

THE RELATIONSHIP OF PARITY, MATERNAL AGE, AND MODE OF DELIVERY WITH EXCLUSIVE BREASTFEEDING AMONG POSTPARTUM MOTHERS AT BUNDA SETIA CLINIC, TABANAN

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ABSTRACT

Background. Exclusive breastfeeding is a key intervention for reducing infant morbidity and supporting maternal postpartum recovery, yet its coverage remains suboptimal. Maternal factors such as parity, age, and mode of delivery are thought to be associated with breastfeeding success; however, evidence at the primary-care facility level remains limited. This study aimed to analyse the relationship of parity, maternal age, and mode of delivery with exclusive breastfeeding among postpartum mothers at Bunda Setia Clinic, Tabanan.

Methods. An analytical observational study with a cross-sectional design was conducted using secondary medical-record data of postpartum mothers for the period 2024–2025. Total sampling yielded 63 eligible mothers who met the inclusion criteria. The independent variables were parity, maternal age, and mode of delivery, and the dependent variable was exclusive breastfeeding. Univariate analysis was used to describe frequency distributions, whereas bivariate analysis employed the chi-square test and Fisher's exact test where the chi-square assumptions were not met, with statistical significance set at $p < 0.05$.

Results. Forty-five of the 63 mothers (71.4%) practised exclusive breastfeeding. The mean maternal age was 28.8 ± 5.1 years (range 19–41). Most mothers were multiparous (73.0%), and all mothers (100%) delivered vaginally. Maternal age was significantly associated with exclusive breastfeeding: the proportion of exclusive breastfeeding was markedly lower among mothers of high-risk reproductive age (<20 or >35 years) than among those aged 20–35 years (28.6% vs 76.8%; Fisher's exact test $p = 0.017$). Parity showed no significant association ($p = 0.820$). The relationship between mode of delivery and exclusive breastfeeding could not be tested owing to the absence of variation in the data, as all deliveries were vaginal.

Conclusion. Maternal age was significantly associated with exclusive breastfeeding, whereas parity was not. Mothers of high-risk reproductive age require strengthened lactation counselling and support. Further research with adequate variation in mode of delivery and multivariable analysis is warranted.

Keywords: parity; maternal age; mode of delivery; exclusive breastfeeding; postpartum mothers

INTRODUCTION

Exclusive breastfeeding is regarded as the gold standard for infant feeding during the first six months of life. The World Health Organization (WHO) and UNICEF recommend early initiation of breastfeeding within the first hour after birth, exclusive breastfeeding for six months, and continued breastfeeding up to two years of age or beyond^{1,2}. Breastfeeding and human milk are recognised as the normative standard for infant feeding, and their protective effects extend well beyond early nutrition³. This practice plays an important role in reducing infant morbidity and mortality, supporting optimal growth and development^{1,4,5}, and it confers health benefits on the mother, including a reduced risk of breast and ovarian carcinoma and a longer duration of lactational amenorrhoea⁶. Pooled evidence indicates that, relative to exclusively breastfed infants, those who are predominantly, partially or not breastfed carry a substantially higher risk of all-cause and infection-related mortality during the first six months of life⁵.

Despite these clear benefits, exclusive breastfeeding coverage in Indonesia remains suboptimal. The 2023 Indonesian Health Survey (Survei Kesehatan Indonesia, SKI) reports a national exclusive breastfeeding proportion of 68.6% among infants aged 0–5 months, whereas the six-month exclusive breastfeeding indicator among children aged 6–23 months is only 55.5%⁷. UNICEF Indonesia reports that the rate of exclusive breastfeeding among infants under six months rose to 66.4% in 2024; nevertheless, many infants still do not receive full exclusive breastfeeding as recommended⁸. Population-based analyses of national survey data further show that coverage differs substantially according to maternal and health-service characteristics, so that national averages conceal considerable heterogeneity between subgroups and regions^{9,10}. These data underscore that the achievement of exclusive breastfeeding remains an important issue in maternal and child health services.

The success of exclusive breastfeeding is influenced by various factors, including maternal characteristics. Parity is related to a mother's experience in caring for and breastfeeding her infant; multiparous mothers generally have better experience than primiparous mothers^{9–11}. First-time mothers more often report early breastfeeding problems, anxiety and insecurity in the weeks following discharge, and these experiences contribute to earlier cessation of exclusive breastfeeding^{12,13}. Maternal age reflects biological, psychological, and social readiness to undertake the breastfeeding role. Kitano et al. demonstrate that older maternal age and primiparous status are associated with lower successful initiation of exclusive breastfeeding, so the combination of age and parity warrants attention in evaluating risk factors for breastfeeding failure¹⁴. Cohort data from the Japan Environment and Children's Study similarly identify maternal age as a determinant of exclusive breastfeeding up to six months postpartum¹⁵. In addition, the mode of delivery influences breastfeeding success; mothers who undergo caesarean

section tend to face greater obstacles owing to postoperative pain, delayed skin-to-skin contact, and delayed early initiation of breastfeeding¹⁶, and evidence from Southeast Asian countries indicates that caesarean delivery is associated with a lower likelihood of exclusive breastfeeding compared with vaginal delivery¹⁷. Conversely, immediate or early skin-to-skin contact after birth improves the establishment of breastfeeding, which is why the peripartum management surrounding the mode of delivery is clinically relevant¹⁸.

The postpartum period is a critical window for lactation success, as mothers adapt physically and psychologically after delivery. Additional, structured breastfeeding support delivered during this window increases both the duration and the exclusivity of breastfeeding¹⁹, and the determinants of breastfeeding operate simultaneously at the individual, health-service, and policy levels²⁰. Most of the available evidence derives from population surveys or multicentre studies, which provide a broad picture but lack specificity for the clinic-level care setting. As a maternal and child health facility, Bunda Setia Clinic in Tabanan maintains medical-record data that can be used to identify the relationship of maternal characteristics with exclusive breastfeeding in a contextual manner. Accordingly, this study aims to analyse the relationship of parity, maternal age, and mode of delivery with exclusive breastfeeding among postpartum mothers at Bunda Setia Clinic, Tabanan, so that its findings may serve as a basis for strengthening risk-based lactation education and breastfeeding support.

METHODS

Study Design and Setting

This was a quantitative study with an analytical observational design and a cross-sectional approach. The study was conducted at Bunda Setia Clinic, Tabanan, Bali. The data analysed were secondary medical-record data of postpartum mothers for the period 2024 to 2025.

Population and Sample

The study population comprised all medical records of postpartum mothers at Bunda Setia Clinic, Tabanan, during that period that contained information on maternal age, parity, mode of delivery, and exclusive breastfeeding status. Sampling was performed using a total-sampling technique. The inclusion criteria were medical records of postpartum mothers with complete data on all study variables and clear documentation; the exclusion criteria were medical records with incomplete or illegible data. Based on these criteria, 63 medical records met the requirements and were included as the study sample.

Variables and Operational Definitions

The independent variables were parity, maternal age, and mode of delivery, whereas the dependent variable was exclusive breastfeeding. Parity was defined as the number of live births a mother had experienced and was classified as primiparous, multiparous, or grand-multiparous. Maternal age was the mother's age at delivery according to the medical record; for analysis, age was grouped into <20 years, 20–35 years, and >35 years, and was further

categorised into a high-risk reproductive-age group (<20 or >35 years) and a non-high-risk group (20–35 years). Mode of delivery was classified as vaginal delivery or caesarean section. Exclusive breastfeeding was defined as the provision of breast milk alone, without any additional food or drink, according to the medical record, in accordance with the WHO and UNICEF definition of exclusive breastfeeding²¹, and was categorised as yes or no.

Data Collection and Analysis

Data were collected using a medical-record data-extraction sheet that recorded the respondent code, maternal age, parity, mode of delivery, and exclusive breastfeeding status. After completeness checking, coding, and tabulation, the data were analysed univariately to describe the frequency distribution and proportion of each variable. Bivariate analysis was performed to assess the relationship of each independent variable with the dependent variable using the chi-square test; where the chi-square assumptions were not met (more than 20% of cells with an expected frequency <5), Fisher's exact test was used as an alternative. The level of statistical significance was set at $p < 0.05$.

Ethical Considerations

Table 1. Distribution of characteristics of postpartum mothers (n = 63)

Characteristic	n	%
<i>Year of data</i>		
2024	24	38.1
2025	39	61.9
<i>Age group (years)</i>		
<20	1	1.6
20–35	56	88.9
>35	6	9.5
<i>Reproductive-age category</i>		
Non-high-risk (20–35)	56	88.9
High-risk (<20 or >35)	7	11.1
<i>Parity</i>		
Primiparous	12	19.0
Multiparous	46	73.0
Grand-multiparous	5	7.9
<i>Mode of delivery</i>		
Vaginal delivery	63	100.0
Caesarean section	0	0.0
<i>Exclusive breastfeeding</i>		
Yes	45	71.4
No	18	28.6

Mean maternal age 28.8 ± 5.1 years (median 28; range 19–41).

Relationships between Variables (Bivariate Analysis)

The results of the bivariate analysis are presented in Table 2. Maternal age was significantly associated with exclusive breastfeeding. In the high-risk age group (<20 or >35 years), only 2 of 7 mothers (28.6%) practised exclusive

This study used secondary medical-record data while upholding the principles of confidentiality and anonymity; no personal identities were included in the analysis or reporting, and all data were analysed in aggregate. Ethical approval was obtained from the Research Ethics Committee of **Warmadewa University**, and research permission was granted by Bunda Setia Clinic, Tabanan.

RESULTS

Characteristics of Respondents (Univariate Analysis)

A total of 63 postpartum mothers met the criteria and were analysed, comprising 24 respondents (38.1%) from the 2024 data and 39 respondents (61.9%) from 2025. The mean maternal age was 28.8 ± 5.1 years, with a range of 19–41 years and a median of 28 years. The majority of mothers were in the 20–35-year age group (88.9%) and were multiparous (73.0%). All mothers (100%) underwent vaginal delivery, and no caesarean section was recorded during the available data period. Overall, 45 mothers (71.4%) practised exclusive breastfeeding and 18 (28.6%) did not. The distribution of respondent characteristics is presented in Table 1.

breastfeeding, far fewer than the 43 of 56 mothers (76.8%) in the 20–35-year group. This difference was statistically significant (Fisher's exact test $p = 0.017$; chi-square $p = 0.027$).

By contrast, parity showed no significant association with exclusive breastfeeding ($p = 0.820$). The proportion of mothers who practised exclusive breastfeeding was relatively similar across parity groups: primiparous 75.0%, multiparous 71.7%, and grand-multiparous 60.0%. The relationship between mode of delivery and exclusive

breastfeeding could not be analysed inferentially because all mothers in the sample underwent vaginal delivery, so there was no variation in exposure required for statistical testing. The proportions of exclusive breastfeeding by age group and parity are shown in Figure 1.

Table 2. Relationship of parity, maternal age, and mode of delivery with exclusive breastfeeding ($n = 63$)

Variable	Exclusive BF	Not exclusive	Total	p-value
Reproductive age				
Non-high-risk (20–35 y)	43 (76.8%)	13 (23.2%)	56	0.017^a
High-risk (<20 or >35 y)	2 (28.6%)	5 (71.4%)	7	
Parity				
Primiparous	9 (75.0%)	3 (25.0%)	12	0.820 ^b
Multiparous	33 (71.7%)	13 (28.3%)	46	
Grand-multiparous	3 (60.0%)	2 (40.0%)	5	
Mode of delivery				
Vaginal delivery	45 (71.4%)	18 (28.6%)	63	NT ^c
Caesarean section	0	0	0	

a Fisher's exact test (chi-square $p = 0.027$); *b* chi-square test; *c* NT = not testable owing to the absence of data variation (all deliveries were vaginal).

Bold indicates a statistically significant association ($p < 0.05$).

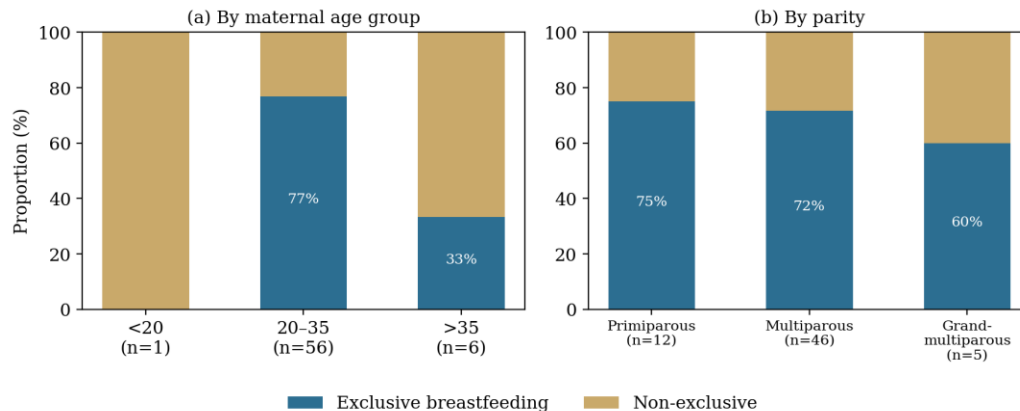


Figure 1. Proportion of exclusive breastfeeding by (a) maternal age group and (b) parity among postpartum mothers at Bunda Setia Clinic, Tabanan ($n = 63$).

DISCUSSION

This study shows that the coverage of exclusive breastfeeding among postpartum mothers at Bunda Setia Clinic, Tabanan, is 71.4%, a figure higher than the national proportion reported by the 2023 SKI (68.6% among infants aged 0–5 months)⁷ and the UNICEF Indonesia report for 2024 (66.4%)⁸. This relatively favourable achievement may be related to the characteristics of the sample, which is dominated by multiparous mothers and mothers within the optimal reproductive-age range, as well as to a clinic care setting that allows more personalised lactation support. Facility-based studies conducted elsewhere likewise report coverage that departs appreciably from national estimates in either direction, which reflects differences in setting, case mix, and the operational definition applied^{22,23}.

The principal finding of this study is the significant association between maternal age and exclusive breastfeeding. Mothers in the high-risk age group (<20 or >35 years) have a far lower proportion of exclusive breastfeeding (28.6%) than mothers aged 20–35 years (76.8%). This finding is consistent with the study by Kitano et al., which shows that older maternal age is associated with lower successful initiation of exclusive breastfeeding, with the lowest success rate among primiparous mothers aged ≥ 35 years¹⁴. A large-scale path analysis of Japanese mothers likewise identifies older maternal age as a direct predictor of lower exclusive breastfeeding at one month postpartum²⁴, and a nationwide comparison of breastfeeding rates by parity and delivery age in the same population describes a comparable gradient²⁵; cohort data extending to

six months postpartum point in the same direction¹⁵. A recent systematic review and meta-analysis of predictors of exclusive breastfeeding also places maternal age among the demographic factors most consistently associated with breastfeeding outcomes²⁶. The biological and physiological readiness for lactation, energy levels, and the potentially increased obstetric comorbidities at older ages, together with the limited psychosocial readiness of very young mothers, may help explain this pattern. Mothers of high-risk reproductive age should therefore be a priority target for lactation counselling and support.

Contrary to the initial hypothesis, parity shows no significant association with exclusive breastfeeding in this study ($p = 0.820$). Although multiparous mothers theoretically have better breastfeeding experience^{9,10}, the proportion of exclusive breastfeeding is relatively similar across parity groups. This non-significant result may be influenced by the skewed sample distribution—most respondents are multiparous—and by the limited number of participants in the primiparous and grand-multiparous groups, which reduces the statistical power to detect a difference. Indonesian evidence is itself inconsistent on this point: analyses of national survey data identify parity as a significant correlate of exclusive breastfeeding^{9,11}, whereas a community-based study in West Java found education, knowledge, attitude, self-efficacy, and early initiation of breastfeeding—rather than parity—to be the factors associated with the practice²². Recent systematic reviews emphasise that the determinants of exclusive breastfeeding are multifactorial, so the influence of parity may be modified by other factors such as family support, education, and care practices²⁶.

The relationship between mode of delivery and exclusive breastfeeding cannot be analysed in this study because all mothers in the sample underwent vaginal delivery. The absence of caesarean section cases eliminates the variation in exposure required for statistical testing. This represents an important limitation, given that the literature indicates caesarean delivery may hinder early initiation of breastfeeding and reduce the likelihood of exclusive breastfeeding^{16,17}. The evidence is nevertheless not uniform: in a large Japanese path analysis, the type of delivery did not predict the feeding method once other obstetric characteristics were accounted for²⁴. Mechanistically, much of the disadvantage attributed to caesarean birth appears to operate through delayed skin-to-skin contact and a delayed first feed rather than through the operation itself, and early skin-to-skin contact improves the establishment of breastfeeding after all modes of birth¹⁸. The homogeneity of mode of delivery in this study probably reflects the characteristics of a clinic focusing on physiological delivery, and highlights the need for further research at facilities with adequate variation in mode of delivery.

From a practical standpoint, these findings support the strengthening of lactation interventions segmented by risk factor, particularly the targeting of breastfeeding counselling and support at mothers of high-risk reproductive age.

Systematic review evidence indicates that additional breastfeeding support reduces the cessation of exclusive breastfeeding, and that it is most effective when it is offered proactively and face to face rather than only on request¹⁹; sustaining such services further requires supportive measures at the health-system and policy levels^{20,26,27}. The use of medical-record data as a source of local evidence also demonstrates the potential of the clinic to conduct continuous quality monitoring of maternal and neonatal services.

Study Limitations

This study has several limitations. First, the cross-sectional design does not permit causal inference. Second, the use of secondary medical-record data limits the coverage of important confounders such as educational level, occupation, family support, the practice of early initiation of breastfeeding, and infant health status, so that multivariable analysis to control for confounders cannot be performed. Third, the relatively small sample size ($n = 63$), with several small cell counts, reduces the statistical power and requires cautious interpretation, particularly for the parity analysis and the age subgroups. Fourth, the absence of variation in mode of delivery means that one of the principal independent variables cannot be tested. Fifth, the definition of exclusive breastfeeding relies on medical-record documentation, which is subject to potential recording bias. Prospective further studies, with a larger sample, adequate variation in mode of delivery, and multivariable analysis, are recommended to strengthen the evidence.

CONCLUSION

Maternal age is significantly associated with exclusive breastfeeding among postpartum mothers at Bunda Setia Clinic, Tabanan, with a markedly lower proportion of exclusive breastfeeding among mothers of high-risk reproductive age (<20 or >35 years). Parity shows no significant association, whereas the relationship of mode of delivery cannot be analysed because all mothers underwent vaginal delivery. These findings emphasise the importance of strengthening lactation counselling and support segmented according to age-related risk factors, as well as the need for further research incorporating variation in mode of delivery and multivariable analysis.

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