



# Factors Affecting Early Feeding Using Complementary Foods Breast Milk on Infants Under 6 Months of Age in Nagan Raya Regency Indonesia

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## Abstract

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**BACKGROUND:** The exclusive breastfeeding of infants aged 0–6 months in the working area of the Jeuram Community Health Center below the national target (80%). The failure of exclusive breastfeeding is probably due to the babies are too early given the complementary foods (MP-ASI).

**AIM:** This study was aimed to analyze factors that influenced early MP-ASI provision for infants under 6 months.

**METHODS:** This research was a quantitative study with a cross-sectional design. The sample included 54 mothers who have babies under 6 months of age. The data analysis was carried out using bivariate, multivariate, and multiple logistic regression analysis.

**RESULTS:** The results showed that the level of knowledge ( $p < 0.001$ ), family support ( $p < 0.001$ ), and sociocultural factors ( $p = 0.001$ ) significantly affected the provision of early MP-ASI for infants aged  $<6$  months, while the support of health care workers ( $p > 0.001$ ) showed no relationship with early MP-ASI. The results of the F-test ( $p = 0.000$ ,  $\alpha = 5\%$ ) showed that this model is suitable for reducing early MP-ASI. The logistic regression test correlated knowledge, family support, and sociocultural support with the provision of early MP-ASI. The final model generated is:  $Y = -1.628 + 1.046 X_1 + 0.993 X_2 + 2.198 X_3$ .

**CONCLUSION:** This study concludes that knowledge, attitude, family support, health care worker support, and sociocultural support influence early MP-ASI for infants aged  $<6$  months.

## Introduction

When a child reaches 2 years of age, she/he has reached a golden period in achieving optimal growth supported by proper nutrition from birth [1]. Breast milk is the exclusive nutritional requirement for infants until the age of 6 months and plays an important role in growth and development; thus, the World Health Organization recommends exclusive breastfeeding from 4 to 6 months of age [2].

Nutritional problems are very common and it is, therefore, essential that parents are aware of them. Parenting plays an integral role in the growth and development of children because malnutrition during this period can lead to a serious problem [3]. Various nutritional problems can be avoided if parents have sufficient knowledge about food and dietary patterns in children [4]. A lack of information about how to provide sufficient food for infants and children and the existence of habits that are detrimental to health—both direct

and indirect—are the main causes of malnutrition and infection in children, particularly those  $<2$  years of age [5]. Early complementary feeding is still common in developing countries, and this impacts the incidence of diarrhea, infection, allergies, and growth disorders in children [6]. Mukhopadhyay's research in 2013 states that inappropriate complementary feeding practices often occur in children and can lead to malnutrition [7].

The success in consumption pattern provision in children is strongly influenced by various internal and external factors of the mother herself, and the family as well. These include body mass index, age, gender, nutritional knowledge, body image, psychosocial factors, disease history, economic level, family, occupation, communication, education, parents, social culture, the role of parents, peers, and media influence [8].

The Nagan Raya Regency is an area in the Aceh province where the rate of exclusive breastfeeding remains low (67%) and is still below the set target. Nagan Raya Regency has 10 work areas, with the lowest percentage of exclusive breastfeeding

(50.7%) occurring in Puskesmas Jeuram (Jeuram Health Center). The rate of early complementary feeding, *Makanan Pendamping Air Susu Ibu* (so-called "MP-ASI"), is still high in this community. This also correlates with nutritional problems in toddlers, namely, four under-fives under the dotted line and three under-fives under the red line [9].

An initial survey of 10 mothers of children under 5 years of age in the working area of the Jeuram Health Center showed that eight people had given early MP-ASI to babies <6 months of age, such as banana porridge, brown rice porridge, and formula milk. The reason given was that the family had expressed concern about the child's insignificant weight gain each month. Therefore, the researchers are interested in examining the factors that influence the provision of early MP-ASI in the work area of the Jeuram Public Health Center, in the Nagan Raya Regency.

## Materials and Methods

This study was conducted using a quantitative approach with a cross-sectional design. The sample included 54 mothers with a baby <6 months of age. The data were then analyzed using bivariate, multivariate, and multiple logistic regression analysis. The instrument used in this study was a questionnaire set containing respondents' data and their answers to closed-ended questions.

This research is a quantitative study with a cross-sectional study design. The population in this study was 54 mothers who had babies aged >6–24 months. The sampling technique used was total population sampling technique involving the whole 54 mothers. Analysis of the data used was the bivariate with multivariate analysis using multiple logistic regression analysis. The instrument used in this study was a modified questionnaire sheet from the previous research which was developed in accordance with the characteristics of the research area and it has been tested for validity to obtain the feasibility of the instrument. The instrument items are as shown in the following details:

a. The questionnaire about knowledge consists of 10 questions which are adapted from Handayani (2011). To measure the level of knowledge, each question is given a weighted value of 1 if it is true and 0 if the answer is wrong, the maximum value is 10 and the minimum value is 0. Based on the number of scores obtained by the respondent, the respondent's level of knowledge can be categorized as follows: 1) The level of knowledge is good,

if the value obtained by the respondent is > 8; 2) the level of knowledge is moderate, if the value obtained by the respondent ranges from 5 to 7; 3) the level of knowledge is poor, if the value obtained by the respondent is < 4. Validity test was carried out on 20 mothers who had babies aged > 6–24 with 15 questions obtained 10 valid and five invalid questions (Cronbach's Alpha 0.933;  $r_{table} = 0.444$ ).

- b. The family support questionnaire consists of 10 questions which are a modification of the questionnaire in Yuanita's research (2012). Family support instrument with parameters of informational support, emotional support, and material support uses the categories of Likert Scale which is 4 = often, 3 = often, 2 = rarely, and 1 = never. The scoring system is a final score of; 1 = Not good= $T < \text{Mean}$  and 2 = Good= $T > \text{Mean}$ . After the validity test, all of 10 questions are valid (Cronbach's Alpha = 0.948; 0.05;  $n = 20$ ; and  $r_{table} = 0.444$ ). Because  $r \text{ count} > r_{table}$ , it can be concluded that the 10 questions are reliable.
- c. The sociocultural questionnaire consists of 10 questions which are modifications of the questionnaire in Dewinataningtyas' research (2014). The questionnaire scoring system  $\geq 4$  means that the respondent still follows the culture. If the "yes" answer is < 4, it means that the respondent does not follow the culture. Validity test on 10 questions obtained that the results of 10 sociocultural questions are valid, the results of reliability test with Cronbach's Alpha 0.925 with 0.05 obtained  $r_{table} = 0.444$ . Because  $r \text{ count} > r_{table}$ , it can be concluded that the 10 questions are reliable.
- d. The health worker support questionnaire consists of 10 questions which are adapted from Jannah's (2015). The scoring system of health worker support is using Likert scale as a score of 1 = never, 2 = sometimes, 3 = often, and 4 = always, with the category of less support (7–14), sufficient support (15–21), and good support (2–28).

The validity test with 10 questions and obtained 10 questions for the support of health workers is valid, with a reliability test with Cronbach's Alpha support for health workers is 0.948 with 0.05 and  $n = 20$ , obtained  $r_{table} = 0.444$ . Because  $r \text{ count} > r_{table}$ , it can be concluded that 10 questions are reliable.

This study has been approved by all respondents so that it meets the ethical criteria. They signed the informed consent consisting the technical information of this study, objective of this study, methodology, benefit they would get from this study, and possible risks.

## Results

### Univariate analysis

Table 1 shows the characteristics of study participants. The majority of the participant is 21–25 years (69.9%), graduated from senior high school (48.1%), and work as an entrepreneur (18.5%).

**Table 1: Characteristics of study participant**

Characteristics (n = 54)	N	%
Age (year)		
15–20	8	14.8
21–25	34	62.9
26–30	12	22.2
Education Level		
Primary school	10	5.4
Secondary school	15	27.7
High school	26	48.1
University/college	3	5.5
Occupation		
Housewife	32	59.2
Farmer	3	5.5
Entrepreneur	10	18.5
Government official	9	16.6
Total	54	100

Table 2 shows the distribution of knowledge, family support, health care worker support, and sociocultural support, as well as MP-ASI provision. A total of 90.7% of infants received early complementary feeding or MP-ASI. It is that only 12.9% of participants have good knowledge and 37.1% of health workers are good at supporting MP-ASI provision of the mother.

**Table 2: Distribution of knowledge, family support, health care worker support, and sociocultural support and early MP-ASI provision**

Variables	N	%
Early Complementary Feeding		
Yes	49	90.7
No	5	9.2
Knowledge		
Good	7	12.9
Not good	47	87.1
Family support		
Supportive	45	78.9
Not supportive	9	16.6
Health worker support		
Supportive	20	37.1
Not supportive	34	62.9
Sociocultural support		
Supportive	47	81.5
Not supportive	10	18.5
Total	54	100

### Bivariate analysis

Table 3 shows that of the total respondents who lacked knowledge, 39 (83%) gave early MP-ASI to their babies, while 8 (17%) did not ( $p = 0.0002$  for this data group). Of the total respondents who had family support, 31 (69%) gave early MP-ASI, while 14 (31%) did not ( $p < 0.0001$  for this data group). Of the total respondents with poor sociocultural support, 28 (60%) gave early MP-ASI, while 19 (40%) did not ( $p = 0.003$  for this data group). Therefore, the bivariate results indicated that there was a significant relationship between knowledge, family support, and socioculture with early MP-ASI provision. Of the total respondents who had support from health care workers, 12 (60%) gave early MP-ASI, while 8 (40%) did not ( $p = 0.08$  for

this data set). Therefore, the results of the bivariate analysis indicated that there was no relationship between the support of health care workers and the provision of early MP-ASI.

**Table 3: The correlation between knowledge, family support, health care worker support, sociocultural support, and early MP-ASI provision**

Variable	Early MP-ASI n (%)	Non-early MP-ASI n (%)	Total N (%)	p
Knowledge				
Sufficient	39 (83)	8 (17)	47 (100)	0.0002
Insufficient	5 (71)	2 (29)	7 (100)	
Family support				
Supportive	31 (69)	14 (31)	45 (100)	<0.0001
Not supportive	3 (33)	6 (67)	9 (100)	
Health worker support				
Supportive	12 (60)	8 (40)	20 (100)	0.08
Not supportive	24 (71)	10 (29)	34 (100)	
Sociocultural support				
Supportive	29 (60)	19 (40)	47 (100)	0.003
Not supportive	4 (40)	6 (60)	10 (100)	

### Multivariate analysis

Table 4 shows that the multivariate analysis indicated  $R^2 = 0.354$ , meaning that 35.4% of this model contributed to early MP-ASI provision. The results of the F-test showed  $p = 0.000$  and  $\alpha = 5\%$ ; therefore, this model is suitable for reducing early MP-ASI provision. The logistic regression test showed a correlation between knowledge, family support, and sociocultural support with the provision of early MP-ASI. The final model generated is:  $Y = -1.628 + 1.046 X_1 + 0.993 X_2 + 2.198 X_3$ . Model terakhir yang dihasilkan melalui Analisa multivariat adalah sebagai berikut:  $Y = -1,628 + 1,046 X_1 + 0,993 X_2 + 2,198 X_3$ . This model is a recommended model regarding the MP-ASI provision for babies below 6 months with approaches made to mothers' knowledge, family support, and sociocultural support. In this model, Y variable represents the MP-ASI provision and X variable represents the factors affecting the MP-ASI provision.

**Table 4: Results of bivariate selection between knowledge, family support, and sociocultural support on the provision of early MP-ASI**

Family Health Indicator	B Coefficient	p-value	Exp (B)	R <sup>2</sup>
Knowledge	1.046	0.000	2.846	0.354
Familial support	0.993	0.000	2.700	
Sociocultural support	2.198	0.000	9.005	
Constant	-1.628			

## Discussion

Complimentary food for breast milk, MP-ASI, is indicated for infants between 6 and 24 months of age. Several previous studies have found high rates of MP-ASI given to babies <6 months old. Research conducted by Puspitorini *et al.* in Kebumen, Indonesia showed that 39.15% of toddlers were given MP-ASI at the incorrect age [10]. Breast milk contains very precise nutrients to meet the nutritional needs of babies

and is easily digested. Exclusive breastfeeding is an appropriate way to fulfill the nutritional requirements in infants 0–6 months of age. After 6 months of age, the baby is introduced to family food or solid food as MP-ASI while continuing to breastfeed until the age of 24 months [4].

Knowledge is an important factor that shapes a person's actions and attitudes such that they are aware, willing, and able to independently carry out various activities. In this study, knowledge was found to be a major influence on mothers giving early MP-ASI. This is in line with Agumasie's research on early MP-ASI provision at the Hiwot Fana Ethiopia Hospital, which showed that 60% of infants had been given early MP-ASI (beginning between 4 and 6 months of age) with a sufficient knowledge factor of 47% and perception of 30.6% [11]. Mothers with insufficient knowledge are not informed in terms of the time to give MP-ASI to their babies. Mothers also do not get information sustainably from health care workers or the media about the quality and quantity of the recommended food for babies. Respondents who did not give early MP-ASI were influenced by the successful experience of exclusive breastfeeding for their first child and received information about the dangers of early MP-ASI from health care workers and the media. This is in line with Hadian's research study in the United Arab Emirates, which shows that there are patterns and factors for monitoring breastfeeding practices and MP-ASI by mothers [12].

Family support regarding nutrition has a major influence on maternal behavior, but support for early MP-ASI despises the practice of fulfilling infant nutrition. This study showed that of the total respondents who had family support, 31 (69%) gave early MP-ASI, while 14 (31%) did not ( $p < 0.0001$  for this data group). Thus, there is a relationship between family support and early MP-ASI provision. This is in line with the research of Diani *et al.* which showed that mothers with family support (70.6%) gave MP-ASI to their babies at <6 months of age [13].

Receiving family support to provide early MP-ASI for infants was related to the mother's decision on the practice of feeding infants <6 months of age. The assumption of the community in the research area shows that breastfeeding is regarded as a matter between mothers and their babies; therefore, family support is needed for the provision of early MP-ASI, especially in terms of the motivations, perceptions, emotions, and attitudes of mothers. The negative behavior of family support for the provision of early MP-ASI to infants at the research location arises from the family's concern for babies who often cry and are thus assumed not to be satisfied with breast milk. Furthermore, families in these areas also compare babies' weights and conclude that babies who receive early MP-ASI weigh more than those who do not. This

makes mothers less confident to continue exclusively breastfeeding until the age of 6 months, leading to the decision to give early MP-ASI. Appreciation and support can be given in the form of praise, encouragement, and positive reinforcement by the family regarding the mother's decision to give MP-ASI at the correct time. Providing the family information regarding MP-ASI is also very helpful.

This study showed that mothers who had negative sociocultural support (28.60%) had given early MP-ASI to their babies. This is in line with research conducted by Mohamad, who found that sociocultural support ( $p < 0.001$ ) had a significant relationship with the behavior of giving early MP-ASI to babies aged 0–6 months. The environment here refers to the family, the place of work, and the household environment such that it results in giving early MP-ASI [14]. On the other hand, mothers who are not easily influenced by various existing beliefs or traditions have positive sociocultural support. This is generally reflected by the mother's level of knowledge. Therefore, it is necessary to increase public knowledge to reduce the behavior of mothers giving early MP-ASI as a result of inappropriate traditions or beliefs.

Indeed, human behavior is influenced by cultural factors and values that exist in the social environment. The influence of culture on behavior as it relates to health is unavoidable and difficult to change. People behave by their culture and this influence will have a negative impact if it is followed by mothers who lack knowledge regarding the proper time to give MP-ASI to babies [15].

## Conclusion

The results of this study have shown that the mother's knowledge, family support, and sociocultural support robustly influence the provision of early MP-ASI to infants, while health care workers have no impact on the provision of early MP-ASI. Thus, it is recommended that the health department provides breastfeeding counselor training activities for health care workers, midwives, and nutritionists at village health centers. In addition, building breastfeeding cadres (so-called ASI cadre) and breastfeeding support groups (called KP-ASI) to assist health care workers in monitoring and reviewing mothers' behavior in giving early MP-ASI are recommended. Furthermore, counseling programs can be provided regarding complementary feeding to infants, which would best be given at the time of the mother's first pregnancy check so that they are aware right away of the risk of giving early MP-ASI to their babies.

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