



## Original Research

# Socioeconomic Factors and Its Correlation with Nutritional Status in Toddlers: A Study in Papua

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## Abstract

Nutritional status in toddlers is a critical indicator of overall well-being and long-term health outcomes. Malnutrition among children is persistent and continues to be an alarming burden, often linked to socioeconomic factors in Papua. This study aims to analyze the relationship between socioeconomics and the nutritional health of toddlers. This cross-sectional study involved 300 toddlers aged 1–5 years from working areas at the Primary Health Center (PHC) Remu, Sorong City, Papua. We collected data by conducting structured interviews with the mothers and measuring the anthropometric traits of the toddlers. Socioeconomics was assessed through family income, maternal education, and access to healthcare. We measured nutritional status using WHO standards for weight-for-age (underweight), height-for-age (stunting), and weight-for-height (wasting). We implemented the Pearson and Spearman correlation tests for data analysis. The results indicated family income ( $p < 0.05$ ), maternal education ( $p < 0.05$ ), and access to healthcare ( $p < 0.05$ ) were significantly correlated with nutritional status. This study highlights the significant influence of socioeconomic status on the nutritional status of toddlers in Papua. Toddlers from families with higher income, better maternal education, and enhanced accessibility to healthcare had better nutritional outcomes, with lower rates of stunting, wasting, and underweight. These findings suggest the need for targeted interventions aimed at improving socioeconomic conditions and enhancing access to nutritional and healthcare services in Papua, particularly in rural and remote areas, to reduce malnutrition and promote better health outcomes for children.

**Keywords:** nutritional status, socioeconomic, toddler

## INTRODUCTION

Nutritional status in toddlers is a critical aspect of their overall development and well-being. In toddlerhood, optimal growth is greatly influenced by adequate nutritional intake. Toddlers require a balanced diet to support their rapid growth and development. It is considered a reliable predictor of the country's economic condition. Malnutrition, both undernutrition and overnutrition, can have severe consequences for their health and well-being (Mkhize & Sibanda, 2020). Globally, the nutritional status of toddlers varies significantly, with a clear divide between high-income and low- and middle-income countries (LMICs). In high-income countries, the prevalence of overnutrition, characterized by obesity and related conditions, is increasing. In contrast, LMICs continue to struggle with undernutrition, where stunting, wasting, and micronutrient deficiencies remain prevalent. The double burden of malnutrition, where undernutrition and overnutrition coexist, has also emerged as a significant issue in many regions (Black et al., 2013).

According to reports, 17.7% of toddlers in Indonesia were still having nutritional issues. This figure consisted of toddlers who experienced malnutrition at 3.9% and those suffering from malnutrition at 17.8%. Where underweight children have a target of 17% and wasting toddlers at 9% (Kementerian Kesehatan RI, 2018). According to the 2022 Nutritional Status Survey of Toddlers in Indonesia, the problem of nutritional health of toddlers that has decreased from 2019 to 2022 is stunting (from 27.7% to 21.6%) and overweigh (from 4.5% to 3.5%). While wasting was increasing from 7.4% to 7.7% and underweight from 16.3% to 17.1% (Kementerian Kesehatan RI, 2023).

Papua is a province in Indonesia which presents a unique context due to its diverse ethnic groups, geographical challenges, and socioeconomic disparities. Stunting is still highly reported in Papua about 34% (Kementerian Kesehatan RI, 2023). A study conducted in Agats, Asmat, Papua found that among 372 children surveyed, 35 (9.4%) were underweight, and 7 (1.9%) were severely underweight. Additionally, 21 (5.7%) were stunted, and 12 (3.2%) were severely stunted. The prevalence of wasting was also noted, with 23 (6.2%) children being wasted and 6 (1.6%) being severely wasted (Pudjohartono et al., 2019). Other fact, undernutrition reported about 2.0% in Sorong, West Papua (Dinkes Kota Sorong, 2019).

Based on a framework developed by UNICEF, the fundamental and contributing aspects of undernutrition include environmental, economic, and socio-political contextual elements, with poverty being a significant component (Black et al., 2008). Research conducted in West Africa demonstrated that increased household wealth and maternal education were linked to lower prevalence rates of stunting and underweight among children (Dwomoh et al., 2023). Similarly, a study in West Aceh, Indonesia revealed a noteworthy correlation between socioeconomic characteristics and the nutritional quality of toddlers. The study's findings, supported by a p-value of 0.007, indicate that families with lower economic standing frequently have difficulties in ensuring sufficient nourishment for their children (Khairunnas et al., 2020). However, findings from Indonesia revealed that while family economic trajectories influence children's body mass index (BMI), the relationship was not uniform across genders, suggesting that socioeconomic impacts may vary based on demographic factors (Samodra et al., 2023). Overall, these studies underscore the critical role of family economic status in shaping nutritional outcomes for toddlers, highlighting the need for targeted interventions to address these disparities (Kristo et al., 2021; Marniati et al., 2020). Access to healthcare significantly influences the nutritional status of toddlers, as evidenced by various studies. The relationship between maternal behavior regarding healthcare utilization and toddler nutrition is critical, with findings indicating that regular visits to integrated healthcare centers lead to better nutritional outcomes (Norviana et al., 2022). Access to healthcare services is associated with improved quality of life and nutritional status in children, as caregivers who utilize these services report better outcomes (Rungamornrat et al., 2022)

A study conducted by Corder et al., (2013) showed that children from families with low socioeconomic status in Indonesia have a higher risk of malnutrition. This study emphasizes that low family income often leads to limited access to nutritious food, which ultimately has a negative impact on children's nutritional status. In addition, another study by Torlesse et al., (2016) found that children living in remote areas of Indonesia, including Papua, have a higher prevalence of stunting compared to children in more developed urban areas. This is due to limited Access to health care and nutrition programs. This study aims to analyze the nutritional status of toddlers in Papua, focusing on how socioeconomic factors (family income, maternal education, and access to healthcare) affect their nutritional health. By understanding the relationship between family economic conditions and children's nutritional

status, this study is expected to provide deeper insights into the root causes of malnutrition in Papua and suggest effective interventions to improve the health of children in these areas.

## METHODS

This research was quantitative, utilizing cross-sectional design approaches. We conducted the research at the PHC Remu in Sorong City from June to August 2023. We collected a total sample of 300 households with toddlers (ages 1–5) using stratified random sampling and collected data on family income, maternal education, and access to healthcare through structured interviews. Nutritional status was assessed by anthropometric measurements, including height and weight, and classified according to the World Health Organization's child growth standards. Data analysis employed Pearson and Spearman correlation tests.

## RESULTS

### Respondent characteristics

Characteristics of 300 respondents can see on Table 1 below:

**Table 1.** Characteristics of respondents

Variable	Frequency	Percentage (%)
<b>Sex of toddler</b>		
Male	165	55
Female	135	45
<b>Age of toddler (Years)</b>		
1-2	90	30
3-4	120	40
5	90	30
<b>Age of mother (Years)</b>		
< 20	45	15
20-30	150	50
>30	105	35
<b>Family income (Rp/month)</b>		
< 2.000.000	120	40
2.000.000 - 4.000.000	105	35
> 4.000.000	75	25
<b>Maternal education</b>		
Not completing primary school	90	30
Junior high school – Senior high school	135	45
> University	75	25
<b>Access to health care</b>		
Distance > 10 km	165	55
Distance ≤ 10 km	135	45
<b>Stunting</b>		
Yes	105	35
No	195	65
<b>Wasting</b>		
Yes	45	15
No	255	85
<b>Underweight</b>		
Yes	75	25
No	225	75

<b>Obesities</b>		
Yes	9	3
No	291	97

Approximately 50% of moms belong to the 20-30 age group, signifying that the majority are within the active reproductive phase. Approximately 15% of moms are under the age of 20, signifying the existence of young mothers. The age distribution of toddlers is quite equitable, with 30% aged 1-2 years, 40% aged 3-4 years, and 30% aged 5 years. Approximately 55% of toddlers are male, whereas 45% are female. The distribution of these genders is relatively balanced between males and females. Approximately 40% of households have a monthly income below Rp 2,000,000, while only 25% have a monthly income above Rp 4,000,000. Approximately 45% of moms possess a secondary education, ranging from junior high to high school; however, 30% of mothers do not attain a comprehensive education. A significant proportion of households, up to 55%, reside at a distance greater than 10 kilometers from healthcare facilities, indicating a limited availability of healthcare services. The prevalence of stunting in toddlers is 35%, indicating that 35% of toddlers have height issues that are not in line with their age. We found that 15% of toddlers had a prevalence of wasting (BB/TB), meaning they are underweight compared to their height. Up to 25% of toddlers are classified as underweight (BB/U), indicating that their weight is inappropriate for their age. In the examined population, the prevalence of obesity among toddlers was only 3%, suggesting a low incidence of overweight in this age group.

### Correlation of the socioeconomic status with the nutritional status of toddlers

The correlation between independent and dependent variables in this study can be seen in the following table.

**Table 2.** Correlation of the socioeconomic status with the nutritional status of toddlers

<b>Variable</b>	<b>Stunting</b>	<b>Wasting</b>	<b>Underweight</b>
<b>Family income</b>	r = -0.42 p < 0.01	r = -0.35 p < 0.05	r = -0.38 p < 0.05
<b>Maternal education</b>	r = -0.38 p < 0.05	r = -0.33 p < 0.05	r = -0.36 p < 0.05
<b>Access to health care</b>	r = -0.36 p < 0.05	r = -0.30 p < 0.05	r = -0.32 p < 0.05

There was a significant negative correlation between family income and the nutritional status of toddlers. This means that the lower the family income, the higher the prevalence of stunting (r = -0.42), wasting (r = -0.35), and underweight (r = -0.38). A significant p-value (p < 0.05 or p < 0.01) indicates that this relationship is statistically significant. Maternal education also has a significant negative correlation with the nutritional status of toddlers. The lower the mother's education level, the higher the risk of stunting (r = -0.38), wasting (r = -0.33), and underweight (r = -0.36). This signifies the importance of maternal education in influencing knowledge and the ability to provide proper nutrition for the child. Access to health care also has a negative correlation with the nutritional status of toddlers. The more difficult it is for families to access to health care, the higher the prevalence of stunting (r = -0.36), wasting (r = -0.30), and underweight (r = -0.32).

## DISCUSSIONS

The findings of this study show that family income has a significant negative correlation with the prevalence of stunting, wasting, and underweight in toddlers. Toddlers who come from low-income families are more likely to experience malnutrition, especially in the form of stunting, wasting, and underweight. These results are in line with research conducted by (Black et al., 2013), which showed that low family income is closely related to the risk of malnutrition in children in developing countries, including Indonesia. Low incomes hinder access to nutritious food, health services, and nutrition education that are essential for children's growth.

A study conducted by Smith & Haddad (2015) also found that low-income families tend to have difficulties in meeting the basic needs of nutritious food, which has an impact on decreasing the quality of food intake and increasing the risk of stunting in children. In the context of Papua, low income is also associated with limited access to markets or food sources, especially in rural and remote areas. Papua's hard-to-access geography also exacerbates this situation, where food prices are more expensive and the availability of nutritious food is very limited.

Maternal education also had a significant influence on the nutritional status of toddlers, as seen from the negative correlation between maternal education and the prevalence of stunting, wasting, and underweight. These results are in line with findings from UNICEF (2019), which emphasized that mothers with higher levels of education tend to have better knowledge about child nutrition, feeding practices, and access to health services.

Another study conducted by Alderman & Headey (2017) showed that maternal education greatly influences decisions regarding children's diets and the ability to cope with health problems that can affect nutritional status. Mothers with higher education also tend to be more able to take advantage of health services and participate in nutrition intervention programs. In this study, mothers who had secondary and higher education showed a lower tendency to have children who were stunted, wasting, or underweight compared to mothers who did not complete primary education.

The findings of this study also show that access to health care is significantly correlated with the nutritional status of toddlers. Toddlers who lived close to health facilities had a lower prevalence of stunting, wasting, and underweight compared to those living in remote areas. This is in accordance with research conducted by Bhutta et al., (2013), which showed that access to health services, such as immunizations, routine health checks, and nutritional interventions, is very important in preventing malnutrition in children.

In the context of Papua, access to health care is very limited, especially in remote areas. Difficult geographical conditions, limited infrastructure, and minimal availability of medical personnel contribute to the high prevalence of malnutrition. Previous research by Mboi et al. (2018) also found that in Papua, limited access to health centers and clinics causes children not to get timely nutritional interventions, which has an impact on the high rate of stunting and wasting in the area.

This study reinforces the results of previous studies that have shown that the economic status of the family plays a crucial role in determining the nutritional status of children. A study by Aisbett and Feeny (2020) shows that in the Pacific region, including Papua, children from low-income families are more vulnerable to malnutrition. They found that increased family income and educational interventions for mothers can reduce the prevalence of malnutrition.

The study also adds new evidence on the importance of maternal education and Access to health care in the context of Papua, a region with unique geographical and socio-economic

challenges. A study by Indraswari et al. (2020) in rural Papua shows that maternal education is one of the most important factors in reducing the prevalence of malnutrition, in line with our findings. Studies show that maternal education significantly correlates with increased knowledge about nutrition, leading to more nutritionally conscious family behaviors (Roihan & Aprilawati, 2023). The research was conducted in a specific area of Papua, which may limit the generalizability of the findings to other regions of Indonesia or countries with different socioeconomic and cultural contexts. Papua has unique geographical, cultural, and socioeconomic characteristics that may influence nutritional outcomes differently compared to other regions. Addressing these limitations in future research, such as through longitudinal designs, broader geographical sampling, and the inclusion of additional confounding factors, would enhance the understanding of the relationship between socioeconomic status and child nutrition in Papua.

## CONCLUSIONS

This study showed that family economic status, maternal education, and access to health care have a significant relationship with the nutritional status of toddlers in Papua. Higher incomes, better maternal education, and easier access to health care are associated with a lower prevalence of stunting, wasting, and underweight. Policy interventions focused on economic empowerment, education, and improved health services can help address the problem of malnutrition in children in Papua and other remote areas.

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