GLOWI
GLOBAL MIDWIFERY INNOVATIONS JOURNAL
e-ISSN : XXXX - XXXX
P-ISSN : XXXX - XXXX
Vol. 01, No. 01 (2025), p. 10-21
Available online at https://ejournal.unuja.ac.id/index.php/glowi

The Difference Giving Formula Milk and Breast Milk Exclusive Against Nutritional Status of Babeis with Ages 3- 7 Month

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Abstract:
Good nutrition is paramount, especially in babies, a state of good nutrition is very influential to improve the process of growth and development in children. Good nutrition can be obtained from good nutrition Similarly, breast milk is an ideal baby food, with a balanced composition and in accordance with the needs of the baby's growth. The purpose of this study was founded out how the nutritional status of babeis fed formula milk and babies are given exclusive breastfeeding, and to investigate differences in nutritional status between babeis fed formula with babeis given breast milk exclusively. The research design comparative descriptive with cross sectional approach. The population used were 3- 7 month old babies in the Dinoyo Public Health Center, Lowokwaru District, Malang City. with due regard to inclusion and exclusion criteria as many as 40 infants. Having more nutrition by Mann Whitney test values obtained with a Z count equal -2.102 P- value 0.036 < α (0.05), it can be concluded that there is a significant difference in formula feeding and exclusive breastfeeding on nutritional status in babes with aged 3- 7 months in Dinoyo Public Health Center, Lowokwaru District, Malang City. The health worker is expected to be counseling and promoting the health benefits of exclusive breastfeeding (example: posters, pamphlets, and counseling to mothers) to increase the use of breast milk in Indonesia, so that pressing the incidence of malnutrition status or more.

ARTICLE HISTORY
Received 03 September 2024
Revised 20 November 2024
Accepted 05 March 2025

KEY WORDS
Infant Formula, Exclusive breastfeeding, Nutritional Status

Please cite this article in APA style as:
Ayur, Noni Fidya. (2025). The Difference Giving Formula Milk and Breast Milk Exclusive Against Nutritional Status of Babeis with Ages 3- 7 Month, 1(1), 10-21.

INTRODUCTION

Children's health is the greatest happiness for every parent, children are a parent's priceless treasure, every mother will definitely do the best for her child, from caring for him, looking after him, giving him nutritious food, giving him everything he needs and giving him everything he needs. Maintaining the nutritional status of children as well as possible is also the main thing for mothers or every parent (Pietrobelli et al., 2017). Circumstances Good nutrition is a very important element. Malnutrition, especially in babies, will hinder the child's growth and development process in an effort to achieve optimal health status to improve the nation's quality of life (Gonçalves et al., 2019).

Nutrition is a process by which an organism uses food that is consumed normally through the processes of digestion, absorption, transportation, storage, metabolism and excretion of substances that are not used to maintain life, growth and normal function

of organs and produce energy (Silva, 2024). The development and growth of each child is always the main focus of parents, especially providing food so that the child gets good food intake so that the child grows and develops well (Alsaleem, 2024).

Breast milk is a complex liquid with nutritional fibers which contains many antibodies, enzymes and hormones (Duan et al., 2018). The content of breast milk is very good for the growth and development and health of babies (Michels et al., 2017). The content of breast milk can change according to the baby's needs (Nishimura et al., 2018). Meanwhile, formula milk is milk that does not come directly from the mother, either from real cow's milk or cow's milk that is processed or re-cooked by the baby's parents with a mixture of flavors and artificial sweeteners or from factory-packaged formula milk (Ratnayake Mudiyanselage et al., 2022).

Mothers' lack of knowledge about choosing nutritious foods or drinks means that mothers are confused about choosing the food intake that should be given to their babies (Hörnell & Lagström, 2024). And the mother's lack of knowledge about the benefits of breast milk also influences the mother's confidence in giving her baby exclusive breast milk(Jeyakumar et al., 2022). The existence of milk advertisements makes mothers think that formula milk is not just food, but also medicine for children. This is believed by mothers who lack knowledge about breast milk. It could be that this assumption emerged after looking at the information printed on the formula milk packaging or explained in the milk advertisement (Iglesia et al., 2020)

From the above background, researchers are interested in examining differences in the use of baby milk between babies who are given formula milk and babies who are exclusively breastfed. So that the public knows about the differences between giving formula milk and breast milk exclusively to the nutritional status of babies according to standard weight for age (WW/U).

RESEARCH METHODS

This research design uses *case control*, namely an analytical study that analyzes causal relationships using reverse logic, namely determining the disease (outcome) first and then identifying the causes (risk factors). regarding the differences between giving formula milk and exclusive breast milk to the nutritional status of babies aged 3-7 months at the Dinoyo Community Health Center, Lowokwaru District, Malang City. Based on the inclusion criteria and exclusion criteria above, the criteria for being the research sample were 52 babies aged 3-7 months, there were 12 babies who did not meet the inclusion criteria so the total inclusion criteria were 40 babies to be used as the research sample.

Research instruments are tools used for data collection. The instruments used in this research were baby scales and a form for writing weight results

Research procedures**:** The preparation stage is a letter of introduction from the Head of the Midwifery Masters Study Program, Universitas Brawijawa Malang, a letter of permission from the Malang City Government, the National Unity, Politics and Community Protection Agency. Permission letter from the Head of the Dinoyo Community Health Center, Lowokwaru District, Malang City.

Data collection stage. The researcher gave the respondent a letter of consent to become a respondent. The researcher approached the parents/mother of the baby to obtain a statement of willingness to become a respondent. If the prospective respondent was willing, he was asked to sign a statement to become a respondent. The researcher conducted the research by visiting the respondent at the posyandu or every house to collect data. Data is obtained by weighing the baby's weight to determine the nutritional status. Then the data that has been collected is processed and tabulated.

Data analysis. The data obtained was analyzed using Mann-Wattney data analysis analytical techniques with the SPSS program.

RESULTS AND DISCUSSION

Results were obtained from 40 research respondents consisting of 20 babies using formula milk and 20 babies using exclusive breast milk. the following results were obtained:

Table: 1 Frequency of respondents based on nutritional status, in babies aged 3-7 months at Dinoyo Community Health Center, Lowokwaru District, Malang City

No	Nutritional status	Milk F	Formulas P
1	Malnutrition	0	0%
2	Malnutrition	10	25%
3	Good nutrition	24	60%
4	More nutrition	6	15%

The distribution of infants' nutritional status at Dinoyo Community Health Center, Lowokwaru District, Malang City, indicates that the majority of infants aged 3-7 months receiving formula milk fall within the good nutrition category (60%). This suggests that formula feeding, when appropriately administered, can meet the nutritional needs of infants during their early developmental stages. Additionally, 15% of infants were categorized as having overnutrition, which may indicate excessive formula feeding or other dietary imbalances. Meanwhile, 25% of infants were classified as experiencing malnutrition, highlighting potential concerns regarding feeding adequacy, digestion, or underlying health issues.

The presence of malnutrition in a quarter of the respondents underscores the need for closer monitoring of infant nutrition and feeding practices. Factors such as improper formula preparation, economic constraints, and parental knowledge about infant nutrition could contribute to these findings. Health interventions, such as nutrition counseling for caregivers and promoting proper feeding techniques, may help reduce malnutrition rates and ensure optimal growth and development in infants.

Table: 2 Frequency of respondents based on nutritional status of babies with formula milk and exclusive breast milk, for babies aged 3-7 months at Dinoyo Community Health Center, Lowokwaru District, Malang City

No	Nutritional status	Milk F	Formulas P	breast milk F	P
1	Malnutrition	0	0%	0	0
2	Malnutrition	9	45%	1	5
3	Good nutrition	8	40%	16	80
4	More nutrition	3	15%	3	15

The distribution of infant nutritional status at Dinoyo Community Health Center, Lowokwaru District, Malang City, based on feeding type (formula milk vs. exclusive breastfeeding) highlights notable differences. Among formula-fed infants, 45%

experienced malnutrition, while only 5% of exclusively breastfed infants fell into this category. This suggests that exclusive breastfeeding may provide better nutritional benefits, as it contains essential nutrients, antibodies, and bioactive compounds that support optimal growth and immune function. Additionally, only 40% of formula-fed infants had good nutrition compared to 80% of breastfed infants, further reinforcing the advantages of breast milk.

Despite these benefits, both feeding groups had a small percentage (15%) of infants experiencing overnutrition. This may be due to overfeeding, inappropriate feeding practices, or individual metabolic factors. The findings emphasize the importance of promoting exclusive breastfeeding for the first six months, as recommended by the World Health Organization (WHO), and ensuring proper formula-feeding practices for infants who cannot be breastfed. Nutrition education and parental guidance are crucial in addressing feeding-related issues and ensuring optimal growth in infants.

Table: 3 Average of nutritional status assessment for babies aged 3-7 months at Dinoyo Community Health Center, Lowokwaru District, Malang City

No	Milk users	Status	nutrition	p-value
		Average	difference	
1	Formula Milk	17.10	6.80	0.036
2	breast milk	23.90		

The average nutritional status assessment for infants aged 3-7 months at Dinoyo Community Health Center, Lowokwaru District, Malang City, reveals a significant difference between formula-fed and breastfed infants. The mean nutritional status score for formula-fed infants was 17.10, whereas breastfed infants had a higher average score of 23.90, with a mean difference of 6.80. The p-value of 0.036 (< 0.05) indicates a statistically significant difference, suggesting that exclusive breastfeeding positively influences infant nutrition compared to formula feeding.

These findings align with existing research emphasizing the superior nutritional benefits of breast milk. Breastfeeding provides essential antibodies, enzymes, and optimal nutrients that contribute to better digestion, immunity, and overall growth. In contrast, formula-fed infants may face challenges such as inadequate nutrient absorption or improper feeding practices, leading to a lower nutritional status. These results highlight the need for continued advocacy and support for exclusive breastfeeding to improve infant health outcomes.

Growth of nutritional status in babies aged 3 to 7 months at Dinoyo Community Health Center, Lowokwaru District, Malang City.

Maintaining the nutritional status of children as well as possible is the main thing for mothers or every parent (L. Zhang et al., 2024). Child growth and child development are things that every parent always pays attention to, and based on the results of research conducted at the Dinoyo Community Health Center, Lowokwaru District, Malang City, researchers have obtained data on the growth of babies' nutritional status, namely that from 40 respondents there were 0% of babies experiencing malnutrition. poor and those experiencing malnutrition are 25%, while those experiencing good nutrition are 60% with the highest percentage compared to other nutritional values, and those experiencing overnutrition are 15%.

From the data above it can be stated that there are no babies who experience malnutrition, this can be said that every parent always pays attention to good food intake for their baby, parents have chosen the best food intake for their baby, so that the nutritional adequacy rate has been met by each baby. and there are no babies with malnutrition (Rodríguez-Cano et al., 2020).

Meanwhile, malnutrition reaches 25%, this indicates that there are still babies who experience malnutrition, and 15% experience overnutrition. This is due to various reasons, although each mother has paid attention to each baby's intake, each individual's food needs are different due to genetic variations which will result in differences in metabolic processes, this will affect the baby's growth, so that the nutritional status of each baby is different (Feldman-Winter et al., 2018).

Nutritional status is largely determined by the availability of nutrients in sufficient quantities and in combination at the right time at the body's cellular level so that they develop and function normally (Alsaleem, 2024). Nutritional status is determined by the full range of nutrients needed by the body and the factors that determine the amount of need, absorption and use of these substances (X. Zhang et al., 2016).

Good nutritional status in this study is the largest percentage, namely 65%. It can be said that the growth in nutritional status of babies in the Dinoyo Community Health Center, Lowokwaru District, Malang City, on average, experienced good nutrition. This indicates that parents or mothers have paid attention to the best food intake for their babies.

However, the growth of good nutritional status in babies still has not reached 100%, so there are still some babies who do not experience good nutrition. The growth of good nutritional status is desired by every parent, but in assessing the growth of nutritional status in babies, it shows that some babies still experience malnutrition and overnutrition, researchers consider several causes that are known from the results of this research, so that it will reduce the number of malnourished and good nutritional status as well as increase the growth rate of good nutrition in babies at the Dinoyo Community Health Center, Lowokwaru District, Malang City.

Growth in nutritional status of babies using formula milk, in babies aged 3 to 7 months at the Dinoyo Health Center, Lowokwaru District, Malang City.

Formula milk is milk given to babies not directly from mother's milk, either from real cow's milk or milk from factory packaging (Monge-Montero et al., 2020). Many parents believe that babies who are given formula milk alone are enough to meet their nutritional status (Ibrahim et al., 2022). Even though according to theory the content of formula milk is much smaller than breast milk, formula milk will not be comparable to the nutritional content of breast milk (Duan et al., 2018).

Based on the results of research conducted by researchers, the growth in nutritional status of babies using formula milk is in the malnutrition category, namely 0%, from observations and surveys researchers have proven that there are no babies at the Dinoyo Community Health Center, Lowokwaru District, Malang City, who show signs of malnutrition. Malnutrition is not only caused by baby food, but by several factors including: Economy, Sanitation, parental education, parental behavior. It's just that there are babies who look thin and small compared to babies of other ages (Hajira et al., 2016).

This can be seen from the large number of babies who are still using formula milk, of the 20 babies who are using formula milk, 45% are experiencing malnutrition,

of the 20 babies 9 of them are still experiencing malnutrition, it can be said that formula milk still has no effect for growing nutritional status in babies (Salsabilla et al., 2023). The causes vary, from the results of researchers when asking why they chose formula milk, there were some mothers who answered that the mother's breast milk did not come out even though she frequently consumed herbal medicine (Abbate et al., 2023). And there were mothers who said that their breast milk suddenly didn't come out and they had to use formula milk (Hörnell & Lagström, 2024). There are also mothers who say they deliberately chose formula milk for their babies, because they wanted their babies to be healthier and gain weight quickly (Quan et al., 2020). It is possible that this is the influence of advertisements on TV, the internet, other advertisements, or the information printed on the milk packaging which makes parents prefer formula milk as baby milk (Ortega-Cisneros et al., 2019).

Which states that the existence of milk advertisements makes mothers think that formula milk is not just food, but also medicine for children (Bruun et al., 2017). This is believed by mothers who lack knowledge about breast milk (Leurer et al., 2019). It could be that this assumption arose after looking at the information printed on the formula milk packaging or explained in the milk advertisement. So that parents prefer formula milk to exclusive breast milk for their babies (Chakona, 2020).

Based on good nutritional status, there are 8 babies experiencing good nutrition, but this is not a reason for mothers not to give exclusive breast milk to babies, because babies who have good nutritional status even if they are given formula milk, of course the baby still experiences a decline in the body's immune system. However, this does not mean that babies who use formula milk are easily infected with diseases such as diarrhea and ultimately the baby experiences growth problems, because mothers who give formula milk must still be able to give formula milk in the right way, namely according to the packaging instruction s(Odiase et al., 2023). However, it would be better if mothers used breast milk, entitled Why should a mother breastfeed? That said, breast milk is an ideal source of nutrition with a balanced composition and appropriate for the baby's growth (Pérez-Escamilla et al., 2019).

Based on the nutritional status of formula milk users, there were 3 babies who experienced overnutrition, namely 15%, of the 20 respondents, 3 experienced overnutrition, in accordance with the theory according to the theory of nutrition in the life cycle, that babies who drink bottle milk do not will stop drinking his small bottle of milk unless it is empty, this leads to baby obesity. This shows that giving formula milk can accelerate the baby's weight gain at the age of 0-6 months, because the baby does not get the nutrition that is needed (Rodríguez-Cano et al., 2020).

This research is the same as another, entitled Differences in Exclusive Breastfeeding and Formula Milk on the Nutritional Status of Babies Aged 7-12 Months, namely the results of research from 17 babies who were given formula milk, of which 9 babies (52.9%) had more status. Babies who have more nutritional status are because the babies receive a lot of formula milk intake. These babies tend to have more nutritional status because the content of available formula milk is clearly different from the nutritional content contained in breast milk. Formula milk contains more artificial sweeteners, so it can increase the baby's weight very quickly (Ames et al., 2023).

Growth in nutritional status of babies using exclusive breast milk, in babies aged 3-7 months at Dinoyo Community Health Center, Lowokwaru District, Malang City.

Breast milk is the only best food for babies up to 6 months old because it has the most ideal nutritional composition for the growth and development of babies which can

meet the baby's nutritional needs during the first 6 months (Tahir et al., 2021). Based on the results of research on babies using exclusive breastfeeding who experience malnutrition, it is 0%, this proves that the growth in nutritional status of babies is not only influenced by food factors but also by other factors, however, the best food choices for babies are still the most important thing. Every parent must pay attention to (Kostecka et al., 2021).

Exclusive breast milk users in this study experienced malnutrition as much as 1 baby out of 20 babies who used exclusive breast milk. The cause of this is unknown, based on the theory, which states that babies who have been given exclusive breast milk but still have poor nutritional status, are caused by maternal factors, such as the mother's psychological factors and the food consumed by the mother (Moran-Lev et al., 2021). From this, it can be said that the causes of babies using exclusive breast milk who are still malnourished can be caused by various things, such as the food consumed by the mother, the mother's psychological condition, the mother's health, or other causal factors (Mosca et al., 2018).

Based on research results, 85% of babies who are well-nourished are 16 babies out of 20 babies who use exclusive breast milk who are well-nourished. This states that breast milk is indeed very good for the growth of nutritional status in babies. In accordance with the theory that breast milk is an ideal source of nutrition with a balanced composition and adapted to the needs of the baby's growth (Duan et al., 2018). Breast milk is the most perfect baby food, both in quality and quantity. With correct breastfeeding practices, breast milk as a sole food will be sufficient to meet the body's needs of a normal baby up to 6 months of age (Arredondo et al., 2021).

Compared to formula milk users, breast milk users are twice as likely to achieve good nutrition. This research shows that 8 babies who used formula milk experienced good nutrition, while 16 babies who used exclusive breast milk experienced good nutrition. This can prove to parents that breast milk is much better to give to their babies, both in terms of development. the baby's brain and the growth of nutritional status in babies (Michels et al., 2017).

This can also prove that mothers no longer need to be confused about choosing the best food intake for their babies, mothers do not need to choose which formula milk is suitable for their babies, mothers do not need to be confused about choosing milk that contains the best nutrition, no need to be confused about choosing milk that does not make baby allergies or diarrhea. Because of this research, mothers can find out that the benefits of exclusive breastfeeding are very good for babies, and breast milk is the best food for babies to consume (L. Zhang et al., 2024).

There were also 3 over-nourished babies using exclusive breast milk, but from observations and surveys from researchers the cause was not known, in accordance with the confession of the baby's mother that breastfeeding was the same as the others, namely given less than once every 2 hours or given during infancy cry (Ergang et al., 2021).

Differences in infant nutritional status between babies with formula milk and babies with exclusive breast milk, in babies aged 3-7 months at the Dinoyo Community Health Center, Lowokwaru District, Malang City.

Based on the results of the researcher's research entitled the difference in giving baby milk between formula milk and exclusive breast milk on the nutritional status of babies aged 3-7 months at the Dinoyo Community Health Center, Lowokwaru District, Malang City and from the results of discussion 1 and 2, the researcher stated that there is a difference in giving milk between babies with formula milk and babies with exclusive breast milk is very significant.

The results of the data analysis test using *Man-Whitney* P value were 0.036 < 0.05 so h0 was rejected, so it can be interpreted that there is a difference in infant milk feeding between those given formula milk and those given exclusive breast milk.

This shows that giving exclusive breast milk to babies can have a better effect on their growth or the nutritional status of babies compared to babies who are given formula milk. Because at the age of 0-6 months exclusive breastfeeding is really needed, because the digestive system is not yet perfect, only breast milk is the best food for him (Santacruz-Salas et al., 2021).

The average value of the difference in breastfeeding between babies who are given formula milk and babies who are given exclusive breast milk is 6.80 with the value of formula milk users being 17.10 and exclusive breast milk users being 23.90. This value states that the nutritional status of babies using formula milk is lower than the nutritional status of babies using exclusive breast milk, and states that the nutritional status value of exclusive breast milk users is greater than that of formula milk users (Ratnayake Mudiyanselage et al., 2022).

Related research on the differences between exclusive breastfeeding and formula milk on the nutritional status of babies aged 7-12 months, also state that based on the Mann Whitney test, the calculated Z value = -2.694 with a p-value of 0.020. Because the p-value is 0.020 < α (0.05), it can be concluded that there is a significant difference in giving exclusive breastfeeding and formula milk to the nutritional status of babies aged 7-12 (Alsaleem, 2024).

Babies who are given exclusive breast milk tend to have good nutritional status. It has been proven in the field that babies who are given exclusive breast milk have better nutritional status. From the research results, it can be shown that babies who are given exclusive breast milk have better nutritional status than babies who are given formula milk (Tada et al., 2020).

This can be an input for mothers to always provide exclusive breast milk to their babies, especially at the age of 0-6 months. Due to this, Indonesian babies are created who have good nutritional status and have a normal weight according to their age (Arredondo et al., 2021).

CONCLUSION

Based on the results of research by researchers at the Dinoyo Community Health Center, Lowokwaru District, Malang City, regarding the differences in giving baby milk between babies who were given Formula Milk and babies who were given exclusive breast milk on the nutritional status of babies aged 3-7 months in 40 babies aged 3-7 months, including 20 babies were given formula milk and 20 babies were given exclusive breast milk which met the inclusion criteria and exclusion criteria, the results were:

1. The growth in nutritional status of babies aged 3-7 months who use formula milk at the Dinoyo Community Health Center, Lowokwaru District, Malang City, is an average value of 17.10. Which means the nutritional status value is lower compared to babies using exclusive breast milk, which is 23.90.
2. The growth in nutritional status of babies aged 3-7 months who use formula milk at the Dinoyo Community Health Center, Lowokwaru District, Malang City, is the average value is 23.90. Which means the value of nutritional status is higher compared to babies using formula milk whose value is 17.10
3. The difference in giving baby milk between formula milk and exclusive breast milk. The results of data analysis using *Mann-Whitney* show that the calculated F for nutritional status with *Equal Variance Assumed* (assuming the two variances are not the same) is 4.727 with a probability of 0.036. Because the probability <0.05 then H0

is rejected, or the two variances are different. Which means there is a difference in the provision of formula milk and exclusive breast milk on the nutritional status of babies aged 3-7 months at the Dinoyo Community Health Center, Lowokwaru District, Malang City.

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