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## MATERNAL KNOWLEDGE OF COMPLEMENTARY FEEDING AND ITS RELATIONSHIP WITH INFANT NUTRITIONAL STATUS IN A STUNTING LOCUS VILLAGE

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### ABSTRACT

**Background:** Nutritional problems in infants can negatively affect growth and development, including the risk of stunting. Maternal knowledge plays an important role in shaping feeding practices, yet many mothers still lack an adequate understanding of proper complementary feeding. This study aimed to examine the relationship between maternal knowledge of complementary feeding and infant nutritional status in a village with the highest stunting prevalence in Pamekasan Regency.

**Methods:** A correlational analytic study design was employed, involving 54 mothers with infants aged 6–23 months selected through total sampling. Maternal knowledge was assessed using a closed-ended multiple-choice questionnaire, while infant nutritional status was evaluated using weight-for-age (WFA) Z-scores calculated with WHO Anthro version 3.2.2. Data were analyzed using the Spearman rank correlation test.

**Results:** The results showed a weak, non-significant negative correlation ( $r = -0.212$ ;  $\rho = 0.124$ ).

**Conclusion:** Although no significant association was found, maternal education on complementary feeding should be strengthened. Nutrition programs should also address broader determinants, such as food access, caregiving practices, and health service utilization, to improve infant nutritional outcomes in stunting areas.

**Keywords:** complementary feeding, infant nutritional status, maternal knowledge, stunting

### INTRODUCTION

Growth faltering in early childhood is a progressive process characterized by a slowdown in weight gain, followed by impaired linear growth, reflecting prolonged inadequate nutrient intake and recurrent infections. This condition commonly begins during the first 1,000 days of life when infants transition from exclusive breastfeeding to complementary feeding and become more vulnerable to nutritional deficits. Inappropriate complementary feeding practices, including delayed introduction, inadequate dietary diversity, and insufficient feeding frequency, contribute to nutrient gaps that disrupt normal growth trajectories and increase the risk of persistent growth failure. Therefore, ensuring timely and nutritionally adequate complementary feeding is essential to support optimal growth and prevent continued growth faltering in children under two years of age (Nabiella et al., 2025; Nataningtyas et al., 2024). When growth faltering persists without timely intervention, disturbances in weight gain eventually affect skeletal growth, leading to permanent linear growth retardation, manifested as stunting. Therefore, growth faltering should be recognized as a precursor and early warning sign of stunting, highlighting the importance of early detection and nutritional intervention to prevent

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chronic growth failure in children under two years of age (Kemenkes RI, 2021; S. A. Putri et al., 2025)

According to the World Health Organization (2023) An estimated 148.1 million children under five years of age were affected by stunting globally in 2022. National data from the 2023 Indonesian Nutrition Status Survey (SSGI), conducted by the Ministry of Health of Indonesia, reported a stunting prevalence of 21.6% among Indonesian children (Kemenkes RI, 2022). At the regional level, the East Java Provincial Health Office documented a stunting prevalence of 17.7% in 2023, reflecting a decline from 19.2% in the previous year (Dinkes Jatim, 2023). Furthermore, data from Dinas Kesehatan Pamekasan in 2024 identified 19 villages or subdistricts as stunting locus areas, with the highest prevalence reaching 47.89% in Gugul Village, Tlanakan Subdistrict, within the service coverage of Tlanakan Primary Health Center.

Maternal attitudes and behaviors in fulfilling infants' nutritional needs are strongly influenced by their level of knowledge, which can shape feeding practices and overall child health (Rakotomanana et al., 2020). Mothers with adequate knowledge of breastfeeding, complementary feeding, dietary diversity, and hygiene practices are more likely to adopt appropriate nutritional behaviors that support optimal growth and prevent nutritional problems during early childhood. Conversely, limited knowledge may lead to inappropriate feeding practices, such as early or delayed introduction of complementary foods, low dietary diversity, and inadequate feeding frequency, which can contribute to growth faltering and other forms of undernutrition. Therefore, strengthening maternal knowledge through nutrition education is essential to improve caregiving practices and promote better nutritional outcomes among infants and young children (Ginting & Br Hutabarat, 2025; Waqiyah et al., 2023)

Based on the foregoing discussion, effective strategies are required to address nutritional problems among infants. Enhancing maternal knowledge regarding the importance of infant nutritional status represents a key approach to reducing nutrition-related problems through community-based health services such as *Posyandu*. This is supported by findings from Kusfriadhi et al., (2019) which demonstrated improvements in maternal knowledge and caregiving behaviors following a six-week family mentoring intervention, resulting in increased child weight. Accordingly, *Posyandu* can serve as an effective platform for educating mothers on appropriate complementary feeding practices to improve child nutritional status. Therefore, this study aims to examine the relationship between maternal knowledge of complementary feeding and the nutritional status of infants in a stunting locus village.

## RESEARCH METHOD

This study employed a correlational analytic design to examine the association between maternal knowledge of complementary feeding and infant nutritional status. The research was conducted in Gugul Village, Tlanakan Subdistrict, Pamekasan Regency, within the service area of Tlanakan Primary Health Center. The study population comprised mothers with infants aged 6–23 months residing in Gugul Village. A total sampling approach was used, in which all eligible mother–infant pairs meeting the inclusion criteria were recruited as study participants.

Maternal knowledge regarding complementary feeding was measured using a structured, closed-ended multiple-choice questionnaire. The questionnaire underwent psychometric testing prior to data collection. Construct validity was evaluated using the Pearson product–moment correlation test. The validity analysis indicated that 25 items were valid, with all item–total correlation coefficients exceeding the critical value ( $r$ -calculated >  $r$ -table = 0.3610) (Sugiyono, 2022). Only valid items were retained for

further analysis. Instrument reliability was assessed using Cronbach's alpha coefficient (Ghozali, 2018). The reliability test produced a Cronbach's alpha value of 0.711, which exceeded the minimum acceptable threshold of 0.60, indicating satisfactory internal consistency of the instrument (Ghozali, 2018). Knowledge levels were classified according to the criteria proposed by Notoatmodjo: high (76–100%), moderate (56–75%), and low (<56%) (Notoatmodjo, 2012).

Infant nutritional status was determined through standardized body weight measurements and recorded using an observational checklist, applying the weight-for-age (WFA) indicator. Nutritional status Z-scores were calculated using the WHO Anthro software version 3.2.2. Data were processed using Microsoft Excel 2013 and analyzed using SPSS software. Data management procedures included editing, coding, scoring, tabulation, and interpretation. The Spearman rank correlation test was performed to assess the relationship between maternal knowledge of complementary feeding and infant nutritional status. Statistical significance was determined at a p-value threshold of < 0.05. This study has received ethical approval from the Ethics Committee of Universitas Kusuma Husada Surakarta, with ethical clearance number 2527/UKH.L.02/EC/I/2025.

## RESULTS

Table 1. Univariate Analysis

Variable	Frequency (n)	Percentage (%)
Maternal Education		
Elementary school	6	11
Junior high school	32	59
Senior high school	14	26
College	2	4
Maternal occupation		
Unemployed	29	53
Entrepreneur	9	17
Farmer/ Fisher	16	30
Maternal Age		
18 – 35	36	67
>35	18	33
Nutritional information		
Social media	16	30
Health worker	28	52
Peer	10	18
History of infection		
Diarrhea	5	9
No history of infection	49	91
Maternal knowledge		
High	34	7
Medium	16	30
Low	4	63
Infant Nutritional Status		
Normal	31	57
At risk of overnutrition	23	43

The univariate analysis showed that most mothers had a junior high school education or equivalent, accounting for 32 respondents (59%). More than half of the mothers were unemployed, with 29 respondents (54%) reporting no formal occupation. The majority of mothers were within the reproductive age range of 18–35 years, comprising 36 respondents (67%). Regarding sources of health and nutrition information, 28 mothers

(52%) reported obtaining information primarily from healthcare professionals. In addition, most infants included in the study had no history of infectious diseases, with 49 infants (91%) reported as infection-free. Furthermore, a substantial proportion of mothers demonstrated good knowledge levels, totaling 34 respondents (63%). In terms of nutritional status, more than half of the infants (31, 57%) were classified as having normal nutritional status.

Table 2. Maternal Knowledge Nutritional Status Crosstabulation

			Nutritional status		
			normal	At risk of overnutrition	Total
Maternal Knowledge	Low	Count	1	3	4
		% of Total	1,9%	5,6%	7,4%
	Medium	Count	8	8	16
		% of Total	14,8%	14,8%	29,6%
	High	Count	22	12	34
		% of Total	40,7%	22,2%	63,0%
Total	Count	31	23	54	
	% of Total	57,4%	42,6%	100,0%	

Based on the cross-tabulation between maternal knowledge and the nutritional status of children under five, nearly half of mothers with good knowledge had children classified as at risk of overnutrition, totaling 12 (22.2%) respondents.

Table 3. Spearman's rho rank test results

Variable		Maternal Knowledge	Infant Nutritional Status
Maternal Knowledge	Correlation Coefficient	1,000	-,212
	Sig. (2-tailed)	.	,124
	N	54	54
Infant Nutritional Status	Correlation Coefficient	-,212	1,000
	Sig. (2-tailed)	,124	.
	N	54	54

The Spearman rank correlation analysis revealed a correlation coefficient ( $r_{xy}$ ) of  $-0.212$ , indicating a weak negative association between maternal knowledge and infant nutritional status. This suggests that higher maternal knowledge was associated with a slightly lower infant nutritional status; however, the magnitude of this relationship was minimal. Furthermore, the p-value ( $p = 0.124$ ) exceeded the 0.05 significance threshold, indicating that the observed correlation was not statistically significant. Therefore, these findings indicate that maternal knowledge was not significantly associated with infant nutritional status in the study population.

## DISCUSSION

The findings of this study indicate that there is no statistically significant association between maternal knowledge of complementary feeding practices and infant nutritional status in the stunting locus village. This result aligns with prior evidence reporting no significant relationship between maternal knowledge and the nutritional status of children aged 6–24 months in Simolawang Village (N. F. Putri et al., 2023), as well as findings from Tатели Primary Health Care service area showing no association between maternal nutrition knowledge and child weight-for-age status (Marsita S. L., 2019). These findings suggest that although maternal knowledge is an important prerequisite, it may not be

sufficient to directly influence infant nutritional status in real-world settings (World Health Organization, 2023b).

The lack of a significant relationship may be explained by the well-documented gap between knowledge and actual feeding practices, whereby mothers with adequate nutritional knowledge may still face barriers to implementing optimal complementary feeding behaviors. Structural constraints such as limited household income, food insecurity, maternal workload, and restricted access to diverse and nutritious foods can hinder the translation of knowledge into practice, thereby weakening the potential impact of maternal knowledge on child nutritional outcomes (Keats et al., 2019). Furthermore, the predominance of unemployed mothers in this study may reflect financial dependency and limited household resources, which can influence food purchasing power and ultimately affect infant dietary quality, regardless of maternal knowledge levels (Sahoo et al., 2024).

In this study, nearly half of the toddler respondents were categorized as being at risk of overnutrition, and nearly half of the mothers with good knowledge had children classified as at risk of overnutrition. This finding aligns with previous evidence indicating that mothers with higher levels of knowledge about complementary feeding tend to encourage infants to consume the foods they have prepared, based on the assumption that these foods are beneficial for growth and health. However, in practical implementation, mothers often fail to adequately consider whether the portion sizes provided correspond to the infants' actual nutritional needs, which may result in excessive caloric intake. If such feeding behaviors continue over time, they may contribute to an increased risk of overnutrition among infants. Consequently, possessing good nutritional knowledge alone is insufficient to ensure optimal child nutritional status, as additional factors such as maternal attitudes, practical skills, and self-confidence play a crucial role in shaping appropriate feeding practices. Moreover, maternal economic capacity to procure nutritious and high-quality food ingredients represents an important determinant in meeting infants' nutritional requirements (Kemenkes RI, 2024; Rossa Rahmadia & Mardiyah, 2022).

In contrast, the results of this study are inconsistent with those reported by Ismiyanti et al., who found a statistically significant positive association between maternal knowledge of complementary feeding and the nutritional status of infants aged 6–24 months in Medan Belawan Primary Health Care. Their findings indicated that almost all mothers with high levels of knowledge had infants with a favorable nutritional status, suggesting that maternal knowledge may exert a stronger influence in environments with fewer structural barriers and more robust health and nutrition support systems. These divergent results underscore the critical role of contextual factors such as socioeconomic circumstances, availability of health services, and culturally embedded feeding practices in moderating the relationship between maternal knowledge and infant nutritional outcomes (Ismiyanti et al., 2023; UNICEF, 2020; WHO, 2023).

These contrasting findings may be attributed to differences in study settings, population characteristics, and contextual determinants that influence how maternal knowledge translates into feeding practices and child nutritional outcomes. In the present study, structural constraints such as limited household income, food accessibility, maternal employment status, and caregiving workload may have restricted mothers' ability to apply their nutritional knowledge effectively, thereby weakening its potential impact on infant nutritional status. Evidence suggests that broader social and cultural contexts—including household income constraints, caregiving norms, and culturally embedded feeding beliefs—strongly shape maternal feeding behaviors beyond individual knowledge levels (Chakona, 2020). Furthermore, environmental factors such as

neighborhood food availability and household food environments have been shown to modify the relationship between infant feeding practices and childhood nutritional outcomes, highlighting the role of structural and environmental determinants in shaping infant nutrition (Anderson et al., 2024). In addition, maternal decision-making autonomy and family power dynamics have been identified as key mediators influencing whether maternal knowledge translates into optimal feeding practices, indicating that knowledge alone may be insufficient without supportive social and household conditions (Chen et al., 2024).

Therefore, these findings indicate that maternal knowledge was not significantly associated with infant nutritional status in the study population. From a practical perspective, this suggests that improving knowledge alone may be insufficient to produce measurable changes in nutritional outcomes, as child nutrition is also influenced by caregiving practices, household food availability, economic constraints, and environmental health conditions. Consequently, interventions should not rely solely on educational strategies but also incorporate behavioral support and contextual factors that enable mothers to translate knowledge into appropriate feeding practices.

## **CONCLUSION**

This study found no statistically significant association between maternal knowledge of complementary feeding and infant nutritional status in the study area. These findings indicate that maternal knowledge alone may not be sufficient to ensure optimal nutritional outcomes among infants, particularly in stunting-prone communities. The results underscore the need for comprehensive interventions that address not only knowledge, but also socioeconomic conditions, caregiving practices, food security, and access to quality health and nutrition services. At the primary health care level, Puskesmas should strengthen growth monitoring and nutrition counseling by providing practical training on complementary feeding aligned with World Health Organization (WHO) guidelines. This includes guidance on age-appropriate portion sizes, feeding frequency, food texture, and balanced meal planning. At the village level, local governments in stunting locus areas should promote multisectoral collaboration among health workers, community leaders, women's groups, and local cadres to strengthen sustainable nutrition programs. Key strategies include integrating nutrition education into Posyandu services, supporting household food security through home gardening, and providing targeted assistance for vulnerable families. Ongoing training for Posyandu cadres and community health volunteers is also essential to ensure effective nutrition communication and timely follow-up for at-risk infants.

## **RECOMMENDATIONS**

Future research should examine broader factors influencing infant nutritional status, such as socioeconomic conditions, feeding practices, and household food security. Longitudinal studies and intervention-based research are recommended to understand causal pathways better and assess the effectiveness of complementary feeding programs, particularly in stunting-prone communities. Expanding study populations across diverse regions is also suggested to improve the generalizability of findings.

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