



## Does a caesarean affect breastfeeding initiation? Evidence among women who delivered in health facilities

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**Abstract:** *Introduction: Breastfeeding initiation is internationally recommended due to its benefits on maternal and child health. The aim of the study was to determine the relationship between mode of delivery and early breastfeeding initiation among women who delivered in health facilities. Methods: The study based on The Indonesia Demographic and Health Survey 2017. There were 5,369 women whose children born in the last 24 months preceding the survey in health facilities in Indonesia. Descriptive statistics and binary logistic regression were used for data analysis. The complex sample design was performed for analyses. Results: Of the women who had given birth to at least 24 months preceding the survey in health facilities, 57 percent was found to practice initiation breastfeeding. The likelihood of breastfeeding initiation among women who delivered in health facilities was associated with mode of delivery, which women with caesarean delivery (OR = 0.33; 95% CI: 0.29-0.38) were less likely to practice breastfeeding initiation compared with those with normal vaginal delivery after adjusted by socio-economic factors. Moreover, women age 35-49 years and non-working women were found to have higher probabilities to practice breastfeeding initiation. Conclusion: Maternal age, working status and type of delivery were significantly influencing the practice of early initiation of breastfeeding among women who delivered in health facilities. Therefore, education and promotion of breastfeeding initiation need to be improved, so couples can raise their knowledge and awareness of the benefits of breastfeeding initiation then implement it.*

**Keywords** *breastfeeding, caesarean, health facility, initiation, normal delivery*

### 1. INTRODUCTION

Early initiation of breastfeeding (EIBF) within one hour after delivery is one of the public health challenges (Ezeh et al., 2019). Breastfeeding initiation is internationally recommended due to its benefits on maternal and child health such as reduce the risk of hypothermia, develop natural immunity (Ezeh et al., 2019; Smith et al., 2017). Early initiation of breastfeeding reduces the risk of neonatal mortality and severe morbidity (Smith et al., 2017).

Many health facilities have adopted Baby-friendly hospital initiative (BFHI) launched by WHO and UNICEF to promote and support breastfeeding in health facilities that provide maternity and newborn services. Moreover, delivery in health facilities will benefit mothers because they can get close monitoring from skilled attendants to start the initiation of breastfeeding as soon as possible after delivery (Nkoka et al., 2019). During EIBF, it is important to give infants the first breast milk (colostrum) as highly nutritious food to develop newborn's antibodies and reduce the risk of microbial translocation (Liben & Yesuf, 2016; Smith et al., 2017). EIBF may help mothers to develop their close bonding with the newborn (Smith et al., 2017).

Previous studies showed that there were some factors influencing the practices of

EIBF such as demographic, socio-economic and healthcare utilization factors. Demographic factors contain mother's age (Ezeh et al., 2019), birth order (Ezeh et al., 2019; John et al., 2019; Liben & Yesuf, 2016; Nkoka et al., 2019), and birth interval (Senanayake et al., 2019). Socio-economic factor influencing EIBF were household wealth index (Ezeh et al., 2019; John et al., 2019; Nkoka et al., 2019), mother's working status (Dagher et al., 2016; Ezeh et al., 2019; Ghimire, 2019; Nkoka et al., 2019; Senanayake et al., 2019), maternal education (Ezeh et al., 2019; Liben & Yesuf, 2016; Nkoka et al., 2019; Senanayake et al., 2019), and place of residence (Liben & Yesuf, 2016; Nkoka et al., 2019; Senanayake et al., 2019). Healthcare utilization factors that affecting EIBF were place of delivery (Ezeh et al., 2019; Ghimire, 2019; John et al., 2019; Nkoka et al., 2019; Senanayake et al., 2019), mode of delivery (Ezeh et al., 2019; Ghimire, 2019; John et al., 2019; Ndirangu et al., 2018; Nkoka et al., 2019; Senanayake et al., 2019), type of delivery assistance (Ezeh et al., 2019; Ghimire, 2019; John et al., 2019; Liben & Yesuf, 2016; Nkoka et al., 2019; Senanayake et al., 2019), and antenatal clinic visits (Ezeh et al., 2019; Senanayake et al., 2019). The study aimed to determine the relationship between mode of delivery and early breastfeeding initiation among women who delivered in health facilities.

## 2. METHODS

The study based on The Indonesia Demographic and Health Survey (IDHS) 2017. IDHS was a cross-sectional and nationally representative survey covered all 34 provinces in Indonesia. The survey used multistage sampling design. The first stage consisted of 1,970 selecting census enumeration areas (EA) with probability proportional of size from rural and urban areas based on the households listed in the 2010 Indonesian Population Census. Secondly, a systematic sample of households was identified in each selected census block with a cluster of 25 households.

A structured questionnaire was used for interviewing women in reproductive age. Regarding this study, the questionnaire captured information about the last pregnancies such as maternal age, breastfeeding initiation and place of delivery, Socio-demographic details of the mother were also collected such as mother's highest educational attainment, wealth index, place of residence and occupational status.

The inclusion criteria for this study were mothers, aged 15-49 years, who gave birth to the youngest child in the last 24 months living with mother, and who delivered the alive baby in health facilities such as government hospital/clinic, government health Centre, government mobile clinic, government-private midwife, village health post, private hospital/clinic,

private clinic/maternity home, private obstetrician and private midwife. The exclusion criteria were mothers who had not complete response on their breastfeeding status and mothers who delivered twins or triplets or quadruplets babies. Data collection was carried out between July and September 2017. We restricted our analyses to the 5,369 women who delivered the last child in the last 24 months preceding the survey in health facilities in Indonesia.

We used descriptive analysis of the practice of EIBF for the first analysis. The analyses in this study were weighted to adjust for differences in the probability of sampling techniques due to selection and non-response. Secondly, bivariate and multivariate analyses were assessed to determine the covariates on the two variables interest. The results of logistic regression were presented as the partial proportional odds model. The model had a p-value of  $< 0.05$ . All analyses were undertaken in Stata 15.1. The complex sample design was performed for analyses. STATA command “svy” and “logistic” was used to fit the partial proportional odds model.

### **3. CONCLUSION**

Table 1 shows the characteristics of the respondents of 5,369 women aged 15-49 years at the births of their youngest child who delivered in the health facilities. More than 70% of the participants were aged 20-24 years and delivered their last child with normal vaginal delivery. About 62% of the respondents had secondary education. Half of the women were working and lived in urban areas. With regard to the wealth status of the household, about 45% were rich, 21% were middle and 24% were poor. Of the women who had given birth to at least 24 months preceding the survey in health facilities, the proportion of EIBF was about 57.3% in the overall female population.

**Table 1.** Proportion of women who practiced early initiation of breastfeeding (EIBF) and delivered in health facilities, IDHS 2017

Characteristics	EIBF	
	n = 3,076 (57.3%)	n = 5,369
Age		
15-19 years	109 (3.53%)	211 (3.93%)
20-34 years	2210 (71.85%)	3861 (71.91%)
35-49 years	757 (24.61%)	1297 (24.16%)
Education		
Primary or lower	627 (20.39%)	1067 (19.88%)
Secondary	1895 (61.60%)	3312 (61.69%)
Higher	554 (18%)	990 (18.43%)
Occupation		
Not working	1767 (57.45%)	3000 (55.88%)
Working	1309 (42.55%)	2369 (44.12%)
Wealth status		
Poor	1069 (34.74%)	1803 (33.59%)
Middle	663 (21.54%)	1139 (21.21%)
Rich	1345 (43.72%)	2427 (45.20%)
Mode of delivery		
Normal vaginal	2614 (84.98%)	4130 (76.93%)
Caesarean	462 (15.02%)	1239 (23.07%)
Total		
Place of residence		
Urban	1695 (55.11%)	2911 (54.22%)
Rural	1381 (44.89%)	2458 (45.78%)

Table 2 presents bivariate (crude odds ratios) and multivariate (adjusted odds ratios) analyses of EIBF. The bivariate findings show that the practice of EIBF was associated with women's aged, occupation, and mode of delivery. The significant predictors in bivariate analysis then included in the multivariate analysis. Based on the multivariate analysis in table 2 (the last column), women aged 35-49 years (aOR = 1.58; 95% CI: 1.17-2.14) were more likely to practice breastfeeding compared with those women aged 15-19 years. Not working women (aOR = 1.18; 95% CI: 1.05-1.33) were more likely to practice EIBF compared to working women. Moreover, The likelihood of breastfeeding initiation among women who delivered in health facilities was associated with mode of delivery, which women with caesarean delivery (OR = 0.33; 95% CI: 0.29-0.38) were less likely to practice breastfeeding initiation compared with those with normal vaginal delivery after adjusted by socio-economic factors.

**Table 2.** Determinants of Early Initiation of Breastfeeding among women who delivered in health facilities, IDHS 2017

Characteristics	Crude Odds Ratios (95% CI)	Adjusted Odds Ratios (95% CI)
Age		
15-19 years	1	1
20-34 years	1.26 (0.96-1.67)	1.33 (1.00-1.76)
35-49 years	1.32 (1.01-1.77) **	1.58 (1.17-2.14)**
Education		
Primary or lower	1	1
Secondary	0.94 (0.82-1.08)	-
Higher	0.89 (0.75-1.06)	-
Occupation		
Working	1	1
Not working	1.16 (1.04-1.29)**	1.18 (1.05-1.33)**
Wealth status		
Poor	1	-
Middle	0.96 (0.82-1.11)	-
Rich	0.85 (0.76-0.97)	-
Mode of delivery		
Normal vaginal	1	1
Caesarean	0.35 (1.30-1.39)**	0.33 (0.29-0.38)**
Place of residence		
Urban	1	-

Note: \*\* significant < 0.05; \* significant < 0.01; CI: Confidence Interval

#### 4. DISCUSSION

The prevalence of EIBF among infants aged 0-23 months and whose mothers delivered in the health facilities is 57.3%. Based on the guidelines from WHO and UNICEF, the EIBF prevalence is categorized as good because it is between 50% and 89% (World Health Organization, 2003). This study indicates that maternal age (35-49 years), not working mothers and normal vaginal delivery were significantly influencing the practices of EIBF within one hour of delivery.

Mode of delivery is one important factor that affects breastfeeding practices among newborn mothers. Our findings confirm the results that caesarean delivery is related to delayed initiation of breastfeeding which findings are similar to other studies (Erbaydar & Erbaydar, 2020; Ezeh et al., 2019; Gayatri & Dasvarma, 2020; Ghimire, 2019; John et al., 2019; Liben & Yesuf, 2016; Mukora-Mutseyekwa et al., 2019; Ndirangu et al., 2018; Senanayake et al., 2019; Tewabe, 2016). The time needed for recovery after caesarean section may influence in delaying the onset of lactation (Awi & Alikor, 2006; Nkoka et al., 2019). The effect of anaesthesia during caesarean delivery, prolonged labor, maternal-infant separation and critical condition of mothers or newborn babies after C-section delivery may delay the practice of EIBF (Ezeh et al., 2019; Karim et al., 2019; Liben & Yesuf, 2016;

Nkoka et al., 2019; Tewabe, 2016). Due to the positive impact of early initiation of breastfeeding on maternal and infant health, it is needed to improve women's knowledge and awareness on healthy breastfeeding practices. Moreover, psychological supports from family and health providers are needed to increase the confidence in practicing EIBF among new mothers even though they are in critical condition after caesarean delivery (Karim et al., 2019).

Guidelines are needed to improve the practice of EIBF and reduce the breastfeeding difficulties especially among mothers who delivered their babies via caesarean delivery. Moreover, the promotion of the benefits of EIBF needs to be improved, so mothers will be more informed and confident to give their first breast milk to their newborns.

Among women who delivered in health facilities, age has a significant impact on the practice of EIBF. It may be attributable to the increased knowledge and experience among older women (aged 35-49 years) compared to younger women (aged 15-19 years). In this research, older women are related to higher parity compared to younger women. The previous study finds that multiparous women are more likely to practice EIBF because they have more experience from the previous delivery (Ndirangu et al., 2018).

This study shows that non-working women are more likely to practice EIBF than worker women. It is better to provide the lactation counsellors especially for working women, so when they give birth, they can deal with the breastfeeding problem after delivery (Dagher et al., 2016). Worker women may continue their breastfeeding in the workplace. Therefore, the supports from workplace like providing lactation room for pumping the breastmilk and preservation equipment to keep the breastmilk, are important to improve the duration of breastfeeding.

The study has some limitations. The cross-sectional sample design is unable to establish the causal relationship between the predictors and the practices of EIBF. Moreover, the survey data was based on respondent's self-assessment that have the risk of recall bias related to the variables used in this study. However, this study also has some strengths. The coverage of the survey is nationally representative of 34 provinces in Indonesia, so the findings of this study can be generalized for women who have 0-23 months baby and delivered in the health facilities in Indonesia. Additionally, due to the national coverage of the survey, this study is based on a large sample size that more robust for analysis.

## 5. CONCLUSION

Maternal age, working status and type of delivery were significantly influencing the practice of early initiation of breastfeeding among women who delivered in health facilities. Therefore, education and promotion of breastfeeding initiation need to be improved, so couples can raise their knowledge and awareness of the benefits of breastfeeding initiation then implement it. Moreover, the appropriate guideline for new mothers especially after caesarean delivery is needed to improve the practice of early initiation of breastfeeding.

## Acknowledgements

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The author is grateful to Measure DHS for providing the data for the analysis and National Population and Family Planning Board for supporting the writing articles.

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