



# The relationship of parity, education and maternal knowledge with complementary feeding at the Jeulingke Primary Health Center, Banda Aceh

*Hubungan paritas, pendidikan dan pengetahuan ibu terhadap MP-ASI di Puskesmas Jeulingke Banda Aceh*

Sofi Alfia Zuhra<sup>1</sup>, Nora Sovira<sup>2\*</sup>, Ima Indirayani<sup>3</sup>, Jufitriani Ismy<sup>4</sup>, Liza Salawati<sup>5</sup>

<sup>1</sup> Medical Student of Faculty of Medicine, Universitas Syiah Kuala, Aceh, Indonesia. E-mail: [sofialfi21@mhs.usk.ac.id](mailto:sofialfi21@mhs.usk.ac.id)

<sup>2</sup> Department of Pediatrics, Faculty of Medicine, Universitas Syiah Kuala, Aceh, Indonesia. E-mail: [norasovira@usk.ac.id](mailto:norasovira@usk.ac.id)

<sup>3</sup> Department of Obstetrics and Gynecology, Faculty of Medicine, Universitas Syiah Kuala, Aceh, Indonesia. E-mail: [ima.indirayani@usk.ac.id](mailto:ima.indirayani@usk.ac.id)

<sup>4</sup> Department of Pediatrics, Faculty of Medicine, Universitas Syiah Kuala, Aceh, Indonesia. E-mail: [fitriismy@usk.ac.id](mailto:fitriismy@usk.ac.id)

<sup>5</sup> Department of Public Health, Faculty of Medicine, Universitas Syiah Kuala, Aceh, Indonesia. E-mail: [dr\\_lizasalawati@usk.ac.id](mailto:dr_lizasalawati@usk.ac.id)

## \*Correspondence Author:

Department of Pediatrics, Faculty of Medicine, Universitas Syiah Kuala, Jln. Teungku Tanoh Abee, Kopelma Darussalam, Kecamatan Syiah Kuala, Kota Banda Aceh, Aceh 24415, Indonesia. E-mail: [norasovira@usk.ac.id](mailto:norasovira@usk.ac.id)

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## Abstract

Inappropriate complementary feeding negatively affects children under two years. Parity, education, and maternal knowledge were associated with inappropriate complementary feeding. This study aimed to analyze the relationship between parity, education, and maternal knowledge of complementary feeding at the Jeulingke Primary Health Center in Banda Aceh, Indonesia. This analytical, observational study used a cross-sectional design. Data will be collected from September to October 2024 through interviews using questionnaires and 1 × 24-hour food recalls. This study included 76 mothers selected using consecutive sampling at seven integrated health service points in the Jeulingke Primary Health Center area. Statistical analysis was performed using Spearman's test with a 90% confidence interval and an alpha level of 0.1. The study showed that 65.8% of the mothers provided appropriate complementary feeding practices. Parity was not significantly associated with complementary feeding ( $p = 0.194$ ;  $r = -0.151$ ). Maternal education ( $p = 0.049$ ;  $r = 0.227$ ) and knowledge ( $p = 0.028$ ;  $r = 0.253$ ) had weak relationships with complementary feeding practices. In conclusion, to implement appropriate complementary feeding, the education and knowledge of mothers as primary providers of complementary feeding at the Jeulingke Primary Health Center in Banda Aceh must be improved.

**Keywords:** Complementary feeding, education, knowledge, parity

## Abstrak

Pemberian makanan pendamping ASI (MPASI) yang tidak tepat berdampak negatif pada anak-anak di bawah dua tahun. Paritas, pendidikan, dan pengetahuan ibu adalah faktor yang berkaitan dengan pemberian MPASI yang tidak tepat. Penelitian ini bertujuan untuk menganalisis hubungan antara paritas, pendidikan, dan pengetahuan ibu dengan pemberian MPASI di Puskesmas Jeulingke Banda Aceh. Studi observasional analitik ini menggunakan desain cross-sectional. Data dikumpulkan dari September hingga Oktober 2024 melalui wawancara menggunakan kuesioner dan *food recall* 1 × 24 jam. Penelitian ini melibatkan 76 ibu, dipilih menggunakan *consecutive sampling* di tujuh Pos Layanan Terpadu di area Puskesmas Jeulingke. Analisis statistik dilakukan dengan menggunakan uji Spearman pada interval kepercayaan 90% dan alpha 0,1. Hasil penelitian menunjukkan bahwa sebanyak 65,8% ibu memberikan MPASI yang tepat. Paritas tidak memiliki hubungan yang signifikan dengan MPASI ( $p = 0.194$ ;  $r = -0.151$ ). Pendidikan ibu ( $p = 0.049$ ;  $r = 0.227$ ) dan pengetahuan ibu ( $p = 0.028$ ;  $r = 0.253$ ) menunjukkan hubungan yang lemah dengan MPASI. Kesimpulan, bahwa dalam upaya menerapkan pemberian MPASI yang tepat perlu ditingkatkan pendidikan dan pengetahuan ibu sebagai pelaku utama dalam pemberian MPASI di Puskesmas Jeulingke Banda Aceh.

**Kata Kunci:** MPASI, paritas, pendidikan, pengetahuan

## Introduction

Complementary food is additional food and fluid provided to children aged 6-23 months because breast milk alone is insufficient to meet their nutritional requirements at this stage (Hikmah et al., 2023). Early complementary feeding can cause disorders in the baby's digestive system because it is not ready to process foods other than breast milk (Hidayat et al., 2023). Complementary feeding, which is not sufficiently nutritious in terms of quality and quantity, impact malnutrition, namely undernutrition and stunting (Aprillia et al., 2020).

Early complementary feeding in Indonesia occurs in more than 40% of babies, 40% of children aged 6-24 months consume food ingredients that are not as varied as they should be, and 28% of children experience meal frequencies that do not meet the standards (UNICEF, 2020). In 2022, growth monitoring activities in Indonesia reported that 0.8% of children under two years of age experienced malnutrition and 4.1% experienced undernutrition. Based on Indonesia's health profile in 2022, Aceh Province ranked 11th, with a percentage of children under two years of age experiencing malnutrition of 0.9% and undernutrition of 4.8% (Kementerian Kesehatan Republik Indonesia, 2023). According to previous research, complementary feeding for children aged 6-23 months in Aceh is still less than optimal. Only one in four children receives appropriate complementary feeding (Ahmad et al., 2019). According to the data from the Banda Aceh City Health Service in 2022, the prevalence of malnutrition among children under five years of age was 963, based on the results of measuring 12,118 children with the highest prevalence at the Jeulingke Primary Health Center at 14.6% (Dinas Kesehatan Kota Banda Aceh, 2023).

Inappropriate complementary feeding is associated with various factors including parity, education, and maternal knowledge (Anggraini & Simbolon, 2023; Lestiarini & Sulistyorini, 2020). Multiparous mothers have much experience in providing complementary foods to their previous children; therefore they know how to provide good and correct complementary foods to their babies (Firmansyah & Prasetya, 2023). In addition, according to research in the Serdang Bedagai Regency, there is a relationship between

knowledge and complementary feeding, where the proportion of mothers who provide early complementary food is higher among those with less knowledge (Nurhayati et al., 2021). Educational level was also significantly associated with early complementary feeding. According to research in the Serang Regency, it would be riskier for mothers with less education to provide early complementary food (Widiastuti & Yanuar, 2020). Although several studies have explored the associations between individual maternal factors and complementary feeding, no prior research has comprehensively examined the combined relationship between parity, education, and maternal knowledge and the accuracy of complementary feeding practices using detailed indicators, such as timeliness, adequacy, safety, and feeding method.

The low practice of providing appropriate complementary foods to children aged 6-23 months in Aceh, namely, only one in four children, affects the nutritional condition of children, so that they experience malnutrition. Based on the high number of malnourished children in Banda Aceh City, with the highest number in Jeulingke Primary Health Center, this study aims to describe the practice of complementary feeding and analyze the relationship between parity, education, and maternal knowledge with the appropriateness of complementary feeding among children aged 6-23 months at the Jeulingke Primary Health Center, Banda Aceh. Unlike previous studies, this study evaluated the appropriateness of complementary feeding based on aspects such as timeliness, adequacy, safety, and proper feeding methods according to the Maternal and Child Health Handbook guidelines.

## Methods

This analytical, observational study used a cross-sectional design. Data collection was conducted from September to October 2024 at seven integrated service posts in the Jeulingke Primary Health Center working area, Banda Aceh, through interviews using questionnaires that had been tested for validity and reliability and 1 × 24-hour food recalls. The validity test was conducted on 10 individuals with characteristics similar to the study sample at the Kopelma Darussalam Primary Health Center, while reliability was assessed using Cronbach's alpha

coefficient. To minimize recall bias during the 1 × 24-hour food recall interview, a standardized food photo book was used to help respondents estimate portion sizes and food types more accurately.

The sample of this study included 76 mothers with children aged 6-23 months at the Jeulingke Primary Health Center, Banda Aceh, in 2024 who met the research criteria. The inclusion criteria were mothers who brought maternal and child health books and were able to communicate effectively. Mothers who were unwilling to respond were also excluded. The sampling technique used was a non-probability sampling technique with a consecutive sampling model, and each integrated service posts had 10-11 respondents.

The statistical test analysis in this study used the Spearman test with a 90% confidence interval and an alpha level of 0.1 to analyze the relationship between the independent and dependent variables.

This study was approved by the Ethics Committee of the Faculty of Medicine, Syiah Kuala University, Banda Aceh (No. 086/EA/FK/2024). Following ethical approval, the confidentiality of the subjects was maintained.

## Result and Discussion

### Characteristics of respondents

**Table 1.** Frequency distribution of respondent characteristics and maternal knowledge about complementary feeding

Characteristics	n (%)
Age	
17-25 years	16 (21)
26-35 years	42 (55.3)
36-45 years	17 (22.4)
46-55 years	1 (1.3)
Parity	
Primipara	27 (35.5)
Multipara	48 (63.2)
Grand Multipara	1 (1.3)
Maternal education	
low	9 (11.8)
Intermediate	45 (59.2)
High	22 (29)
Child Gender	
Male	39 (51.3)
Female	37 (48.7)
Child Age	

6-8 months	10 (13.2)
9-11 months	20 (26.3)
12-23 months	46 (60.5)
Maternal knowledge	
Not enough	13 (17.1)
Enough	15 (19.7)
Good	48 (63.2)

As shown in Table 1, from a total of 76 mothers who were the subjects of the study, the age range of the mothers showed a diverse distribution: more than half of the respondents (55.3%) were 26-35 years old (early adulthood), multipara (63.2%), had intermediate education (59.2%), had male children (51.3%), and were in the age group of 12-23 months (60.5%). Based on maternal knowledge, more than half of the respondents (63.2%) had a good level of knowledge about complementary feeding.

Most respondents were in the early adulthood age group, which aligns with previous research that found that the majority of respondents belonged to the early adulthood age group (Lestiarini & Sulistyorini, 2020). The early adulthood group is the age group that allows them to capture the information provided, remember it, and be responsible for caring for infants and toddlers (Arifin et al., 2020).

More than half (63.2%) of the respondents were multiparous mothers. Similar results were obtained in a previous study that showed that more than half of the respondents were multiparous mothers (Firmansyah & Prasetya, 2023). Mothers with several children (multipara) usually have a lot of experience in providing complementary foods to their children; therefore, they already understand the right way to provide complementary foods to their babies (Firmansyah & Prasetya, 2023).

Based on education level, more than half of the respondents had an intermediate education (59.2%). The findings of this study are consistent with previous research showing that the category of intermediate mothers' education is higher than that of low or high education (Sulistyorini, 2022). Education functions as a process to explore individual potential and help humans control the potential that has been developed to improve their quality of life. This can support a person's ability to adapt, respond, and accept innovation (Firmansyah & Prasetya, 2023).

This study included more boys than girls. In addition, the highest age range was in the age

group of 12-23 months, which included 45 children (59.2%). Previous research showed the same results: most research subjects were age group 12-23 months and most of the subjects were male (Apriliani et al., 2023).

More than half of the respondents (63.2%) had good knowledge of the disease. Similar results were obtained in a previous study, which showed that more than half of the respondents had a good level of knowledge about diabetes. Knowledge plays a significant role in encouraging action (Mauliza et al., 2021).

### Parity

Appropriate complementary food was mostly provided by primiparous (74.1%) and multiparous mothers (62.5%). The results of statistical tests using the Spearman analysis test at a confidence interval of 90% and alpha of 0.1, obtained ( $p = 0.194$ ) and correlation coefficient of -0.151, no significant association was found between parity and complementary feeding practices for children aged 6-23 months at the Jeulingke Primary Health Center, Banda Aceh.

The findings of this study showed no relationship between parity and complementary feeding. This finding is consistent with previous

research stating that parity has no significant relationship with food provision for infants and children aged 6-24 months (Raniati et al., 2023). This is also in line with another study that found no significant relationship between parity and early complementary feeding (Fatma & Farida, 2024).

This differs from the findings of another study, which revealed a significant relationship between maternal parity and the accuracy of complementary feeding practices (Winarsih et al., 2020). In theory, multiparous mothers have experience of providing complementary feeding to their children, so they can provide appropriate complementary feeding (Winarsih et al., 2020). However, inconsistent findings regarding the relationship between parity and complementary feeding practices have been reported based on the results of a scoping review (Herman et al., 2023). A study in Western Ethiopia found that primiparous mothers were less likely to provide appropriate complementary food (Herman et al., 2023). In contrast, a study in Malawi showed that primiparous mothers provided adequate food because of their strong commitment to caring for their children and to ensuring nutrition (Herman et al., 2023).

**Table 2.** Relationship between parity and complementary feeding at the Integrated Health Service Post in the Jeulingke Primary Health Center, Banda Aceh

Variables	Complementary feeding			p value	r value
	Inappropriate n (%)	Appropriate n (%)	Total n (%)		
Parity					
Primipara	7 (25.9)	20 (74.1)	27 (100)	0.194	-0.151
Multipara	18 (37.5)	30 (62.5)	48 (100)		
Grand Multipara	1 (100)	0 (0)	1 (100)		
Maternal education					
Low	7 (77.8)	2 (22.2)	9 (100)	0.049	0.227
Intermediate	13 (28.9)	32 (71.1)	45 (100)		
High	6 (27.3)	16 (72.7)	22 (100)		
Maternal knowledge					
Not enough	9 (69.2)	4 (30.8)	13 (100)	0.028	0.253
Enough	4 (26.7)	11 (73.3)	15 (100)		
Good	13 (27.1)	35 (72.9)	48 (100)		

In this study, the tendency of mothers to provide appropriate complementary feeding was almost the same between primiparous and multiparous mothers; thus, no significant relationship was found between parity and the accuracy of providing complementary feeding. This can be affected by various factors; for

example, mothers with multiparous parity tend to have better accuracy in providing complementary feeding because they are influenced by knowledge gained based on experience with previous children, while mothers with primiparous parity are more influenced by educational factors and knowledge gained through social media.

### Maternal education

Table 2 shows that 77.8% of mothers with low education level provide inappropriate complementary foods, while only 27.3% of those with higher education do. The results of statistical tests using the Spearman analysis test at a confidence interval of 90% and alpha 0.1, obtained ( $p= 0.049$ ) and a correlation coefficient of 0.227. Therefore, there is a weak relationship between maternal education and complementary feeding in children aged 6-23 months at the Jeulingke Primary Health Center in Banda Aceh.

Consistent with previous research, there was a significant relationship between maternal education and complementary feeding (Yulianto et al., 2019). This finding is in agreement with another study that found a significant relationship between maternal education and the accuracy of providing complementary feeding (Winarsih et al., 2020). Education is an important component of knowledge acquisition. In general, the higher an individual's level of education, the more accessible it becomes to receive information, resulting in increased knowledge (Mauliza et al., 2021). However, educational level does not always determine a person's knowledge. It is possible that a person has good knowledge because it is acquired from their social environment (Lestiarini & Sulistyorini, 2020). A high level of education enables mothers to access the most current and accurate information about their children, including complementary feeding (Firmansyah & Prasetya, 2023).

### Maternal knowledge

Appropriate complementary feeding was mostly provided by mothers with sufficient knowledge (73.3%), while only 30.8% of mothers had insufficient knowledge. The results of the statistical test using the Spearman analysis test at a confidence interval of 90% and alpha of 0.1, obtained a P value of 0.028 and a correlation coefficient of 0.253. Thus, a weak relationship was observed between maternal knowledge and complementary feeding in children aged 6-23 months at the Jeulingke Primary Health Center in Banda Aceh.

In line with previous research, there is a significant relationship between knowledge level and the provision of complementary food (Parandari et al., 2021). This finding also agrees with another study that showed a significant relationship between maternal knowledge and

complementary feeding (Winarsih et al., 2020). Knowledge is a very important aspect of action/behaviour. Mothers need to increase their insight and knowledge regarding the provision of appropriate complementary foods for their children. Mothers with a good level of knowledge can absorb information more widely; thus, mothers with a good level of knowledge tend to provide appropriate complementary foods (Winarsih et al., 2020).

This finding supports the importance of providing targeted nutrition education as an effective intervention to improve complementary feeding practices and prevent malnutrition during the first two years of life. Health education related to the basic principles of complementary feeding and feeding rules can be more effective if delivered before the complementary feeding period. Therefore, the antenatal period and exclusive breastfeeding phase are considered the most strategic times to provide complementary feeding education as a preventive intervention against malnutrition in children (Meivita et al., 2025).

### Complementary feeding

This study showed that more than half of the respondents (65.8%) provided appropriate complementary feeding. This finding indicates that while the majority of mothers practice appropriate feeding, a significant proportion (34.2%) still do not meet the recommended standards, which raises public health concerns, especially in areas with malnutrition problems, such as Banda Aceh.

Introducing adequate and safe complementary foods at the right time is crucial for ensuring optimal health and enhancing a child's nutritional status, particularly during periods of heightened nutritional requirements (Mutuku et al., 2020). Mothers play an important role in providing the best food intake for infants. After the baby reaches six months of age, complementary foods should be provided according to the right quantity and quality (Parandari et al., 2021). In this study, more than half of the respondents (65.8%) provided appropriate complementary food; therefore, complementary feeding was not closely related to malnutrition at the Jeulingke Primary Health Centre in Banda Aceh. This is because malnutrition is caused not only by inadequate food intake but also by disease. Children who receive adequate food intake but often

experience diarrhea are still at a risk of malnutrition (Ramlah, 2021). This is related to impaired nutrient absorption that occurs during and after diarrhea. In addition, infectious diseases, such as upper respiratory tract infections and worms, can also cause malnutrition owing to the child's decreased immune system, resulting in appetite (Eldrian et al., 2023). Personal and environmental sanitation also play important roles in malnutrition. Careless defecation and low handwashing habits without soap can increase the risk of diarrhea which can later cause children to lose important nutrients (Rahmuniyati & Sahayati, 2021).

## Conclusion

This study showed that 65.8% of mothers at the Jeulingke Primary Health Center in Banda Aceh provided appropriate complementary feeding. There was no relationship between parity and complementary feeding at the Jeulingke Primary Health Center, Banda Aceh, and a weak relationship between maternal education and knowledge of complementary feeding at the Jeulingke Primary Health Center, Banda Aceh.

Interventions to improve maternal education and knowledge are essential for promoting appropriate complementary feeding in children aged 6–23 months. To implement appropriate complementary feeding, the education and knowledge of mothers as primary providers of complementary feeding at the Jeulingke Primary Health Center in Banda Aceh must be improved.

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