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ABSTRACT

Introduction. Exclusive breastfeeding (EBF) plays a crucial role in infant health and development, yet its practice remains suboptimal, particularly in low- and middle-income countries (LMICs). This study aimed to assess the determinants of EBF in Indonesia using data from the 2017 Indonesia Demographic and Health Surveys (IDHS).

Methods. This cross-sectional study analyzed data from the 2017 IDHS to examine factors influencing exclusive breastfeeding among 2,909 women aged 15-49 years with infants under 6 months. Exclusive breastfeeding was defined as feeding only breast milk for at least one month.

Results. The results from 2,909 participants showed that 77.0% of respondents practiced exclusive breastfeeding. Multivariate logistic regression showed that employed mothers were 1.26 times more likely to exclusively breastfeed (95%CI 1.05-1.51; p=0.014).

Fathers with higher education increased the likelihood by 1.73 times (95%CI 1.17-2.54; p=0.006), and mothers with at least four antenatal care visits were 1.84 times more likely to breastfeed exclusively (95%CI 1.09-3.11; p=0.023).

Conclusion. These findings underscore the importance of targeted interventions and policies to promote EBF, considering maternal and paternal factors, as well as access to healthcare services. Further research is needed to explore additional determinants of EBF in Indonesia.

Keywords: determinant, exclusive breastfeeding, Indonesia, infant, mother

INTRODUCTION

Exclusive breastfeeding (EBF) is defined as providing only breast milk from birth to the first six months of life without giving or replacing it with other foods or drinks, except for the provision of medication [1,2]. EBF has been demonstrated as one of the natural strategies that can improve growth, health, and survival, reducing the risk of infant morbidity and mortality. Despite its numerous benefits, recent data indicates that the rate of EBF remains low. Globally, exclusive breastfeeding coverage is reported to be only 30-50%, and this low coverage impact especially in low- and middle-income countries (LMICs) [3].

In 2020, the national exclusive breastfeeding coverage in Indonesia was 52.5%, estimated to cover only 2.3 million infants under the age of 6 months [4]. Several attempts have been made by Indonesian government to increase the EBF coverage, including increases the capacity of officers to promotes EBF. Indonesian government also implementing Baby Friendly Initiative (BFI), an international programs initiate by World Health Organization (WHO) and United Nations Children's Fund (UNICEF) which aims to promote appropriate EBF practice [4].

Various factors can influence the practice of EBF, including maternal characteristics such as education, age, parity, occupation, and socioeconomic status [5]. Its should be noted that the effect of these factors can also vary, depending on sociocultural influences [6]. Therefore, this study aims to evaluate the determinants of EBF in Indonesia based on the Indonesia Demographic and Health Surveys (IDHS) 2017. The analysis of these

determinants can serve as a basis for policy development efforts aimed at increasing EBF coverage in Indonesia.

MATERIALS AND METHODS

Study design and data sources

A cross-sectional study was conducted using secondary data based on the results of the 2017 IDHS, conducted from July 24th to September 30th, 2017, across 34 provinces of Indonesia [7]. The sampling technique employed in IDHS comprises two-stage probability sampling and cluster random sampling. The dataset used in this study specifically pertained to women with completed interviews (IDIR71FL.dta). The dataset was utilized to gather information on women aged 15-49 years who have children with a maximum age of 6 months. The data gathered exclusively from the IDHS. Approval for this study was granted by the Indonesian Ministry of Health's National Institute for Health Research and Development, which also approved a waiver of informed consent from study participants.

Variables

Exclusive breastfeeding served as the dependent variable in this study. Defining exclusive breastfeeding posed a challenge due to variations in the measurement period, the formulation of questions, and the age of the infant [8]. In this study, exclusive breastfeeding was defined as the provision of only breastmilk, with the exception of medication, for at least one month [9,10]. The selection and classification of independent variables in this study were adapted from other DHS studies [11,12]. Adequate antenatal care (ANC) visits were categorized adequate by WHO recommendation [13].

Statistical methods

Analysis was conducted using Stata MP Edition version 15.0. The frequency distribution of outcomes was presented in counts and percentages. Chi-square test were performed to explore associations between exclusive breastfeeding and various factors. Finally, multivariate binary logistic regression was employed to identify independent

variables that could influence exclusive breastfeeding. All analysis were conducted at a significance level of $p<0.05$ with 95% confidence intervals.

RESULTS

Based on the results of the analysis, it was shown that out of the 2,909 respondents, the majority of respondents practiced exclusive breastfeeding (Table 1). A total of 23.0% of respondents did not practice exclusive breastfeeding until at least 6 months, while only 13.6% of respondents provided full exclusive breastfeeding until 6 months. Most of the mothers were aged 30-49 years old (56.6%), employed (59.7%), had secondary school background (56.7%), on first parity (37.0%), adequate ANC visits (89%), deliver spontaneous (74.3%), and ever used contraceptive (68.9%). Additionally, the majority of fathers also had secondary school background (61.9%).

Table 1. Characteristic of Study Participants

Category	Frequency (2909)	Percentage
Exclusive Breastfeeding (Months)		
Never	670	23.0
0	261	9.0
1	533	18.3
2	369	12.7
3	380	13.1
4	184	6.3
5	117	4.0
6	395	13.6
Mother's Age (Years)		
15-19	60	2.1
20-24	442	15.2
25-29	761	26.2
30-49	1646	56.6
Mother's Occupation		
Unemployed	1171	40.3
Employed	1738	59.7
Mother's Educational Background		
No. Education Background	16	0.6
Primary School	515	17.7
Secondary School	1650	56.7
Diploma	199	6.8
Bachelor	529	18.2

Father's Educational Background		
Primary School	553	19.0
Secondary School	1801	61.9
Diploma	101	3.5
Bachelor	454	15.6
Parity (Times)		
1	1077	37.0
2	850	29.2
3	515	17.7
More than 3	467	16.1
ANC Visits		
Never	66	2.3
Below 4 times	254	8.7
Above or Equal to 4 times	2589	89.0
Type of Delivery		
Spontaneous	2160	74.3
Caesarean section	749	25.7
Contraceptive Use		
Never	906	31.1
Ever	2003	68.9

ANC, Antenatal Care;

The comparation analysis is presented in Table 2. A significant difference in mother's age, occupation status, educational background, parity, ANC visits, and contraceptive used was observed between the EBF group and the non-EBF group ($p<0.05$). Additionally, there were a significant differences of father's education ($p<0.05$) between the EBF and non-EBF groups. Only type of delivery did not have significant differences between two groups.

Table 2. Comparation Analysis of Exclusive Breastfeeding Factors

Category	Non Exclusive Breastfeeding N=670 (%)	Exclusive Breastfeeding N=2239 (%)	p value
Mother's Age (Years)			<0.001*
15-19	16 (0.6)	44 (1.5)	
20-24	86 (3)	356 (12.2)	
25-29	142 (4.9)	619 (21.3)	
30-49	426 (14.6)	1220 (41.9)	
Mother's Occupation			<0.001*
Unemployed	316 (10.9)	855 (29.4)	
Employed	354 (12.2)	1384 (47.6)	

Mother's Educational Background			<0.001*
. Education Background	8 (0.3)	8 (0.3)	
Primary School	160 (5.5)	355 (12.2)	
Secondary School	400 (13.8)	1250 (43)	
Diploma	27 (0.9)	172 (5.9)	
Bachelor	75 (2.6)	454 (15.6)	
Father's Educational Background			<0.001*
Primary School	169 (5.8)	384 (13.2)	
Secondary School	424 (14.6)	1377 (47.3)	
Diploma	14 (0.5)	87 (3.0)	
Bachelor	63 (2.2)	391 (13.4)	
Parity (Times)			<0.001*
1	214 (7.4)	863 (29.7)	
2	162 (5.6)	688 (23.7)	
3	137 (4.7)	378 (13)	
More than 3	157 (5.4)	310 (10.7)	
ANC Visits			<0.001*
Never	27 (0.9)	39 (1.3)	
Below 4 times	85 (2.9)	169 (5.8)	
Above or Equal to 4 times	558 (19.2)	2031 (69.8)	
Type of Delivery			0.650
Spontaneous	502 (17.3)	1658 (57.0)	
Caesarean section	168 (5.8)	581 (20.0)	
Contraceptive Use			0.004*
Never	239 (8.2)	667 (22.9)	
ver	431 (14.8)	1572 (54.0)	

ANC, Antenatal Care; *Significant p value <0.05

The multivariate analyses are presented in Table 3. An employed mothers were 1.26 times more likely to EBF (95%CI 1.05-1.51; p=0.014). Additionally, fathers with bachelor educational background were associated with a 1.73 times higher likelihood for the baby to receive EBF (95%CI 1.17-2.54; p=0.006). Moreover, mothers who attended adequate ANC visits were 1.84 times more likely to provide EBF (95%CI 1.09-3.11; p=0.023).

Table 3. Binary Logistic Regression Analysis of Exclusive Breastfeeding Factors

Category	Adjusted Odds Ratio	p value
Mother's Age (Years)		
15-19	R	
20-24	1.30 (0.69-2.44)	0.412
25-29	1.18 (0.63-2.20)	0.604

30-49	0.91 (0.49-1.71)	0.773
Mother's Occupation		
Unemployed	R	
Employed	1.26 (1.05-1.51)	0.014*
Mother's Educational Background		
Education Background	R	
Primary School	1.38 (0.49-3.86)	0.537
Secondary School	1.55 (0.55-4.35)	0.406
Diploma	2.57 (0.84-7.84)	0.098
Bachelor	2.36 (0.81-6.89)	0.117
Father's Educational Background		
Primary School	R	
Secondary School	1.18 (0.93-1.50)	0.172
Diploma	1.66 (0.89-3.12)	0.112
Bachelor	1.73 (1.17-2.54)	0.006*
Parity (Times)		
1	R	
2	1.15 (0.89-1.49)	0.289
3	0.86 (0.63-1.15)	0.306
More than 3	0.70 (0.51-0.96)	0.026*
ANC Visits		
Never	R	
Below 4 times	1.20 (0.67-2.13)	0.543
Above or Equal to 4 times	1.84 (1.09-3.11)	0.023*
Type of Delivery		
Spontaneous	R	
Caesarean section	0.87 (0.71-1.07)	0.196
Contraceptive Use		
Never	R	
Ever	1.38 (1.14-1.67)	0.001*

ANC, Antenatal Care; CI, Confidence Interval; R, Reference; *Significant p value <0.05

DISCUSSION

This study sought to evaluate the determinants of EBF in Indonesia, drawing on data from the 2017 IDHS. Our study did not find a significant difference between the EBF and non-EBF groups in terms of maternal age. This contrasts with several previous studies that have identified maternal age as a significant predictor of EBF practices [14,15]. However, we observed that mothers aged 20-30 years were more likely to practice EBF,

which could be attributed to better preparedness and readiness for childbearing compared to younger mothers under the age of 20 [16].

Interestingly, we found that employed mothers were more likely to provide EBF than unemployed mothers. This finding is unique as it diverges from several earlier studies [17,18]. In many LMICs, including Indonesia, India, and Bangladesh, employed mothers face barriers to sustaining EBF, such as heavy workloads, rigid schedules, and a lack of privacy for breastfeeding in the workplace [2,19,20]. However, increased health awareness and better access to breastfeeding information among employed mothers may contribute to higher rates of EBF in this group [21].

Our results also highlight the importance of both maternal and paternal education in influencing family health outcomes. This finding aligns with previous studies that demonstrate a positive association between education and EBF practices [6, 22]. Mothers with lower levels of education may be more susceptible to cultural practices that undermine EBF and may lack adequate knowledge about its benefits. In some indigenous communities in Indonesia, for example, traditional feeding practices involve the early introduction of honey, sugar solutions, or sago solutions to infants, which are unnecessary for children under six months [22].

Our findings further support the relationship between ANC visits and EBF practices [23]. During ANC, pregnant women receive critical education on lactation management, including the benefits and practices of EBF, from healthcare professionals.[23] We also found higher EBF in the 2 parity but not on more than 3 parity. As parity increases, challenges such as breastfeeding difficulties and the splitting of divided attention between several children may contribute to the decline in EBF [24].

The relationship between delivery type and EBF remains unclear. Cesarean sections have been identified as a potential factor in delaying the initiation of breastfeeding, as postoperative recovery may interfere with breastfeeding in these mothers [25,26]. We also observed higher rates of EBF among mothers who had a history of contraceptive use, suggesting that contraceptive use may be an indicator of planned pregnancies, which could correlate with better preparation for breastfeeding [27].

Strength and Limitation

This study was based on data from the 2017 IDHS, a large, nationally representative survey that enabled us to examine a wide range of potential risk factors, including external environment, predisposing factors, enabling factors, and need factors. However, the study has several limitations. The information provided was subject to recall bias, as it relied on the respondents' ability to recall details from their pregnancies. Additionally, several important determinants of EBF, such as infant-related variables (birth weight, birth interval, infant comorbidities), timing of breastfeeding initiation, parental sociodemographic factors (media exposure, household family size), healthcare postnatal care utilization, community-level variables (contextual region), and postpartum care were not included in this analysis. We recommend further research to evaluate these additional determinants of exclusive breastfeeding that were not addressed in this study.

CONCLUSIONS

The findings of this study emphasize the critical role of maternal employment, educational attainment of both parents, and antenatal care visits in shaping exclusive breastfeeding practices in Indonesia. These results point to the necessity for targeted interventions and policies that promote EBF, with a comprehensive approach that includes both maternal and paternal influences, alongside improved access to healthcare services. Future research should investigate additional determinants of exclusive breastfeeding, such as infant-specific factors, healthcare postnatal care utilization, and community-level influences, which were not covered in this study.

REFERENCES

1. Binns CW, Fraser ML, Lee AH, Scott J. Defining exclusive breastfeeding in Australia. Journal of paediatrics and child health. 2009;45(4):174-80. Epub 2009/05/12. doi: 10.1111/j.1440-1754.2009.01478.x. PubMed PMID: 19426375.

2. Gayatri M. Exclusive Breastfeeding Practice in Indonesia: A Population-Based Study. Korean journal of family medicine. 2021;42(5):395-402. Epub 2021/10/05. doi: 10.4082/kjfm.20.0131. PubMed PMID: 34607416; PubMed Central PMCID: PMCPMC8490177.

3. Mallick L, Wang W, Farid S, Pullum T. Initiation of Breastfeeding in Low- and Middle-Income Countries: A Time-to-Event Analysis. Global health, science and practice. 2021;9(2):308-17. Epub

2021/05/22. doi: 10.9745/ghsp-d-20-00361. PubMed PMID: 34019481; PubMed Central PMCID: PMCPMC8324198.

4. Indonesian Ministry of Health. Indonesian Health Profile 2020 [cited 2024 20 August]. Available from: https://www.kemkes.go.id/id/profil-kesehatan-indonesia-2020.

5. Nguyen NT, Do HT, Pham NTV. Barriers to exclusive breastfeeding: A cross-sectional study among mothers in Ho Chi Minh City, Vietnam. Belitung nursing journal. 2021;7(3):171-8. Epub 2021/06/28. doi: 10.33546/bnj.1382. PubMed PMID: 37469344; PubMed Central PMCID: PMCPMC10353628.

6. Khanal V, Sauer K, Zhao Y. Exclusive breastfeeding practices in relation to social and health determinants: a comparison of the 2006 and 2011 Nepal Demographic and Health Surveys. BMC Public Health. 2013;13(1):958. doi: 10.1186/1471-2458-13-958.

7. USAID. Demographic and Health Surveys Program, [cited 2024 20 August]. Available from: https://dhsprogram.com/countries/Country-Main.cfm?ctry_id=17&c=Indonesia.

8. Khanal V, Lee AH, Scott JA, Karkee R, Binns CW. Implications of methodological differences in measuring the rates of exclusive breastfeeding in Nepal: findings from literature review and cohort study. BMC pregnancy and childbirth. 2016;16(1):389. Epub 2016/12/14. doi: 10.1186/s12884-016-1180-9. PubMed PMID: 27955620; PubMed Central PMCID: PMCPMC5154002.

9. World Health Organization. Indicators for assessing infant and young child feeding practices: definitions and measurement methods [cited 2024 20 August]. Available from: https://www.who.int/publications/i/item/9789240018389.

10. Demographic and Health Surveys Program. Percentage of children exclusively breastfed, and receiving mixed milk feeding [cited 2024 20 August]. Available from: https://dhsprogram.com/data/Guide-to-DHS-Statistics/Breastfeeding_and_Complementary_Feeding.htm.

11. Agho KE, Dibley MJ, Odiase JI, Ogbonmwan SM. Determinants of exclusive breastfeeding in Nigeria. BMC pregnancy and childbirth. 2011;11(1):2. doi: 10.1186/1471-2393-11-2.

12. Khanal V, da Cruz JL, Karkee R, Lee AH. Factors associated with exclusive breastfeeding in Timor-Leste: findings from Demographic and Health Survey 2009-2010. Nutrients. 2014;6(4):1691-700. Epub 2014/04/24. doi: 10.3390/nu6041691. PubMed PMID: 24756151; PubMed Central PMCID: PMCPMC4011060.

13. World Health Organization. Antenatal care coverage - at least four visits (%) [cited 2024 20 August]. Available from: https://www.who.int/data/gho/indicator-metadata-registry/imr-details/80.

14. Asfaw MM, Argaw MD, Kefene ZK. Factors associated with exclusive breastfeeding practices in Debre Berhan District, Central Ethiopia: a cross sectional community based study. International Breastfeeding Journal. 2015;10(1):23. doi: 10.1186/s13006-015-0049-2.

15. Yalçin SS, Berde AS, Yalçin S. Determinants of Exclusive Breast Feeding in sub-Saharan Africa: A Multilevel Approach. Paediatric and perinatal epidemiology. 2016;30(5):439-49. Epub 2016/06/04. doi: 10.1111/ppe.12305. PubMed PMID: 27259184.

16. Tariku A, Alemu K, Gizaw Z, Muchie KF, Derso T, Abebe SM, et al. Mothers' education and ANC visit improved exclusive breastfeeding in Dabat Health and Demographic Surveillance System Site, northwest Ethiopia. Plos One. 2017;12(6):e0179056. Epub 2017/06/29. doi: 10.1371/journal.pone.0179056. PubMed PMID: 28658257; PubMed Central PMCID: PMCPMC5489161.

17. Bai DL, Fong DY, Tarrant M. Factors associated with breastfeeding duration and exclusivity in mothers returning to paid employment postpartum. Maternal and child health journal. 2015;19(5):990-9. Epub 2014/08/07. doi: 10.1007/s10995-014-1596-7. PubMed PMID: 25095769.

18. Hunegnaw MT, Gezie LD, Teferra AS. Exclusive breastfeeding and associated factors among mothers in Gozamin district, northwest Ethiopia: a community based cross-sectional study. International Breastfeeding Journal. 2017;12(1):30. doi: 10.1186/s13006-017-0121-1.

19. Tadesse F, Alemayehu Y, Shine S, Asresahegn H, Tadesse T. Exclusive breastfeeding and maternal employment among mothers of infants from three to five months old in the Fafan zone, Somali regional state of Ethiopia: a comparative cross-sectional study. BMC Public Health. 2019;19(1):1015. doi: 10.1186/s12889-019-7345-5.

20. Patel A, Badhoniya N, Khadse S, Senarath U, Agho KE, Dibley MJ. Infant and young child feeding indicators and determinants of poor feeding practices in India: secondary data analysis of National Family Health Survey 2005-06. Food and nutrition bulletin. 2010;31(2):314-33. Epub 2010/08/17. doi: 10.1177/156482651003100221. PubMed PMID: 20707236.

21. Ahmad RS, Sulaiman Z, Nik Hussain NH, Mohd Noor N. Working mothers' breastfeeding experience: a phenomenology qualitative approach. BMC pregnancy and childbirth. 2022;22(1):85. doi: 10.1186/s12884-021-04304-4.

22. Laksono AD, Wulandari RD, Ibad M, Kusrini I. The effects of mother's education on achieving exclusive breastfeeding in Indonesia. BMC Public Health. 2021;21(1):14. Epub 2021/01/07. doi: 10.1186/s12889-020-10018-7. PubMed PMID: 33402139; PubMed Central PMCID: PMCPMC7786474.

23. Alebel A, Tesma C, Temesgen B, Ferede A, Kibret GD. Exclusive breastfeeding practice in Ethiopia and its association with antenatal care and institutional delivery: a systematic review and meta-analysis.

Int Breastfeed J. 2018;13:31. Epub 2018/07/22. doi: 10.1186/s13006-018-0173-x. PubMed PMID: 30026786; PubMed Central PMCID: PMCPMC6048887.

24. Nagy E, Orvos H, Pál A, Kovács L, Loveland K. Breastfeeding duration and previous breastfeeding experience. Acta paediatrica (Oslo, Norway : 1992). 2001;90(1):51-6. Epub 2001/03/03. doi: 10.1080/080352501750064879. PubMed PMID: 11227334.

25. Tracz J, Gajewska D, Myszkowska-Ryciak J. The Association between the Type of Delivery and Factors Associated with Exclusive Breastfeeding Practice among Polish Women-A Cross-Sectional Study. Int J Environ Res Public Health. 2021;18(20). Epub 2021/10/24. doi: 10.3390/ijerph182010987. PubMed PMID: 34682733; PubMed Central PMCID: PMCPMC8535354.

26. Paksoy Erbaydar N, Erbaydar T. Relationship between caesarean section and breastfeeding: evidence from the 2013 Turkey demographic and health survey. BMC pregnancy and childbirth. 2020;20(1):55. doi: 10.1186/s12884-020-2732-6.

27. Birgisson NE, Zhao Q, Secura GM, Madden T, Peipert JF. Preventing Unintended Pregnancy: The Contraceptive CHOICE Project in Review. Journal of Women's Health. 2015;24(5):349-53. doi: 10.1089/jwh.2015.5191.