


## Maternal Knowledge of Exclusive Breastfeeding and Nutritional Status of Children Under Two Years During the COVID-19 Pandemic

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### ABSTRACT

**Introduction:** Breast milk (ASI) is the best source of nutrition for infants, especially in the first six months of life, as it supports optimal growth and development. Maternal knowledge about exclusive breastfeeding plays a key role in determining a child's nutritional status. Lack of awareness can lead to improper breastfeeding practices and poor nutritional outcomes. The World Health Organization (WHO) reported that in 2014, 161 million children under five years old experienced nutritional deficiencies globally.

**Methods:** This cross-sectional analytic observational study was conducted at Posyandu Cempaka A and B, Tanah Baru sub-district, Bogor City, during the COVID-19 pandemic. A total of 53 mothers with children under two years old were selected through consecutive non-random sampling. Data were obtained using validated questionnaires to assess maternal knowledge of exclusive breastfeeding, and children's nutritional status was measured anthropometrically. Fisher's exact test was used for statistical analysis.

**Results:** The study found a significant association between maternal knowledge of exclusive breastfeeding and children's nutritional status ( $p = 0.038$ ). Mothers with higher knowledge levels were more likely to have children with normal nutritional status, while those with lower knowledge levels were more likely to have children with nutritional deficiencies.

**Conclusion:** Maternal knowledge of exclusive breastfeeding significantly influences the nutritional status of children under two years old, even during the COVID-19 pandemic. These findings emphasize the need for educational programs to enhance maternal awareness, which can contribute to better child health and nutritional outcomes.

Exclusive Breastfeeding, Maternal Knowledge, Nutritional Status, COVID-19 Pandemic

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## INTRODUCTION

Breast milk, replete with essential nutrients, is universally recognized as the optimal nutrition for newborns, recommended exclusively for the first six months of life. This period, encompassing the first 1000 days from conception to two years of age, is a critical window for a child's development, with far-reaching implications for future health and well-being. While global exclusive breastfeeding rates hover around 44% according to the World Health Organization (WHO, 2015-2020), Indonesia reports a slightly higher rate of 61.33%. [1] Despite these figures, a significant gap remains, highlighting the need for continued efforts to promote and support exclusive breastfeeding practices. Breast milk protects infants from infectious, allergic, and metabolic diseases. Interrupting breastfeeding, even if the mother has a suspected infection (including COVID-19), deprives the infant of crucial nutrients and immune factors, including sIgA. [2]

A mother's knowledge and understanding of exclusive breastfeeding are paramount. This knowledge directly influences her ability to initiate and maintain exclusive breastfeeding, impacting her child's growth, development, and nutritional status. A lack of awareness regarding the benefits and practical aspects of

exclusive breastfeeding can lead to suboptimal feeding practices, potentially contributing to nutritional deficiencies. The global burden of childhood malnutrition remains substantial, with WHO reporting 161 million children under five experiencing nutritional problems in 2014. In Indonesia, the prevalence of severe malnutrition among children aged 0-24 months is 3.8%, with an additional 11.4% classified as undernourished.[1] These statistics underscore the urgency of addressing the knowledge gap surrounding exclusive breastfeeding, particularly in regions with high rates of undernutrition.

Bogor City, the focus of this study, has reported fluctuating but concerning rates of malnutrition, with 65 cases of severe malnutrition in 2018 and a prevalence of undernutrition at 3.84% in 2020, including 0.68% experiencing severe undernutrition.[3,4] These figures highlight the local relevance of this research. Several factors contribute to malnutrition, including limited maternal knowledge, inadequate nutrient intake, and underlying illnesses. Indonesia has set ambitious targets to reduce child malnutrition by 2025, aiming to lower the prevalence of underweight to 17% as outlined in the Ministry of Health's Strategic Plan (2015-2019). Promoting exclusive breastfeeding is a key strategy in achieving this goal.[5]

Existing research presents conflicting findings regarding the relationship between maternal knowledge of exclusive breastfeeding and child nutritional status. This study aims to investigate this relationship in children under two in Bogor City, recognizing the critical importance of the first 1000 days and the region's persistent challenges with child malnutrition. This research contributes to the body of knowledge surrounding exclusive breastfeeding and its impact on child health, providing evidence to inform public health interventions and support the application of science and technology to improve nutritional outcomes for children in Bogor City. The study's objective is to determine whether a statistically significant relationship exists between maternal knowledge of exclusive breastfeeding and the nutritional status of children under two years of age in Bogor City during the COVID-19 pandemic. Success will be measured by the ability to demonstrate a statistically significant association between these two variables.

## METHOD

This study was a cross-sectional analytic observational study conducted at Posyandu Cempaka A and B in Tanah Baru sub-district, Bogor City, during the COVID-19 pandemic. The study aimed to investigate the relationship between maternal knowledge of exclusive breastfeeding and the nutritional status of children under two years of age. Ethical approval for this study was obtained from the Ethics Review Committee of the Faculty of Medicine, Trisakti University, with approval number 67/KEP-FK/VII/2022. All participants provided written informed consent before participating in the study, ensuring they understood the purpose, procedures, risks, and benefits of the research. Participation was entirely voluntary, and confidentiality was maintained throughout the study.

The study included 53 mothers with children aged 0-2 years who visited Posyandu Cempaka A and B. Participants were selected using a consecutive non-random sampling technique, where every mother who met the inclusion criteria was included until the required sample size was achieved. Inclusion criteria included mothers who were willing to participate, had children aged 0-2 years, and provided informed consent. Mothers who did not meet these criteria or refused to participate were excluded.

Questionnaire, maternal knowledge of exclusive breastfeeding was assessed using a validated questionnaire adapted from the research conducted by Hasrianti N (2015) entitled "Hubungan pengetahuan ibu tentang ASI eksklusif dengan kejadian diare akut pada anak-anak di Kalua, Tabalong, Banjarmasin".[6] This questionnaire demonstrated good reliability and validity in the previous study. It comprises questions covering various aspects of exclusive breastfeeding, including benefits, duration, recommended practices, and potential challenges. Based on the total score, knowledge levels were categorized as good, moderate, or poor, using the same scoring criteria as the original study.

Anthropometric Measurements, children's anthropometric data were collected using standard tools. Weight was measured using a spring scale (Weight-for-Age/WA), and length was measured using a wooden infant ruler (Length-for-Age/LA). These measurements were used to determine the nutritional status of the children based on WHO growth standards. Nutritional status was categorized as underweight, normal, or overweight.

Data were processed and analyzed using Fisher's exact test due to the small sample size and the presence of expected values less than five in the contingency table. This test was used to determine the relationship between maternal knowledge of exclusive breastfeeding and the nutritional status of children. A p-value of less than 0.05 was considered statistically significant. The success indicator for this study was the demonstration of a statistically significant association between maternal knowledge and child nutritional status.

The study adhered to ethical principles, including respect for participants, beneficence, and justice. Ethical clearance was granted by the Ethics Review Committee of the Faculty of Medicine, Trisakti University (Approval No. 67/KEP-FK/VII/2022). Written informed consent was obtained from all participants, and they were assured of their right to withdraw from the study at any time without consequences. Data confidentiality and anonymity were strictly maintained.

**RESULTS**

This study included 53 mothers with children aged 0-2 years who visited Posyandu Cempaka A and B in Tanah Baru sub-district, Bogor City, during the COVID-19 pandemic. The participants were selected using consecutive non-random sampling. The characteristics of the participants, including income, number of children, and education level, are presented in. The majority of mothers (64.2%) had an income above the minimum wage, and 64.2% had two or fewer children. Regarding education, 66.1% of mothers had completed secondary education (middle or high school) (Table 1).

Table 1. Distribution of Subjects by Income, Number of Children, and Education Level (n=53)

Characteristic	Frequency (n)	Percentage (%)
Income		
< Minimum Wage	19	35.8
≥ Minimum Wage	34	64.2
Number of Children		
≤ 2 Children	34	64.2
> 2 Children	19	35.8
Education		
Elementary School	12	22.6
Middle School	17	32.1
High School	18	34.0
Bachelor's Degree	6	11.3

The study assessed maternal knowledge of exclusive breastfeeding and its relationship with the nutritional status of children under two years old. Maternal knowledge was categorized as good, moderate, or poor, while child nutritional status was classified as underweight, normal, or overweight based on anthropometric measurements (Table 2).

Table 2. Distribution of Subjects by Maternal Knowledge of Exclusive Breastfeeding, Child Nutritional Status, and Breastfeeding Practice (n=53)

Characteristic	Frequency (n)	Percentage (%)
Maternal Knowledge of Exclusive Breastfeeding		
Good	28	52.8
Moderate	19	35.8
Poor	6	11.3
Child Nutritional Status		
Underweight	15	28.3
Normal	36	67.9
Overweight	2	3.8
Breastfeeding Practice		
Yes	47	88.7
No	6	11.3

The results of Fisher's exact test revealed a statistically significant relationship between maternal knowledge of exclusive breastfeeding and child nutritional status (p = 0.038). Mothers with good knowledge were more likely to have children with normal nutritional status (78.6%), while mothers with moderate

knowledge had a higher proportion of children with underweight status (52.6%). These findings are summarized in Table 3.

Table 3. Relationship Between Maternal Knowledge of Exclusive Breastfeeding and Child Nutritional Status (n=53).

Maternal Knowledge	Nutritional Status: Underweight		Nutritional Status: Normal		Nutritional Status: Overweight		p-value
	n	%	n	%	n	%	
Good	4	14.3	22	78.6	2	7.1	0,038*
Moderate	10	52.6	9	47.4	0	0.0	
Poor	1	1.9	5	9.4	0	0.0	

\*p < 0.05

Fisher's exact test (p=0.038) revealed a statistically significant relationship between maternal knowledge of exclusive breastfeeding and child nutritional status. Mothers with good knowledge were more likely to have children with normal nutritional status.

## DISCUSSION

The majority of participants (64.2%) had two or fewer children, consistent with Wahyuni et al. (2020), who reported that families with fewer children tend to provide better care and nutrition, resulting in improved child nutritional status. This is likely because parents can focus more on meeting the nutritional and developmental needs of their children. Additionally, most respondents (64.2%) had incomes above the minimum wage, and 66.1% had secondary education, aligning with Sebatara (2014), which found that higher income and education levels positively correlate with better child nutrition. These socioeconomic factors play a critical role in ensuring access to adequate nutrition and healthcare services.[7]

The exclusive breastfeeding rate among respondents was 88.7%, which exceeds the 2019 WHO global target of 50% and is slightly below the global average of 67.74%. This high rate is a positive finding, suggesting strong support for exclusive breastfeeding in the community. Exclusive breastfeeding is essential for child growth and development, particularly during the first six months of life, as it provides all the necessary nutrients and antibodies to protect against infections. The high rate observed in this study may reflect effective health promotion efforts in the community, even during the COVID-19 pandemic.

While the majority of mothers demonstrated good knowledge of exclusive breastfeeding (52.8%), a substantial portion (47.2%) had moderate to poor knowledge. This gap in knowledge could potentially impact breastfeeding practices and, consequently, child nutritional status. Cunha et al. (2015) similarly found a significant relationship between maternal knowledge and child nutritional status, emphasizing the importance of educating mothers about the benefits and practices of exclusive breastfeeding. Mothers with limited knowledge may lack the confidence or understanding needed to initiate and sustain exclusive breastfeeding, which can negatively affect their children's growth and development.[8]

The study found that 67.9% of children had normal nutritional status, which is consistent with WHO data (55%) and higher than the Indonesian national average of 48.6% (2021 SSGI). This indicates that the nutritional status of children in Bogor City is relatively good compared to national and global benchmarks. However, 28.3% of children were underweight, highlighting the need for continued efforts to address malnutrition in this population. Ensuring adequate maternal knowledge and support for breastfeeding practices is critical to improving child nutritional outcomes.

The study revealed a significant relationship (p=0.038) between maternal knowledge of exclusive breastfeeding and child nutritional status. Mothers with good knowledge were more likely to have children with normal nutritional status (78.6%), while those with moderate or poor knowledge had a higher proportion of children with underweight status. These findings are consistent with Rahayu et al. (2019) and Mirnawati et al. (2016), who also reported significant associations between maternal knowledge and child nutritional status. However, the results contrast with Fianasari et al. (2018) and Waluyo et al. (2022), who found no significant relationship. These discrepancies may be attributed to differences in geographic location, sample size, study

duration, and other methodological factors. For example, Waluyo et al. (2022) conducted their study in Gorontalo with a smaller sample size and a longer study duration, which may have influenced their findings. Additionally, the majority of mothers in Waluyo's study had low education levels and poor knowledge of exclusive breastfeeding, which could have contributed to the lack of a significant relationship.[9-12]

This study was conducted during the COVID-19 pandemic, a period that posed unique challenges to maternal and child health. Despite these challenges, the high exclusive breastfeeding rates observed suggest that the pandemic did not negatively impact breastfeeding practices in this community. This aligns with WHO recommendations, which emphasize the importance of continuing breastfeeding during the pandemic with appropriate hygiene measures. Breastfeeding provides essential nutrients and antibodies that support child growth and immunity, which are particularly important during a global health crisis. The findings highlight the resilience of mothers in maintaining breastfeeding practices despite the challenges posed by the pandemic.[13,14]

This study has several limitations. First, it focused solely on maternal knowledge of exclusive breastfeeding and its relationship with child nutritional status, without assessing other factors such as complementary feeding practices, which are critical for older infants. Second, the study was conducted in a specific geographic area, which may limit the generalizability of the findings to other regions. Third, the cross-sectional design of the study does not allow for causal inferences. Future research should explore the impact of complementary feeding practices, maternal attitudes, and other contextual factors on child nutrition. Longitudinal studies could provide a deeper understanding of the long-term effects of maternal knowledge on child health outcomes.[15-18]

The findings of this study underscore the importance of educational interventions to improve maternal knowledge of exclusive breastfeeding. Community health programs should prioritize providing accessible and culturally appropriate education to mothers on the benefits and practical aspects of exclusive breastfeeding. These programs can be implemented through various strategies, including workshops, individual counseling, and community-based support groups. For example, counseling sessions could focus on addressing common misconceptions about breastfeeding and providing practical guidance on overcoming challenges such as latching difficulties or milk supply concerns.[19-21]

The success of such programs should be monitored and evaluated through ongoing assessments of maternal knowledge and child nutritional status. Photographic documentation of educational sessions and community engagement activities can be used to illustrate the implementation of these programs and their impact on the community. Challenges in implementing these programs may include limited resources, cultural barriers, and access to healthcare services. However, the potential benefits for child health and development make these efforts crucial. The suitability of these interventions should be continuously evaluated based on community feedback and evolving needs.

## **CONCLUSION**

This study found a significant relationship between maternal knowledge of exclusive breastfeeding and the nutritional status of children under two years old in Bogor City during the COVID-19 pandemic. Mothers with good knowledge were more likely to have children with normal nutritional status, highlighting the critical role of maternal education in improving child health outcomes. These findings emphasize the need for community health programs that focus on enhancing maternal knowledge and providing support for exclusive breastfeeding practices. Future research should investigate the long-term effects of such interventions and explore the influence of complementary feeding practices on child nutritional status.

## **DECLARATIONS**

Ethics approval and consent to participate. Permission for this study was obtained from the Ethics Review Committee of the Faculty of Medicine, Trisakti University, with approval number 67/KEP-FK/VII/2022

## **CONSENT FOR PUBLICATION**

The Authors agree to publication in Journal of Society Medicine.

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## COMPETING INTERESTS

The authors declare that there is no conflict of interest in this report.

## AUTHORS' CONTRIBUTIONS

All authors significantly contribute to the work reported execution, acquisition of data, analysis, and interpretation, or in all these areas. Contribute to drafting, revising, or critically reviewing the article. Approved the final version to be published, agreed on the journal to be submitted, and agreed to be accountable for all aspects of the work.

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