as respondents; and having a child aged 0–24 months. The exclusion criteria were parents who were not present at the research site during data collection, children with a genetic history of short stature, and parents who were unwilling to participate in the study.

A total of 97 respondents were included in the study. The sample size was determined using the Slovin formula and participants were selected using purposive sampling. The independent variable was family socioeconomic status, while the dependent variable was the risk of stunting among children. Family socioeconomic status was assessed based on parental income, educational attainment, and occupation. Stunting was assessed using the height-for-age (H/A) index according to the World Health Organization (WHO) Child Growth Standards, with a height-for-age Z-score (HAZ) of <−2 standard deviations (SD) classified as stunting.

Data were collected using a structured questionnaire to assess family socioeconomic characteristics and by measuring children's height using a microtoise stadiometer. Information on children's age was obtained from Maternal and Child Health (MCH) handbooks or child identity cards. Data were analyzed using univariate and bivariate analyses. Univariate analysis was

performed to describe the characteristics of the respondents and study variables, while bivariate analysis using the chi-square test was conducted to assess the association between family socioeconomic status and stunting. Statistical significance was set at  $p < 0.05$  with a 95% confidence level. All respondents provided informed consent before participating in the study.

### 3. RESULT AND DISCUSSION

#### Result

Tabel 1. Characteristics of Parents of Children

| Age             | N  | %      |
|-----------------|----|--------|
| Early Adulthood | 80 | Tuntas |
| Late Adulthood  | 70 | Tuntas |
| TOTAL           | 97 | 100    |

Table 1, it is evident that the majority of parents of toddlers in Limboto District, Gorontalo Regency, fall into the late adulthood age category, comprising 62 respondents (63.9%). Meanwhile, a smaller proportion fall into the early adulthood category, consisting of 35 respondents (36.1%).

Table 2. Characteristics of Parents of Children Based on Education

| Education          | N  | %    |
|--------------------|----|------|
| Elementary School  | 80 | 30.9 |
| Junior High School | 15 | 15.5 |
| Senior High School | 32 | 33.0 |
| Bachelor's Degree  | 20 | 20.6 |
| TOTAL              | 97 | 100  |

Based on Table 2, it is known that the majority of parents of toddlers in Limboto District, Gorontalo Regency have a high school education, namely 32 respondents (33.0%). A small portion have junior high school education, namely 15 people (15.5%).

Table 3. Characteristics of Parents of Children Based on Occupation

| Occupation    | N  | %    |
|---------------|----|------|
| Housewife     | 77 | 79.4 |
| Entrepreneur  | 10 | 10.3 |
| Civil Servant | 10 | 10.3 |
| TOTAL         | 97 | 100  |

Table 3, it is known that the majority of parents of toddlers in Limboto District, Gorontalo Regency have housewife jobs, namely 77 respondents (79.4%). A small portion are self-employed and civil servants, namely 10 respondents each (10.3%).

Table 4. Characteristics of Children Based on Child's Age

| Child's Age | N  | %    |
|-------------|----|------|
| ≤12 Month   | 63 | 64.9 |
| >12 Month   | 34 | 35.1 |
| TOTAL       | 97 | 100  |

Table 4.4, the majority of toddlers in Limboto District, Gorontalo Regency, fall into the age category of ≤12 months, comprising 63 respondents (64.9%). Meanwhile, a smaller proportion falls into the age category of >12 months, comprising 34 respondents (35.1%).

Table 5. Characteristics of Children by Gender

| Gender | N  | %    |
|--------|----|------|
| Male   | 53 | 54.6 |
| Female | 44 | 45.4 |
| TOTAL  | 97 | 100  |

Table 5, it is evident that the majority of toddlers in Limboto District, Gorontalo Regency, are male, comprising 53 respondents (54.6%), while a smaller proportion are female, comprising 44 respondents (45.4%).

Table 6. Socio-economic Status of Families with Children

| Family Socioeconomic Status | N  | %    |
|-----------------------------|----|------|
| Low                         | 41 | 42.3 |
| Medium                      | 38 | 39.2 |
| High                        | 18 | 18.6 |
| TOTAL                       | 97 | 100  |

Based on Table 6, the majority of respondents in Limboto District, Gorontalo Regency, fall into the low socioeconomic status category (41 respondents or 42.3%), while 38 respondents (18.6%) have a moderate socioeconomic status. A smaller proportion 18 respondents (18.6%) have a high socioeconomic status.

Table 7. Risk of Stunting

| Risk Of Stunting | N  | %    |
|------------------|----|------|
| Risk free        | 36 | 37.1 |
| At risk          | 61 | 62.9 |
| TOTAL            | 97 | 100  |

Table 7, it is evident that the majority of respondents in Limboto District, Gorontalo Regency, are at risk of stunting, comprising 61 respondents (62.9%), while a smaller proportion—36 respondents (37.1%)—are not at risk.

Table 8. Relationship between Family Socioeconomic Status and the Risk of Stunting

| Socio-Economic Status | Risk Of Stunting |      |          |      |       |      | P value |
|-----------------------|------------------|------|----------|------|-------|------|---------|
|                       | Tidak berisiko   |      | Berisiko |      | Total |      |         |
|                       | n                | %    | n        | %    | n     | %    |         |
| Low                   | 3                | 3.1  | 38       | 39.2 | 41    | 42.3 | 0.000   |
| Medium                | 17               | 17.5 | 21       | 21.6 | 38    | 39.2 |         |
| High                  | 16               | 16.5 | 2        | 2.1  | 18    | 18.6 |         |
| Total                 | 36               | 37.1 | 61       | 62.9 | 97    | 100  |         |

Table 8 shows that among the 97 respondents in Limboto District, Gorontalo Regency, 41 respondents (42.3%) had a low socioeconomic status; of these, 3 (3.1%) were not at risk of stunting, while 38 (39.2%) were at risk. Regarding the 38 respondents (39.2%) with a medium socioeconomic status, 17 (17.5%) were not at risk of stunting, whereas 21 (21.6%) were at risk. Finally, among the 18 respondents (18.6%) with a high socioeconomic status, 16 (16.5%) were not at risk of stunting, while 2 (2.1%) were at risk of stunting.

## DISCUSSION

Based on a study of toddlers in Limboto District, Gorontalo Regency, a chi-square statistical test yielded a p-value of 0.000 ( $< 0.05$ ). This result supports the acceptance of the alternative hypothesis (H1), indicating a relationship between family socioeconomic status and the risk of stunting among toddlers in the area.

The study found that among the 41 respondents (42.3%) with low socioeconomic status, 3 respondents (3.1%) did not present a risk of stunting. This is attributed to the fact that most parents routinely took their children for the full course of basic immunizations on schedule. Timely immunization plays a significant role as a protective factor against impaired child growth, even when families fall into the low-income category. Questionnaire results indicate that despite low family socioeconomic status, most mothers in this group were highly motivated to participate in the complete immunization program. Posyandu services are affordable because the government provides immunizations free of charge, meaning economic factors are no longer a primary barrier. Furthermore, the results show that mothers of children who did not experience stunting were more active in participating in Posyandu activities, nutrition education sessions, and growth and development monitoring programs.

According to Safira (2020), based on the Health Belief Model, parental health behavior regarding the immunization of toddlers is influenced by perceptions of disease susceptibility and severity, perceived benefits, and perceived barriers. In low-income families, financial constraints do not necessarily hinder immunization behavior, as government-sponsored free immunization programs reduce cost-related barriers. Parents who perceive immunization as beneficial for preventing infectious diseases are more likely to ensure their children receive it. Complete immunization can reduce the incidence of recurrent infections, thereby optimizing nutrient utilization and supporting toddler growth. Consequently, even in low-income families, toddlers can avoid the risk of stunting if they receive a full course of immunizations.

Research by Widyastuti (2020) indicates that toddlers who receive complete immunizations face a 35–50% lower risk of stunting compared to those with incomplete immunization records, even after controlling for economic status. This demonstrates that immunization acts as a universal protective factor, including for low-income families. Research by Rahmadani (2021) also confirms a significant link between complete immunization and a reduced incidence of infectious diseases among toddlers in impoverished families. Children from poor families who do not receive immunizations are more likely to suffer from recurrent infections, which can ultimately lead to stunting.

Another factor enabling toddlers in low-income families to avoid stunting relates to respondent characteristics; the majority of parents fell into the "late adulthood" age category. These parents generally possess greater experience, knowledge, and understanding regarding child-rearing, nutrition, and childcare compared to younger parents. Thus, despite limited economic means, they are able to optimally meet their children's basic needs, including adequate nutritional intake. Parental age specifically falling within the late adulthood category plays a crucial role in mitigating stunting risk amidst economic hardship. At this stage of life, parents tend to have more extensive child-rearing experience and greater wisdom in managing limited resources, including the provision of family nutrition. They have generally passed through various life stages that foster a more mature mindset when making decisions regarding their children's health and well-being. Furthermore, older adulthood is often accompanied by a broader social network, which can be leveraged to obtain information or assistance in meeting children's nutritional needs. Consequently, parental experience and maturity serve as protective factors against the risk of stunting, even among families in low-income categories (Husain, Wilodati & Sartika, 2021).

Research by Fitriani et al. (2020) indicates that older parents tend to have a better understanding of the importance of balanced nutrition and appropriate parenting practices, thereby helping to reduce the risk of stunting in their children. A similar study by Sari and Widodo (2019) also found that older parental age correlates with a higher level of concern for child health, even in low-income households. Based on these findings, the researchers posit that despite low family economic status, toddlers are not necessarily at risk of stunting if their parents practice good health behaviors specifically, adherence to the complete basic immunization schedule. Timely immunization can reduce the incidence of recurrent infections, thereby supporting child growth and mitigating the risk of stunting. The researchers also assume that easy and affordable access to healthcare services such as (integrated health posts) offering free immunization

programs can alleviate economic barriers, enabling low-income families to provide optimal health protection for their children.

Research conducted in Limboto District, Gorontalo Regency, revealed that among the 41 respondents (42.3%) with low socioeconomic status, 38 (39.2%) were at risk of stunting. Questionnaire results indicated that mothers from low-income families often face limitations in accessing nutritious food, routine prenatal check-ups, and other essential health support during pregnancy. These limitations make mothers more susceptible to Chronic Energy Deficiency (CED), anemia, and micronutrient deficiencies. Maternal nutritional deficiencies during pregnancy directly impact fetal development. Furthermore, studies show that low-income families often have limited access to quality healthcare facilities, preventing optimal monitoring of the mother's pregnancy. The combination of poor nutrition during pregnancy and limited access to healthcare services increases the likelihood of Low Birth Weight (LBW) and the subsequent risk of stunting.

The "First 1000 Days of Life" (1000 HPK) concept identifies pregnancy as a critical period determining a baby's size and condition at birth. Maternal malnutrition resulting from economic constraints hinders fetal growth and leads to low birth weight. LBW serves as a significant risk factor for stunting, as infants begin life with minimal nutritional reserves and immature organs (Haskas, 2020). Research by Widyastuti (2020) indicates that pregnant women from low-income families tend to have a lower frequency of antenatal care (ANC) visits compared to those from higher-income families. Infrequent ANC visits prevent optimal monitoring of maternal nutrition and health, thereby increasing the risk of anemia and Chronic Energy Deficiency (CED), which contribute to LBW. Infants born with LBW in this study were found to have a higher risk of stunting during early childhood. Research by Rahmadani (2021) further confirms a significant association between family economic status and the incidence of stunting in children under five. Low-income families face limitations in meeting maternal nutritional needs during pregnancy and accessing healthcare services, thereby increasing the risk of low birth weight (LBW). This study concludes that LBW serves as an intermediary factor that reinforces the link between family economic conditions and the incidence of stunting.

Regarding the link between low economic status and stunting risk, a key factor lies in respondent characteristics: the majority of the toddlers in the study were male. During early life, boys often prioritize rapid physical growth and tissue development, thereby requiring higher intakes of energy, protein, and micronutrients. In low-income families, financial constraints negatively impact both the quality and quantity of food provided to the child, as well as the utilization of healthcare services. This situation disproportionately affects boys because their heightened biological needs cannot be optimally met. Consequently, boys in low-income families face a higher risk of stunting compared to girls (Achjar et al., 2024).

These results align with a study by Zulfa & Widi (2023) conducted in the Kalisat Community Health Center (Puskesmas) area, which also found that stunting was more prevalent among male toddlers than females. That study identified higher nutritional requirements and greater susceptibility to infectious diseases among boys as factors increasing stunting risk, particularly in families with limited access to adequate nutrition and healthcare services. Furthermore, research by Sudikno et al. (2022) analyzing data on Indonesian toddlers aged 0–23 months reported that male gender is a risk factor for stunting, alongside low birth weight and maternal nutritional status. Their study confirmed that male toddlers have a higher likelihood of stunting than female toddlers, even after controlling for socioeconomic variables and maternal characteristics. These findings reinforce the assumption that biological differences between boys and girls play a role in determining susceptibility to growth disorders.

Based on these results, the researchers hypothesize that low family economic status contributes to stunting through poor maternal nutrition and health conditions during pregnancy. Financial limitations hinder adequate nutrition and prenatal care (ANC) visits, thereby increasing the risk of low birth weight (LBW). Low birth weight (LBW) increases the risk of stunting due to limited nutritional reserves and impaired child growth starting from the "First 1000 Days of Life" period. Research conducted in Limboto District, Gorontalo Regency, found that among the 38 respondents (39.2%) with a moderate socioeconomic status, 17 (17.5%) were not at risk of stunting. Questionnaire results suggest this can be explained by the family's ability to meet basic

needs for a healthy environment, particularly access to clean water. Families with a moderate economic status generally possess sufficient resources to provide adequate basic sanitation facilities, even if they do not fall into the high-income bracket. Access to adequate clean water plays a crucial role in maintaining personal and environmental hygiene, as well as preventing infectious diseases such as diarrhea and gastrointestinal infections.

According to Rahmawati (2022), good environmental sanitation specifically the use of clean water plays a crucial role in preventing infectious diseases among children under five. Environmental health theory posits that unsanitary environments increase the risk of environment-related diseases such as diarrhea, gastrointestinal infections, and parasitic worm infections; these conditions can impair nutrient absorption and affect child growth. From a socioeconomic perspective, families with a moderate economic status generally possess sufficient financial means to meet basic sanitation needs, even if they do not fall into the high-income bracket. This capacity enables families to secure adequate clean water sources and hygienic latrines, thereby minimizing exposure to disease-causing agents. With a reduction in infection rates, the nutrients consumed by young children can be optimally utilized for growth, thereby curbing the risk of stunting.

These findings align with research by Sari (2020), which indicated that children under five living in households with access to clean water and hygienic latrines face a lower risk of stunting compared to those in environments with inadequate sanitation. That study underscored environmental sanitation as a protective factor against impaired child growth. Rahmawati's (2022) research concluded that consistent use of clean water is significantly associated with lower stunting rates, particularly among families capable of meeting basic sanitation needs despite not belonging to the high-income group. This demonstrates that environmental sanitation can be a critical determinant in stunting prevention.

Based on the study results, the researchers posit that a moderate family economic status acts as an indirect protective factor against stunting risk by facilitating good environmental sanitation specifically through the use of clean water and the possession of hygienic latrines. Sufficient economic means allow families to provide adequate basic sanitation facilities and adopt clean and healthy living practices, thereby minimizing the risk of infectious diseases in young children. The researchers further assume that the consistent use of clean water and hygienic latrines reduces the incidence of environment-related infectious diseases, playing a vital role in maintaining nutrient absorption and supporting optimal growth in children under five. When infections are reduced and environmental health is maintained, the nutrients consumed by toddlers can be utilized optimally; consequently, toddlers from families with a moderate economic status do not face a risk of stunting.

Research conducted in the Limboto District of Gorontalo Regency revealed that among the 38 respondents (39.2%) belonging to the moderate socioeconomic group, 21 (21.6%) were at risk of stunting. This indicates the presence of factors more dominant than financial aspects; specifically, maternal education plays a significant role, as it influences a mother's ability to manage family resources particularly in meeting her child's nutritional and health needs. Questionnaire results indicate that a portion of mothers in the moderate economic group possess low to moderate levels of education, such as having completed only primary or junior high school. This situation results in limited maternal knowledge regarding balanced nutrition, age-appropriate feeding practices, and the importance of regularly monitoring a toddler's growth.

Maternal education plays a crucial role in shaping family health behaviors. Mothers with higher levels of education tend to possess a better understanding of nutrition, appropriate breastfeeding and complementary feeding practices, and the utilization of health services such as integrated health posts (\*posyandu\*) and community health centers (\*puskesmas\*). Conversely, mothers with lower education levels often face limitations in receiving and comprehending health information, resulting in suboptimal child-rearing practices, even when the family's economic status is moderate (Kurniasih et al., 2021). A moderate economic status does not always guarantee that a child is free from the risk of stunting if it is not supported by adequate maternal education. Maternal education is pivotal in determining the quality of caregiving and the utilization of family resources. Therefore, stunting prevention efforts must focus not only on improving economic



conditions but also on enhancing maternal education and health knowledge particularly regarding nutrition and child growth and development (Noe & Nggilu, 2025).

Research by Kurniasih and Sulastris (2021) indicates that toddlers cared for by mothers with low education levels face a higher risk of stunting compared to those with highly educated mothers, a trend observed even in families with moderate economic status. Another study by Rachman et al. (2021) confirms that maternal education influences the quality of care, the use of health services, and the family's ability to optimize their economic resources. Furthermore, research by Rahmawati (2022) emphasizes that maternal education is a key factor affecting how effectively family economic resources are utilized to support toddler growth and development.

Regarding the factors contributing to stunting risk within the moderate socioeconomic group, respondent characteristics reveal that the majority of parents are housewife. Although they play a central role in child-rearing, they often lack adequate access to health and nutritional information. Limited knowledge regarding healthy diets and nutritious food preparation, combined with minimal involvement in educational activities or health awareness programs, results in some housewives being less capable of optimally meeting their children's nutritional needs. Homemakers play an instrumental role in child care and upbringing, particularly in meeting nutritional and health needs. However, the effectiveness of this role depends heavily on their level of education, knowledge, and access to information. When a homemaker lacks an understanding of basic nutritional principles and proper parenting practices, it can negatively impact a child's growth and development, including increasing the risk of stunting. Therefore, a homemaker's role in preventing stunting is determined not merely by their physical presence at home, but also by their knowledge and skills in carrying out appropriate caregiving functions (Maryam, Mahyiddin & Faudiah, 2022).

Research by Lestari and Handayani (2020) indicates that homemakers with limited knowledge regarding child nutrition tend to pay less attention to nutritional balance, thereby placing their children at a higher risk of stunting. Another study by Damayanti et al. (2019) found that while homemakers may have more time to care for their children, this does not guarantee quality caregiving unless accompanied by an understanding of proper feeding practices. Based on the research results, researchers assume that a family's moderate economic status does not necessarily protect toddlers from the risk of stunting if it is not supported by adequate maternal education and knowledge. A mother's limited knowledge about nutrition, feeding patterns, and growth and development monitoring leads to suboptimal utilization of economic resources. Therefore, maternal education and knowledge play a crucial role in ensuring that toddlers' nutritional and health needs are met, thus influencing the risk of stunting.

Based on the results of a study conducted in Limboto District, Gorontalo Regency, of 18 respondents (18.6%) with a high socioeconomic status, 16 respondents (16.5%) were not at risk of stunting. This indicates that a good socioeconomic status plays a protective factor against stunting in toddlers. Families with a high socioeconomic status generally have sufficient financial capacity to optimally meet their children's health and nutritional needs, including access to health services and health insurance. Based on the questionnaire results, toddlers from high-income families showed that respondents with high economic status mostly had good access to health services, such as easy access to health facilities, regular use of integrated health posts (Posyandu), community health centers (Puskesmas), and hospitals, and regular child health checkups. Furthermore, the majority of respondents also had health insurance, either through BPJS Kesehatan (Social Security Agency for Health) or other health insurance.

Socioeconomic status influences an individual's health status through access to resources, including health services. Individuals with high economic status have a greater opportunity to access quality health services, thereby preventing and controlling risk factors for stunting early on. The availability, affordability, and utilization of health services are strongly influenced by economic conditions and health insurance coverage (Hutagaol et al., 2024). These study results also align with research by Farohatus (2022), which states that families with better economic conditions and adequate access to health services have a lower risk of chronic nutritional problems, including stunting. Research conducted by Marlina (2020) shows that having health insurance and regular utilization of health services are associated with a reduced prevalence of

stunting in toddlers. This is because health services play a crucial role in the early detection of nutritional problems, providing nutritional counseling, and preventing and treating infectious diseases.

Based on the research findings, researchers assume that good economic conditions enable families to optimally meet their children's nutritional and health needs. Families with higher economic status tend to have better access to health services and health insurance, enabling them to utilize health services regularly and sustainably. This allows for early detection of nutritional problems, nutritional counseling, and timely prevention and treatment of infectious diseases. Therefore, researchers assume that the combination of economic capacity, access to health services, and health insurance indirectly reduces the risk of stunting in toddlers. Based on the results of a study conducted in Limboto District, Gorontalo Regency, of 18 respondents (18.6%) with a high socioeconomic level, 2 respondents (2.1%) were at risk of stunting. The questionnaire results indicated that the risk of stunting is not solely due to poverty but is also influenced by parenting behaviors, breastfeeding patterns, and nutritional choices. In this group, one contributing factor was the failure to provide exclusive breastfeeding.

Based on the Health Belief Model, exclusive breastfeeding behavior is influenced by the mother's perception of the benefits of breastfeeding, the child's susceptibility to disease, and perceived barriers. In families with a high economic level, even though access to information, health services, and breastfeeding facilities is adequate, exclusive breastfeeding practices are not always optimal due to perceived barriers such as work demands, modern lifestyles, stress levels, and the perception that formula milk is more practical or equivalent to breast milk. The low perception of the benefits of exclusive breastfeeding and the high barriers cause mothers to choose not to provide exclusive breastfeeding fully, so that nutritional intake and protective factors for infants aged 0–6 months are not optimally met. This condition explains that the risk of stunting can still occur in toddlers from high-income families if the practice of exclusive breastfeeding is not optimal, because parenting behavior is not in line with the family's economic capabilities (Apriastini, 2024). Research by Fitriani (2020) found that high-income families often use infant formula due to convenience, work commitments, and the perception that formula is more practical; this leads to a decline in exclusive breastfeeding and increases the risk of growth problems. Similarly, a study by Hassan (2020) demonstrated that toddlers from high-income households who were not exclusively breastfed faced a risk of stunting comparable to that of infants from low-income households.

The risk of stunting observed in the high-income group is attributed to the fact that the majority of the toddlers surveyed fell within the 0–12 month age range a critical period within the "First 1,000 Days of Life." At this age, a child's growth and development rely heavily on proper nutritional intake, particularly through exclusive breastfeeding and appropriate complementary feeding. If nutritional deficiencies, recurrent infections, or improper feeding practices occur during this period, the risk of stunting remains even in high-income families due to the heightened biological vulnerability of infants to growth impairment (Wulandari et al., 2024).

In the context of child growth and development, the period from birth to 24 months of age, particularly the first 12 months, represents a critical and highly vulnerable window for physical and cognitive development. During this period, children experience rapid growth and require adequate and appropriate nutritional intake to support optimal development. The first 1,000 days of life, spanning from conception to the child's second birthday, constitute a critical and irreversible window of opportunity for optimizing growth and preventing stunting. Regardless of household socioeconomic status, inadequate nutrition and insufficient stimulation during this critical period may increase the risk of impaired growth and stunting (Haskas, 2020). Marlina et al. (2020) reported that infants younger than 12 months were at greater risk of stunting when they did not receive exclusive breastfeeding and timely, appropriate complementary feeding, even when they came from economically advantaged families.

These findings suggest that a high level of family socioeconomic status does not necessarily protect children against stunting when exclusive breastfeeding is not adequately practiced. Maternal work demands, stress, and the perception that formula feeding is more convenient may constitute barriers to exclusive breastfeeding, potentially limiting infants aged 0–

6 months from receiving optimal nutritional support. Consequently, the risk of stunting may remain among children under five years of age, even in families with relatively favorable socioeconomic conditions. Taken together, the findings of this study, supported by relevant theoretical perspectives and previous research, demonstrate a significant association between family socioeconomic status and the risk of stunting among children under five years of age in Limboto District, Gorontalo Regency. The chi-square analysis yielded a p-value of 0.001 ( $p < 0.05$ ), indicating a statistically significant association between family socioeconomic status and stunting risk in the study population. However, given the cross-sectional design, this association should not be interpreted as evidence of a causal relationship.

#### 4. CONCLUSION

The study found that 42.3% of respondents had low family economic status, while 18.6% had high economic status. In terms of stunting risk, 62.9% of children were classified as being at risk of stunting, whereas 37.1% were not at risk. The chi-square test demonstrated a statistically significant association between family economic status and the risk of stunting among children under five years of age in Limboto District, Gorontalo Regency ( $p < 0.001$ ).

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