JURNAL UPI

JURNAL PENDIDIKAN KEPERAWATAN INDONESIA

Journal Homepage: http://ejournal.upi.edu/index.php/JPKI

JPKI

The Relationship of Early Complementary Feeding (CF) with Nutritional Status to Children Aged 6-24 Months towards Family Farmers

Lutfian Lutfian[1], Peni Perdani Juliningrum[2], Dini Kurniawati[3]

[1]Faculty of Nursing, University of Jember, Jember, Indonesia
[2,3]Department of Pediatric and Maternity Nursing, University of Jember, Jember, Indonesia
Corresponding email: lutfian.ardianysah@aiesec.net

A B S T R A C T

Complementary feeding (CF) practices have an essential role in determining the nutritional status of children. Children who are given early complementary feeding (ECF) are at risk of malnutrition. Besides, children with family farmers tend to have wasting or overweight because they cannot provide food in a variety, quantity, and quality according to the nutritional needs of their children. This study aimed to determine the relationship of ECF with nutritional status in children 6-24 months towards family farmers. This correlational study was conducted using a cross-sectional approach. Samples were 75 children aged 6-24 months selected using purposive sampling. This research was conducted at Geger Health Center Bangkalan Regency. Data collection was done by giving questionnaires to children parents. Children's weight-for-height z-score (WHZ) were calculated using WHO Anthro version application 3.2.2. The chi-square test analyzed the association between CF and nutritional status. The results of the study showed that the nutritional status of 75 children was normal (72%), overweight (25.3%), and wasted (2.7%). Most mothers have been given ECF since infants aged two months (29.3%) and 0 months (13%), which caused 36.4% of children to become overweight. Bivariate analysis showed a significant relationship between CF with nutritional status to children aged 6-24 months towards family farmers (p-value=0.033). ECF caused children aged 6-24 months to become overweight. Therefore, it is hoped that health workers will always give health education to increase mothers' knowledge about exclusive breastfeeding to support the nutritional status of children aged 6-24 months towards family farmers.

ARTICLE INFO

Article History:

Received: *September 24, 2021*
Revised: *December 05, 2021*
Accepted: *December 27, 2021*
First Available Online: *15 December 2021*
Published: *December 30, 2021*

Keywords:
Children, Early Complementary Feeding, Farmers, Nutritional Status

1. INTRODUCTION

Children under two years are a golden period which means that this period is a critical time of children's development (Ibnu F, I & Syafar M., 2018). At this time, children under two years need a balanced nutritional intake in terms of proportion and variety to achieve optimal growth. Children will grow and develop very fast at 29 days to 12 months, so they need a balanced nutritional intake (Kumala & Purnomo, 2019). Quality nutritional intake is essential because malnutrition in children aged 6-23 months can cause growth failure; this is often associated with the history of giving early complementary feeding (ECF) to the babies (Blaney et al., 2015; Hermiyanty et al., 2017). Sariy *et al*. (2018) explained that mothers who do not provide exclusive breastfeeding to their babies would provide ECF (Sariy et al., 2018). Providing ECF can cause several problems such as malnutrition, overweight, hyperthermia, diarrhea, dan increasing the risk of disability and death in infants (Ministry of Health Indonesia, 2019).

Based on World Health Organization (WHO) recommendations, giving complementary feeding (CF) must meet four requirements, including quantity and quality, safety, a proper way of giving (property), and the ideal time. The most appropriate CF is when the baby is at six months (WHO, 2013). Providing ECF is one of the factors that have a strong influence on the determinants of the nutritional status of children at present, and in the future, children who are given ECF are at risk of experiencing overweight (Maciel et al., 2018). Breast milk is the best nutrition for babies; the composition consists of carbohydrates, proteins, fats, and minerals whose levels follow the nutritional needs of children. When children are given ECF, they will consume breast milk in more minor quantities, so children can experience nutritional problems because balanced nutritional intake contained in breast milk is not obtained (Nassar, 2017). Most parents provided soup or porridge with a very runny texture as it is easy to enter into the baby's digestion. Nevertheless, these foods can only make the stomach contents complete and contain fewer nutrients than breast milk, which will lead to nutritional problems in children (Molika, 2014).

According to the WHO (2017), the percentage of exclusive breastfeeding in the world is still deficient; only 40% of babies are exclusively breastfed; as many as 61% of babies have been given ECF before they are six months old (WHO, 2017). In 2017, according to the Ministry of Health Indonesia, the prevalence of ECF in Indonesia was recorded at 48%, which can be seen from the exclusive breastfeeding coverage rate, which only reached 52% (Ministry of Health Indonesia, 2017). Based on a report from the East Java Health Office in 2019, the prevalence of ECF in East Java was 23.2%; this can be seen from the coverage of exclusive breastfeeding in 2018, which reached 76.8% (Dinkes Jatim, 2019). The districts with the lowest percentage of exclusive breastfeeding in East Java are in Bangkalan Regency with 46.4%, which means that 53.6% of parents in the Bangkalan Regency have provided ECF to their babies (Dinkes Jatim, 2019).

Bangkalan Regency is an agricultural area where society's main job is farmers (CIO of Bangkalan, 2018). In 2016 the number of farmer group members in Bangkalan Regency was 19.36, and Geger District was the third-largest sub-district with the number of farmer societies after Tanah Merah and Klampis Districts 2130 people (CIO of Bangkalan, 2017). Based on data obtained by researchers toward preliminary study at Geger Health Center, Bangkalan Regency, it is indicated that as many as 651 mothers in 2020 had provided ECF to children.

DOI: http://dx.doi.org/10.17509/jpki.v7i2.39084
e-ISSN 2477-3743 | p-ISSN 2541-0024

According to the baby's digestive function, providing CF should be done gradually in quantity, quality, and variation. The digestive ability of food other than breast milk in the digestive tract of infants aged 0-6 months is still not optimal, so babies who are given solid food are at risk of experiencing diarrhea or constipation (Majestika Septikasari, 2018). The secretion of polysaccharide enzymes (amylase, maltase, and sucrase), which functions to break down carbohydrates in the first three months of a baby's life, has not been secreted optimally, as well as the lipase enzyme, which functions to break down fat into fatty acids is not secreted optimally (Wahyuni, 2018). The function of imperfect polysaccharides and lipase enzymes in infants can interfere with the absorption of other nutrients, which can cause nutritional problems in children (Wargiana & Susumaningrum, 2013). At 0-6 months, the baby's intestines are still open. Babies begin to produce antibodies (IgA) when they reach six months of age; this is because, at that age, the closure of the baby's intestine has begun to complete. If babies under six months old have been given CF, they are at risk of experiencing intestinal intussusception or invagination, a condition in which a segment of the intestine enters another part of the intestine (Hegar B, 2017).

The factors that can influence parents in providing ECF for babies include insufficient parents' knowledge regarding balanced nutrition, socio-culture that encourages giving ECF, progressive marketing of baby food producers, working mothers, and lack of support health workers (Majestika Septikasari, 2018). Mothers play an important role in providing appropriate CF (Pandey et al., 2016). Sulistiani (2018) showed that 57.4% of babies given ECF experience malnutrition status incidence; giving ECF interferes with the baby's ability to digest, absorb, and metabolize food (Tanti Sulistiani, 2018).

Research by Park & Lee (2017) reported that giving ECF formula milk can increase the risk of babies experiencing overweight because formula milk contains more nitrogen and protein than breast milk (Park, S.J., Lee, 2017). in addition, Laving *et al*. (2018) showed that providing CF with high protein and energy content before the baby is four months old can increase overweight in children (Laving et al., 2018). Haszard (2019) explained that mothers are more likely to introduce ECF, resulting in more nutrition in toddlers (Haszard et al., 2019; Wang et al., 2016)

The causes of malnutrition in children with farming families are influenced by several factors, including a history of exclusive breastfeeding, suboptimal feeding to toddlers, a history of infection, food insecurity, which is not enough to provide optimal care for children, lack of knowledge of mothers and poverty (Nordang et al., 2015). Mothers who work as farmers, on average, have a level of education and knowledge related to the fulfilment of balanced nutrition in their toddlers (Nzefa et al., 2018). Giving ECF to children under two years old can affect the nutritional status, and the characteristics of farming families have a close relationship with the factors that affect the nutritional status of children under five. Therefore, this study was conducted to determine the relationship between ECF and nutritional status in children aged 6-24 months toward family farmers.

2. METHOD

Research Design

This research uses quantitative methods with a correlational study type with a cross-sectional design. The research was conducted to find the relationship between the independent variables,

DOI: http://dx.doi.org/10.17509/jpki.v7i2.39084
e-ISSN 2477-3743 | p-ISSN 2541-0024

namely the complementary feeding (CF), with the dependent variables, namely nutritional status in children aged 6-24 months toward family farmers.

Population and Sample

The population in this study were 429 children (6-24 months) with their family working as farmer based on data obtained from Geger Health Center, Bangkalan Regency. The total sample in this study were 75 children (6-24 months), who were recruited using the purposive sampling technique. Before participating in this study, all participants were determined based on inclusion and exclusion criteria. The inclusion criteria of this study were children 6-24 months of age; children whose parents work as a farmer; children should be located in the Geger health centre, Bangkalan Regency. The exclusion criteria were children who suffered from sick, children with congenital abnormalities and defects, children with a history of severe infections such as COVID-19, HIV/AIDS, and Pneumonia. The research process was carried out from January 2021- April 2021.

Instruments

The data of respondent demographics were collected using a sociodemographic questionnaire, and anthropometric data were collected using children's weight scales and length boards. The sociodemographic questionnaire identified characteristics of parents such as age, education, occupation, the history of CF, the age of children is started to be given CF, type of ECF given to children, and identified characteristics of children such as age, gender, body weight, body length, and weight-for-height z-score *(WHZ).* Anthropometric data were collected using children's weight scales and length boards. The measurement of children's weight and length used the ministry of health republic Indonesia guidelines. The weight-for-height z-score (WHZ) was calculated using World Health Organization (WHO) Anthro version 3.2.2. To classify children's nutritional status, the ministry of health republic Indonesia guidelines were used. WHZ classified into 3 categories, including wasted (Z-score <-3 to <-2), normal (Z-score -2 to + 2), and overweight (Z-score > +2 to >+3).

Research Procedures

All children who participated in this study were recruited from Geger Health Center Bangkalan regency. Children information was obtained from their parents—subjects who agreed to participate filled the informed consent. Parents were informed that the collected information would be kept confidential and that the questionnaire was anonymous. The researcher gave a sociodemographic questionnaire for attaining the demographic data of respondents. To measure the height of children, we lay the child on her back without a pillow (supination), straighten the knee until the stick on the table (the position of the extension), then align the top of the head and lower leg (foot perpendicular to the measuring table) then measure following the scale shown. Meanwhile, to measure the weight of children, we were put the children on the baby's weight scale, making sure the scale needle is at 0, asking the mother to put their child on the scale in a supination position; the researcher has ensured that footwear, pampers, jackets, and other items that have weight have been removed.

DOI: http://dx.doi.org/10.17509/jpki.v7i2.39084
e-ISSN 2477-3743 | p-ISSN 2541-0024

Data Analysis

The data collected through the questioners and measurement of the children's weight and length were coded and entered into SPSS version 23.0. This study employed descriptive and correlational data analyses. Descriptive statistics, including frequencies and percentages, were used to summarize categorical measures, means and standard deviation were used to summarize children's length, and median and min-max were used to summarize children's weight. Previously, children's weight and length data tested normality using Kolmogorov-Smirnov (P>0.05). The results showed that the data of children's length were typically distributed (P=0.200), and the data of children's weight were not normally distributed (p=0.031). The WHZ was calculated using WHO Anthro version 3.2.2. A Chi-square test was used to analyze the correlation between CF and nutritional status to Children Under 2 Years (6-24 Months) towards Family Farmers. The statistical significance based on the assumption was performed using a two-tailed significance level of 0.05.

Ethics Clearance

This study obtained ethical approval from the health researcher ethics committee Faculty of Nursing, University of Jember (No. 09/UN25.1.14/ KEPK/2021). All respondents have explained the study's purposes, procedures, and advantages through their parents as the children's guardians. Also, a sign was obtained for an informed consent form explaining their rights in this study.

3. RESULTS

Demographic Characteristics of the Parent Respondents

Based on table 1, it can be seen that the characteristics of the parents in this study are that most parents who participated in this study were in the early adulthood phase with an age range of 26-35 years as many as 45 people (60.0%), and 75 people (100%) parents in this study worked as farmers. The most recent educational level was graduated from elementary school with the equivalent of 29 people (38.7%) and not attended school as many as 25 people (33.3%).

Table 1. Demographic characteristics of parent respondents

Sub Variable	Frequency	Percentage
Age		
Adolescence (12-25 years)	17	22.7
Early adulthood (26-35 years)	45	60.0
Late adulthood (36-45 years)	13	17.3
Occupation		
Farmer	75	100
Educational level		
Not attended school	25	33.3
Elementary school	29	38.7
Junior high school	13	17.3
Senior high school	8	10.7

DOI: http://dx.doi.org/10.17509/jpki.v7i2.39084
e-ISSN 2477-3743 | p-ISSN 2541-0024

Demographic Characteristics of the Children's Respondents

The distribution of children respondents based on table 2 below showed that most of the children who participated in this study were aged 13-24 months as many as 44 children (58.7%), and the most gender was male as many as 42 children (56%).

Table 2. Demographic characteristics of children

Demographic characteristics	Frequency	Percentage
Age		
6-12 months	31	41.3
13-24 months	44	58.7
Gender		
Boys	42	56
Gils	33	44

Table 3. Mean and median of body's length and weight of children

Sub Variables	Mean	SD	*Md*	*Min-Max*
Body's length	70.62	8.35	-	-
Body's weight	-	-	8.8	5.1-14.4

Based on table 3, it is found that the average body length of 75 children aged 6-24 months in the Geger Health Center is 70.62 cm with a standard deviation of 8.35. Meanwhile, the mean weight of 75 children was 8.8 kg with a minimum of 5.1 kg and a maximum of 14.4 kg.

The History of Giving Complementary Feeding to Children

Based on table 4 below, it is found that as many as 44 respondents (58.7%) were given ECF during the first six months of a baby's life. A total of 22 children (29.3%) were given ECF when they were 0 months old, and 10 children (13.3%) had been given ECF when they were two months years old. In this study, the most additional types of food given before the baby was six months old were formula milk, banana pulp, CF made by the factory, and young coconut water.

Table 4. The history of CF and ECF were given to children

The history of giving CF	Frequency	Percentage
Type of CF		
ECF	44	58.7
Not ECF	31	41.3
Time of giving CF		
0 month	22	29.3
1 month	3	4.0
2 months	10	13.3
3 months	1	1.3
4 months	2	2.7
5 months	3	4.0
<6 month	3	4.0

DOI: http://dx.doi.org/10.17509/jpki.v7i2.39084
e-ISSN 2477-3743 | p-ISSN 2541-0024

Nutritional Status of Children (WHZ) Age 6-24 Months

Based on table 5, it can be seen that most of the children aged 6-24 months in this study had a normal nutritional status with a total of 54 children (72%) and an overweight of 19 children (25.3%).

Table 5. Nutritional status of children among family farmers Status

Indicator	Frequency	Percentage
Nutritional status		
Wasting	2	2.7
Normal	54	72.0
Overweight	19	25.3

Table 6. The Relationship of CF with Nutritional Status to Children Under 2 Years (6-24 Months) towards Family Farmers

Type of CF	Nutritional Status (WHZ)			Total	χ^2 (*p-value*)
	Wasting (%)	Normal (%)	Overweight (%)		
ECF	1 (2.3%)	27(61.4%)	16 (36.4%)	44 (100%)	7.501 (0.033)
Exclusive Breastfeeding	1 (3.2%)	27 (87.1%)	3 (9.7%)	31 (100%)	
Total	2 (2.7%)	54 (72%)	19 (25.3%)	75 (100%)	

n (%) = number of participants (percentage); χ^2 = Value of Likelihood Ratio Chi-Square

The Relationship of Early Complementary Feeding (ECF) with Nutritional Status to Children Under 2 Years (6-24 Months) towards Family Farmers

Table 6 shows the results of the analysis of the relationship between CF and nutritional status of children aged 6-24 months in farmer families in Geger Health Center, Bangkalan Regency. The results of statistical analysis using chi-square obtained p-value <α (p = 0.033 <0.05) so that it can be concluded that the alternative hypothesis (Ha) failed to be rejected or there was a relationship between ECF with nutritional status of children aged 6-24 months toward family farmers in the working area of the Geger Community Health Center, Bangkalan Regency. The nutritional status of children among farmer families in this study showed that as many as 16 children (36.4%) who were given ECF had been overweight, one child (2.3%) had wasted, and 27 (61.4%) were normal. Besides, 54 children (72%) who were not given ECF had normal nutritional status.

4. DISCUSSION

Based on the results of the study using the Chi-square test, it was found that the p-value = 0.033 (P <0.05), then Ha failed to be rejected, or there was a relationship between giving ECF and nutritional status of children aged 6-24 months among farmer families. This study indicated that of the 44 children who were given ECF, 16 children (36.4%) had overweight. Researchers studied in the Geger Community Health Center, Bangkalan Regency, where most people have Madurese ethnicity and culture. The Madurese tribe is one of the tribes with cultural diversity that is closely attached to the social fabric of its people (Mubarokah & Munaroh, 2020).

Illahi & Muniroh's research (2015) showed that there is a relationship between the socio-culture of Madura and the nutritional status of infants, such as the provision of prelacteal food in

DOI: http://dx.doi.org/10.17509/jpki.v7i2.39084
e-ISSN 2477-3743 | p-ISSN 2541-0024

the form of honey and young coconut, and other types of CF before the baby is six months old (Ilahi & Muniroh, 2015). The history of exclusive breastfeeding and timing of CF are factors that strongly influence the determinants of nutritional status in children at present and in the future (Maciel *et al*., 2018). Giving ECF to infants can cause several problems, such as increasing overweight and obesity in children under 5 years (Maciel *et al.*, 2018). The mothers gave ECF because they can introduce solid foods to babies early so that babies are not surprised when they have to be given CF after the baby's age more than 6 months old. Besides, the Madurese people believe that babies cry continuously even though they have been given breastfeeding because the baby is still hungry, so it needs to be given additional food to calm down and fall asleep (Ilahi & Muniroh, 2015). Based on the interviews with the respondents' parents, they revealed that the babies in this study who were given ECF would feel fuller so that when they are left to work, the babies are not fussy. In this study, the most additional types of food given before the baby was 6 months old were formula milk, banana pulp, CF made by the factory, and young coconut water.

According to Park & Lee (2017), ECF in formula milk can increase the risk of babies experiencing overweight because formula milk contains higher protein and nitrogen than breast milk (Park & Lee, 2017). According to Wahyuni (2018), parents who provide ECF in formula milk do not consider the nutritional value contained in formula milk. They choose formula milk only based on whether there is an allergy after the baby is given formula milk or not. They give formula milk when the baby is fussy with the dosage that the mother estimates, so this can cause the child to be overweight (Wahyuni, 2018). Apart from formula milk, in this study, the type of ECF that was often given to babies was CF made by the factory. The mothers gave CF made by the factory because it is easy to give, practical in terms of presentation, and has nutritional content by the nutritional needs of children according to their age. Anggraini's research (2020) showed that children given ECF in the form of CF made by factories tend to be overweight (Anggraeni et al., 2020). In this study, the banana pulp is one type of ECF that mothers often give to their babies. The reason mothers gave banana pulp as ECF is because the fruit is easy to get, and banana pulp has a soft texture and is easily crushed, so they think it is suitable for the baby's digestive system. Based on interviews with the respondents' parents, the type of ECF often given to babies is young coconut water. According to Ilahi & Muniroh (2016), giving young coconuts to babies in the Madurese ethnic according to local beliefs aims to smoothen the baby's digestion to receive whatever type of food is given to him (Ilahi & Muniroh, 2016).

Wang *et al*. (2016) explain that the mechanism of obesity in children under five due to ECF is due to an increase in calorie and protein intake from other food consumed by infants, which will result in an increase in body weight and percentage of fat in the toddler's body (Wang et al., 2016). Protein is a fundamental component in the protoplasm of every cell because it is an adequate intake of protein in babies is very important to support their growth. The nutritional adequacy of infants at the age of 4 and 6 months is estimated based on the consumption of protein derived from breast milk. Breast milk contains about 6.9-10.4 grams of protein (Fatmawat *et al*., 2015).

According to the researchers, the cause of 36.4% of overweight children in this study was that their mothers' consumption of protein in ECF had a higher value than the Protein Adequacy Rate (PAR) in infants less than 6 months old. According to Yusriani (2008), overweight in children is the impact of excessive energy consumption, where the excess energy is stored in the body in

DOI: http://dx.doi.org/10.17509/jpki.v7i2.39084
e-ISSN 2477-3743 | p-ISSN 2541-0024

glycogen and fat. Glycogen is made from glucose molecules absorbed from carbohydrates stored in the liver and muscles. Excess glucose that is not stored in glycogen will be stored as fat in the body. If the fat reserves are too excessive, it will cause a person to be overweight (Yusriani *et al.*, 2008).

According to Qanit *et al.* (2020), when babies are introduced to ECF, it could be that the baby has a diet that does not match the energy needs of his body, and the baby will get used to eating more and excessively portions. This is what puts babies at risk of experiencing overweight (Qanit *et al*., 2020). Symon *et al*. (2017) revealed that ECF could increase the risk of overweight in infants because it can increase fat deposits (Symon *et al*., 2017). When the baby is less than six months old, the function of the lipase enzyme, which is responsible for breaking down fat into fatty acids and glycerol, is still not wholly secreted (Wahyuni, 2018). In this study, as many as 22 mothers (29.3%) had provided ECF when their babies were 0 months old, and ten mothers (13.3%) had given ECF when the babies were two months old. Several factors can influence mothers giving ECF to their children, including insufficient knowledge about CF, low educational history, socio-culture that encourages giving ECF, progressive marketing of baby food manufacturers, working mothers, and lack of support from health workers (Septikasari, 2018). Research by Yan J *et al*. (2014) revealed that the duration of CF is also a substantial factor in obesity in children under five (Yan J et al., 2014).

This research is in line with Laving et al. (2018) research, which showed that providing complementary foods with high protein and energy content before the baby is four months old can increase the incidence of overweight and obesity in children (Laving et al., 2018). In the first two months, the incidence of overweight also increased because they were given water, milk, and other semi-liquid foods too early (Schneider et al., 2020). Haszard (2019) also showed that mothers are more likely to introduce ECF to their babies before six months, resulting in overweight in toddlers (Haszard et al., 2019; Wang et al., 2016).

Based on the characteristics of the parent respondents in this study, the 75 respondents studied found that as many as 58.7% of parents had provided ECF before the baby was six months old, this can be related to the parents' low educational background, where the most recent education was many, graduated from elementary school equivalent of 29 parents (38.7%) and as many as 25 parents (33.3%) had not attended school. Besides, in this study, the researcher involved children's respondents with their parents who worked as farmers. Families who have jobs as farmers affect their children's nutritional status through production and food security in the family (Safitri et al., 2017). According to Safitri (2017), uncertain income levels for farmers will impact the nutritional status of children under five (Safitri et al., 2017). The majority of family heads who only work as farmers will affect family income, which will later cause nutritional problems in children (Putri et al., 2015. Research by Nzefa et al. (2018) explains that toddlers who have mothers who work as farmers mostly have underweight and low nutritional status stunting (Nzefa et al., 2018).

Based on the results of statistical tests, this study showed a relationship between ECF and nutritional status of children in family farmers in the working area of the Geger Community Health Center, Bangkalan Regency, with a p-value = 0.033. This study is in line with Nordang (2015) research, which proved that toddlers tend to experience nutritional problems when their mothers

DOI: http://dx.doi.org/10.17509/jpki.v7i2.39084
e-ISSN 2477-3743 | p-ISSN 2541-0024

spend their day farming during the growing season, with 63.8% of children experiencing stunting and 33.6% experiencing wasting (Nordang et al., 2015). In contrast to the research of Nzefa *et al.* (2018), which showed the results that toddlers who have mothers working as farmers tend to have underweight and stunting, but in this study, the results showed that 54 children (72%) had normal nutritional status, and 19 children (25.3%) had overweight, and only two children (2.7%) had wasted.

The causes of childhood malnutrition in farming families are influenced by several factors, including less than optimal feeding practices for toddlers, a history of infectious diseases, food insecurity, little time to provide optimal care, lack of maternal knowledge, and poverty (Nordang et al., 2015). The insufficient knowledge of mothers regarding the fulfillment of balanced nutritional intake in toddlers has a powerful influence on food processing behaviour and food consumption in the family (Doutel et al., 2019). In agricultural areas, mothers tend to prepare less diverse consumption, and the quantity and quality of foodstuffs given to their children are also insufficient for the nutritional adequacy rate for children under five (Doutel et al., 2019). There was a strong relationship between dietary diversity in farming families and the nutritional status of children (Kumar et al., 2015).

Food consumed by toddlers with farming families in the research of Nzefa et al. (2018) are primarily in the form of cassava, potatoes, bananas, corn, and beans or high-carbohydrate foods that come from agricultural products, but toddlers in farming families tend to consume less animal protein such as meat and fish because the prices are prohibitive. In addition, most farming families tend to sell the produce from their farms to meet secondary needs rather than their family's nutritional coverage. Lack of sufficient knowledge related to balanced nutrition in mothers who work as farmers also has a strong influence on stunting status in children (Nzefa et al., 2018).

Implications for Nursing Services

This study for nursing services implies that the nurse has to provide intensive services through *Posyandu* activities in maximizing exclusive breastfeeding and reducing children's nutritional problems in the agricultural environment. Besides that, nurses can provide health education related to strategies that can be used to improve the nutritional status of children aged 6-24 years with an approach to the use of agricultural products, and nurses can provide information regarding the importance of exclusive breastfeeding and the impacts that may be caused by giving ECF in infants.

5. CONCLUSIONS

This study indicates a relationship between complementary feeding and nutritional status of children aged 6-24 months in farmer families in the working area of the Geger Community Health Center, Bangkalan Regency. Children among family farmers who are given ECF tend to have overweight. It is hoped that local health workers can maximize the provision of education related to the importance of exclusive breastfeeding for babies aged 0-6 months to the farmer families through the agricultural health nursing approach and still paying attention to the aspects of Madura ethnic culture in the working area of the Geger Community Health Center Bangkalan Regency

DOI: http://dx.doi.org/10.17509/jpki.v7i2.39084
e-ISSN 2477-3743 | p-ISSN 2541-0024

will increase. Further researchers can pay more attention to biased factors affecting research results on nutritional status in children aged 6-24 months among family farmers.

6. ACKNOWLEDGMENT

The researchers are very thankful to all parents and children for their voluntary participation in this study. We also extend our thanks to all the authors of the references used in this study.

7. REFERENCE

Anggraeni, E. M., Herawati, D. M. D., Rusmil, V. K., & Hafsah, T. (2020). Perbedaan status gizi bayi usia 6-9 bulan yang diberi MPASI buatan pabrik dan rumah. Jurnal Gizi Klinik Indonesia, 16(3), 106-113.

Blaney S, Februhartanty J, S. S. (2015). Feeding Practices among Indonesian Children Above Six Months of Age: A Literature Review on Their Magnitude and Quality (part 1). Asia Pac J Clin Nutr, 24(1), 16-27.

Dev, M.,Shaikh, S., Rehana, S., Shabdum, I., Adil, I, M. 2013. Knowledge of Complementary Feeding of Mothers having Infants Younger than 2 Years of Aged- A community-Based Study. Pediatr J. 37 (3): 149-155.

Doutel, E. J., Picauly, I., & Salmun, J. A. R. (2019). Determinants of Toddler Nutritional Status in Farmers' Families in the Work Area of the Halilulik Health Center in Belu Regency in 2019. Journal of Community Health, 1 (3), 103–110.

Haszard JJ, Russell CG, Byrne RA, Taylor RW, C. K. (2019). Early maternal Feeding Practices: Associations with overweight Later in Childhood. Appetite, 132, 91-6.

Hermiyanty, Wandira Ayu Bertin, D. S. (2017). 済無No Title No Title. Journal of Chemical Information and Modeling, 8(9), 1–58.

Illahi, R. K. & Muniroh, L. 2016. Description of Socio-Cultural of Madurese Ethnic to Nutrition and Stunting Incidence of Toddlers Ages 24-59 Months in Bangkalan Regency. Media Gizi Indonesia. 11, 135–143.

Kumala, H. R., & Purnomo, W. (2019). Relationship Between Exclusive Breastfeeding with Development of Toddlers Who Have Low Birth Weight History, 8(2), 33–39.

Laving, A. R., Hussain, S. R. A., & Atieno, D. O. (2018). Overnutrition: Does complementary feeding Play a Role? Annals of Nutrition and Metabolism, 73(suppl 1), 15–18.

Maciel, B. L. L., Moraes, M. L., Soares, A. M., Cruz, I. F. S., Andrade, M. I. R. De, Filho, J. Q., & Junior, F. S. (2018). Infant Feeding Practices and Determinant Variables for Early Complementary Feeding in The First 8 Months of Life : Results from the Brazilian MAL-ED cohort site, 21(13), 2462–2470.

DOI: http://dx.doi.org/10.17509/jpki.v7i2.39084
e-ISSN 2477-3743 | p-ISSN 2541-0024

Nordang, S., Shoo, T., Holmboe-Ottesen, G., Kinabo, J., & Wandel, M. (2015). Women's Work in Farming, Child Feeding Practices and Nutritional Status among Under-Five Children in Rural Rukwa, Tanzania. British Journal of Nutrition, 114(10), 1594–1603.

Nzefa, L., Monebenimp, F., & Äng, C. (2018). Undernutrition among children under five in the Bandja village of Cameroon, Africa. South African Journal of Clinical Nutrition, 32(2), 46-50.

Pandey, V. L., Mahendra Dev, S., & Jayachandran, U. (2016). Impact of agricultural interventions on the nutritional status in South Asia: A review. Food Policy, 62, 28–40.

Park, S.J., Lee, H. J. (2017). Exclusive Breastfeeding and Partial Breastfeeding Reduce the Risk of Overweight in Childhood : A Nationwide Longitudinal Study in Korea. Obesity Research and Clinical Practice, 12(2), 222-228..

Qanit, S., Bangsawan, C, C. 2020. Early Complementary Feeding Increases the Risk of Obesity in Children. Journal of Nursing Research prof. 2(1) 91-98.

Safitri, A. M., Pangestuti, D. R., & Aruben, R. (2017). The Relationship of Family Food Security and Consumption Patterns with the Nutritional Status of Toddler Farmers' Families. Kesehatan Masyarakat, 5(3), 120–128.

Sariy, R. B., Simanjuntak, B. Y., & Suryani, D. (2018). Pemberian MP-ASI dini dengan status gizi (PB/U) usia 4-7 bulan di Kecamatan Ratu Samban Kota Bengkulu. AcTion: Aceh Nutrition Journal, 3(2), 103.

Schneider, B. C., Gatica-Domínguez, G., Assuncąõ, M. C. F., Matijasevich, A., Barros, A. J. D., Santos, I. S., & Silveira, M. F. (2020). Introduction to Complementary Feeding in The First Year of Life and Risk of Overweight at 24 Months of Age: Changes From 2004 to 2015 Pelotas (Brazil) Birth Cohorts. British Journal of Nutrition, 124(6), 620–630.

Symon B, Crichton GE, Muhlhausler B. 2017. Does the Early Introduction of Solids Promote Obesity?. Singapore Med J. 8(11), 626-631..

Wang J, Wu Y, Xiong G, Chao T, Jin Q, Liu R. (2016). Introduction of Complementary Feeding Before 4 Months of Age Increases The Risk of Childhood Overweight or Obesity: A Meta-Analysis of Prospective Cohort Studies. Nutr Res, 36(8), 759-770.

Yan J, Liu L, Zhu Y, Huang G, Wang PP. 2014. The Association between Breastfeeding and Childhood Obesity: a Meta-Analysis. BMC Public Health. 14, 1-11.

DOI: http://dx.doi.org/10.17509/jpki.v7i2.39084
e-ISSN 2477-3743 | p-ISSN 2541-0024

DOI: http://dx.doi.org/10.17509/jpki.v7i2.39084
e-ISSN 2477-3743 | p-ISSN 2541-0024