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Role of Early Initiation of Breastfeeding and Nutritional Counseling on Exclusive Breastfeeding in Indonesia

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ABSTRACT

Exclusive breastfeeding (EBF) for the first six months of life is essential for infant health, growth and development, yet its coverage remains low in Indonesia. The study aimed to assess exclusive breastfeeding practices in Indonesia and examine the association of early initiation of breastfeeding and other antenatal care service (ANC) with EBF in Indonesian. This cross-sectional study analyzed secondary data from the 2022 Indonesia National Nutrition Survey. Data of 3,718 infants aged 6 months from 33 provinces on breastfeeding practice were extracted. Multiple logistic regression analysis was performed to identify the factors associated with EBF, presenting Adjusted Odds Ratio (AOR), 95% Confidence Interval (95% CI) and spatial distribution was mapped using QGIS. The results revealed that only 45.70%. History of early breastfeeding (AOR=1.60; 95% CI: 1.40-1.83), received nutrition counseling (AOR=1.21; 95% CI: 1.06-1.38) and infants with normal or higher birth weight (≥2,500 grams) were more likely to be exclusively breastfed (AOR=1.68; 95% CI: 1.27-2.21). Employment of mothers also showed significant associations with EBF practices (AOR=1.20; 95% CI: 1.04-1.37). Less than half of infants received exclusive breastfeeding. Early breastfeeding and nutrition counseling improved EBF, especially among employed mothers. Emphasis on those factors during ANC is needed, particularly in low EBF coverage provinces.

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1. INTRODUCTION

Exclusive breastfeeding (EBF) is a critical public health strategy that significantly reduces infant morbidity and mortality (Abdulla, Hossain, Karimuzzaman, Ali, & Rahman, 2022; WHO & UNICEF, 2021). It provides complete nutritional and immunological support for the first six months of life and is recommended by WHO and UNICEF as the global standard (UNICEF, 2016; WHO; UNICEF, 2021). However, global EBF rates remain below target, with less than 40% of infants exclusively breastfed, falling short of the international goal of 70% (Brown & Sear, 2019; Burger et al., 2022; WHO; UNICEF, 2021).

In Indonesia, EBF prevalence declined from 37.3% in 2018 to 16.7% in 2022 (Indonesia Ministry of Health, 2018, 2023). This decline is associated with increased formula use and socioeconomic shifts, including urbanization and changing maternal roles (Pérez-Escamilla et al., 2023; Terefe, Habtie, & Chekole, 2024). Several factors influence EBF practices, such as maternal education, employment, birth weight, timing of breastfeeding initiation, and access to health services (Gayatri, 2021; Patil et al., 2020).

Among those factors, early initiation of breastfeeding (EIBF), defined as breastfeeding within the first hour after birth, has been shown to increase the likelihood of continued EBF through physiological and behavioral mechanisms (Armdie et al., 2024; Syahri et al., 2024). Birth weight is another important determinant, with low-birth weight infants facing higher risks of feeding complications (Areprekumor, Ezeh, Madjemu, & Okocha, 2024; Nejsum et al., 2023). Nutrition counseling during antenatal and postnatal care also contributes to improved breastfeeding outcomes, although access remains inconsistent across regions (Devasia, Nayak, Rao, & Kamath, 2025).

Despite extensive global evidence, national-level studies focusing on EBF among six-month-old infants in Indonesia are limited. This study aims to assess the prevalence of EBF and its associated factors, including EIBF, birth weight, nutrition counseling, and maternal employment.

2. RESEARCH METHOD

This cross-sectional study utilized secondary data from the 2022 Indonesia Nutritional Status Survey (SSGI), which covered 33 provinces and 479 districts, excluding East Nusa Tenggara due to security concerns. The national survey employed a stratified two-stage sampling technique from March to December 2022, encompassing 345,000 households. For this study, 3,718 infants aged exactly six months were included, based on eligibility for exclusive breastfeeding and completeness of variable data. Sample size was determined using the logistic regression method (Hsieh, Bloch, & Larsen, 1998) and a one-sample proportion power test, referencing prior national EBF studies.

Data were extracted from two Ministry of Health instruments: the household questionnaire (SSGI-2022-RT) and individual questionnaire (SSGI-2022-IND_BLT). Exclusive breastfeeding was defined as infants who received only breast milk since birth, without other food or liquids, based on maternal recall. The dependent variable was categorized as exclusive or non-exclusive breastfeeding.

Independent variables analysed included early initiation of breastfeeding, infant birth weight, receipt of nutrition counselling, and maternal employment status. Data were analysed using STATA version 18. Descriptive statistics were calculated, followed by bivariate and multivariable logistic regression. Variables with $p < 0.25$ in bivariate analysis were included in the multivariable model. Statistical significance was set at $p < 0.05$, and results were reported as adjusted odds ratios (AORs) with 95% confidence intervals (CIs). Additionally, exclusive breastfeeding coverage was mapped using Quantum GIS (QGIS).

3. RESULT AND DISCUSSION

3.1 Exclusive Breastfeeding Coverage in Indonesia, 2022

This study found that only 45.70% of infants aged six months in Indonesia were exclusively breastfed in 2022 (Table. 1). Figure 1 shows provincial-level coverage, with 14 provinces (41%) reporting EBF rates at or above the study average (45.70%) and 19 provinces (56%) falling below. One province had no available data. Province's meeting or exceeding 45.70% are shown in green, while those below are shown in red.

These findings are lower than those reported in previous studies from Nepal (Singh, Khatri, Sahani, & Khanal, 2024), Ethiopia (Shitie, Tilahun, & Olijira, 2022) and Indonesia as well (Gayatri, 2021; Idris & Astari, 2023; Syahri et al., 2024), which showed EBF prevalence above 50%. Differences may be due to variation in study design, population characteristics, or timing of data collection. The geographic disparities underscore the need for targeted strategies to improve EBF coverage in lower-performing regions.

Tabel 1. Prevalence of Exclusive Breastfeeding infants aged 6 months in Indonesia, 2022 (n=3,718)

Exclusive breastfeeding	Number (n)	Percentage (%)
No	2,019	54.30
Yes	1,699	45.70

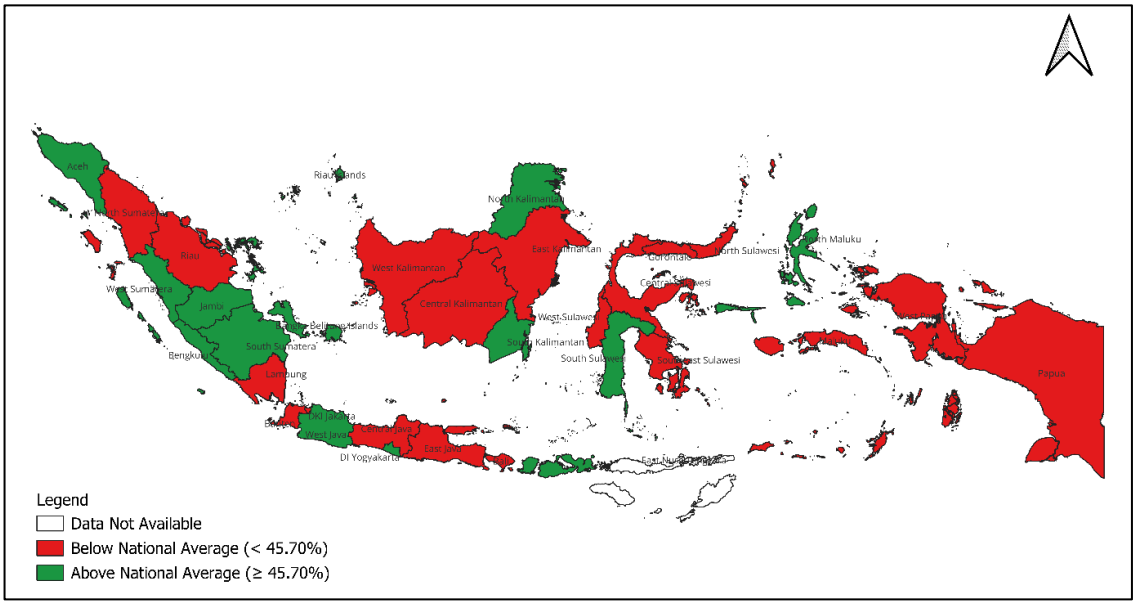

Figure 1. Provincial Coverage of Exclusive Breastfeeding Compared to the Study Average in Indonesia, 2022

3.2 Characteristics of Study Participants

Among 3,718 infants aged six months, slightly more than half (51.61%) were female. Over half (57.96%) had a history of early initiation of breastfeeding, and nearly all (93.22%) had normal or above-normal birth weight, with a mean of 3,093.86 grams (SD ±454.08). Nearly two-thirds of mothers (63.23%) were employed, and 36.87% received nutrition counseling during community health services (Table. 2).

These characteristics reflect key maternal and infant factors relevant to exclusive breastfeeding outcomes.

Table 2. Characteristics of Study Participants

Characteristics	Number (n)	Percentage (%)
Gender of Children		
Male	1,799	48.39
Female	1,919	51.61
Early Initiation Breastfeeding History of Children		
No	1,563	42.04
Yes	2,155	57.96
Birth weight (in gr)		
<2500 (Lower)	252	6.78
≥2500 (Normal or above)	3,466	93.22
Mean (±SD)	3,093.86 (±454.08)	
Median (min: max)	3,100 (1,400 : 5,000)	
Nutrition Counseling History		
No	2,347	63.13
Yes	1,371	36.87
Mother Occupation		
Unemployed	1,367	36.77
Employed	2,351	63.23

3.3 Factors Associated with Exclusive Breastfeeding in Indonesia, 2022

Results from multivariable analysis revealed that early initiation of breastfeeding, birth weight, nutrition counselling, and mother occupation significantly associated with exclusive breastfeeding. Infants who had early initiation breastfeeding were 1.60 times (AOR=1.60; 95% CI: 1.40-1.83; p<0.001) more likely to undertake EBF than infants who had not. Similarly, infants with normal or above-normal birth weight (≥2,500 grams) had 1.68 times higher odds of being exclusively breastfed compared to those with low birth weight (AOR=1.68; 95% CI: 1.27-2.21; p<0.001) (Table 3).

Furthermore, mothers who received nutrition counselling during community health services were also more likely to practice EBF (AOR=1.21; 95% CI: 1.06-1.38; p=0.005) compared to those who did not receive counselling. Additionally, employed mothers were more likely to exclusively breastfeed compared to unemployed mothers (AOR=1.20; 95% CI: 1.04-1.37; p=0.008) (Table 3). These findings highlight the key role of early initiation of breastfeeding, adequate birth weight, access to nutrition counselling, and maternal employment status in promoting exclusive breastfeeding practices in Indonesia.

Tabel 3. Adjusted Odds ratios for each category of factors on Exclusive Breastfeeding (EBF) on multiple logistic regression

Characteristic	Total sample (n)	EBF (n)	EBF %	Crude OR	Adj. OR	95% CI	p-value
Early Initiation Breastfeeding							<0.001
No	1,563	602	38,51	1	1		
Yes	2,155	1,097	50,90	1,65	1,60	1.40-1.83	
Birth weight (in grams)							<0.001
<2,500 (Lower)	252	83	32.94	1	1		
≥2,500 (Normal or above)	3,466	1,616	46.62	1.77	1.68	1.27-2.21	
Nutrition Counseling History					0.005		
No	1,371	1,030	43.89	1	1		
Yes	2,347	669	48.80	1.21	1.21	1.06-1.38	
Mother Occupation							0.008
Unemployed	1,367	586	42.87	1	1		
Employed	2,351	1,113	47.34	1.19	1.20	1.04-1.37	

1) Early Initiation of Breastfeeding with Exclusive Breastfeeding

Early initiation of breastfeeding within the first hour of birth was identified as a key determinant of exclusive breastfeeding in this study. Infants who received early breastfeeding were more likely to be exclusively breastfed than those who did not. These findings are consistent with prior studies conducted in Saudi Arabia (Alshammari & Haridi, 2021), Japan (Inano et al., 2021), China (Shi et al., 2021) and Ethiopia (Jebena & Tenagashaw, 2022), which similarly reported a positive association between early initiation and exclusive breastfeeding. This may be explained by the physiological benefits of early suckling, which stimulates prolactin and oxytocin release, a hormones essential for milk production and ejection also helps establish proper latch, feeding rhythm, and maternal confidence (Idris & Astari, 2023).

2) Birth Weight with Exclusive Breastfeeding

Birth weight was found to be significantly associated with exclusive breastfeeding in this study. Infants born with normal or higher birth weight (≥2,500 grams) were more likely to be exclusively breastfed compared to those with low birth weight (AOR = 1.68; 95% CI: 1.27–2.21). This finding is consistent with previous studies from Ghana and Brazil (Agyekum, Codjoe, Dake, & Abu, 2022; Melo et al., 2024), which reported higher odds of EBF among normal-weight infants. Low birth weight has been associated with delayed feeding readiness, immature suckling reflexes, and increased neonatal care needs, all of which may disrupt early breastfeeding and reduce EBF (Areprekumor et al., 2024; Nejsum et al., 2023). In addition, maternal uncertainty and concern over infant vulnerability may influence feeding decisions. These findings underscore the importance of preventing low birth weight through improved maternal nutrition and antenatal care, while also emphasizing the need for targeted breastfeeding support for low-birth-weight infants in clinical and community settings (Davie, Bick, Pasupathy, Norton, & Chilcot, 2021; Nejsum et al., 2023).

3) Nutrition Counselling with Exclusive Breastfeeding

Nutrition counseling was also found to be a significant determinant of exclusive breastfeeding in this study. Mothers who received counseling during community health services were more likely to practice EBF compared to those who did not. This finding aligns with previous research from Africa (Duarte Lopes et al., 2022), Ethiopia (Shitie et al., 2022), meta-analysis from Ghana (S. Mohammed, I. Yakubu, A. G. Fuseini, A. M. Abdulai, & Y. H. Yakubu, 2023) and Pakistan (Chaudry et al., 2024), which consistently demonstrated that breastfeeding counseling increases the likelihood of exclusive breastfeeding. Counseling provides mothers with essential knowledge, skills, and support that enhance self-efficacy and confidence in making

informed feeding decisions. Evidence suggests that counseling during antenatal and postnatal care significantly improves EBF outcomes, with studies reporting strong associations (AOR = 7.6 during ANC and AOR = 4.6 during PNC) (S. Mohammed, I. Yakubu, A.-G. Fuseini, A.-M. Abdulai, & Y. H. Yakubu, 2023; S. Mohammed et al., 2023; Shitie et al., 2022). Health professionals who offer individualized, empathetic support play a key role in improving maternal capability and commitment to sustained exclusive breastfeeding (Idris & Astari, 2023; Syahri et al., 2024).

4) Mother Occupation with Exclusive Breastfeeding

Maternal employment was significantly associated with exclusive breastfeeding in this study, with employed mothers showing higher odds of practicing EBF than those who were unemployed. This finding is linear with studies from Kenya (Ickes et al., 2022), Tanzania (Mkono, Chirande, Moshiro, & Noorani, 2024) and Taiwan (Yu, Wu, & Liu, 2023), which highlighted the role of workplace support in enabling continued breastfeeding among working mothers. Supportive employment conditions, such as flexible work hours, access to lactation rooms, and positive employer attitudes which have been shown to enhance breastfeeding duration and exclusivity (Ray, 2023). In Indonesia, government policy allowing up to six months of maternity leave may contribute to improved EBF outcomes by facilitating sustained maternal-infant contact during the critical early months. These findings reinforce the importance of workplace accommodations and family-friendly policies in supporting exclusive breastfeeding among employed women (Ray, 2023; Wake & Mittiku, 2021).

4. CONCLUSION

This study found that exclusive breastfeeding (EBF) coverage among infants aged six months in Indonesia remains suboptimal. Early initiation of breastfeeding, receipt of nutrition counseling, maternal employment, and normal or above-normal birth weight were significantly associated with EBF. Among these, early initiation and counseling are modifiable factors that represent key intervention points for improving coverage.

Efforts to increase EBF should focus on promoting immediate breastfeeding after birth, strengthening nutrition counseling during ANC and PNC visits, and expanding health promotion programs. Supportive workplace policies such as flexible working hours and access to lactation facilities may also enhance EBF among employed mothers. Addressing these factors concurrently, these strategies are essential to strengthen national efforts toward achieving optimal breastfeeding practices.

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