



Comparative Nutritional Status of Infants with Exclusive Breastfeeding and Formula Milk at Puskesmas Dadok Tunggul Hitam, Padang City

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Abstract

Exclusive breastfeeding is crucial for optimal growth and development of infants, as it provides essential nutrition and immunity. However, in Padang City, the coverage of exclusive breastfeeding varies significantly. Data from 2021 shows that the highest coverage is at Bungus Health Center, with 86.9%, while the lowest is at Dadok Tunggul Hitam Health Center, at only 25.67%. This discrepancy raises concerns about the nutritional status of infants who do not receive exclusive breastfeeding, as nutritional status is a key indicator of overall health and development. This study investigates the differences in nutritional status between infants who receive exclusive breastfeeding and those given formula milk at Dadok Tunggul Hitam Health Center. This descriptive-analytic research employs a cross-sectional approach with 96 infants over 6 months old. Data was collected through interviews using questionnaires and analyzed with T-test. The results show that the average nutritional status of infants receiving exclusive breastfeeding is -2.23, while for those receiving formula milk, it is -2.04. This significant difference indicates that infants who receive exclusive breastfeeding have better nutritional status. The study recommends that healthcare workers, especially midwives at the health centre, be more proactive in providing information about the benefits of exclusive breastfeeding to improve infant nutritional status, particularly in areas with low coverage.

Keywords: Nutritional Status, Exclusive Breastfeeding, Formula Milk

Introduction

The nutritional status of infants or toddlers is one indicator that illustrates the level of community welfare. Assessment of the nutritional status of infants/toddlers can be done with anthropometric measurements. There are three types of indicators measured, namely weight for age (BB/U), height for age (TB/U) and weight for height (BB/TB). The indicator often used is body weight according to age (BB/U). Based on the national standard BB/U index consists of overnutrition, good nutrition, undernutrition and malnutrition (Rahmawati, 2019).

Growth in infants develops rapidly, especially at 0-6 months. Infants experience growth in body length, weight, head circumference, and upper arm circumference (Ahmed et al., 2024). Body weight is the best indicator of growth in children, but body length, head circumference, and upper arm circumference are no less important indicators of child growth (Armdie et al., 2024). Growth in infants is influenced by genetic factors such as racial descent and family ethnicity, environmental factors such as home hygiene and the nutrition infants receive, namely exclusive breastfeeding or not (Rahmadanty, 2020).

Based on data from the Indonesian Nutrition Status Study (SSGI) in 2021, it was found that the prevalence of malnutrition and undernutrition in West Sumatra was lower than the national level at 23.3 and 24.4%. However, there are 9 districts/cities with a higher prevalence of malnutrition than the provincial rate, including Solok District (40.1%), Pasaman District (30.2%), Sijunjung District (30.1%) and Padang Pariaman District (28.3%). These were followed by Lima Puluh Kota (28.2%), Mentawai Islands (27.3%), Pesisir Selatan (25.2%), Solok Selatan (24.5%) and Pasaman Barat (24%).

The achievement of the exclusive breastfeeding program in West Sumatra Province for infants aged 0-6 months recorded in the registration of breastfeeding records in 2018 was (77.9%) (Ministry of Health, 2018). This shows that the coverage of exclusive breastfeeding in West Sumatra Province is still low. Exclusive breastfeeding (Kushwaha & Jacob, 2024) coverage in Padang city in 2019 was 93.5% (DKK Padang, 2019). Although this figure is relatively high, it is above the national target expected to increase exclusive breastfeeding (Dwiantini et al., 2024), which has reached 90% as a government policy to reduce infant mortality in Indonesia (Profkes, 2019).

Based on the data obtained (Alissa & Alshareef, 2024), the coverage of exclusive breastfeeding in Padang City in 2021 was found to be the highest coverage of exclusive breastfeeding at the Bungus Health Center, namely 86.9%. Meanwhile, the lowest exclusive breastfeeding coverage was at the Dadok Tunggul Hitam Health Center, which was 25.67%.

Literature Review

Another study was conducted by Utary Dwi Listiarini and Indah Dewi Sari (2021) on differences in exclusive breastfeeding and not on baby weight at the Wita Medan Clinic. This study found that exclusive breastfeeding accounted for most of the non-exclusive breastfeeding category, with 23 respondents (60.5%). The minority of the exclusive breastfeeding category amounted to 15 respondents (39.5%), 6 months baby weight; the majority of respondents who had normal babies amounted to 21 respondents (55.3%); respondents who had thin babies amounted to 7 respondents (18.4%), and respondents who had fat babies amounted to 10 respondents (26.3%) and the results of the chi-square test, obtained a $p\text{-value} = 0.007 < \alpha 0.05$ then the hypothesis is accepted. (Izumi et al., 2024)

Nutritional problems in infants are influenced by many factors, both directly, such as low nutritional intake and health status, and indirect causes (Widianoro et al., 2024), such as income factors and economic inequality (income), health systems, and others (Bappenas, 2018)

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(Ariani, 2020). Other factors cause the incidence of nutritional problems in Indonesia include lack of knowledge about nutrition, exclusive breastfeeding, environmental sanitation, and low family socioeconomic status (Beal et al., 2018; Bukusuba et al., 2017; Masereka et al., 2020) (Ariani, 2020). According to the Unicef Framework, one of the factors causing nutritional problems in infants/toddlers is unbalanced food intake. Unbalanced food intake includes exclusive breastfeeding that is not given for 6 months and breast milk for up to 2 years (Wiyogowati, 2012) (Fitri, 2018). According to Lawrence Green (1980), the practice of exclusive breastfeeding can be influenced by several things, including the level of maternal knowledge, maternal education, maternal employment, maternal health conditions, and the family environment (Assriyah et al., 2020).

Breastfeeding is important in reducing the incidence of stunting (Makwela et al., 2024) because it contains nutrients that can provide adequate nutrition for children (Harahap et al., 2024). This is very important because a lack of nutrition can be the reason for mortality and stunting in children (Black et al., 2013). Breast milk has many benefits: nutrition, increased endurance, mental intelligence and emotional stability, and protection against allergies (Mufdilah, 2017). Lack of breastfeeding and early complementary feeding can increase the risk of stunting, especially in early life (Ni'mah Khoirun and Siti Rahayu Nadhiroh, 2015). According to research by Nimah and Nadhiroh (2015), they explained that toddlers who do not get exclusive breastfeeding are 4.6 times at greater risk of stunting (Martín-Ramos et al., 2024). Children who do not get exclusive breastfeeding tend to experience nutritional deficiencies needed in the growth process (Lestari & Dwihestie, 2020).

Research Method

This type of research is descriptive-analytic research with a cross-sectional method approach. The research was conducted at the Dadok Tunggul Hitam Health Center. The number of samples was 96 babies. Sampling was done by accidental sampling based on who was in the research location as a research sample. The research was conducted using univariate analysis to determine each variable studied, aiming to explain or describe each research variable. Univariate analysis in this study is to see the average value of body weight and nutritional status of infants >6 months. Bivariate analysis was carried out to see the relationship between the independent variable (nutritional status) and the dependent variable (exclusive breastfeeding with formula milk), analyzed using the T-test and data processed using SPSS.

Result

Responden Characteristics

Table 4.1 Distribution of Respondent characteristics in the Dadok Tunggul Hitam Health Center Working Area.

Respondent Characteristics	<i>f</i>	%
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Age		
17-25 Years	14	14,6%
26-35 Years	55	57,3%
36-45 Years	27	28,1%
Total	96	100.0%
Education		
SD	4	4,2%
SMP	32	33,3%
High School	47	49,0%
Higher Education	13	13,5%
Total	96	100.0%
Jobs		
IRT	75	78,1%
Private	18	18,8%
PNS	3	3,1%
Total	96	100.0%
Gender of Child		
Male	59	61,5%
Female	37	38,5%
Total	96	100.0

Based on table 4.1 above, it can be seen that the distribution of respondent data in the Dadok Stump Black Health Center Working Area, more than half (57.3%) of the mother's age is included in early adulthood, has a high school education as many as 47 people (49.0%), Respondents have jobs as housewives as many as 75 people (78.1%) and more than half of the sex of boys as many as 59 people (61.5%).

Nutritional Status of Exclusive Breastfeeding

Table 4.2 Number of Nutritional Status of Infants who Get Exclusive Breastfeeding at DadokTuggul Hitam Health Center.

Nutrition Status	Mean	Min	Max
Exclusive Breastfeeding	-2.23	-3	-1

Based on Table 4.2, it is known that the average nutritional status seen from the standard deviation value in infants who are exclusively breastfed is -2.23. The lowest value is -3, and the highest is -1.

Nutritional status of those who received Formula Milk

Table 4.3 Number of Nutritional Status of Infants who received Formula Milk at DadokTuggul Hitam Health Center.

Nutrition Status	Mean	Min	Max
Formula Feeding	-2.04	-3	-2

Table 4.3 shows that the average nutritional status seen from the standard deviation value in formula-fed infants is -2.04. The lowest value is -3, and the highest is -2

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Differences in Nutritional Status of Exclusively Breastfed Infants and Formula-fed Infants

Table 4.4 Differences in Nutritional Status of Infants who Get Exclusive Breastfeeding with Infants who Get Formula Milk at Puskesmas Dadok Tunggul Hitam

Nutrition Status	Mean	SD	SE	N	P Value
Exclusive Breastfeeding	-2,23	0,692	0,100	48	0,004
Formula Milk	-2.04	1,071	0,155	48	

Based on Table 4.4 above, it is known that the average nutritional status of infants who are exclusively breastfed is -2.23 with a standard deviation of 0.692, while for infants who are given formula milk, the average nutritional status of infants is -2.04 with a standard deviation of 1.071. The difference in the mean value of nutritional status between exclusively breastfed babies and formula-fed babies is -0.19.

Statistical test results obtained p value = $0.000 < \alpha (0.05)$ means H_0 is rejected. It can be seen that there is a significant difference in the nutritional status of infants 0-6 months who get exclusive breastfeeding with infants who get formula milk at the Dadok Tunggul Hitam Health Center.

Discussion

Based on the study's results, it was found that the average nutritional status seen from the standard deviation value in exclusively breastfed infants was -2.23. The lowest value is -3, and the highest is -1. In comparison, the average nutritional status seen from the standard deviation value in formula-fed infants is -2.04. The lowest value is -3, and the highest is -2.

According to Norma (2015), there are differences in nutritional status in infants who are exclusively breastfed with partial breastfeeding at the Jetis City Health Center. The statistical test results showed that the nutritional status seen from the weight gain was 210 grams higher in babies who were exclusively breastfed, the weight gain of babies who were exclusively breastfed was 8,200 grams and 7,990 grams in babies who were partially breastfed. And that the main source of calories in breast milk is fat. Breast milk fat is easily digested and absorbed by infants because breast milk contains lipase enzymes that digest triglyceride fats into diglycerides, so very little fat is absorbed by the infant's digestive system. Meanwhile, formula milk (complementary food) does not contain enzymes because enzymes will be damaged when heated. That is why it is difficult for the baby to absorb the fat of formula milk, causing the baby to have diarrhoea and causing fat accumulation, which will eventually result in obesity.

Conclusion

Based on the results of the study, it was found that there was a significant difference in the nutritional status of infants who received exclusive breastfeeding with infants who received formula milk at the Dadok Tunggul Hitam Health Center, Padang City, in 2023. Infants aged 0-6 months who are not exclusively breastfed tend to be overweight, with an average increase of 1,240 grams/month at the age of 0-3 months. It can be stated that the weight of exclusively breastfed infants is lighter than non-exclusively/partially breastfed infants until the age of 6 months. This does not mean that the greater weight of non-exclusively/partially breastfed infants is better than exclusively breastfed infants (Norma, 2015).

The results of this study are in line with research conducted by Yenie (2015) entitled A Comparative Study of Exclusive Breastfeeding and Complementary Feeding on Weight Gain and body length in 6-month-old babies at the Posyandu of the Hajimena Tanjung Karang Health Center work area. The results showed that the average weight gain in exclusively breastfed babies was 4043.27 grams (95% CI: 410.046-711.108), a median of 4100.00 grams, with a standard deviation of 334,17 grams. The lowest BW was 3100 grams, and the highest BW was 4700 grams. The analysis showed that the average weight gain in infants given BMS increased to 4603.85 grams (95% CI: 409.929-711.225), with a median of 4700.00 grams and a standard deviation of 433.39 grams. The lowest BW was 3300 grams, and the highest was 6000 grams. Statistical test results obtained p value = 0.000 (p-value <0.05), means H_0 . Rejected. There was a significant difference in BW gain between exclusively breastfed infants compared to infants whose mothers fed BMS.

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