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Dwi Cahya Rahmadiyah
Department of Community Nursing, Faculty of Nursing, Universitas Indonesia, Depok 16424, Indonesia, d.cahya@ui.ac.id

Junaiti Sahar
Department of Community Nursing, Faculty of Nursing, Universitas Indonesia, Depok 16424, Indonesia

Poppy Fitriyani
Department of Community Nursing, Faculty of Nursing, Universitas Indonesia, Depok 16424, Indonesia

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The Correlation between Providing Complementary Food and Breast-Feeding with the Growth and Development of Children under the Age of Five Years Old (6-24 months)

Dwi Cahya Rahmadiyah*, Junaiti Sahar, Poppy Fitriyani

Department of Community Nursing, Faculty of Nursing, Universitas Indonesia, Depok 16424, Indonesia

*e-mail: d.cahya@ui.ac.id

Abstract

A toddler is a group on the stage of human development that is vulnerable to the risk affecting their health specifically about their growth and development. Providing the appropriate nutrition to toddlers during this risky age of 6 to 24 months is crucial in promoting a proper growth and development. The proper nourishment for toddlers at the age of 6 to 24 months includes breast-feeding and complimentary solid foods. The objective of this study was to determine the correlation between the specific characteristics of a family or a household and the provision of complementary feeding about the growth and development of children (6-24 months) in the village of Curug Cimanggis, Depok. This study used a descriptive correlational, cross-sectional approach using a sample that consisted of 102 children aged 6-24 months, which were collected using a proportional cluster sampling. Based on the Chi Square test, the researchers found no correlation between the provision of complementary feeding with a child's growth and development. This is because breast-feeding as the source of nourishment is still the major factor that directly influences the growth and development of any toddler between the age of 6-24 months. However, by applying better financial management in conjunction with the ability to modify the practices of how families feed their toddlers, a family may raise and nurture their toddlers so they may grow according to the proper stages of development. The results of this study are expected to serve as an input in improving toddlers' health care concerning their growth and development by promoting the importance of providing the appropriate complimentary food by the proper guidelines while continuing to breast feed toddlers between the age of 6 to 24 months.

Abstrak

Gambaran Pemberian Makanan Pendamping ASI dengan Pertumbuhan dan Perkembangan Balita (6-24 Bulan). Balita merupakan kelompok risiko yang mudah terkena masalah kesehatan diantaranya masalah pertumbuhan dan perkembangan. Pemberian nutrisi pada balita usia 6-24 bulan yang sesuai dapat meningkatkan pertumbuhan dan perkembangan. Pemberian nutrisi pada balita usia 6-24 bulan meliputi pemberian Air Susu Ibu (ASI) dan Makanan Pendamping ASI (MP-ASI). Penelitian ini bertujuan untuk mengetahui hubungan pemberian MP-ASI dan karakteristik keluarga dengan pertumbuhan dan perkembangan anak (6-24 bulan) di Posyandu Kelurahan Curug Kecamatan Cimanggis, Depok. Penelitian ini menggunakan deskriptif korelasional, pendekatan *cross sectional* dengan 102 sampel keluarga dengan balita usia 6-24 bulan yang diambil secara *proportional cluster sampling. Uji Chi Square* ditemukan tidak ada hubungan pemberian MP-ASI dengan pertumbuhan dan perkembangan. Hal ini dikarenakan faktor langsung yang memengaruhi pertumbuhan dan perkembangan balita adalah nutrisi dimana balita usia 6-24 bulan masih diberikan ASI. Hasil penelitian didapatkan lebih banyak Ibu yang memberikan MP-ASI yang sesuai dengan pedoman pemberian MPASI memiliki balita dengan pertumbuhan baik dan perkembangan yang sesuai. Hasil penelitian ini diharapkan dapat memberi masukan pelayanan kesehatan dalam upaya peningkatan tumbuh kembang balita melalui peningkatan promosi kesehatan tentang pentingnya MP-ASI sesuai pedoman dan melanjutkan menyusui pada balita usia 6-24 bulan.

Keywords: development, family characteristic, feeding, growth, toddlers

Introduction

The most crucial stage during the growth and development period of a toddler is the period under three years old *(batita)*, given that during this period a toddler's brain will experience its most rapid development, wherein such a development will cease when the toddler reaches the age of three years old.[1]

Therefore, families with a toddler under the age of five years old (*balita*) are classified as a risk group, based on several health-related factors.

The risks above may affect the growth and development of a child under the age of five years old, specifically about the provision of nutrition. If during this period a child under the age of five years old did not receive a proper nutrition then it would result in any number of nutrition-related problems, one of which is malnutrition. Issues related to malnutrition may hinder the achievement of the goals specified in the Millennium Development Goals (MDGs) 2015. One of the goals outlined in MDGs is lowering or reducing a child's mortality rate, i.e. reducing the mortality rate of children under the age of five years old by two-third.[2] Issues about malnutrition will have an impact on the growth and development of children under the age of five years old.

The management of issues on malnutrition or under-nourishment is not solely the responsibility of the government, more importantly, it is also the responsibilities of families. Families with children under the age of five years old play a role in reducing the negative impact of malnutrition, mainly by providing the appropriate complimentary food in conjunction with breast-feeding. Unfortunately, the practices of providing inappropriate complimentary nourishment, including how the nourishment are dispensed to the child or the type of food provided to the child during the transitional period from breast feeding or formula milk to solid food may have an effect on the toddlers' health both at the short or long-term.[3]

Complimentary food provided to a child in conjunction with breast-feeding (*Makanan Pendamping Air Susu Ibu, MP-ASI*) is food or beverage given to a toddler or child at the age of 6 to 24 months old that contains the proper nutritional value to meet the child's nutritional requirement in addition to the nutrition provided by breast-feeding.[4] The provision of complimentary food (MP-ASI) provided to a child in conjunction with breastfeeding is closely related to the growth and development of a child under the age of five years old. This is because nutrition is the factor that is directly affecting growth.[5]

Nutritional factor among children under the age of five (6-24 months) consisted of breast-feeding and complimentary food. Therefore, in addition to providing complimentary food to the child at the age of 6 to 24 months, they still need to be breast fed to meet their nutritional requirement. Continuing breast-feeding a child will provide an important nutritional contribution that goes beyond the first year of the child's life. Children who are breast fed at the age of 12 to 23 months (approximately 550 g/d in developing countries, WHO/UNICEF 1988) received 35 to 40% of their total energy requirement from breast milk.[6,7] Wamani *et al*. (2006) in Lesiapetto *et al*. (2010),[8] states that the factors that influence the nutrition status according to the hierarchical risk factor of anthropometric status are the mother's body mass index and nutrition. The correct body mass index and good mother's nutrition will produce good breast milk, which in turn will promote good development in children under the age of five years old.

In addition to nutrition, other factor that may influence child nutrition is infection suffered by a child. This view is endorsed by UNICEF (1988), wherein it states that the direct cause of nutrition related issues is improper feeding and health-related status specifically those caused by infection.[2]

According to the study conducted on families with children under the age of five years old in the village of Curug in the month of October 2013, around 61.4% of the 236 households surveyed were not doing it properly about preparing food for their children.[9] Around 41.4% of the children under the age of five years old were having difficulties in eating. Difficulties in eating may be the major risk factor in fulfilling the nutritional requirement for children under the age of five years old that eventually may lead to a case of malnutrition. The majority of the children under the age of five years old surveyed in the village of Curug in the study were still breast fed after they reached the age of six months. The observation made by the researchers in the village of Curug with regard to the provision of complimentary food provided to a child under the age of five years old, in conjunction with breast-feeding, revealed that a large numbers of the mothers do not know the proper amount or the frequencies (how often they should feed their children).

About the provision of complimentary food, and whether or not it has an influence on the growth and development of children under the age of five years old in the region of Curug, the researchers did not find the correlation. Based on the background as explained before, more studies need to be done on the relation between families characteristics and the provisions of complimentary food with the growth and development of children under the age of five years old (6-24 months) at the *Posyandu* (integrated health service station, i.e., centers for pre - and postnatal health care and information for women and for children under the age of five) in the village of Curug, the sub-district of Cimanggis, Depok.

Methods

This study employs the correlation descriptive design using a cross-sectional approach. The sample used in the study consisted of 102 families with children under

the age of five years old aged 6-24 months, with inclusion criteria that the child is still breast-fed and is also taken to the *Posyandu* during this study.

Data collecting instruments consisted of questionnaires to measure the provision of complimentary food and family characteristics; weighing instrument to measure body weight to assess development, as well as KPSP observation form (development pre-screening questionnaires) to assess the development of children under the age of five years old. The validity test on the questionnaires concerning the provision of complimentary food produced a value of 0.424-0.829 while the reliability test produced a value of 0.880. The normality test showed a result with normal data distribution; therefore, we would use the mean value.

This research passed the ethical test standards for research as outlined by FIK UI before data collection. Data for the study were gathered based on the data of weighing months at the *Posyandu* and information obtained from the health cadres regarding the families who have been visited previously by the medical staff. The researchers did not differentiate one respondent from another during the collection of data. All respondents have been fully briefed and they also filled-out the informed consent forms provided by the researchers. Univariate data analysis is used to analyze the variables on family characteristics, the provision of complimentary food and the growth and development of the children under the age of five years old. Bivariate analysis is used to examine the further correlation between variables.

Results and Discussion

Analysis result of Table 1 on the growth of children under the age of five years old revealed that the majority of children observed in this study have a good growth status (82.4%), and the majority of the children also have a development that matches the proper stages of growth and development 60.8% (95% CI).

The distribution of respondents based on the provision of complimentary food to children under the age of five in *Posyandu* in the village of Curug, the sub-district of Cimanggis, Depok in the month of May 2014 ($n = 102$) revealed that the majority of children under the age of five years old have a good growth status, i.e. 82.4% and more than half of the children observed have development that matched the proper stages of growth and development 60.8% (95% CI).

Results of the univariate and bivariate analysis are summarized as follows:
Based on the variable of family characteristics, the study revealed, among other, that 97.1% of the children's mother are in their early mature ages; also more than half of the families surveyed or 59.8% of them belong to low-income families (i.e. their income is below the UMR (regional minimum wage) or less than 2,397,000 rupiah); with regard to the number of children, the majority of families surveyed or 72.5% of them; have enough children (≤2 children); whereas from the perspective of family members, more than half of the families surveyed or 64.7% (95% CI) belong to the nuclear family category (≤4 people per family). The Table 2 showed that the result of the Chi-Square test showed that there is no correlation between the provision of MP-ASI with growth/nutrition status of a child under the age of five years old ($p = 0.313$; $p = 0.05$).

The analysis result of Table 3 that less than half of mothers who provide complimentary food according to the guidelines for providing MP-ASI have children whose

Table 1. Distribution of Respondents According to the Growth and Development of Children Under the Age of Five Years Old in *Posyandu* in the Village of Curug, The Sub-District of Cimanggis, Depok in the Month of May of 2014 ($n = 102$)

Distribution of responden	Total	Percentage
Growth of children under the age of five		
Good	84	82.4
Not good	18	17.6
Total	102	100
Development of children under the age of five		
Matched the proper development stages	62	60.8
Not matched	40	39.2
Total	102	100

Table 2. The Relation between the Provision of Complimentary Food and the Growth of Children under the Age of Five Years Old in *Posyandu* in the Village of Curug, the Sub-district of Cimanggis, Depok in the Month of May of 2014 ($n = 102$)

Provision of (MP-ASI)	Growth		Total
	Good	Not Good	
Matched the proper development stages	47 (46.1%)	13 (12.7%)	60 (58.8%)
Not exactly matched	37 (36.3%)	5 (4.9%)	42 (41.2%)
Total	84 (82.4%)	18 (17.6%)	102 (100%)

development matched the proper growth and development stages, i.e. 38.2% (95% CI). The result of the Chi-Square test showed that there is no correlation between the provision of MP-ASI with the development of a child under the age of five years old ($p = 0.40$; $p = 0.05$).

Descriptively, the majority of children under the age of five observed in this study have a good development proportion. The figure from this study is lower than the national prevalence, wherein the prevalence of bad nutrition is less than 19.6%.[10] The development proportion/ nutrition status of children under the age of five years old obtained from this research showed a better figure of development/nutritional status than the national prevalence. The better development figure is the result of some factors affecting the growth of children under the age of five years old in the region of Curug.

Factors that are affecting the nutritional status (growth), including, among others, the age of the mothers, the number of children they have (Wamani *et al.*, 2006, & Chapra *et al*., 2003).[8] The result of this study revealed that the majority of the mothers of children under the age of five are in their early mature age (18 to 40 years old) and the majority families have the right number of children (≤2 children). The number of children in a family will trigger a competition or rivalries for facilities, rivalries over food, limiting the time available for childcare, reducing access to medical care, and increased exposure to infection.[11] These are the supporting factors why the majority of children under the age of five in *Posyandu* in Curug have good growth.[11]

The researchers also analyzed other influencing factor, i.e. the fact that the region of *Posyandu* in Curug as the object of this study is a region looked after by the students from the Faculty of Nursing Sciences, specifically from community nursing since 2013. Furthermore, the local *Posyandu* in the area is quite active and is supported by the health cadres, RW Siaga (community association) as well as *bina keluarga balita* (BKB). This is in line with an opinion by the Indonesian Ministry of Health that in dealing with the high threat risk of nutrition issues in children under the age of five years old require a comprehensive and multi-discipline approaches.[12]

Table 3. The Relation between the Provision of Complimentary Food and the Development of Children Under the Age of Five Years Old in *Posyandu* in the Village of Curug, the Sub-District of Cimanggis, Depok in the Month of May of 2014 (*n* = 102)

Provision of (MP-ASI)	Development		Total
	Matched	Not matched	
Matched the proper development stages	39 (38.2%)	21 (20.6%)	60 (58.8%)
Not exactly matched	23 (22.5%)	19 (18.6%)	42 (41.2%)
Total	62 (60.8%)	40 (39.2%)	102 (100%)

Research showed that the majority of children in the *Posyandu* in the village of Curug have developed according to the proper growth and development stages. One of the influencing factors in children development is the growth and development stimulation. Around 54.9% of children under the age of five years old in the region of Curug received a good growth and development stimulation. This is endorsed by Supartini (2004) who states that each is different in the process of growth and development because a child's growth and development is influenced by some factors, whether hereditary or environmental. One of environmental factor that has a big influence on the development of a child under the age of five years old is the growth and development stimulation.[13]

The researchers also found that the other factor that influenced the good growth in the region of *Posyandu* in the village of Curug is the immunization status. More than half of the children under the age of five in the region have been immunized according to their age; thus, supporting their development. This view is endorsed by Hidayat (2005),[14] who states that environmental factors that have any influence on the growth and development of a child are the pre-natal and post-natal environments. Environmental factor consisted of, among others, the immunity factor, which is a part of the pre-natal environment.[14]

Descriptively, the number of respondents who provide complimentary food to children under the of five years old by the proper guidelines is almost the same with those who provide MP-ASI without following the guidelines. The provision of complimentary food, which is done according to the proper guidelines is influenced by the health education, and family counseling activities carried out by community application students from the Faculty of Nursing Sciences in the region of *Posyandu* in the village of Curug for the last five months. These activities are providing the necessary knowledge to the families in administering the nourishment for their toddler with balanced nutrition. This view is in line with Guldan *et al.* (2000),[15] who conducted a study that revealed an effective intervention in education such as group training and inter-personal communication can lead to a behavioral change concerning the practice of feeding children to increase food intake and promoting growth in children under the age of five years old.[15]

Analysis of results obtained from the study revealed that more mothers who provide complimentary food according to the proper guidelines for providing MP-ASI have

children under the age of five years old with better growth in comparison to mothers who provide MP-ASI not according to the set guidelines. The finding of this research is in line with Khanal *et al*. (2013) who states that the practices of providing complimentary food are a crucial factor in promoting better nutritional status in children.[16]

The result of the Chi-Square test showed that there is no correlation between providing complimentary food with growth/nutrition status of children under the age of five years old ($p = 0.169$). This is in contrary to the theory about MP-ASI that states breast milk (ASI) can only meet the nutrition requirement of an infant until the age of 4 to 6 months.[18] Therefore, complimentary food (MP-ASI) is provided at the age six months or more. Feeding a complimentary food is urgently required to meet the nutritional requirement of an infant since the provision of MP-ASI has a great impact the nutritional status of an infant about their growth and development.

Analysis by the researchers that showed no correlation between the provision of complimentary food may be due to the fact a child's growth is not solely influenced by the provision of MP-ASI alone, instead it is influenced by nutritional factors such as breast-feeding (ASI) and complimentary food for children under the age of five years old at the age of 6 to 24 years old. The provision of breast milk (ASI) is also a crucial factor that affects a child's growth. Continuing breast-feeding a child will provide a crucial nutritional contribution that goes beyond the first year of the child's life. Children who are breast fed at the age of 12 to 23 months (approximately 550 g/d in developing countries, WHO/UNICEF 1988) received 35 to 40% of their total energy requirement from breast milk.[7] Therefore, in addition to being given complimentary food, children under the age of five years old still need to be fed breast milk to meet their nutritional requirement.

Descriptively, the study's analysis showed that the majority of mothers who provide complimentary food according to the guidelines for providing MP-ASI have children whose development matched the proper growth and development stages, in comparison to mothers who provide MP-ASI not according to the set guidelines for providing MP-ASI to children under the age of five years old. This finding is supported by a number of findings that revealed that a child's growth and development required essential nutritional components such as protein, fat, carbohydrate, minerals, vitamins and water that must be consumed proportionately, in an amount that appropriate for the specific stages of a child's age.[14]

The result of Chi-Square test showed that there is no correlation between the provisions of MP-ASI with the development of children under the age of five years old. The study's result showed that the provision of complimentary food has no significant effect on the development of children under the age of five years old. This is because the aspect of providing food is often ignored in Psychology of Development, even though the task related to development is quite crucial.[18]

Analysis by the researchers that showed there is no correlation between the provision of complimentary food with development since development is not solely influenced by fulfilling nutritional requirement/providing complimentary food alone; however, it is also influenced by other factors that are not covered in this study, i.e. birth historical record. Nursalam (2005) states that historical birth record that showed birth assisted by vacuum extraction or forceps may lead to head trauma and may also lead to damage of brain tissues, that in turn may also lead to disruption in a child development stages. Based on the survey, the majority of children, i.e. 84.5% of them were born through normal procedure, while 15.5% of them were born through caesarean section. From the data, it can be discerned that no child was born through vacuum extraction or forceps, hence, no head trauma as a result of childbirth. Therefore, it is possible that all children will grow up normally.[19]

This study is also limited in its scope of research. The limitation of the study is the instrument used in the study, i.e. questionnaires that cover the variables on family characteristics and children under the age of five years old, knowledge regarding complimentary food and the provision of MP-ASI. No obstacles with regard to the variables on family characteristics, child's birth historical record, and the nutrition status of children under the age of five years old who were being observed; however, additional items on the quality of breast-feeding, mother's body mass index, the child's medical record, health status, specifically with regard to infections, nurturing and health services.

Conclusions

The proportion of growth/the status of malnutrition as observed in *Posyandu* in the village of Curug, Depok is lower than the national prevalence. This is due to the fact that in that region children under the age of five years old are still breast fed, which is the major source of nutrition for children aged 6-24 months in addition to complementary food. Furthermore, the nutrition program in the *Puskesmas* (community health center) and *Posyandu* are running well.

The proportion of children under the age of five years old that corresponds to their development stages as observed in *Posyandu* in the village of Curug, Depok in overall is quite good. This is also because there are students who specialize in nursing care from the Faculty of Nursing Sciences of the Universitas Indonesia (UI)

who practiced in the region, specifically in activities that are related to growth and development stimulation of children under the age of five. The proportion of complimentary food fed to children whether it is done according to the proper guidelines or if it is given not according to the guidelines is almost the same throughout the region of *Posyandu* in the village of Curug, Depok. Complimentary food is given according to the proper guidelines because the mothers of these children have the necessary and required knowledge about complimentary food, whereas the provision of complimentary food that is not done according to the proper guidelines are mostly occurred in families or households whose income are less or below than minimum wage.

There is no correlation between providing complimentary food with the growth and development of children under the age of five years old since the factor that are directly influencing a child's development is the nutrition and health status. Nutrition in children under the age of five depends both on complimentary food and breast-feeding; therefore, complimentary food in itself is not sufficient to influence the growth and development of children under the age of five years old. Meanwhile, another significant factor that influences a child's development, such as nurturing pattern as practiced by families is not studied in this research

References

1. Hockenbery MJ, Wilson D. *Wong's essentials pediatric nursing*. 8th ed. St. Louis Missouri: Mosby. Inc; 2008.
2. UNICEF. 2011.
3. Fein SB, Labiner-Wolfe J, Scanlon KS, Grummer-Strawn LM. Selected complementary feeding practices and their association with maternal education. *Pediatr*. 2008;122(2): 91-97.
4. Departemen Kesehatan Republik Indonesia. *Buku tata laksana anak gizi buruk*. Buku I. Edisi 3. Jakarta: Direktorat Bina Gizi Masyarakat. Depkes Republik Indonesia, 2006. [In Indonesia].
5. Departemen Kesehatan Republik Indonesia. *Pedoman pelaksanaan pendistribusian dan pengelolaan makanan pendamping air susu ibu (MP-ASI) Tahun 2004*. Jakarta: Direktorat Gizi Masyarakat, Depkes Republik Indonesia, 2000. [In Indonesia].
6. UNICEF. 1998. *The world children.* (internet) [cited 2011 February 13]. www.unicef.org/publications/files/pub_sowc98_en.pdf.
7. Dewey KG, Adu-Afarwuah, S. Systematic review of the efficacy and effectiveness of complementary feeding interventions in developing countries. *Matern. Child Nutr*. 2008;4(1): 24-85.
8. Lesiapeto MS, Smuts CM, Hanekom SM, Plesisi JDu, Faber M. Risk factors of poor anthropometric status in children under five years of age living in rural districts of the Eastern Cape and KwaZulu- Natal Provinces, South Africa. *South Afr. J. Clin. Nutr*. 2010;23(4): 202-207.
9. Rahmadiyah, DC. *Laporan Akhir Komunitas RW 05 Curug;* 2014 Tidak dipublikasikan
10. Departemen Kesehatan Republik Indonesia. *Pelatihan Konseling Makanan Pendamping Air Susu Ibu (MP-ASI).* Jakarta: Kementrian Kesehatan Republik Indonesia, Direktorat Bina Gizi, 2013. [In Indonesia].
11. Muaz SSA, Hasan MR, Shahim SA, Dev A, Kamar S. (2010). Nutritional statues of 1-5 years children of the tea workers in sylhet division. *Bangladesh J. Child Health.* 2010;34(1): 11-16.
12. Departemen Kesehatan Republik Indonesia. *Laporan nasional riset kesehatan dasar tahun 2010*. Badan Perencanaan dan Penelitian Kesehatan. 2010. (internet) [cited 2014 January 8]. Available from: http://www.litbang.depkes.go.id. [In Indonesia].
13. Supartini Y. *Buku ajar konsep dasar keperawatan anak*. Jakarta: EGC; 2004. [In Indonesia].
14. Hidayat AA. *Pengantar ilmu keperawatan anak*. Jakarta: SalembaMedika; 2005. [In Indonesia].
15. Guldan GS, Fan HC, Ma X, Ni ZZ, Xiang X, Tang MZ. Culturally appropriate nutrition education improves infant feeding and growth in rural Sichuan, China. *J. Nutr*. 2000;130(5): 1204-1211.
16. Khanal V, Sauer K, Zhao Y. Determinants of complementary feeding practices among Nepalese children aged 6-23 months: findings from demographic and health survey 2011. *BMC Pediatr*. 2013;13: 131.
17. Krisnatuti D, Yenrina R. Menyiapkan makanan pendamping ASI. Jakarta: PuspaSwara; 2000.
18. Pliner P. Cognitive schemes: how can we use them to improve children's acceptance of diverse and unfamiliar foods. *British J. Nutr*. 2008;99(1): 2-6.
19. Nursalam. *Asuhan keperawatan bayi dan anak*. Jakarta: Salemba medika; 2005. [In Indonesia].