

Relationship of MP ASI Processing with Infant 6 to 12 Months Old Baby Growth and Development (Study at Umi Rahma Maternity Clinic in 2019)

Tetty Rina Aritonang¹, Wa Ode Ida Fitriani², Riyeen Sari Manulang³, Farida Mentalina Simanjuntak⁴

^{1,2,3,4}Stikes Medistra Indonesia, Bekasi, Indonesia

ARTICLE INFO

Keywords:

Complementary foods with ASI (MP-ASI), Infant Growth, Infant Development.

E-mail:

tetty.rina.2109@gmail.com

ABSTRACT

Complimentary food (MP ASI) is another complimentary food supplied to children from 6-24 months of age, and that accompanies breastfeeding. The research aimed to establish the relationship between different food and growth and infants 6 to 12 months old. This research was conducted at the Umi Rahma maternity clinic from June-July 2019 with a sample of 44 people. The population determines the research sample, and the selection studied is following the research capability in terms of funding and sampling quota time. Analytical survey methods with SPSS analysis that involves Univariate and Bivariate analysis were used in the study. The results showed that the MPASI processing variable had a weak, positive and insignificant effect on infant growth and had a strong, positive, and significant impact on infant development..

Copyright © 2021 Science Midwifery.

1. Introduction

Balanced nutrition and nutrition are the primary needs in child development. The purpose of providing good nutrition is so that children can grow up healthy and robust (Fitri et al., 2014). Lack of nutritional intake for infants and children can cause growth and development disorders which, if not addressed immediately, will affect the child until he reaches adulthood (Cayani et al., 2017). WHO and UNICEF propose four crucial things in their Global Strategy for Children and Young Child Feeding. Only provide breast milk less than 30 minutes after the baby has been born as soon as possible. Second, only or exclusive breastfeeding for the first six months of breast milk (ASI) will be provided. Third, provide ASI (MP-ASI) with other food between 6 months and 24 months. Fourth, continue to provide breast milk until your child is 24 months old (Unicef, 2015).

Infancy is a period of growth and development of the fastest, so it requires adequate nutrition. Therefore, breast milk is the best and most important food and drink (Wulansari & Astuti, 2018). This is because it contains immune substances which are needed to protect babies from viruses and diseases. However, along with the growth and development of the baby, the need for nutrients also increases. The need for these nutrients cannot be met only with breast milk; therefore, complementary foods are given to ASI (MP-ASI) (Mufida et al., 2015).

Complementary foods (MP ASI) are other foods that are complementary to breastfeeding that is given to children aged 6-24 months. Appropriate breastfeeding is food that meets nutritional needs so that children can grow and develop optimally (Sihwi et al., 2014). According to the Ministry of Health (2007), MP ASI (Complimentary Food to ASI) is given to babies over the age of 6 months because breast milk can no longer meet the baby's needs. The habit of giving early complementary breastfeeding has contributed to many problems later in life, such as allergies, malnutrition, and gastrointestinal issues (Dayanti & Fatonah, 2017). In the first months of life, the digestive system is not yet fully developed, so that too early complementary feeding can cause various health problems. Because it is necessary to know the factors that influence the habit of giving early MP ASI. (Riksani, 2012).

In infants aged six to twenty-four months, breast milk (ASI) cannot meet the baby's nutritional needs. Therefore, babies need to be given complementary foods (MPASI), including all solid and liquid foods other than breast milk or formula milk (Al Rahmad, 2017), to meet their nutritional needs. The switch from exclusive breastfeeding to complementary breastfeeding usually covers the age period from six months to eighteen to twenty-four months. This period is a period of susceptibility to malnutrition in many infants (Lestari et al., 2014). The World Health Organization (WHO) estimates that 2 out of 5 children do not grow well in low-income countries (WHO, 2014). Therefore, supplementary diets need to be available, meaning that a range of dietary requirements

for babies and children's development must be given food in quantity, frequency, quality, and continuous breastfeeding requirements (WHO, 2014).

General nutritional problems are caused by two factors (Heryanto, 2017); the first is a direct factor related to nutritional intake or food intake for specific nutrients and infectious diseases. The second factor is the indirect factor in the mother's knowledge about nutritious food, education of parents, income in the family (Riskseddas, 2013).

In line with the context mentioned above, the authors would identify the following problems. There is a link between complementary feeding treatment with lactating (MPASI) processing and sampling growth and development of babies and the maternity clinic's test site in Umi Rahma. This research was designed to establish the relationship between processed and developed complementary food for infants aged 6 and 12 months.

2. Literature Review

2.1 Nutrition

The definition of nutrition in reproductive health is how an individual can meet the nutritional needs needed by his body to remain in a healthy state and either physically or mentally. As well as being able to run the metabolic and reproductive systems, both function or process naturally with a healthy body condition (Dewantari, 2013).

Nutritional status, according to Almatsier (2003), is divided into four types, namely:

- a. Status of malnutrition Severe malnutrition due to insufficient energy and protein intake in everyday food and continues for a considerable time.
- b. Nutritional insufficiency. It happens when one or more vital nutrients are lacking in the body.
- c. The good status of nutrition or optimal nutrition. That is when the body gets sufficient nutrients to effectively achieve the most significant possible degree of physical growth, brain development, employability, and general wellbeing.
- d. On the status of nutrition. This is when an excess of nutrients is obtained from the body to cause toxic or harmful effects. A good predictor is recommended for determining adolescent nutritional status BMI.

2.2 Growth and Development

Growth is an increase in body size that can be measured or is quantitative. At the same time, development is characterized by the rise in the baby's qualitative abilities, such as the ability to respond to sound, see the environment, suck fingers, and so on (Chamidah, 2009). The growth of the baby is indicated by the presence of weight gain (BB), body length (PB), head circumference (LK), upper arm circumference (LILA), and so on. Because growth represents an increase in the child's size, the child must be weighed and measured regularly (Jahja, 2011).

The pattern of height growth rate in girls and boys from birth to adulthood (Kania, 2006) is as follows:

- a. The growth and development experienced by children is a series of regular changes from one stage to the next, which as a whole starts from the conception in the mother's womb, which is continually becoming more and more observable after the child is born into the world (Narendra, 2002).
- b. Good growth and development will be the capital for the continuity of children as an excellent future generation. On the other hand, it can also act as an obstacle to the next generation's continuity. It can even be a source of distress and calamity for individuals, families, and communities (Hidayat & Uliyah, 2015).

The growth and development process of babies in infants, youth, and adults depend on several factors. These influences can be good and evil. Efficient food intake, good healthcare, good parenthood, safe and stable environmental environments, etc., all positively impact. In the meantime, vulnerability, deprivation, social disability, inadequate health care, and other causes have a detrimental effect on infant growth and development (Septikasari, 2018).

2.3 Complementary foods breast milk (MP-ASI)

Complementary foods (complementary foods) are foods or drinks that contain nutrients that are given from the age of 6 months. (Rini & Kumala, 2016). Complementary foods (complementary foods) are baby foods offered in addition to breast milk, with a texture and density according to the baby's digestibility. (MPASI) are food given to babies, and breast milk and complementary

Science Midwifery

breastfeeding also help support the baby's growth. Complementary feeding is food that is given to babies to meet the needs of babies or children in complementing breast milk and is usually given to babies aged 6-12 months (Sitompul, 2017)

MPASI is the transformation mechanism from a mere consumption of milk to semi-solid foods. The other foods can be introduced and delivered at stages of both the shape and the amount, depending on the baby and child's digestive ability. Just 60% of babies aged 6-12 months satisfy the food requirements of infants. Certain foods which are adequate in amount and healthy nutrition have to be added to the remainder. Therefore, children 6 months and older require more solid food nutrition (Mudifa et al., 2015).

The purpose of providing complementary foods with ASI (MP-ASI) to babies is as follows:

- a. Achieve optimal growth and development both from physical, motoric, and intellectual development
- b. Avoiding malnutrition
- c. Prevent malnutrition
- d. Avoiding disease
- e. Prevent deficiency of iron, zinc, calcium, vitamin A, vitamin C, and folic acid, which can affect the growth process of babies/children.

2.4 Research Hypothesis

Hypotheses are quick answers to a study, benchmarks, assumptions, or propositions, while the truth is proven in the research (Natoadmojo, 2012). The hypothesis in this study will be explained as follows:

Ho: There is no relationship between complementary food processing and baby growth at Umi Rahma Maternity Clinic in 2019.

Ha: There is a relationship between complementary food processing and baby growth at Umi Rahma Maternity Clinic in 2019.

Ho: There is no relationship between complementary food processing and baby development at Umi Rahma Maternity Clinic in 2019.

Hb: There is a Relationship between MPASI Processing and Baby Development at Umi Rahma Maternity Clinic in 2019.

3. Method

This research style is based on a system of analytical survey research, in which research on all researched subjects of the population is not carried out. In the study, the analysis is intended to assess the relationship between additional feeding and child growth in the Umi Maternity Clinic for 6 to 12 months. Rahma. Rahmen. The research included mothers and babies between the ages of 6 and 12 months of age in the Umi Rahma Clinic in May and June 2019. (Lapau, 2015). The numbers calculate the study sample, and the sample is funded, and the sample tested is based on research ability. Data analysis with univariate and bivariate analyzes is conducted with SPSS tools.

4. Result and Discussion

4.1 Univariate analysis

In this study, the univariate analysis used variables of complimentary food processing and infant growth and development in the Umi Rahmah clinic. Univariate analysis can be seen in the table below.

Table 1

Frequency of complimentary food processing with infant growth and development

No	Variables	Frequency (f)	Percentage (%)
1	MPASI processing		
	Good	36	81.82
	Not good	8	18.18
	amount	44	100
2	Baby Growth		
	Good	29	65.91

Contents lists available at [iocspublisher](http://iocspublisher.com)

Science Midwifery

Journal Homepage: www.midwifery.iocspublisher.org

No	Variables	Frequency (f)	Percentage (%)
3	Not good amount	15	34.09
	Baby Development	44	100
	Good	40	90.91
	Not good amount	4	9.09
		44	100

Based on table 1, the frequency distribution of 44 respondents with a variable value of solid food processing in good categories is 36 respondents (81.82%) for the variable growth of babies in the excellent variety of 29 respondents (65.91%). And for the variable of infant development is 40 respondents (90.91%).

4.2 Bivariate Analysis

This study intends to examine whether there is a correlation between the processing of substitute foods for breastmilk (MP-ASI) on the growth and development of infants. Tests were carried out using Pearson correlation with bivariate analysis with the SPSS software analysis tool as below:

Table 2.
The Relationship between MPASI Processing and Baby Growth

		Correlations		
		Pengolahan_MPASI	Infant_Growth	Infant_Development
MPASI_Processing	Pearson Correlation	1	.158	.671**
	Sig. (2-tailed)		.305	.000
	N	44	44	44
Infant_Growth	Pearson Correlation	.158	1	.106
	Sig. (2-tailed)	.305		.493
	N	44	44	44
Infant_Development	Pearson Correlation	.671**	.106	1
	Sig. (2-tailed)	.000	.493	
	N	44	44	44

** . Correlation is significant at the 0.01 level (2-tailed).

Based on table 2 above, it is understood that the Sig. (2-tailed) of 0,305 > 0,04 for the complementary production of food and child development is accepted, so Ho is accepted, and Ha has been refused. The connection between complementary food production and the growth of infants also has a Sig value.(2) The value of 0.000 < 0.05 is rejected, Ho is accepted, and Hb is obtained, which implies that a substantial distinction is made between complementary and childhood feeding variables.

Meanwhile, based on the value of r calculated (Pearson Correlation), it is known that the value of r calculated for the relationship between MPASI processing and infant growth is 0.158, which means there is a positive relationship and is at a fragile level of connection. Meanwhile, the calculated r-value of the relationship between complementary feeding and infant development is 0.671, which means there is a positive relationship and is at an intense level.

Meanwhile, to measure the effect of infant growth and infant development on complementary food processing can be shown in tables 2 and 3 below :

Table 3
Coefficient of Determination of Baby Growth on MPASI Processing

Model Summary					
Model	R	R Square	Adjusted R Square	Std. The error of the Estimate	Durbin-Watson
1	.158 ^a	.025	.002	.47906	2.347

a. Predictors: (Constant), Pengolahan_MPASI
b. Dependent Variable: Pertumbuhan_Bayi

The coefficient of measurement R Square is 0.025 based on table 3 above. The measurement coefficient (R Square) of 0.025 or 2.5% means the MPASI treatment component for infants' development is 2.5%. The remaining 97,5% is dependent on other non-examined factors or variables.

Table 4

Coefficient of Determination of Baby development on complementary food processing

Model	R	R Square	Model Summary		
			Adjusted R Square	Std. The error of the Estimate	Durbin-Watson
1	.671 ^a	.450	.437	.21822	1.875

a. Predictors: (Constant), Pengolahan_MPASI
b. Dependent Variable: Perkembangan_Bayi

The coefficient of R Square determination is 0.450 based on above table 3. This means the baby processing percentage for solid foodstuffs is 0.450 or 45%; other factors affect the remaining 55%.

From the research on the relationship between complementary feeding and growth and development of babies carried out at Ummi Rahma's maternity clinic, which was conducted in June-July 2019, the results in table 1 showed that from 44 respondents, 36 respondents or 81.82% processed breastmilk replacement food good, namely by steaming and boiling it. As for the infant growth variable, the results obtained were 29 respondents or 65.91%, which were good (-2 SD to 2 SD), and for the infant development variable, there were 40 respondents or 90.91%, according to their age.

Based on the correlation test results using Pearson Correlation, as shown in Table 2, it is known that the Sig. (2-tailed) between MPASI processing and baby growth, the results were $0.305 > 0.05$. This shows that the processing of complementary foods has a relationship but does not significantly affect infant growth (H_a rejected). Meanwhile, for the sig (2-tailed) value between complementary feeding and infant development, as seen in the table, the value is $0.000 < 0.05$. This shows that the processing of complementary foods with infant development is related and has a significant effect (H_0 is accepted).

The measurement of r count (Pearson Correlation) for the variable complementary food processing on infant growth obtained a value of 0.158 which means that the two variables have a positive relationship but are at a weak level of connection. This contrasts with the r count results, the variable complementary food processing with infant development, where the value is 0.671. This indicates a positive relationship and is at an intense level.

Measurement of the Determination Coefficient (R Square) as seen in Tables 3 and 4 shows that the effect of baby growth on complementary food processing is fragile, namely 2.5% & while the impact of infant development on MPASI processing is more substantial at 45%. The lower the measuring coefficient, the more negligible the independent variable has on the dependent variable and vice versa.

5. Conclusion

From the research that has been done, it can be concluded that there is a positive but insignificant and weak relationship between the MPASI processing variable and infant growth. This can be seen from the Sig (2-tailed) of $0.305 > 0.05$; the r count is 0.158, and R Square is 2.5%. Meanwhile, for the relationship between MPASI processing and infant development, there is a positive, strong, and significant relationship, where the Sig. (2-tailed) of $0.000 < 0.05$; r count of 0.671 and r Square of 45%.

6. References

- [1] Al Rahmad, A. H. (2017). Pemberian ASI dan MP-ASI Terhadap Pertumbuhan Bayi Usia 6-24 Bulan. *Jurnal Kedokteran Syiah Kuala*, 17(1), 4-14.

Science Midwifery

Journal Homepage: www.midwifery.iocspublisher.org

- [2] Almtsier, S. (2010). *Prinsip Dasar Ilmu Gizi*. Jakarta: Gramedia Pustaka Utama.
- [3] Cahyani, F. P., Furqon, M. T., & Rahayudi, B. (2017). Identifikasi Penyimpangan Tumbuh Kembang Anak Dengan Algoritme Backpropagation. *Jurnal Pengembangan Teknologi Informasi dan Ilmu Komputer e-ISSN, 2548, 964X*.
- [4] Chamidah, A. N. (2009). Deteksi Dini Gangguan Pertumbuhan Dan Perkembangan Anak. *Jurnal Pendidikan Khusus, 5(2)*, 83-93.
- [5] Damayanti, D., & Fatonah, S. (2017). Hubungan Pola Pemberian Makanan Pendamping Asi Dengan Status Gizi Balita Usia 6-24 Bulan Pada Salah Satu Desa Di Wilayah Lampung Timur. *Jurnal Ilmiah Keperawatan Sai Betik, 12(2)*, 257-263.
- [6] Dewantari, N. M. (2013). Peranan Gizi Dalam Kesehatan Reproduksi. *Jurnal Skala Husada, 10(2)*, 219-224.
- [7] Fitri, D. I., Chundrayetti, E., & Semiarty, R. (2014). Hubungan Pemberian ASI Dengan Tumbuh Kembang Bayi Umur 6 Bulan Di Puskesmas Nanggalo. *Jurnal Kesehatan Andalas, 3(2)*.
- [8] Heryanto, E. (2017). Faktor-Faktor Yang Berhubungan Dengan Pemberian Makanan Pendamping ASI Dini. *Aisyah: Jurnal Ilmu Kesehatan, 2(2)*, 217409.
- [9] Hidayat, A. A., & Uliyah, M. (2015). *Buku Saku Praktik Kebutuhan Dasar Manusia*. Health Books Publishing.
- [10] Jahja, Y. (2011). *Psikologi perkembangan*. Kencana.
- [11] Kania, N. (2006). Stimulasi Tumbuh Kembang Anak Untuk Mencapai Tumbuh Kembang Yang Optimal. *Bandung: Universitas Padjajaran*.
- [12] Kementerian Kesehatan R I. (2013). *Riset Kesehatan Dasar*. Jakarta : Balitbang Kesehatan.
- [13] Lestari, M. U., Lubis, G., & Pertiwi, D. (2014). Hubungan Pemberian Makanan Pendamping Asi (MP-ASI) Dengan Status Gizi Anak Usia 1-3 Tahun Di Kota Padang Tahun 2012. *Jurnal Kesehatan Andalas, 3(2)*.
- [14] Mufida, L., Widyaningsih, T. D., & Maligan, J. M. (2015). Prinsip Dasar Makanan Pendamping Air Susu Ibu (MP-ASI) Untuk Bayi 6-24 Bulan: Kajian Pustaka [In Press September 2015]. *Jurnal Pangan dan Agroindustri, 3(4)*.
- [15] Narendra, M. B. (2002). *Tumbang Anak dan Remaja*. Jakarta: Sagung Seto.
- [16] Notoatmodjo, S. (2012). *Metodologi Penelitian Kesehatan*. Jakarta : Rineka Cipta.
- [17] Rini, S., & Kumala, F. (2017). *Panduan Asuhan Nifas dan Evidence Based Practice*. Deepublish.
- [18] Septikasari, M. (2018). *Status Gizi Anak Dan Faktor Yang Mempengaruhi*. UNY Press.
- [19] Sihwi, S. W., Mulyasari, H., Saptono, R., & Wiboworini, B. (2014). Sistem Rekomendasi Menu Harian Makanan Pendamping Air Susu Ibu (MPASI) Berdasarkan Kebutuhan Kalori Bayi dengan Metode TOPSIS. *Jurnal Ilmu Komputer dan Agri-Informatika, 3(2)*, 122-131.
- [20] Sitompul, E. W. (2017). *Buku Pintar MPASI Makanan Penunjang ASI 6 Bulan Sampai 1 Tahun*. Jakarta: Arena Kid.
- [21] Unicef. (2015). Paket Konseling: Pemberian Makan Bayi dan Anak. *United Nations International Children's Emergency Fund*.
- [22] Wulansari, M. A., & Astuti, D. A. D. (2018). Hubungan Pengetahuan Ibu dengan Pemberian Makanan Pendamping ASI pada Bayi Usia 6-12 Bulan. *Proceeding of The URECOL, 802-807*.