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ORIGINAL ARTICLE

Differences in nutritional status of exclusively breastfed and non-exclusively breastfed infants aged 0-6 months in Kutambaru Village, Munte Subdistrict

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ABSTRACT

Nutritional status in children under five remains a critical public health issue in Indonesia, characterized by high rates of stunting (21.6%) and wasting (7.9% in North Sumatra). Exclusive breastfeeding (EBF) for the first six months is vital for optimal growth, but compliance is low. This study aimed to analyze the determinants of nutritional status, focusing on the differences between infants aged 0-6 months receiving exclusive breastfeeding and those receiving breastfeeding plus early complementary feeding (MPASI). This research employed a comparative analytical design with a total sampling of 40 mothers and their infants (0-6 months) in Kutambaru Village, Munte Subdistrict. The independent variables were breastfeeding status (exclusive vs. non-exclusive) and complementary feeding status. The dependent variable was infant nutritional status (weight-for-length). Data were analyzed using the Chi-Square test. The results demonstrated a statistically significant association between exclusive breastfeeding and infant nutritional status (p = 0.019). Infants who received EBF were significantly more likely to have an optimal nutritional status. Complementary feeding also showed a significant association (p = 0.033). In conclusion, exclusive breastfeeding is the dominant factor significantly associated with optimal nutritional status in infants 0-6 months. Strengthening interventions to promote EBF is critical to prevent malnutrition.

Keywords: nutritional status, exclusive breastfeeding, complementary feeding

Introduction

Nutritional status is defined as an individual's health condition resulting from the equilibrium between nutritional intake and the body's utilization of nutrients for metabolic processes, growth, and development.[1] Exclusive breastfeeding (EBF) for the first 6 months of life is considered the ideal nutrition for infant growth and development. After 6 months, infants require additional energy and nutrients beyond what breast milk alone can provide, necessitating the introduction of complementary foods (MPASI).[2] In Indonesia, approximately 25.27% of infants under 6 months do not receive exclusive breastfeeding. Given an infant population (under 6 months) of approximately 2.5 million, it is estimated that 650,000 to 750,000 infants annually do not receive EBF.[3]

Nutritional requirements and status vary according to an individual's age, sex, and physical activity level. A child's nutritional status is determined by multiple factors, with exclusive breastfeeding being a critical component. Breast milk provides essential nutrients for the infant; its composition is ideally suited

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to support optimal growth and development while also offering protection against various illnesses.[4] Globally, in 2023, 56% of infants aged 0–6 months were not exclusively breastfed. This nutritional gap is associated with 45% of all child deaths worldwide. Consequently, optimizing breastfeeding practices is crucial, with the potential to save the lives of 820,000 children under 5 annually.[5]

According to WHO data, the global prevalence of stunting among children under 5 is 23.2%, affecting 150.2 million children. This figure represents a significant chronic nutritional problem with long-term implications worldwide. A prevalence rate encompassing nearly one-quarter of the global under-5 population indicates that millions of children lack adequate nutrition or face environments unconducive to optimal growth. Addressing stunting requires a multisectoral approach, including improved maternal nutrition, promotion of exclusive breastfeeding, high-quality complementary feeding, adequate sanitation, and access to healthcare services.[6] Globally, 12.2 million children under 5 suffer from wasting, indicating an urgent acute nutritional crisis. Although less prevalent than stunting, wasting is an extremely dangerous form of malnutrition as it significantly increases the risk of child mortality. Children with severe wasting have compromised immune systems, making them highly susceptible to fatal infections. Concurrently, 35.5 million (5.5%) of children under 5 worldwide are overweight. This represents an alarming trend and contributes to the "double burden of malnutrition" faced by many nations. While historically associated with high-income countries, the prevalence of childhood overweight is now rapidly increasing in low- and middle-income countries.[7]

Nutritional status problems in Indonesia are associated with significant morbidity rates. According to the 2021 Indonesian Nutritional Status Survey (SSGI), the prevalence of stunting in children under 5 was 24.4%. Although this rate decreased to 21.6% in 2022, it remains high, indicating that achieving national stunting reduction targets requires intensified efforts. Obesity also presents a major public health challenge; the SSGI reported obesity prevalence at 12.8% among children aged 5–12 and 26.7% among adults, often attributed to imbalanced dietary patterns. Malnutrition among children under 5 is also evident, with wasting (low weight-for-height) at 7.7% and underweight (low weight-for-age) at 17.1%. Other nutritional issues, such as anemia and iodine deficiency disorders (IDD), demand serious attention, particularly for pregnant women and children. These deficiencies can impair physical and cognitive development and increase the risk of premature birth or congenital anomalies.[8] At the provincial level in North Sumatra, the prevalence of stunting (ranking ninth nationally) decreased from 21.1% to 18.9% in 2024.[9] However, the prevalence of wasting in 2023 was 7.9%, exceeding the WHO threshold of 5%. The prevalence of overweight in 2022 was relatively low, reported at approximately 3.8% to 4%.[10] The objective of this study is to analyze the determinants of nutritional status, including stunting, wasting, and overweight, among children under five in Kutambaru Village, Munte Subdistrict.

Method

This study employed a comparative analytical design using an independent t-test to examine differences in nutritional status (weight-for-length) between infants receiving exclusive breastfeeding and those receiving breastfeeding plus complementary feeding (MPASI) at the age of 0–6 months in Kutambaru Village, Munte Subdistrict. The research was conducted in Kutambaru Village, Munte Subdistrict, from June 2025 until completion. The study population comprised all breastfeeding mothers with infants aged 0–6 months (n = 40), all of whom were included as the study sample using a total sampling technique. The inclusion criteria were breastfeeding mothers with infants aged less than 6 months, registered residents of Kutambaru Village, and those willing to participate in interviews. The exclusion criteria were mothers with infants aged over 6 months, non-residents of the village, or those unwilling to be interviewed. Data were collected through secondary sources from community health posts (posyandu) and primary data through direct interviews using a structured questionnaire.

The independent variable was breastfeeding (exclusive vs. non-exclusive), while the dependent variable was the infant's nutritional status, assessed through body weight and body length measurements using a baby scale and infantometer.[11] Nutritional status was categorized based on standardized deviation (SD) scores, ranging from severe malnutrition (<–3 SD) to obesity (>+3 SD), according to the established anthropometric standards.

Data analysis was performed using an independent t-test. A significance value of $p < 0.05$ or a calculated t-value greater than the critical t-value indicated rejection of the null hypothesis (Ho) and acceptance of the alternative hypothesis (Ha), signifying a significant difference in nutritional status between

exclusively breastfed infants and those receiving both breast milk and complementary feeding. Conversely, a significance value of $p > 0.05$ or a calculated t-value lower than the critical t-value indicated acceptance of Ho and rejection of Ha, suggesting no significant difference between the two groups.

Results

Data analysis was conducted on 40 respondents. The demographic characteristics and core research variables are presented descriptively in Table 1. The respondent profile was predominantly composed of individuals in the 26–30 year age group (47.5%), and the most common final education level was Senior High School (50.0%). Occupationally, respondents were evenly distributed between Homemakers (45.0%) and Self-employed individuals (45.0%). The majority of respondents had 1 to 3 children, with the highest proportion having 3 children (32.5%). Regarding the principal variables, most respondents (75.0%) had a good nutritional status; however, 15.0% were classified as obese and 2.5% as severely malnourished. Three-quarters of respondents (75.0%) reported having been breastfed, while more than half (57.5%) stated they were not given complementary feeding (MPASI) during their infancy.

Table 1. Respondent characteristics and research variables (n=40)

Characteristic	Category	Frequency (n)	Percentage (%)
Age	21-25 years	6	15.00%
	26-30 years	19	47.50%
	31-35 years	11	27.50%
	> 35 years	4	10.00%
Education	Primary School	2	5.00%
	Junior High School	5	12.50%
	Senior High School	20	50.00%
	Bachelor's Degree	11	27.50%
	Master's Degree	2	5.00%
Occupation	Homemaker	18	45.00%
	Self-employed	18	45.00%
	Farmer	4	10.00%
Number of Children	1 child	12	30.00%
	2 children	11	27.50%
	3 children	13	32.50%
	4 children	4	10.00%
Nutritional Status	Severe malnutrition	1	2.50%
	Good nutritional status	30	75.00%
	Overweight	3	7.50%
	Obesity	6	15.00%
Breastfeeding History	Yes	30	75.00%
	No	10	25.00%
Comp. Feeding History	Not given	23	57.50%
	Given	17	42.50%

Bivariate analysis using the Chi-Square test (summarized in Table 2) was performed to examine relationships between variables. A statistically significant association was found between the respondent's breastfeeding history and their current nutritional status ($p = 0.019$). The proportion of good nutritional status was substantially higher in the group that had been breastfed (26 of 30) compared to those who had not (4 of 10). Notably, the sole case of severe malnutrition was found in a respondent who was not breastfed. Furthermore, a significant association was identified between the respondent's history of receiving complementary feeding and their current nutritional status ($p = 0.033$). The group that was not given complementary feeding (n=23) was dominated by individuals with good nutritional status (n=21). In contrast, the group that was given complementary feeding (n=17) demonstrated greater variation in nutritional status, including cases of severe malnutrition (n=1), overweight (n=3), and obesity (n=4).

Discussion

The results of the study demonstrate a significant association between breastfeeding and infant nutritional status. A total of 86.7% of infants who were breastfed had a good nutritional status, whereas only 40% of infants who were not breastfed had good nutritional status. The Chi-Square test yielded a Pearson Chi-Square value of 9.956 with a significance level of $p = 0.019$ ($p < 0.05$), indicating that breastfeeding is significantly associated with better nutritional outcomes among infants.

Table 2. Bivariate analysis of breastfeeding and complementary feeding history on nutritional status

Independent Variable	Nutritional Status	Category	Total (n)	Total	p-value
		Yes	No		
Breastfeeding History	Severe malnutrition	0	1	1	0.019
	Good nutritional status	26	4	30	
	Overweight	1	2	3	
	Obesity	3	3	6	
	Total	30	10	40	
		Not Given	Given		
Comp. Feeding History	Severe malnutrition	0	1	1	0.033
	Good nutritional status	21	9	30	
	Overweight	0	3	3	
	Obesity	2	4	6	
	Total	23	17	40	

Theoretically, breast milk is considered the optimal source of infant nutrition because it contains complete and balanced nutrients tailored to the infant's needs. Exclusive breastfeeding for the first six months has been shown to prevent both undernutrition and obesity, while also protecting against infectious diseases.[12] This finding is consistent with studies conducted by Rahmawati & Putri[13], Putri et al.[14], and Ayu et al.[15], which highlight the critical role of exclusive breastfeeding in supporting a normal nutritional status among children. Therefore, this study underscores the importance of promoting and educating communities on exclusive breastfeeding as a strategic approach to preventing malnutrition in children.

The study also revealed a significant association between complementary feeding (MPASI) and infant nutritional status, as evidenced by a Pearson Chi-Square value of 8.764 ($p = 0.033$). Crosstab analysis showed that among 23 infants who had not received complementary feeding, the majority (21 infants) had good nutritional status. Conversely, among 17 infants who had received complementary feeding, their nutritional status varied, ranging from good to obese and undernourished.

In theory, complementary feeding plays a vital role after the age of six months because breast milk alone is insufficient to meet the infant's increasing energy and nutrient requirements. The World Health Organization (WHO) emphasizes that complementary foods should be provided in a timely, adequate, safe, and developmentally appropriate manner.[16] This finding aligns with research by Fitriani et al.[17], Sari & Yuliana[18], and Lestari et al.[19], which demonstrate that the timeliness and quality of complementary feeding significantly influence a child's nutritional status. Accordingly, this study reaffirms that properly administered complementary feeding supports optimal growth, whereas inappropriate practices can increase the risk of both undernutrition and obesity. Therefore, education on proper complementary feeding practices is essential to prevent nutritional problems in children.

Conclusion

The findings of this study indicate that exclusive breastfeeding has a statistically significant association with infant nutritional status, as evidenced by a Pearson Chi-Square value of 9.956 ($p = 0.019$). Infants who received exclusive breastfeeding were more likely to achieve optimal nutritional status compared to those who did not. Complementary feeding (MPASI) also showed a significant relationship with nutritional status (Pearson Chi-Square = 8.764; $p = 0.033$), although the strength of the association was weaker than that observed with exclusive breastfeeding. These results suggest that exclusive breastfeeding remains the dominant factor influencing infant nutritional outcomes during the first six months of life. Strengthening public health interventions that promote and support exclusive breastfeeding practices, alongside appropriate education regarding complementary feeding, is therefore critical for improving early childhood nutrition and preventing both undernutrition and overnutrition.

References

1. I Gusti Ayu Avinya Chintya Devi, Ni Kadek Elmy Saniathi, & Ni Putu Diah Witari. (2024). Hubungan pemberian ASI terhadap status gizi bayi usia 4–6 bulan di UPT Kesmas Sukawati I. Aesculapius Medical Journal, 4(1), 102–108. https://doi.org/10.22225/amj.4.1.2024.102-108
2. UNICEF. (2022). Pekan menyusui sedunia: UNICEF dan WHO serukan dukungan yang lebih besar terhadap pemberian ASI di Indonesia seiring penurunan tingkat menyusui selama pandemi COVID-19.
3. BPS. (2024). Persentase bayi usia kurang dari 6 bulan yang mendapatkan ASI eksklusif menurut provinsi (persen), 2024.

4. Riska Aulia, Andi Fajriansi, & Rahmatullah Muin. (2023). Eksklusif dan susu formula pada bayi usia 9–12 bulan. Jurnal Ilmiah Mahasiswa & Penelitian Keperawatan, 3, 38–45.
5. World Health Organization. (2023). Pemberian makanan pada bayi dan anak kecil.
6. World Health Organization. (2024). Joint child malnutrition estimates.
7. World Health Organization. (2023). Joint child malnutrition estimates.
8. Nur Fauziah Aguina Serana. (2025). Indonesia masih hadapi gizi buruk, saatnya peduli pada asupan yang tepat.
9. Pemerintah Provinsi Sumatera Utara. (2024). Prevalensi stunting di Sumut berhasil turun signifikan jadi 18,9%, Pj Gubernur optimis capa target 2024.
10. SSGI. (2024). Survei Status Gizi Indonesia 2024.
11. Direktorat Promosi Kesehatan dan Pemberdayaan. (2018). Apa itu MP-ASI? Apa pengaruhnya terhadap perkembangan bayi? Retrieved from https://promkes.kemkes.go.id/?p=8929
12. World Health Organization. (2020). Infant and young child feeding. Geneva: WHO.
13. Rahmawati, L., & Putri, A. (2020). Hubungan pemberian ASI eksklusif dengan status gizi anak usia 6–24 bulan di Yogyakarta. Jurnal Ilmu Kesehatan Anak, 12(2), 89–97.
14. Putri, A. R., Nugroho, D., & Sari, W. (2021). ASI eksklusif dan risiko gizi kurang pada anak usia balita. Jurnal Gizi Klinik Indonesia, 17(1), 55–62.
15. Ayu, D., Pratiwi, R., & Sari, M. (2022). Peran pemberian ASI terhadap pertumbuhan dan status gizi bayi. Jurnal Gizi dan Kesehatan Anak, 14(2), 115–123.
16. World Health Organization. (2020). Infant and young child feeding. Geneva: WHO.
17. Fitriani, A., Lestari, N., & Wulandari, S. (2019). Hubungan pola pemberian MPASI dengan status gizi anak usia 6–24 bulan. Jurnal Kesehatan Masyarakat Indonesia, 14(1), 45–52.
18. Sari, D., & Yuliana, F. (2021). Pengaruh pemberian MPASI dini terhadap status gizi balita di Surabaya. Jurnal Gizi dan Kesehatan Masyarakat, 9(2), 134–141.
19. Lestari, H., Putra, Y., & Andini, R. (2022). Ketepatan pemberian MPASI dan hubungannya dengan status gizi anak. Media Gizi dan Pangan, 29(3), 201–210.