

INTRODUCTION

Stunting is a growth disorder experienced by children due to chronic malnutrition or repeated infections. A child is said to be stunted when height for age is below -2 Standard Deviations from World Health Organization (WHO) standards.¹ WHO data shows that in 2022, it is estimated that around 148.1 million children under 5 years of age are stunted.² This shows that stunting is still a global problem, especially for developing countries, including Indonesia. The results of the Indonesian Nutrition Status Study (SGGI) in 2022 show that the prevalence of stunting in Indonesia has decreased from 24.4% in 2021 to 21.6%.³ This figure is still above the WHO stunting prevalence standard of 20%.⁴ Reducing the prevalence of stunting is one of the global nutrition targets in 2025, which is also relevant to the Sustainable Development Goals (SDGs) in 2030.⁵

Stunting affects children's physical and cognitive development, mental development, and risk of disease in both the short and long term. If this continues, it can affect national economic productivity and the quality of Indonesia's human resources in the future. The First 1000 Days of Life (HPK) period is a crucial time to optimize children's nutritional intake to avoid stunting.⁶

WHO emphasizes that stunting is an indicator of social inequality and a manifestation of system failure to fulfill children's rights to optimal nutrition and health.⁷ This is in line with the fact that stunting in children is closely related to parents' socioeconomic factors. Socio-economic status is measured based on the employment status, income, and education level of parents to the place of residence.⁸

Parent's employment status is a factor that can

affect parenting patterns and the fulfillment of children's nutritional needs. Parenting patterns are defined as a form of household practice with the availability of food health, health care, and other resources for child growth and development.⁹ Previous research shows that working mothers have inadequate parenting time, including breastfeeding and complementary foods, increasing the risk of stunting.¹⁰

Income levels influence the fulfillment of nutritious food for children. A high income will ensure the purchasing power of food for the fulfillment of toddler nutrition.¹¹ Poor families will experience high food insecurity, lack of access to health services, unhealthy environment, and high risk of infection.⁸ Observational studies in Indonesia show that children from low-income families have a 2.2 times higher risk of stunting compared to children from high-income families.¹²

Parents' education contributes to improving children's nutritional status by making it easier to understand and receive nutrition information.¹³ Parents' education, especially mothers, is a crucial factor in stunting prevention. Mothers with higher education are better able to access and understand health information, thus ensuring balanced nutrition, proper parenting, and access to optimal health services.¹⁴

Sungai Landas Village is one of the villages in Karang Intan Sub-district. Banjar Regency, South Kalimantan Province. Banjar Regency is one of the districts with the highest incidence of stunting in South Kalimantan Province in 2024, which is 6,810 toddlers with a percentage of 26.05%.³ Based on the results of community diagnosis that has been carried out from February 2025 in Sungai Landas Village, the data shows that 30% of children aged



0-60 months are stunted; besides that, it was found that the majority of the population did not work, had no income and had low education. Therefore, a study was conducted to analyze the relationship between employment status, income, and parental education on the incidence of stunting in Sungai Landas Village.

MATERIALS AND METHODS

This study is a quantitative study with a *cross-sectional* research design; this design is used to describe the relationship between factors of employment status, income, and parental education with the incidence of stunting at one specific time. This design was chosen because it is efficient in time and cost and is suitable for identifying prevalence and related factors in a limited population. The study was conducted in January-February 2025 in Sungai Landas Village, Karang Intan Sub-district, Banjar Regency, South Kalimantan Province.

The sampling technique used was probability sampling, with the inclusion criteria being respondents who had children aged 0-60 months, lived in the research location, and were willing to become respondents. The sample size in this study was 30 respondents, referring to the Central Limit Theorem principle, which states that the minimum sample size required for the distribution to approach a normal curve is at least 30 respondents.¹⁵

The research instruments used include questionnaires and anthropometric measuring instruments. The questionnaire was used to collect data on the characteristics of respondents, including child gender, incidence of stunting, parental employment status, parental income, and

parental education. Formal employment is work that is under an official institution or agency and has a work contract, fixed income, and labor protection. In contrast, informal employment is work done without a formal contract, irregular income, and no social security or legal protection. Low income is below the Banjar District Minimum Wage (UMK) of Rp3,496,195, while high income is above the UMK. Low education is measured based on the last level of education, which is elementary or junior high school, while high education is measured based on the last level of education, which is senior high school or university.

Anthropometric measurements were carried out with measuring instruments: (1) Infantometer to measure the body length of children aged <2 years, and (2) GEA brand stadiometer to measure the height of children aged ≥ 2 years. Data on body length/height and age of children were then converted to Z scores based on Permenkes No. 2 of 2020 concerning Child Anthropometry Standards.

Data on respondent characteristics were presented in the form of frequency distribution (number and percentage). The association between the incidence of stunting and the independent variables was analyzed using Fisher's exact test due to the relatively small sample size. The significance level used was $p < 0.05$ with a 95% confidence level.

RESULTS

Based on the data presented, of the total 30 children studied, 30% were stunted, while the other 70% had normal nutritional status. The proportion of boys was slightly higher (57%) compared to girls (43%). The majority of parents work in the



informal sector (80%), such as farmers, drivers, entrepreneurs, laborers, and coolies. In terms of income, 63.3% of parents earn less than the Banjar District Minimum Wage (UMK). Meanwhile, the parent's level of education is relatively high, with

66.7% having completed senior high school to university. Bivariate analysis was used to determine the relationship between the variables of employment status, income, and parental education with the incidence of stunting.

Table 1. Distribution of parental characteristics

Variable	n	%
Gender of the child		
Male	17	57.0
Female	13	43.0
Incidence of Stunting		
Stunting (<-2SD Z Score)	9	30.0
Normal (>-2SD Z Score)	21	70.0
Parents' Employment Status		
Formal Worker	6	20.0
Informal Worker	24	80.0
Parents' Income		
Low (≤UMK)	19	63.3
High (>UMK)	11	36.7
Parents' Education		
Low (elementary - junior high school)	10	33.3
High (SMA - PT)	20	66.7
Total	30	100,0

Source: Primary Data 2025

Table 2. Relationship between Employment Status, Income, and Parental Education to the Incidence of Stunting

Variable	Incidence of Stunting						p-Value
	Normal		Stunting		Total		
	n	(%)	n	(%)	n	(%)	
Formal Employment	3	50	3	50	6	100	0,329
Informal Employment	18	75	6	25	24	100	
High Income	8	72,7	3	27,3	11	100	1,000
Low Income	13	68,4	6	31,6	19	100	
Higher Education	17	85	3	15	20	100	0,030*
Low Education	4	40	6	60	10	100	

Source: Primary Data 2025

* Chi-Square test and significant at $p < 0.05$

DISCUSSION

The results of bivariate analysis showed that in the employment variable, 50% of parents working in the formal sector had stunted children, while in

the informal sector, the proportion of stunting was lower at 25%. However, statistically, the relationship between parental employment status and the incidence of stunting was not significant (p-



value = 0.329).

These results are in line with previous research, which showed that there was no significant relationship between parental employment status and the incidence of stunting (p-value = 0.421). This is because other factors are more influential on children's nutritional status, such as parenting and feeding patterns by parents.¹⁶ Inadequate diet, lack of variety of nutritious foods, and parents' ignorance of children's nutritional needs are more determining factors in the incidence of stunting, regardless of the parent's employment sector.

However, this finding is in contrast to a cross-sectional study in the Yapen Islands District, which found a significant association between parental employment status and the incidence of stunting (p-value = 0.018). Parents who work, especially in the formal sector, tend to have a stable income and better access to information on child health and nutrition. This supports more optimal feeding practices and regular monitoring of child growth and development. In contrast, parents who work in the informal sector or are unemployed have economic and information limitations, potentially increasing the risk of stunting. In addition to employment factors, this study also emphasizes the importance of nutrition-conscious behaviors in the family, such as understanding children's nutritional needs, monitoring children's growth, and managing nutritious food.¹⁷ Employment instability leads to food insecurity in the family, which affects children's nutritional status.¹⁸

The results of bivariate analysis showed that the proportion of stunting in low-income families was 31.6%, while in high-income families it was 27.3%. There was no significant relationship between parental income and the incidence of

stunting (p-value = 1.000).

In Theory, higher family income should be able to fulfill the needs of life (primary, secondary, tertiary) compared to low-income families. Families with lower incomes tend to have limited purchasing power, which affects the quality and quantity of food consumed. Limited purchasing power leads to the fulfillment of nutritional needs that are not optimal, less varied, and minimal sources of protein, vitamins, and minerals that are important for growth, thus increasing the risk of malnutrition and stunting in family members.¹⁹ However, in this study, family income was not shown to have a significant relationship with the incidence of stunting.

This result is in line with a study in the Sukajaya Health Centre Working Area of Sabang City, which found that there was no association between family income and the incidence of stunting (p-value=0.204). The study assumed that other factors, such as consumption patterns of nutritious food obtained from fishermen's harvest, contributed to the fulfillment of children's nutritional needs, thus reducing the risk of stunting despite low family income.²⁰

However, this finding contradicts a study in Pujon Sub-district, Malang District, which found that parents' economic status was significantly associated with the nutritional status of children under five. Using a cross-sectional design and involving 144 respondents, the results of the analysis showed a p-value = 0.037, which means there is a relationship between parents' economic status and children's nutritional status.²¹ Economic limitations impact the ability to provide nutritious food and access to health services.²²

This difference in results may be due to



contextual factors such as family consumption patterns, access to nutritious food, and health program interventions that vary across regions.¹² Previous studies have also shown that employment instability can lead to food insecurity in the family and increase the risk of stunting.²³ However, in some contexts, informal employment, especially agriculture or fisheries-based, can provide direct access to more nutritious food sources, reducing the risk of stunting.¹²

In addition, other studies have shown that socio-economic factors such as maternal education level, nutrition knowledge, parenting patterns, and access to health services have more influence on the incidence of stunting than parental employment status or income.²⁴ For example, mothers with low education levels tend to have limited access to good nutrition information, which contributes to an increased risk of stunting in children.²³

In terms of income, research shows that although families with higher incomes have greater purchasing power, other factors such as food distribution within the family, eating habits, and access to clean water and sanitation also play a crucial role in the incidence of stunting.²⁵

These results confirm that interventions to prevent stunting should not only focus on increasing parents' income or employment status but also on nutrition education, parenting, and improving access to adequate health and sanitation services.²⁵

However, it should be noted that these factors were not included in the variables analyzed in this study, so further studies are needed to explore their influence more comprehensively. Thus, while parental employment status and income are important factors in family food security, other

more complex factors also need to be considered in the analysis of stunting incidence to gain a more thorough understanding.

Bivariate analysis showed that parents with low education had a 60% incidence of stunting, while parents with high education had only 15%. The association between parental education level and the incidence of stunting was statistically significant (p -value = 0.030).

Parental education has a direct influence on parenting patterns, which in turn affects children's dietary intake. Education is one of the most powerful social determinants in influencing health behaviors, including nutrition and childcare practices, which in turn affect children's nutritional status. Health behavior theories such as the *Health Belief Model* (HBM) and *Theory of Planned Behaviour* (TPB) explain that individual behavior is strongly influenced by knowledge, which in many cases is shaped by education level. The level of education plays a role in determining how easily a person can absorb and understand information related to nutrition and health. This is related to the breadth of insight and understanding of individuals regarding various sources of nutrition and types of healthy food to be consumed by the family.²⁶

This finding is in line with previous research, which proved that among stunted children ($HAZ < -2$ SD), HAZ values were significantly higher at higher levels of parental education (father and mother). This is further evidenced by the HAZ value decreasing further if both parents' education is only equivalent to a senior high school graduate.²⁷

However, this finding is different from research in the Siantan Hulu Health Centre UPK Working Area, which found that maternal education level



and stunting status had no relationship in children aged 2 to 5 years in the Siantan Hulu Health Centre UPK Working Area. Mothers with low education do not necessarily lack nutrition knowledge. A high level of maternal education does not guarantee that children will avoid malnutrition because a high level of education does not mean that the mother has sufficient knowledge of good nutrition²⁸

CONCLUSIONS AND SUGGESTIONS

Based on the results of the research in Sungai Landas Village, parents' education, especially mothers, plays an important role in efforts to prevent stunting in children. Parents with higher education levels show a better ability to understand children's nutritional needs, apply appropriate parenting patterns, and maintain family health. Meanwhile, economic factors such as employment and income level were not found to be the main factors influencing the incidence of stunting in this village. Therefore, a series of strategic measures are needed, such as sustainable nutrition education programs in posyandu, schools, and communities, involving health cadres and early childhood education teachers as agents of education, mother empowerment programs through basic skills training on child health and nutrition, improve parenting capacity at the family level. These measures can be strengthened with the support of village policies and the involvement of community leaders in supporting program socialization and implementation.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest regarding the publication of this article.

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