

## Association between Parenting Patterns and Exclusive Breastfeeding with Wasting Incidence in Toddlers

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### ABSTRACT

**Introduction:** Wasting is a form of acute malnutrition that significantly affects the physical growth, brain development, and immune function of toddlers. Various factors, including parenting styles and breastfeeding practices, may influence the occurrence of wasting.

**Objective:** This study aims to analyze the relationship between parenting styles and exclusive breastfeeding with the incidence of wasting among toddlers in the Sidomulyo Health Center area, Samarinda City.

**Methods:** A quantitative, correlational study with a cross-sectional design was conducted involving 168 toddlers aged 2–5 years, selected through stratified cluster sampling. Data were collected using structured questionnaires and analyzed using the Chi-Square test and Fisher's Exact Test to assess the associations between variables.

**Results:** The findings revealed that permissive parenting was associated with the highest proportion of wasting cases (46.2%), whereas democratic parenting showed the lowest proportion (9.9%). A significant relationship was found between parenting style and the incidence of wasting ( $p = 0.000$ ). Furthermore, toddlers who were not exclusively breastfed had a significantly higher risk of wasting compared to those who received exclusive breastfeeding ( $p = 0.000$ ).

**Conclusion:** Maternal characteristics, parenting styles, and breastfeeding practices play a significant role in determining the nutritional status of toddlers. Democratic parenting and exclusive breastfeeding were found to contribute positively to the prevention of wasting.

**Keywords:** exclusive breastfeeding, malnutrition, parenting style, toddler, wasting

## Introduction

Wasting (undernutrition/malnutrition) is a form of acute malnutrition characterized by significantly low body weight for height, often indicating substantial weight loss or growth failure, which can severely impact a child's health, development, and survival both in the short and long term (WHO). Globally, wasting continues to be a serious public health challenge. According to the World Health Organization (WHO, 2022), an estimated 45 million children under five years old (0–59 months) suffered from wasting worldwide in 2022, with approximately 13.6 million experiencing severe wasting. Most of these cases are concentrated in Asia and Africa (UNICEF, 2021).

In Indonesia, the prevalence of wasting among toddlers remains a major concern. Data from the Ministry of Health of the Republic of Indonesia indicates that the incidence of wasting was 10.2% in 2019, an increase from 9.5% in 2018, and remains above the national target. This trend has also been observed in various provinces, including Kalimantan (Ministry of Health of the Republic of Indonesia, 2019). At the provincial level, East Kalimantan reported a wasting prevalence of 8.1% in 2021. More specifically, in Samarinda City, the 2023 prevalence was 8.45%, slightly higher than the provincial average. Within Samarinda, significant disparities exist among sub-districts, with Samarinda Ilir District reporting the highest prevalence at 18.6% (Samarinda City Health Office, 2023). The Sidomulyo Health Center, located in Samarinda Ilir, also faces a considerable burden of wasting, with 94 recorded cases among toddlers in early 2024, highlighting the urgent need for local-level interventions.

Numerous factors contribute to wasting in children, including feeding and caregiving practices. Exclusive breastfeeding during the first six months of life is globally recommended to promote optimal nutritional status and protect against various diseases, including wasting. Breast milk provides essential nutrients and immune factors critical for infant growth and development. While several studies support a protective effect of exclusive breastfeeding against wasting, the findings are inconsistent. For instance, a study in Nepal by Aguayo, Badgaiyan, and Dzed found a positive association between exclusive breastfeeding and reduced wasting risk. Conversely, Menon et al. in Uganda found no significant relationship, suggesting that contextual variables such as socio-cultural factors, study design, or other unmeasured influences may play a role.

Beyond breastfeeding, parenting practices—especially those related to nutrition—are also fundamental in shaping toddlers' nutritional outcomes. Nutritional parenting includes feeding behaviors, hygiene, caregiver responsiveness, and health-related practices that collectively influence a child's nutritional status during and after the exclusive breastfeeding period. Improper feeding behaviors, poor hygiene, or unresponsiveness to hunger cues can increase the risk of malnutrition, including wasting. Studies conducted in Indonesia (Sitoayu, 2021; Sari, 2022; Anggreyani et al., 2023; Laia, 2023; Rahma et al., 2024) have shown a significant association between non-exclusive breastfeeding and malnutrition, though most did not comprehensively examine the interactive role of exclusive breastfeeding with broader parenting practices.

For instance, a study by Saleh et al. (2022) reported that toddlers who were not exclusively breastfed had a 1.42 times higher risk of wasting (OR = 1.42), but the confidence interval (95% CI = 0.22–2.25) included the null value, suggesting statistical insignificance. These inconclusive findings reflect the complexity of the relationship and indicate the need for further investigation, especially in regions with a high prevalence of wasting.

Despite global and national efforts, localized data and analysis of causal factors in areas such as Sidomulyo Health Center remain limited. The contradiction in existing research findings regarding exclusive breastfeeding and the lack of comprehensive evaluations of nutritional parenting practices highlight a critical knowledge gap. Given the high prevalence of wasting in Samarinda Ilir and the recorded burden in Sidomulyo, it is vital to explore the specific roles of exclusive breastfeeding and household parenting practices in this context. This research seeks to confirm or challenge previous findings and identify actionable insights for community-level interventions tailored to the local population in Sidomulyo.

## Objective

This study aims to analyze the relationship between parenting styles and exclusive breastfeeding with the incidence of wasting among toddlers in the Sidomulyo Health Center area, Samarinda City.

## Method

This study employed a cross-sectional research design with a quantitative correlational approach to determine the relationship between infection factors, immunization status, exclusive breastfeeding, and parenting patterns with the incidence of wasting in toddlers. A cross-sectional method was chosen to collect data on dependent and independent variables simultaneously (Afandi, 2020; Babapour, Gahassab & Fathnezhad, 2022).

The study population comprised all toddlers aged 2–5 years and their parents who visited the Sidomulyo Health Center work area in Samarinda Ilir District in 2024, totaling 353 individuals (Nursalam, 2020). The sample was selected through cluster sampling, targeting toddlers who met specific inclusion criteria, namely: aged 2–5 years, possessing complete KIA books, and having mothers willing to participate as respondents. Exclusion criteria included toddlers living in orphanages, those with chronic illnesses requiring continuous care, and those not attending integrated health posts. Using the Slovin formula, a sample of 188 respondents was obtained. The research was conducted across seven Posyandu (integrated health service posts) in the Samarinda Ilir area: Anggrek, Flamboyan, Kenari, Lestari 1, Setia, Sri Rejeki, and Teratai. The distribution of samples across these Posyandu is presented in Table 1.

Table 1. Sampling Calculation

Place	Number of Samples
Orchid	$38/353 \times 188 = 20.2 \approx 20$
Flamboyan	$48/353 \times 188 = 25.5 \approx 26$
Canary	$37/353 \times 188 = 19.7 \approx 20$
Sustainable I	$71/353 \times 188 = 37.8 \approx 38$
Loyal	$46/353 \times 188 = 24.4 \approx 24$
Sri Rejeki	$38/353 \times 188 = 20.2 \approx 20$
Lotus	$75/353 \times 188 = 39.9 \approx 40$
<b>Total</b>	<b>188</b>

The data collection instrument consisted of a questionnaire that was tested for validity and reliability. Validity tests for the parenting pattern questionnaire were conducted with 30 toddlers at Posyandu Rumbia II, Samarinda Ilir, in October 2024, using the Pearson Product Moment correlation method with a Likert scale. The results showed that all 15 items were valid with Pearson correlation values  $> 0.361$  (Djaali, 2020). For exclusive breastfeeding, the questionnaire was also tested at Posyandu Rumbia II with the same number of toddlers and date, using the Guttman scale and analyzed with Biserial Correlation. Of 15 items, 10 were valid and 5 were invalid, with Pearson correlation values  $> 0.361$ .

The reliability test for parenting patterns used Cronbach's Alpha, yielding a value of 0.719 across 15 items, indicating the instrument was reliable since values above 0.60 are considered acceptable (Djaali, 2020). The reliability test for exclusive breastfeeding was conducted using the Kuder-Richardson 20 formula, resulting in a value of 0.755, which also confirmed the instrument's reliability.

Data collection was carried out following the completion of the validity and reliability testing. According to Kurniawan and Agustini (2021), data analysis was conducted after data collection and processing were finalized. Univariate analysis was used to describe the frequency distribution of both dependent (wasting incidence) and independent variables (parenting patterns, economic status, etc.), with data categorized based on the operational definitions. Bivariate analysis was conducted using the Chi-square test to assess the relationship between two variables measured on an ordinal scale (Hidayat, 2021). The decision rule for the Chi-square test was as follows: if the p-value  $< 0.05$ , then the null hypothesis ( $H_0$ ) is rejected, indicating a significant relationship between the variables; if the p-value  $> 0.05$ ,  $H_0$  is not rejected, indicating no significant relationship.

## Result

This study was conducted at seven integrated health service posts (Posyandu) under the Sidomulyo Health Center in Samarinda City, specifically at Posyandu Anggrek, Flamboyan, Kenari, Setia, Teratai, Sri Rejeki, and Lestari 1, all located at Jln. Jelawat, Gg 6, RT.08, Samarinda Ilir.

A total of 168 toddlers participated in the study. The majority were female (57.1%), while males accounted for 42.9%. Most toddlers (56.0%) were in the 3.1–4 years age group, followed by 23.8% aged 2–3 years and 20.2% aged 4.1–5 years.

The characteristics of the toddlers' mothers showed that most were aged 21–35 years (82.7%), and only a small portion were under 20 years old (4.8%). In terms of education, 91.1% of the mothers had an elementary to high school education, while 8.9% held a D3 or bachelor's degree. Most mothers (76.2%) were housewives, while others worked as businesswomen (13.7%), in the private sector (3.0%), or as civil servants (7.1%).

A univariate analysis of parenting patterns revealed that democratic parenting was the most common (42.3%), followed by permissive (31.0%) and authoritarian (26.8%). Additionally, 57.7% of the toddlers received exclusive breastfeeding. In terms of nutritional status, 25.6% of toddlers experienced wasting.

The comprehensive frequency distribution of all variables is shown in Table 1.

Table 2. Frequency Distribution of Respondents and Study Variables (N = 168)

Variable	Category	Frequency (n)	Percentage(%)
<b>Toddler Gender</b>	Male	72	42.9%
	Female	96	57.1%
<b>Toddler Age</b>	2–3 years	40	23.8%
	3.1–4 years	94	56.0%
	4.1–5 years	34	20.2%
<b>Mother's Age</b>	< 20 years	8	4.8%
	21–35 years	139	82.7%
	> 35 years	21	12.5%
<b>Mother's Education</b>	Elementary–High School	153	91.1%
	D3–Bachelor	15	8.9%
<b>Mother's Occupation</b>	Housewife	128	76.2%
	Businesswoman	23	13.7%
	Private Sector	5	3.0%
	Civil Servant	12	7.1%
<b>ParentingPattern</b>	Democratic	71	42.3%
	Authoritarian	45	26.8%
	Permissive	52	31.0%
<b>Exclusive Breastfeeding</b>	Yes	97	57.7%
	No	71	42.3%
<b>Wasting Status</b>	Wasting	43	25.6%
	No Wasting	125	74.4%

Table 3. Relationship Between Parenting Patterns and Wasting in Toddlers

Parenting Pattern	Wasting (n)	No Wasting (n)	Total (n)	% Wasting
Democratic	7	64	71	9.9%
Authoritarian	12	33	45	26.7%
Permissive	24	28	52	46.2%
p-value (Fisher's Exact Test)	0.000			

Further bivariate analysis showed a significant relationship between parenting patterns and the incidence of wasting in toddlers. As presented in Table 3, toddlers raised with democratic parenting had the lowest rate of wasting (9.9%), whereas permissive parenting was associated with the highest rate of wasting (46.2%). The Fisher's Exact Test produced a p-value of 0.000, indicating a statistically significant association.

## Discussion

The results of this study indicate that the majority of toddlers who suffer from wasting are aged between 2–3 years, aligning with findings by Masruroh et al. (2023). At this developmental stage, children typically transition from exclusive breastfeeding to solid foods, making them more vulnerable to inadequate nutrition and infection if their dietary needs are not properly met (Trihayuningtyas et al., 2021). Faturrahman et al. (2022) similarly identified children around the age of three as being at higher risk of wasting due to factors such as irregular attendance at integrated health posts and selective eating behavior.

The maternal characteristics in this study also reinforce previously reported associations. Most mothers of toddlers with wasting were aged 21–35 years, consistent with Ghe et al. (2022), who noted this age range as critical due to its connection with early motherhood and the potential lack of experience or knowledge in child nutrition. Maria (2024) supports this by suggesting that younger mothers often lack understanding of proper feeding practices. Educational attainment appears to be another determinant, as most mothers of wasted children in this study had education levels between elementary and high school, which mirrors findings by Masruroh et al. (2023). Lower maternal education may limit the ability to access, understand, or act on nutritional information (Cholifatun, 2023). Moreover, the study reveals that the majority of these mothers are housewives. This finding aligns with previous research stating that while being a housewife may increase time spent at home, it does not necessarily equate to better childcare due to potential constraints in household income and access to health resources (Cholifatun, 2023).

Table 2 shows that among 168 respondents, the most common parenting style was democratic (71 respondents), followed by permissive (52 respondents) and authoritarian (45 respondents). According to Hurlock (2013), parenting style is influenced by factors such as age, education, and occupation. Faturrahman et al. (2022) observed that inadequate caregiving practices, such as monotonous or unbalanced meals, can indirectly affect nutritional status. Families in this study were also mostly of low socioeconomic status, with 86 (93.5%) reporting low income, predominantly due to mothers being housewives. While stay-at-home mothers may have more time for childcare, limited financial resources may hinder their ability to provide adequate nutrition.

The findings also show that the majority of mothers are in the productive age group (21–35 years), which can be a double-edged sword. On one hand, Ortega (2021) suggests that early adulthood is a learning phase conducive to parenting development. On the other hand, without proper nutritional knowledge, even young and energetic mothers may struggle to implement effective feeding practices. Table 2 supports this observation, showing that most mothers had only attained secondary education, which has been linked to better child nutritional outcomes (Liu et al., 2018; Popkin, 2021). Education serves as a key factor in understanding and applying information on nutritional needs, thereby influencing caregiving quality.

Exclusive breastfeeding practices were also assessed, with 131 toddlers (78.9%) receiving exclusive breastfeeding for the first six months. Of these, 129 toddlers did not experience wasting, indicating a protective role of exclusive breastfeeding. Only 2 toddlers who were not exclusively breastfed suffered from wasting, supporting prior research that highlights breast milk as a complete source of nutrition and immunity that significantly reduces the risk of malnutrition (Walyani, 2015 in Rahma et al., 2024). These findings are

corroborated by studies from Hidayat et al. (2020), Habtamu et al. (2022), and Betan et al. (2023), which found that exclusive breastfeeding contributes positively to growth and nutritional status in infants. Amalia and Sari (2021) also found that maternal awareness and knowledge regarding breastfeeding play a significant role in reducing wasting.

Despite these findings, some studies offer contradictory results. Research by Intiyati et al. (2024), Purba & Siregar (2024), and Wahyuni et al. (2023) argue that exclusive breastfeeding is not always associated with improved nutritional outcomes. Other factors such as infections (e.g., diarrhea, pneumonia, malaria), household economy, and environmental conditions can diminish the benefits of breastfeeding and contribute to poor nutritional status.

Statistical analysis further strengthens these observations. Bivariate analysis using the Chi-square test revealed a significant relationship between parenting style and the incidence of wasting ( $p\text{-value} = 0.000 < \alpha = 0.05$ ) as shown in Table 2. This is consistent with studies by Hawazen & Anwar (2024), Sulistiani et al. (2024), and Nadeak et al. (2025), all of which found a statistically significant relationship between caregiving practices and wasting. Further supporting evidence comes from Bornstein et al. (2022), Hadrayani & Purwanti (2024), and Latifah & Puspitawati (2025), who confirmed a strong correlation between parenting style and child nutrition outcomes.

Table 3 indicates that 90.1% of toddlers with democratic parenting did not experience wasting, whereas permissive parenting was associated with 24% of wasting cases. These findings align with Hidayatullah & Mulyana (2017), who reported that permissive and neglectful parenting styles increase the risk of malnutrition due to minimal parental control over dietary choices. Haszard (2013) also noted that children in permissive households often dictate their food choices, leading to poor dietary habits. In contrast, democratic parenting promotes mutual communication, fostering healthier eating behaviors in children. However, even democratic parenting may not be sufficient if parental nutritional knowledge is lacking (Afritayeni, 2017).

Regarding exclusive breastfeeding, the study again confirmed a significant relationship with wasting ( $p < 0.05$ ), supporting the hypothesis that exclusive breastfeeding plays a vital role in child growth and immunity. Still, as discussed, various contextual and confounding factors can moderate this relationship.

In conclusion, this study emphasizes the complex interplay between maternal characteristics, parenting styles, breastfeeding practices, and toddler nutritional outcomes. Effective intervention strategies must not only promote exclusive breastfeeding and democratic parenting but also address educational and economic barriers to reduce the prevalence of wasting in toddlers.

## **Conclusion**

This study highlights that maternal characteristics, parenting styles, and breastfeeding practices significantly influence the nutritional status of toddlers. Democratic parenting and exclusive breastfeeding were associated with better outcomes in preventing wasting. These findings emphasize the importance of educating mothers on effective parenting and optimal feeding practices to support healthy child development.

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### **Authors' contribution**

Each author contributed equally in all the parts of the research. All authors have critically reviewed and approved the final draft and are responsible for the content and similarity index of the manuscript.

### **Conflict of interest**

The researchers stated that there is no conflict of interest related to the implementation and publication of the results of this research. The entire research process, from planning, data collection, analysis, to report preparation, was carried out independently without any influence or pressure from any third party. A commitment to research ethics is upheld throughout the research process, ensuring transparency, accuracy and honesty in reporting results. Respondents' participation was voluntary with informed consent, and their confidentiality and privacy were maintained in accordance with applicable research ethics standards. With this statement, researchers hope that the research results can be trusted and used as a valid reference for the development of science and health practices related to ethnomedicine and reproductive health.

### **Ethical consideration**

Not applicable.

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