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The Comparison of Instant and Homemade MP-ASI to Meet Nutritional Status in Infants 6-12 Months Old at the Cio Maloleo Health Center

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Abstract *This study aims to determine the comparison of Instant and Homemade MP-ASI to meet the nutritional status of infants aged 6-12 months in the working area of Cio Maloleo Health Center. Instant MP-ASI is made based on special provisions set by the World Health Organization (WHO). The type of research used in this study is comparative research, namely comparing the mean growth value of children given Homemade MP-ASI and instant MP-ASI. The measurement scale used is a ratio scale used to determine the comparison of Instant and Homemade MP-ASI. This study uses an Independent t-test analysis. Based on the output results that have been presented, it was found that the significance value (2-tailed) is 0.348, which is greater than 0.05. Therefore, it can be concluded that there is no significant difference in the average provision of Instant and Homemade MP-ASI.*

Keywords*: Homemade MP-ASI; Independent T-Test; Infant; Instant MP-ASI; Nutritional Status.*

1. INTRODUCTION

The age of 0-24 months is a period of rapid growth and development, often referred to as the golden period and a critical period. This golden period can be achieved if infants and children receive adequate nutrition for optimal growth and development.

The nutritional status of infants and toddlers is an indicator of community nutrition and has been developed into an indicator of public health and well-being. This is because infants and toddlers are highly susceptible to various nutritional deficiencies.

Good nutritional status can be achieved if the body receives sufficient nutrients. Nutritional intake for children up to 2 years of age is obtained from breast milk (ASI) and complementary foods (MP-ASI). Based on WHO recommendations on proper infant feeding practices, adequate nutritional needs are met by providing breast milk as soon as possible after birth (less than 1 hour) and exclusively for 6 months.

Nutrition is closely related to a person's health. For this function to function properly, the amount of nutrients consumed by infants must be in accordance with the body's needs. If the body consumes fewer nutrients than it needs, malnutrition will occur. Conversely, if the amount of nutrients consumed is excessive, it will result in excess nutrition.

Complementary foods (MP-ASI) are solid foods containing complete nutrients given to babies starting at 6 months of age in addition to exclusive breastfeeding to achieve optimal growth and development. Another opinion states that complementary foods are foods given in addition to breast milk to babies aged 6 months and older to meet their nutritional needs. If the baby is less than 4 months old, their digestive system is not yet ready, and they may choke. If the baby is older than 6 months, they may develop food allergies (Rochmaedah & Waliulu, 2021). The purpose of complementary foods (MP-ASI) is to complement breast milk. The

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introduction and provision of MP-ASI should be done gradually, both in form and quantity, according to the baby/child's digestive capacity.

Complementary foods currently available in the community include homemade MP-ASI and instant MP-ASI. Instant MP-ASI is made according to specific regulations set by the World Health Organization (WHO). These requirements cover safety, hygiene, and nutritional standards. Homemade complementary foods, on the other hand, offer a richer texture, aroma, flavor, and guaranteed nutritional content. The variety of foods a baby consumes when consuming homemade complementary foods also provides a richer eating experience and facilitates the subsequent learning process for babies to eat.

Nutrition improvement programs aimed at increasing the quantity and quality of complementary foods have been implemented, including providing complementary foods to infants aged 6-12 months from low-income families. Generally, there are two types of complementary foods: factory-processed, also known as instant complementary foods, and home-made complementary foods. Considering the importance of socio-cultural and community empowerment aspects in providing complementary foods, the complementary foods to be provided in 2006 will be homemade complementary foods, also known as "mother's kitchen complementary foods".

Homemade complementary foods in some developing countries do not yet provide sufficient energy and micronutrients to meet daily needs. However, over the past two decades, the choice of manufactured complementary foods, especially instant ones, has become the primary choice for mothers of all socioeconomic levels. Generally, the choice of instant complementary foods is due to their ease of administration, practicality, and the appropriate amount of nutrients for their child's age.

Previous research conducted with 10 mothers of infants aged 6-12 months who had received instant and homemade complementary foods found that 7 of the infants' weights fluctuated (fluctuated), while 3 reported that their infants' weight growth (weight) increased each month. When asked about the appropriate frequency of complementary feeding, 6 of the 7 mothers of infants with unstable growth stated that they were not regularly given both instant and homemade complementary foods, citing their mothers' workload.

The World Health Organization (WHO) states that more than 49 million children under five years of age were wasted, nearly 17 million were severely wasted, and more than 40 million were obese globally in 2018. Africa and Asia are the regions with the highest prevalence of malnutrition. The prevalence of wasting (62%) and obesity (47%) remained the highest in 2018 (WHO, UNICEF & World Bank Group, 2019). UNICEF, WHO, and the World

Bank Global & Regional Child Survey (2018) state that malnutrition remains a global problem, with the world far from being free of malnutrition.

Based on the 2017 Nutritional Status Monitoring (PSG) results for Gorontalo Province, based on the weight-for-age index, cases of malnutrition were 6.0%, undernutrition 17.5%, good nutrition 75.9%, and overnutrition 0.6% (Ministry of Health, 2018). Meanwhile, according to the 2018 Basic Health Research (Riskesdas), the prevalence of malnutrition and undernutrition in Gorontalo Province was 26.0%.

According to data from the Cio Maloleo Community Health Center (Puskesmas), the number of infants aged 6-12 months was 128, with 66 girls and 62 boys. The nutritional problem in the Cio Maloleo Community Health Center area was two infants suffering from malnutrition. Interviews with nutrition staff at the Cio Maloleo Community Health Center revealed that parents generally prefer instant complementary feeding (MP-ASI) over homemade ones, citing their perceived practicality and portability.

Based on this description, the researchers were interested in conducting a case study, "Comparison of Instant and Homemade MP-ASI to Meet Nutritional Needs in Infants Aged 6-12 Months in the Cio Maloleo Community Health Center Work Area."

2. RESEARCH METHOD

This study used a quantitative approach, using primary and secondary data. The study was conducted in the Cio Maloleo Community Health Center (Puskesmas) working area, with a sample of 56 infants aged 6-12 months using the Slovin formula.

The Slovin formula is: $n = \frac{N}{1=Ne2}$

n is the sample size,

N is the population size, and

e is the margin of error, which is the expected or specified error.

Given: N = 128 infants

e = 20%

= 128/(1 + 128 x (0.1)2)

= 128/(1 + 1.28)

= 128/2.28

= 56

The data collection technique used was observational data collection. Data analysis in quantitative research uses statistics; in this study, the Independent Sample T-Test was used.

3. RESULTS AND DISCUSSION

Results

Table 1. Infant Characteristics.

Characteristics	**Instant MP-ASI**		**Homemade MP-ASI**	
	Total	**Percentage**	**Total**	**Percentage**
Gender				
Female	17	60,7 %	15	53,6 %
Male	11	39,3 %	13	46,4 %
Age (months)				
6	11	39,3 %	2	7,1 %
7	8	28,6 %	2	7,1 %
8	4	7,1 %	5	17,9 %
9	2	7,1 %	3	10.7 %
10	1	3,6 %	3	10,7 %
11	1	3,6 %	3	10,7 %
12	1	3,6 %	10	35,7 %

Source: Data Premier, 2023.

According to Table 1, the majority of infants (60.7%) who received instant complementary foods and 53.6% who received homemade complementary foods were female. The majority of infants (39.3%) who received instant complementary foods were 6 months old, while those receiving homemade complementary foods were 12 months old (35.7%).

Table 2. Nutritional Content Overview.

MP-ASI	**Nutrient Content**									
	Energi	P	L	KH	Vit A	Vit B6	Vit B12	Ca	Fe	Zink
Instan	160 Kkal	40 g	2,5 g	31 g	25 µg	75 µg	55 µg	65 µg	85 µg	100 µg
Homemade	461 Kkal	40,7 g	13,3 g	41,8 g	88,5 µg	0,5 µg	2,2 µg	39,5 µg	10 µg	1,6 µg

Source: Processed in 2023.

Based on Table 2 above, the nutritional content of instant complementary foods is lower than that of homemade complementary foods. Homemade complementary foods contain 461 kcal, while instant complementary foods only contain 160 kcal.

Table 3. Results of the Independent Sample Test.

No	Groups	Significant
1	Instan	0,384
2	Homemade	0,348

Source: Processed 2023.

Based on Table 3, there is no difference between instant and homemade complementary foods, as seen in the t-test results, which showed a value of 0.384, which is greater than 0.05.

Table 4. Group Statistics.

No	Groups	Mean
1	Instan	0,5917
2	Homemade	0,4021

Source: Processed in 2023.

Based on Table 4., the average infant aged 6-12 months in the Cio Maloleo Community Health Center Work Area received more instant complementary foods (0.5917), while homemade complementary foods (0.4021) were given.

Discussion

Based on research results obtained from 56 respondents in the Cio Maloleo Community Health Center working area, in terms of gender, infants who consumed instant complementary foods were more likely to be female (60.7%) compared to males (39.3%). Meanwhile, infants who consumed homemade complementary foods were more likely to be female (53.6%) or male (46.6%). Regarding age characteristics, infants who consumed instant complementary foods were most likely to be 6 months old (39.3%), while the least likely were infants aged 10-12 months (3.6%). Meanwhile, infants who consumed homemade complementary foods were most likely to be 12 months old (35.7%), and the least likely were infants aged 6-7 months (7.1%).

Research shows that infants consuming instant complementary foods (MP-ASI) with homemade MP-ASI have normal nutritional status, as indicated by a Z-score of <3 SD, indicating normal nutritional status. A Z-score of >3 SD indicates poor nutritional status.

Based on the nutritional content table, instant MP-ASI contains less than homemade MP-ASI. Homemade MP-ASI contains 461 kcal, while instant MP-ASI contains 160 kcal. The number of kilocalories obtained from homemade MP-ASI is based on the baby's eating history, calculated through Nutrisurvey, while instant MP-ASI is obtained from the nutritional content listed on the packaging.

Providing adequate MP-ASI in terms of quality and quantity is crucial for a child's physical growth and intellectual development, which are rapidly increasing during this period.

As a baby's nutritional needs increase, so does their milk intake to ensure the energy they need for growth and development. Breast milk only meets 60% of a baby's nutritional needs for infants aged 6-12 months. The remainder must be met with other foods in sufficient quantities and with good nutrition. Therefore, babies aged 6 months and older require additional nutrition from complementary foods, but the complementary foods provided must also be of high quality.

A mother's knowledge level is a determining factor in a baby's nutritional status. Good knowledge will help her baby provide complementary feeding according to their condition and age. Research shows that mothers with low levels of education are more receptive to messages or information from others because they are based on local experience and culture, and their feeding principles are adapted to the foods they cook daily. A lack of food variety can lead to infants lacking the nutritional content of various ingredients.

A mother's occupation also influences her decisions regarding complementary feeding. A mother's employment status influences her social relationships with many people outside the home, allowing her to acquire a wealth of positive and negative information from the social environment outside the home. Instant complementary feeding is often chosen by mothers who work outside the home, while homemade complementary feeding is more often chosen by mothers who work only at home.

Being a stay-at-home mother provides unlimited time to provide optimal care and nutrition for their baby. Regular and high-quality complementary feeding can significantly enhance a baby's growth, while inadequate provision can hinder it. Parents and healthcare workers, especially nurses, can improve the community's knowledge and skills in meeting children's nutritional needs. The national increase in stunting incidence is a key reason for this research. Proper nutritional intake during the first 1,000 days of life (HPK) is one solution to addressing child nutrition and preventing stunting.

The table above shows a mean value of -0.4021 for homemade complementary feeding and -0.5917 for instant complementary feeding. This can be interpreted as indicating a higher average rate of homemade complementary feeding compared to instant complementary feeding. Therefore, it can be concluded that there is no significant difference between instant complementary feeding and homemade complementary feeding in the Cio Maloleo Community Health Center (Puskesmas) coverage area.

4. CONCLUSION

The research results showed that 28 infants consumed instant complementary foods and 28 infants consumed homemade complementary foods. The instant complementary foods consisted of 17 girls (60.7%) and 11 boys (39.3%), while the homemade complementary foods consisted of 15 girls (53.6%) and 13 boys (46.4%).

Based on the presented output, the significance value (2-tailed) was 0.348, which is greater than 0.05. Therefore, it can be concluded that there is no significant difference in the average consumption of instant and homemade complementary foods.

The table above shows that the mean value for homemade complementary foods is -0.4021 and -0.5917 for instant complementary foods. This can be interpreted as a higher average consumption of homemade complementary foods compared to instant complementary foods. Thus, it can be concluded that there is no significant difference between Instant MP-ASI and Homemade MP-ASI in the Cio Maloleo Community Health Center work area.

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