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Association of maternal knowledge and attitudes with complementary feeding practices among mothers of children aged 6–24 months

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Abstract

Background: Appropriate complementary feeding supports child growth and development. Maternal knowledge and attitudes may be associated with feeding practices.
Purpose: To analyse the associations of maternal knowledge and attitudes with complementary feeding practices.
Method: This quantitative cross-sectional study involved 195 mothers of children aged 6–24 months, recruited through consecutive sampling. Data were collected using questionnaires assessing maternal knowledge, attitudes, and feeding practices. The instrument had a Cronbach's alpha of 0.984. Associations were analysed using the Chi-square test, with statistical significance set at $p < 0.05$.
Results: Most respondents were aged 20–35 years (72.3%), had completed senior high school (47.7%), were housewives (44.1%), and had an income at or above the regional minimum wage (72.3%). Most mothers had good knowledge (71.8%) and positive attitudes (75.4%), while 74.9% practised appropriate complementary feeding. Maternal knowledge and attitudes were each significantly associated with complementary feeding practices (both $p = 0.001$).
Conclusion: Maternal knowledge and attitudes were associated with complementary feeding practices. Nutrition education and counselling may support informed feeding decisions.

Keywords: Complementary Feeding; Feeding Practices; Maternal Attitudes; Maternal Knowledge.

INTRODUCTION

The first 1,000 days of life represent a critical period for child growth and development. Adequate nutrition during this period is essential because nutritional deficiencies can affect children's growth, health, and long-term development (World Food Programme, 2024; World Health Organization, 2024). Appropriate infant and young child feeding practices are important components of efforts to prevent malnutrition and support optimal development (World Health Organization, 2021; UNICEF, 2017; World Health Organization, 2023). Complementary feeding from six months of age should provide adequate dietary diversity, age-appropriate meal frequency and food consistency, and safe food preparation while breastfeeding continues (Ministry of Health of the Republic of Indonesia, 2022; World Health Organization, 2021).

Appropriate complementary feeding requires mothers to make daily decisions regarding food selection, preparation, quantity, frequency, and suitability for their children's developmental needs. These decisions may be associated with maternal knowledge and attitudes, as well as family practices, cultural beliefs, household resources, and access to reliable health information. Maternal knowledge can support understanding of recommended feeding practices, whereas attitudes may influence how mothers perceive and respond to nutritional guidance. However, adequate knowledge and favourable attitudes do not necessarily translate into appropriate feeding practices because caregiving decisions are shaped by the social and environmental conditions in

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which mothers care for their children. Previous studies have examined maternal knowledge, attitudes, and complementary feeding practices across different populations, highlighting the importance of understanding these factors within their respective contexts (Berisha et al., 2017; Bimpong et al., 2020; Shrestha et al., 2020).

Complementary feeding is also part of the broader psychosocial context of maternal caregiving. Mothers may navigate family expectations, established food-related beliefs, differing advice from relatives, and information obtained from healthcare professionals and digital media. These circumstances may influence how mothers interpret nutritional recommendations and make everyday feeding decisions. Understanding maternal knowledge and attitudes is therefore relevant not only to nutritional counselling but also to understanding the beliefs and social influences surrounding caregiving behaviour. Nevertheless, the relationship between these factors should not be interpreted as evidence of maternal psychological distress or a mental health condition unless such outcomes are assessed directly. Previous research has explored complementary feeding practices in relation to maternal and household factors, dietary adequacy, and child nutritional outcomes, providing a basis for further investigation of the factors associated with feeding practices in specific community settings (Bimpong et al., 2020; Rakotomanana et al., 2020; Jalil et al., 2024; Alfezzy & Aljehany, 2026).

Despite the growing attention to maternal knowledge, attitudes, and feeding behaviour, evidence regarding their associations in the working area of Samalantan Community Health Center, Bengkayang Regency, remains limited. Understanding these associations may help healthcare professionals identify areas in which mothers require clearer information and more appropriate support when making complementary feeding decisions. Integrated Service Posts and community health centers provide opportunities to deliver nutrition education and counselling that address age-appropriate food selection, meal frequency, dietary diversity, and food safety. Involving family members and community health cadres may also help ensure that guidance is relevant to household practices and the circumstances surrounding maternal caregiving (Ministry of Health of the Republic of Indonesia, 2022; World Health Organization, 2021; UNICEF, 2017).

RESEARCH METHOD

This quantitative study employed a cross-sectional design to examine the associations of maternal knowledge and attitudes with complementary feeding practices among mothers of children aged 6–24 months. The study was conducted in the working area of Samalantan Community Health Center, Samalantan District, Bengkayang Regency, Indonesia, from February to June 2026. The study population comprised mothers of children aged 6–24 months residing in the service area. A total of 195 participants were recruited using consecutive sampling. Eligible participants were mothers who attended an Integrated Service Post with their children, were willing to participate, and could read and write in Indonesian. Mothers of children requiring special diets and those who submitted incomplete questionnaires were excluded.

Data were collected using a structured questionnaire consisting of 19 items: seven assessing maternal knowledge, seven assessing maternal attitudes, and five assessing complementary feeding practices. The questionnaire was developed with reference to infant and young child feeding indicators and recommendations from the World Health Organization and the United Nations Children's Fund (WHO & UNICEF, 2021). Corrected item-total correlation coefficients ranged from 0.766 to 0.989, and all 19 items met the study's validity criteria. The reported Cronbach's alpha coefficient was 0.984. This coefficient was reported for the set of items to which it was applied; separate reliability estimates for the knowledge, attitude, and practice subscales were not available. Maternal knowledge was classified as good when 76–100% of answers were correct and poor when the score was below 76%. Maternal attitudes were classified as positive when supportive responses accounted for 76–100% of the score and negative when the score was below 76%. Complementary feeding practices were classified as appropriate when all specified indicators were fulfilled and inappropriate when one or more indicators were not fulfilled. These classifications followed the scoring guidelines established for the study questionnaire.

Univariate analysis was used to describe respondent characteristics and the distributions of maternal knowledge, attitudes, and complementary feeding practices. Bivariate analysis using the Chi-square test was performed to examine the association between maternal knowledge and complementary feeding practices and the association between maternal attitudes and complementary feeding practices. Statistical significance was set at $\alpha = 0.05$.

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RESEARCH RESULTS

Table 1. Characteristics of Respondent (N= 195)

Variable	Results	P-Value
Age (n/%)(Mean±SD)(Range)(Year)	**(28.25 ± 5.64)(18-40)**	
<20	20/10.3	
20–34	141/72.3	
≥35	34/17.4	
Education (n/%)		
Not in School	17/8.7	
Elementary School	25/12.8	
Junior High School	39/20.0	
Senior High School	93/47.7	
University	21/10.8	
Occupation (n/%)		
Housewife	86/44.1	
Farmer	52/26.7	
Laborer	23/11.8	
Self-employed	19/9.7	
Civil servant/military/police	15/7.7	
Income (n/%)		
< minimum wage	54/27.7	
≥ minimum wage	141/72.3	
Number of Children (n/%)		
1	31/15.9	
2-3	131/67.2	
≥ 3	33/16.9	
Knowledge (n/%)		0.001
Good	140/71.8	
Poor	55/28.2	
Attitude (n/%)		0.001
Positive	147/75.4	
Negative	48/24.6	
Accuracy of Complementary Feeding (n/%)		
Appropriate	146/74.9	
Inappropriate	49/25.1	

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Table 1 summarises the characteristics of the 195 respondents and the distribution of the study variables. The mean maternal age was 28.25 years (SD = 5.64), with a range of 18–40 years. Senior high school was the most frequently reported educational level (47.7%), while 44.1% of respondents were housewives. Most respondents reported a monthly income at or above the regional minimum wage (72.3%) and had two to three children (67.2%), subject to verification of the category boundaries.

Regarding the principal study variables, 140 mothers (71.8%) were classified as having good knowledge, 147 (75.4%) had positive attitudes, and 146 (74.9%) reported appropriate complementary feeding practices. The Chi-square analyses indicated statistically significant associations between maternal knowledge and complementary feeding practices and between maternal attitudes and complementary feeding practices (both reported p = 0.001). However, the available summary data do not show the cross-tabulated cell frequencies or the strength and direction of these associations. These results should therefore be supplemented with the corresponding contingency tables and test statistics before submission.

DISCUSSION

This study examined the associations of maternal knowledge and attitudes with complementary feeding practices among mothers of children aged 6–24 months in the working area. Most respondents had good knowledge (71.8%), positive attitudes (75.4%), and appropriate complementary feeding practices (74.9%). The reported statistical analyses indicated significant associations between maternal knowledge and complementary feeding practices and between maternal attitudes and complementary feeding practices (both p = 0.001). These findings suggest that maternal knowledge and attitudes are relevant factors to consider when examining feeding-related decisions within everyday caregiving. However, because this study used a cross-sectional design, the findings do not establish causality or determine whether knowledge and attitudes preceded the reported feeding practices. Previous studies have examined maternal knowledge, attitudes, and complementary feeding practices in different populations, demonstrating the relevance of investigating these factors within specific community contexts (Berisha et al., 2017; Bimpong et al., 2020; Shrestha et al., 2020).

Although most respondents demonstrated good knowledge, 28.2% were classified as having poor knowledge. This finding indicates that some mothers may require additional information about the recommended timing of complementary feeding, meal frequency, dietary diversity, food consistency, and food safety. Appropriate complementary feeding involves more than introducing solid foods after six months; it also requires attention to the nutritional quality, frequency, consistency, and suitability of foods for the child's age (Marfuah & Kurniawati, 2022). Maternal knowledge and attitudes regarding child-feeding recommendations have also been examined in relation to complementary feeding practices and dietary adequacy (Bimpong et al., 2020). Factors associated with complementary feeding among children aged 6–24 months have likewise been investigated in community settings (Leunupun et al., 2025). These studies provide relevant contextual support for examining maternal knowledge and feeding-related factors, although differences in populations, instruments, and study designs should be considered when comparing findings. In the present study, the specific knowledge items associated with appropriate feeding practices cannot be identified from the available summary results.

Maternal attitudes were also significantly associated with complementary feeding practices according to the reported analysis. Although 75.4% of respondents had positive attitudes, 24.6% had negative attitudes. Attitudes may reflect mothers' perceptions of recommended foods, their acceptance of nutritional guidance, and the influence of established household practices. Understanding these perceptions may help healthcare professionals identify topics that require clarification during nutrition counselling. Factors associated with maternal behaviour in providing complementary feeding to infants aged 6–12 months have been examined in previous research (Nurmadiyah et al., 2024). Knowledge, attitudes, and family support have also been investigated in relation to appropriate complementary feeding (Azizah et al., 2022). These studies are relevant to the broader consideration of maternal and family-related factors in feeding behaviour. Nevertheless, the present study's descriptive results do not establish which specific attitudes were associated with appropriate practices, and the available data do not allow the direction or

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magnitude of the observed association to be determined. Cross-tabulated frequencies and effect-size estimates are needed to provide a more complete interpretation.

Complementary feeding practices are also relevant to children's nutritional health. The relationship between complementary feeding and stunting has been investigated among children in Samarinda, providing a related perspective on the importance of feeding practices in child nutrition research (Noviandri et al., 2024). However, the present study assessed maternal knowledge, attitudes, and complementary feeding practices rather than children's nutritional status. Therefore, the findings cannot establish whether the reported feeding practices were associated with stunting or other nutritional outcomes among the children in this sample. Similarly, the study did not assess specific dietary intake, dietary diversity scores, or the nutritional adequacy of individual children's diets. The findings should consequently be interpreted as evidence concerning the measured maternal and feeding-practice variables, rather than as direct evidence of children's nutritional outcomes.

The findings can also be considered within the broader psychosocial context of maternal caregiving. Feeding decisions may be influenced by family expectations, cultural beliefs, household resources, and the availability of reliable health information. Mothers may receive differing recommendations from relatives, community members, and healthcare professionals, potentially creating challenges when translating nutritional guidance into everyday practice. Complementary feeding has been examined in relation to children's consumption of micronutrient sources (Aryani et al., 2021), while family support has been considered alongside maternal knowledge and attitudes in research on appropriate complementary feeding (Azizah et al., 2022). These studies provide contextual links between feeding practices and nutritional or family-related factors. Nevertheless, family support, household decision-making, and cultural influences were not directly measured in the present study, so their contributions to the observed associations remain undetermined. Further research could examine these factors to clarify how the household and community environment relates to maternal feeding decisions.

From a mental health perspective, the findings require cautious interpretation. Maternal caregiving takes place within an interpersonal and psychosocial environment, but this study did not measure maternal stress, anxiety, depression, psychological well-being, parenting stress, or maternal self-efficacy. Consequently, the observed associations cannot be interpreted as evidence of a relationship between maternal mental health and complementary feeding practices. The relevance of this study to a psychosocial perspective lies in its examination of maternal knowledge and attitudes in relation to everyday caregiving behaviour. Future studies could investigate whether family support, maternal self-efficacy, parenting stress, or psychological well-being is associated with complementary feeding practices using validated instruments. Such research would provide a more direct basis for examining the intersection between maternal caregiving and mental health.

The practical implications of this study concern supportive and context-sensitive nutrition education. Samalantan Community Health Center and Integrated Service Posts could prioritise guidance on age-appropriate food selection, meal frequency, dietary diversity, food consistency, and food safety. Counselling may be strengthened through practical demonstrations, discussion of locally available foods, and opportunities for mothers to ask questions and clarify misconceptions without feeling judged. Where household preferences influence feeding decisions, involving family members may help make nutritional guidance more relevant to daily caregiving circumstances. These recommendations are consistent with the broader relevance of maternal knowledge, attitudes, and feeding behaviour discussed in previous complementary feeding studies (Bimpong et al., 2020; Leunupun et al., 2025; Nurmadiyah et al., 2024). However, the present study did not evaluate a nutrition education intervention; therefore, the effectiveness of these proposed approaches cannot be established from the current findings.

Several limitations should be acknowledged. First, the cross-sectional design prevents causal interpretation and does not establish the temporal sequence of the variables. Second, questionnaire-based data may be affected by recall and social desirability biases. Third, the study was conducted in one community health center service area, which may

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limit the generalisability of the findings to other populations. Fourth, although statistically significant associations were reported, the available results do not provide cross-tabulated frequencies, the corresponding Chi-square statistics, or effect-size estimates. Consequently, the direction and magnitude of the associations cannot yet be fully evaluated. Fifth, the study did not directly assess children's nutritional status, household influences, or maternal psychosocial and mental health outcomes. Future studies should report complete association statistics and consider additional validated measures of family support, maternal self-efficacy, parenting stress, and psychological well-being to investigate these relationships more comprehensively.

CONCLUSION

Maternal knowledge and attitudes were significantly associated with complementary feeding practices among mothers of children aged 6–24 months in the working area. Most respondents had good knowledge, positive attitudes, and appropriate feeding practices, although a proportion continued to report less favourable knowledge, attitudes, or practices. These findings support the importance of context-sensitive nutrition education and counselling that addresses maternal understanding, perceptions, and everyday caregiving circumstances. Because the study used a cross-sectional design and did not directly assess mental health outcomes, the findings should not be interpreted as evidence of a causal relationship or an association with maternal psychological well-being.

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