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Analysis of Maternal Knowledge and Complementary Feeding Patterns as Risk Factors for Stunting in Children Aged 6-24 Months

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Abstract
Introduction: *Nutritional status during the critical period of 6–24 months relies heavily on appropriate Complementary Feeding (MP-ASI), a practice directly modulated by maternal health literacy.* ***Objective:*** *This study analyzed the correlation between maternal knowledge levels and complementary feeding patterns with the nutritional status of children aged 6–24 months in Central Lombok Regency.* ***Method:*** *This cross-sectional study involved 73 mothers selected via consecutive sampling in the Penujak Public Health Center area. Maternal knowledge and feeding patterns were assessed using validated questionnaires, while nutritional status (Length-for-Age) was derived from secondary data. Data were analyzed using the Spearman's rho test.* ***Result and Discussion:*** *Stunting prevalence was critically high at 57.5%. Most mothers (50.7%) had 'moderate' knowledge. Bivariate analysis revealed a significant positive correlation between maternal knowledge and nutritional status ($r=0.297$; $p=0.011$). Furthermore, a moderately strong correlation was found between complementary feeding patterns and nutritional status ($r=0.531$; $p<0.001$).* ***Conclusion:*** *Complementary feeding practices serve as a stronger determinant of nutritional status than knowledge alone. Interventions must shift from passive education to operational strategies, such as cooking demonstrations of local menus and the reactivation of Toddler Mothers' Classes (Kelas Ibu Balita) to improve practical feeding skills.*

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Introduction

The quality of a nation's human resources is largely determined by its population's nutritional status, the foundation of which is built during childhood (Naktiany et al., 2022). Nutritional status is the bodily condition resulting from the balance between nutrient intake and utilization. Failure to achieve this balance during critical growth periods leads to malnutrition, with stunting (short stature for age) being the most detrimental manifestation of chronic malnutrition (Muhanifah et al., 2025). Stunting reflects a failure in linear growth with irreversible long-term impacts, including impaired cognitive development and reduced economic productivity in adulthood (Re et al., 2013).

Globally, 148.1 million children under five suffer from stunting (WHO, 2023). In Indonesia, the prevalence of stunting remains a serious public health problem, standing at 29.8% in 2024 (Kemenkes RI, 2025). his condition demands interventions focused on the First 1000 Days of Life (HPK), particularly the 6-24 month age range. This period is a window of opportunity and the most critical nutritional transition. At 6 months, breast milk alone is no longer sufficient to meet nutritional needs, requiring the introduction of complementary foods (MP-ASI) (Rustiaty & Farlikhatun, 2023).

However, the transition to complementary feeding is often fraught with challenges. Ideally, complementary feeding must satisfy core principles: timeliness, adequacy, safety, and appropriateness. Deviations from these principles are the primary drivers of growth faltering in toddlers. In many communities, complementary foods are often introduced too early due to misconceptions about breast milk sufficiency, or conversely, introduced too late (Norberta & Rohmawati, 2022). Furthermore, the quality of MP-ASI often lacks protein and micronutrient density, relying heavily on rice-based porridge with minimal animal protein sources, which fails to support rapid linear growth (Mekonen et al., 2024).

These inappropriate practices are deeply rooted in maternal health literacy. Maternal knowledge serves as the cognitive foundation influencing attitudes and skills in child feeding (Muhanifah et al., 2025). Mothers with adequate nutritional knowledge are better equipped to comprehend food diversity and hygiene, which translates into better caregiving (Widad, 2024). Research consistently shows that low maternal knowledge strongly correlates with improper feeding practices. Common errors include introducing complementary foods too early (before 6 months) (Hasibuan & Boangmanalu, 2023), as well as intake that is inadequate in both quality and quantity (Rahmania et al., 2023). Research in Indonesia also confirms that specific maternal nutritional knowledge, more than just formal education, is the dominant factor correlated with feeding practices (Harahap et al., 2024).

This issue is particularly relevant in Central Lombok Regency, specifically in the working area of Penujak Public Health Center. Local health data indicates a high burden of malnutrition, with 293 reported stunting cases and 156 underweight cases. Preliminary observations in this area suggest a prevalence of suboptimal feeding practices, such as the administration of clear broth without meat or the early introduction of solid foods, driven by a lack of maternal understanding rather than solely economic constraints. Based on this urgency, this study aims to analyze the relationship between maternal knowledge levels and complementary feeding patterns with stunting incidence in children aged 6–24 months.

Method

This study used an observational quantitative design with a cross-sectional approach. The research was conducted from July to September 2024 in the working area of the Penujak Public Health Center, Praya Barat District, Central Lombok.

The study population was all mothers with children aged 6-24 months (N=147). Samples were taken using a consecutive sampling technique from all mothers who met the inclusion criteria (mothers who personally care for their child and were willing to participate) and exclusion criteria (children with specific medical conditions or illiterate mothers), resulting in a final sample of 73 respondents.

The independent variables were maternal knowledge level and complementary feeding patterns. Knowledge was measured using a modified questionnaire from (Alfiana, 2017) (12 True/False questions) with categories Good (>70%), Moderate (50-70%), and Poor (<50%). Complementary feeding patterns were measured using a modified Child Feeding Questionnaire (CFQ) from (NUFUS, 2022)(15 Likert-scale questions) assessing the type, amount, and schedule of feeding, with categories Appropriate (70-100%), Fairly Appropriate (55-70%), and Inappropriate (<55%).

The dependent variable was nutritional status (Length-for-Age/L/A index). Nutritional status data were secondary data from the E-PPGM (Electronic-Community-Based Nutrition Recording and Reporting) records of the Penujak Public Health Center (as of June 2024). Nutritional status was categorized as Normal, Short (Stunted), and Very Short (Severely Stunted).

Data analysis was performed univariately (frequency distribution) and bivariately. The Kolmogorov-Smirnov normality test showed the data were not normally distributed ($p < 0.05$), thus the hypothesis test for correlation between variables used the non-parametric Spearman's rho test.

Result and Discussion

Respondent Characteristics Of the 73 respondent mothers, the largest demographic groups were age 21-25 years (44.4%), had a high school education (70.8%), and were homemakers (54.2%). Child characteristics (n=73) showed 51.4% were female and 56.9% were in the 11-24 month age range.

1. Univariate Analysis

The frequency distribution of the three main study variables is presented below. The majority of mothers (50.7%) had a knowledge level in the Moderate category (Table 1). Respondent's complementary feeding patterns were distributed, with the largest proportion (49.3%) falling into the Appropriate category (Table 2).

The most prominent finding was the nutritional status data (Table 3), where only 42.5% of children had a Normal nutritional status. The majority (57.5%) were stunted, consisting of 41.1% Short (Stunted) and 16.4% Very Short (Severely Stunted).

Table 1
Distribution of Maternal Knowledge Levels

Maternal Knowledge Level	N	Percentage (%)
Good (> 70%)	25	34.2
Moderate (50-70%)	37	50.7
Poor (<50%)	11	15.1
Total	73	100.0

(Source: Primary Data Processed, 2024)

Table 2
Overview of Complementary Feeding Patterns

Complementary Feeding Pattern	N	Percentage (%)
Appropriate (70-100%)	36	49.3
Fairly Appropriate (55-70%)	26	35.6
Inappropriate (<50%)	11	15.1
Total	73	100.0

(Source: Primary Data Processed, 2024)

Table 3
Frequency of Nutritional Status Based on L/A (Length-for-Age)

Nutritional Status	N	Percentage (%)
Normal	31	42.5
Short (Stunted)	30	41.1
Very Short (Severely Stunted)	12	16.4
Total	73	100.0

(Source: E-PPGM Secondary Data, 2024)

2. Bivariate Analysis

Relationship Between Maternal Knowledge Level and Nutritional Status

The Spearman's rho correlation test results (Table 4) show a significance value of $p = 0.011$ ($p < 0.05$) and a correlation coefficient (r) = 0.297. These results confirm a statistically significant positive relationship between maternal knowledge level and child's nutritional status (L/A), with a weak correlation strength.

Table 4
Correlation Maternal Knowledge Level and Nutritional Status

			Maternal Knowledge Level	Nutritional Status
Spearman's rho	**Maternal Knowledge Level**	Correlation Coefficient	1.000	.297*
		Sig. (2-tailed)	.	.011
		N	73	73
	Nutritional Status	Correlation coefficient	.297*	1.000
		Sig.(2-tailed)	.011	.
		N	73	73

Correlation is significant at the 0.05 level (2-tailed).

This finding is consistent with previous research, which also found a significant correlation between maternal nutritional knowledge and child nutritional status (Nurhaida et al., 2024). Knowledge is the cognitive domain that underlies behavior (Ertiana & Zain, 2023). Mothers with good nutritional knowledge will be better able to understand the importance of food variety, food safety, and nutritional adequacy, which are then applied in feeding (Widad, 2024). However, the fact that 50.7% of mothers had only Moderate knowledge despite 70.8% having completed high school suggests a discrepancy between formal education and specific nutritional literacy.

Relationship Between Complementary Feeding Patterns and Nutritional Status

The Spearman's rho correlation test results (Table 5) show a significance value of $p = 0.000$ ($p < 0.05$) and a correlation coefficient (r) = 0.531. These results indicate a statistically significant positive relationship with moderate correlation strength between complementary feeding patterns and the child's nutritional status (L/A).

Table 5
Correlation Complementary Feeding Patterns and Nutritional Status

			Complementary Feeding Patterns	Nutritional Status
Spearman's rho	**Complementary Feeding Patterns**	Correlation Coefficient	1.000	.531**
		Sig. (2-tailed)	.	.000
		N	73	73
	Nutritional Status	Correlation coefficient	.531**	1.000
		Sig.(2-tailed)	.000	.
		N	73	73

Correlation is significant at the 0.05 level (2-tailed)

This relationship is logically stronger (r=0.531) than knowledge (r=0.297), as the complementary feeding pattern is a proximal (direct) determinant of the child's nutritional intake. The nutritional status of children aged 6-24 months is highly sensitive to feeding practices. Previous research also found that untimely complementary feeding is a risk factor for stunting (Norberta & Rohmawati, 2022b). Errors in complementary feeding practices, whether too early or too late, as well as a lack of food diversity, lead to inadequate nutritional intake. As emphasized by Widani (2025), good knowledge and attitudes must be translated into real actions (skills) in preparing complementary foods to impact nutritional status (Widani et al., 2025).

Effective interventions must be able to transform cognitive knowledge into practical skills. Based on these findings, it is recommended to implement specific operational strategies at the community level. First, the revitalization of the Toddler Mothers' Classes (*Kelas Ibu Balita*) should focus on interactive sessions rather than didactic lectures. Second, the Healthy Kitchen to Overcome Stunting (*Dapur Sehat Atasi Stunting/DAHSAT*) program needs to be intensified by utilizing local food ingredients (pangan lokal) that are affordable and accessible. Cooking demonstrations led by trained cadres can help mothers translate nutrition theory into appetizing daily menus for

children. Additionally, routine monitoring of stunting families based on E-PPGM data must be followed by targeted home visits to ensure adherence to correct feeding practices.

The researcher acknowledges several limitations in this study design. First, the cross-sectional design cannot prove cause-and-effect relationships; this study only shows a correlation. Second, other important confounding factors such as family economic status (food purchasing power), environmental sanitation, and history of infectious diseases were not measured in this study, even though these factors are also known to contribute strongly to child nutritional status.

Conclusion

This study identified a critically high prevalence of stunting (57.5%) among children aged 6–24 months in the Penujak Public Health Center area. Statistical analysis confirmed that both maternal knowledge ($p=0.011$) and complementary feeding patterns ($p<0.001$) are significant determinants of nutritional status. Notably, feeding patterns exhibited a stronger correlation, highlighting the paramount importance of practical application over mere theoretical knowledge. Recommendations include the intensification of hands-on nutritional education programs, specifically through the DAHSAT program and cooking demonstrations, to enhance maternal skills in preparing age-appropriate complementary foods using local resources.

Reference

Alfiana, N. (2017). *Hubungan Antara Pengetahuan Ibu Dan Pola Pemberian Makanan Pendamping Asi Dengan Status Gizi Anak* [Undergraduate, Universitas Muhammadiyah Semarang]. http://repository.unimus.ac.id/403/

Ertiana, D., & Zain, S. B. (2023). Pendidikan Dan Pengetahuan Ibu Tentang Gizi Berhubungan Dengan Status Gizi Balita. *JURNAL ILKES (Jurnal Ilmu Kesehatan)*, *14*(1), 96–108. https://doi.org/10.35966/ilkes.v14i1.279

Harahap, I. M., Fajri, N., & Nizami, N. H. (2024). Hubungan Perilaku Orang Tua dalam Praktik Pemberian Makan dan Stunting pada Balita (Usia 2-5 Tahun). *Jurnal Ilmiah Permas: Jurnal Ilmiah STIKES Kendal*, *14*(1), 245-252.

Hasibuan, R., & Boangmanalu, W. (2023). Pengetahuan, Dukungan Suami, dan Peran Tenaga Kesehatan Terhadap Pemberian ASI Eksklusif. *Media Informasi*, *19*(1), 55–61. https://doi.org/10.37160/bmi.v19i1.164

Kemenkes RI. (2025). *Survei Status Gizi Indonesia (SSGI) 2024*.

Mekonen, E. G., Zegeye, A. F., & Workneh, B. S. (2024). Complementary feeding practices and associated factors among mothers of children aged 6 to 23 months in Sub-saharan African countries: A multilevel analysis of the recent demographic and health survey. *BMC Public Health*, *24*, 115. https://doi.org/10.1186/s12889-023-17629-w

Muhanifah, L., Wirakhmi, I. N., & Apriliyani, I. (2025). Hubungan Pengetahuan Ibu tentang Gizi dengan Status Gizi pada Balita. *Jurnal Ilmiah Permas: Jurnal Ilmiah STIKES Kendal*, *15*(1), 43–50. https://doi.org/10.32583/pskm.v15i1.2437

Naktiany, W. C., Yunita, L., Rahmiati, B. F., Lastyana, W., & Jauhari, M. T. (2022). Hubungan Tingkat Pengetahuan Ibu Tentang Gizi Dengan Status Gizi Balita. *Nutriology : Jurnal Pangan, Gizi, Kesehatan*, *3*(2), 57–62. https://doi.org/10.30812/nutriology.v3i2.2468

Norberta, J., & Rohmawati, L. (2022). Korelasi Pengetahuan Ibu Terhadap Pemberian Makanan Pendamping Air Susu Ibu dengan Pendidikan Ibu dan Status Nutrisi Bayi usia 6-24 Bulan. *Sari Pediatri*, *23*(6), 369–373. https://doi.org/10.14238/sp23.6.2022.369-73

Cholishotun, N. (2022). *HUBUNGAN POLA PEMBERIAN MAKANAN PENDAMPING ASI (MP-ASI) DENGAN STATUS GIZI PADA BAYI USIA 6-12 BULAN DI PUSKESMAS BULAK BANTENG SURABAYA* (Doctoral dissertation, STIKES HANG TUAH SURABAYA).

Nurhaida, N., Suri, M., Saputri, M., Aulia, A., & Muslim, F. O. (2024). Hubungan Tingkat Pengetahuan Ibu Dan Pendapatan Keluarga Dengan Kejadian Stunting Pada Balita Usia 24-59 Bulan Di Kelurahan X Tahun 2024. *Menara Ilmu : Jurnal Penelitian Dan Kajian Ilmiah*, *18*(1), 83–89.

Rahmania, S.-, Habibi, A.-, & Rayatin, L. (2023). Pengetahuan Ibu Mengenai Makanan Pendamping Air Susu Ibu (Mpasi) Dengan Status Gizi Pada Anak Usia 6-24 Bulan Di Posyandu Melati Iv Kota Tangerang. *Jurnal JKFT*, *7*(2), 129–137. https://doi.org/10.31000/jkft.v7i2.7014

Re, B., Cg, V., Sp, W., Za, B., P, C., M, de O., M, E., S, G.-M., J, K., R, M., & R, U. (2013). Maternal and child undernutrition and overweight in low-income and middle-income countries. *Lancet (London, England)*, *382*(9890). https://doi.org/10.1016/S0140-6736(13)60937-X

Rustiaty, R., & Farlikhatun, L. (2023). Pengaruh Pemberian Mp-Asi Dini Terhadap Tumbuh Kembang Anak Usia 6-18 Bulan Di Desa Cinta Kasih. *Jurnal Kesehatan Medika Saintika*, *14*(2), 518–525. https://doi.org/10.30633/jkms.v14i2.2172

WHO. (2023). *Levels and trends in child malnutrition: UNICEF/WHO/World Bank Group joint child malnutrition estimates: key findings of the 2023 edition*. https://www.who.int/publications/i/item/9789240073791

Widad, S. (2024). Hubungan Tingkat Pengetahuan Ibu Dengan Status Gizi Balita Usia 6-59 Bulan Di Posyandu Desa Pandean Probolinggo. *Health Research Journal*, *2*(1, Maret), 72–80.

Widani, S., Siregar, S. A., Anita, T., Ramadhani, T., Nasution, T. A., & Wahyuni, W. S. (2025). Hubungan Pengetahuan dan Sikap Ibu Tentang Mp-Asi dengan Pemberian Mp-Asi Pada Bayi 6-24 Bulan di Praktik Bidan Mandiri (PMB) Sri Diana Medan. *Malahayati Nursing Journal*, *7*(3), 1361–1371. https://doi.org/10.33024/mnj.v7i3.18726