Factors Associated with Early Initiation of Breastfeeding: A Study of Nepal Demographic and Health Survey, 2022

Abstract

The paper assesses the factors affecting early initiation of breastfeeding (EIBF) among children under two years of age using the Nepal Demographic and Health Survey, 2022. Logistic regression analysis was performed in both unadjusted and adjusted models, with predictors related to mother and child, access to healthcare, and socio-economic status. Data reveals that children whose mothers were working had higher odds of EIBF (AOR: 1.40, 95% CI: 1.09 – 1.79), children delivered through the vaginal route (AOR: 6.13, 95% CI: 4.38–8.58), with full ANC visits (AOR: 1.45, 95% CI: 1.05– 2.02), exposed to media (AOR: 1.34, 95% CI: 1.06–1.71) and with avoidance of prelacteal feeding (AOR: 2.29, 95% CI: 1.78 – 2.96) were the most likely to receive EIBF. Children from Janajati groups were 1.4 times more likely to receive EIBF (AOR: 1.39, 95% CI: 1.00 – 1.92) as compared to Brahmin/Chhetri children, and those from Lumbini and Sudur Paschim were at greater odds for EIBF than those representing Bagmati province. It indicates that the mothers' employment, delivery mode, media exposure, prelacteal feeding, region, and ethnicity were significant predictors of EIBF. Strategies should address these critical factors through targeted education, healthcare support, and policy interventions.

Keywords

Breastfeeding initiation, Factors associated, Logistic regression, Nepal, DHS

Introduction

Initiating breastfeeding in the first hour of birth is crucial for newborn health. It protects newborns from infections, reduces mortality, increases mother-baby bonding, increases milk production, and encourages more prolonged exclusive breastfeeding. The first produced mother's golden milk is called colostrum, which is highly nutritional and immunological. Thus, it becomes crucial to promote early initiation of breastfeeding (EIBF) (World Health Organization, 2023).

Previous studies have identified several maternal and child-related variables and socio-economic and health-related factors influencing EIBF. A study of Nepal indicates that children whose mothers were educated up to class 12 (OR 2.56), Janjati ethnicity (OR 1.43), delivery at a health facility (OR 1.67), and babies born with larger-than-average newborns birth weight (OR 1.46) significantly had higher odds of EIBF (Adhikari et al., 2014). Another such study in Nepal reveals that infants born from ethnically disadvantaged families or low birth weight infants were less likely to start early breastfeeding. In contrast, those from the poorest families and avoiding prelacteal feeds are most likely to start the initiation of breastfeeding within the hour of birth (Khanal et al., 2015).

A Bangladesh study stated that the variables associated with increased EIBF were rural residence, p < 0.05, and four or more ANC visits, p <0.05. In contrast, the probability of EIBF was lower in caesarean delivery, p <0.01, and in secondary education or above, p <0.05, and in higher education, above the secondary level, p <0.01 (Islam et al., 2019). In another study in Bangladesh DHS 2017-18 data, the richest and Buddhists are less likely to breastfeed within an hour. Mothers with higher education are more likely to breastfeed after 1 hour (Sakib et al., 2021).

In Sub-Saharan Africa, EIBF was strongly related to wealth index (AOR: 1.20), place of delivery (AOR: 1.97), media exposure (AOR: 1.36), and mode of delivery (AOR: 0.27) (Birhan et al., 2022). Another study in the same region shows that the risk of EIBF was lower in working mothers; those who watched television weekly had a caesarean delivery and had multiple births than their counterparts (Appiah et al., 2021).

The multivariate regression analysis revealed that factors significantly associated with EIBF in Ghana included more antenatal care visits, AOR: 1.14, and caesarean delivery, AOR: 0.07. In contrast, older maternal age, AOR: 1.04, first-born child, AOR: 2.06 and prelacteal feeding, AOR: 2.42, were associated with delayed breastfeeding initiation. The analysis revealed that in Chad, women children were more likely to receive EIBF if they were non-working, residing in the wealthiest wealth quintile, were not exposed to media, smaller than average at birth, of higher order of birth, and delivered vaginally while less likely to have had antenatal visits (Ahinkorah, 2022).

A study in Ethiopia shows that there were higher odds of EIBF in those mothers who had primary (AOR: 1.99) or secondary/higher education (AOR: 3.23) and had a vaginal delivery (AOR: 4.59) (Gebremeskel et al., 2019). Similarly, the odds of EIBF in Gambia were higher among mothers who had secondary or higher education (AOR: 1.22, 95% CI: 1.07–1.40) and who belonged to the high wealth quintile (AOR: 1.29, 95% CI: 1.06–1.57). On the contrary, a lower odds level was reported in the rural area (Darboe et al., 2023).

Meta-analyses of Middle Eastern countries show that EIBF was significantly associated with mode of delivery, maternal employment, and prelacteal feeding. In Brazil, difficulty initiating breastfeeding was reported in more women who did not receive antenatal guidance on breastfeeding (Lemos et al., 2023).

A Middle Eastern countries' meta-analysis revealed that EIBF in newborns was significantly associated with delivery mode, maternal employment, and prelacteal feeding, while exclusive breastfeeding was most commonly linked to maternal age, education, employment, and delivery mode (Alzaheb, 2017). In Brazil, difficulty initiating breastfeeding was more common among those who did not receive antenatal breastfeeding guidance (Lemos et al., 2023).

However, no recent academic research has been conducted based on NDHS 2022 regarding those determinants within the context of Nepal. This study aims to fill that gap by using data from the 2022 NDHS and analysing factors associated with EIBF. Understanding these factors will be critical for designing interventions and implementing policies that effectively reduce the existing barriers and promote early breastfeeding practices.

This paper uses logistic regression models to explore the factors associated with EIBF among children under two years of age using Nepal Demography and Health Survey Data (NDHS) 2022. The data were merged by selecting essential variables from the household file (HR) and the mother from the household member file (PR) with the children's file (KR) of the DHS data. Logistic regression applied unadjusted model (Model 1: COR) and adjusted model (Model II: AOR). Maternal Education, Work Status, Skilled Assistance at Delivery, Delivery Type, ANC Visits, Media Exposure, Prelacteal Feeding, Residence (Rural or Urban), Birth Order, Wealth Quintile, and Ethnicity were considered important variables to choose for NDHS 2022 as decided after the literature review and data analysis. It is fixed at 95% and a p-value threshold 0.05 for calculating confidence intervals while determining any statistical significance.

Results

Bivariate analysis

Table 1 presents the prevalence of EIBF with selected statistically significant background variables. Based on this finding, further analysis was done. It reveals that 55.4 percent of children initiate breastfeeding within 1 hour of birth.

Table 1: Percent of breastfeeding initiation within one hour of birth last-born in the past two years, NDHS 2022

Variables	% EIBF	Total	P value
Mother's highest educational level			0.0008
No education	62.7	341	
Primary	59.0	643	
Secondary	51.7	815	
Higher	36.1	91	
Total	55.4	1,890	
Mother currently working			0.0006
No	51.2	1,083	
Yes	61.1	807	
Total	55.4	1,890	
Skilled assistance during delivery			0.0754
Skilled provider	54.2	1,524	
Unskilled provider	61.0	348	
No one	49.1	18	
Total	55.4	1,890	
Live births delivered by caesarean			0.0000
No	64.0	1,543	
Yes	17.4	347	
Total	55.4	1,890	
ANC full			0.0027
No	51.7	363	
Yes	56.3	1,526	
Total	55.4	1,889	
Mass media exposure at least once a week			0.0232
No	50.2	871	
Yes	59.9	1,019	
Total	55.4	1,890	
Birth order			0.0058
1	50.9	778	
2	57.5	666	
3	56.2	275	
4+	66.9	170	
Total	55.4	1,890	
Received a pre-lacteal feed			0.0000
No	68.4	1,122	
Yes	36.8	764	
Total	55.6	1,885	
Birth weight			0.0037
Below normal	48.9	189	
Normal and more	55.3	1,354	
Total	54.5	1,543	
Province			0.0000
Koshi	48.5	345	
Madhesh	55.9	486	
Bagmati	44.0	290	
Gandaki	49.2	117	
Lumbini	62.6	325	
Karnali	63.8	147	
Sudur Pashchim	70.0	181	
Total	55.4	1,890	
Urban-rural residence			0.0001
Rural	63.4	647	
Urban	51.3	1,243	
Total	55.4	1,890	
Wealth index			0.0000
Poorest	63.1	420	
Poorer	61.7	417	
Middle	57.5	372	
Richer	49.4	379	
Richest	41.1	303	
Total	55.4	1,890	
Ethnicity			0.0037
Brahmin/Chhetri	50.9	490	
Terai catse	55.0	343	
Hill/Terai dalit	60.6	350	
Janajati	56.8	580	
Muslim and others	53.5	127	
Total	55.4	1,890	

Factors associated with initiation of breastfeeding

This analysis examined the odds ratios of EIBF across several variables, measured by crude odds ratios (COR) and adjusted odds ratios (AOR), as presented in Table 2. Each interpretation considers the confidence intervals (CI) and significance levels.

In the crude model, children whose mothers had no education had three times greater odds of EIBF than mothers with higher education (COR: 2.986, 95% CI: 1.845-4.832). When controlling for other variables in the crude model, the association was no longer significant (AOR: 1.332, 95% CI: 0.652-2.720). The same applied to children whose mothers had primary and secondary education. The odds of EIBF were significantly higher in children of working mothers in both models. In the unadjusted model, the likelihood of EIBF compared to non-working mothers was 1.5 times higher in children whose mothers work (COR: 1.492, 95% CI: 1.240-1.795). Although the AOR was still significant in adjusted models, it became less significant at 1.4 times higher odds (AOR: 1.398, 95% CI: 1.090-1.793).

In the unadjusted model, children whose birth was attended by the unskilled provider had 1.3 times higher odds of EIBF than skilled providers (COR: 1.323, 95% CI: 1.043-1.678). However, this effect became statistically insignificant after adjusting (AOR: 1.064, 95% CI: 0.584, 1.938). Conversely, not having a provider during delivery was not significantly associated with the risk of EIBF in both models. Children delivered vaginally possessed strikingly higher odds of EIBF than cesarean deliveries, with an odds ratio of 8.453 in the unadjusted model (COR: 8.453, 95% CI: 6.283-11.372). Even after adjusting, the association stood strongly where the odds ratio had increased to 6.130 in the adjusted model (AOR: 6.130, 95% CI: 4.378-8.583). The unadjusted model revealed that children born to women who received full ANC had higher odds of EIBF (COR: 1.202, 95% CI: 0.956-1.512), but the association turned out to be significant after adjustment (AOR: 1.454, 95% CI: 1.049-2.016).

In the crude model, children of media-exposed mothers had 1.5 times more odds of EIBF (COR: 1.477, 95% CI: 1.231-1.773). The odds were still significant in the adjusted model, indicating that media exposure might promote EIBF practices (AOR: 1.344, 95% CI: 1.055-1.712).

In the unadjusted model, compared to first-order birth, second-born children had significantly higher odds of EIBF (COR: 1.303, 95% CI: 1.058-1.604), though this association was no more significant once adjusted (AOR: 1.192, 95% CI: 0.913-1.555). Higher birth orders were not significantly associated with EIBF in the adjusted model. As demonstrated, average or above birth weight babies had 1.3 times higher odds of EIBF than underweight babies in the unadjusted model (COR: 1.292, 95% CI: 0.952-1.752). This association was still favourable but insignificant after adjustment (AOR: 1.314, 95% CI: 0.924-1.868).

Avoidance of prelacteal feeds was significantly associated with EIBF. A child who did not receive prelacteal feeding was 3.7 times more likely to receive BFW in < 1 hour in the unadjusted model (COR: 3.708, 95% CI: 3.056-4.500) and 2.3 times more likely even in the adjusted model (AOR: 2.294, 95% CI: 1.781-2.955).

Regional differences were more prominent in EIBF. Children from Madhesh had considerably higher odds of EIBF than those in Bagmati (COR: 1.616, 95% CI: 1.205-2.166). However, it lost significance when adjusted (AOR: 1.218, 95% CI: 0.750-1.978). In Lumbini, children were at higher odds in crude and adjusted models (COR: 2.134; AOR: 1.699, 95% CI: 1.121-2.575). Similarly, children from Sudur-Paschim had a very significant 1.9 times increased odds of EIBF even after controlling (AOR: 1.935, 95% CI: 1.181-3.170). Children whose mothers were living in rural areas had 1.6 odds of initiating EBF within one hour relative to urban children in the unadjusted model (COR: 1.641, 95% CI: 1.350-1.994). At adjustment, this association had attenuated and lost significance (AOR: 1.274, 95% CI: 0.978-1.659).

Table 2: Unadjusted and adjusted odds ratios from logistic regression of EIBF based on DHS, 2022

Variables	Model I COR (CI)	Model II AOR (CI)
Mother''s highest education		
No education	2.986 *** (1.845, 4.832)	1.332 (0.652, 2.720)
Primary	2.554 *** (1.618, 4.031)	1.134 (0.613, 2.097)
Secondary	1.896 ** (1.209, 2.973)	1.007 (0.568, 1.786)
Higher ®	1	1
Mothers working		
Yes	1.492 *** (1.240, 1.795)	1.398** (1.090, 1.793)
No ®	1	1
Delivery by a skilled provider		
Skilled provider ®	1	1
Unskilled provider	1.323 * (1.043, 1.678)	1.064 (0.584, 1.938)
No one	0.815 (0.318, 2.091)	0.155 (0.011, 2.136)
Delivery by cesarian section		
Yes ®	1	1
No	8.453 *** (6.283, 11.372)	6.130*** (4.378, 8.583)
ANC full		
Yes	1.202 (0.956, 1.512)	1.454* (1.049, 2.016)
No ®	1	1
Media exposure none		
Yes	1.477 *** (1.231, 1.773)	1.344* (1.055, 1.712)
No ®	1	1
Births order		
1 ®	1	1
2	1.303 * (1.058, 1.604)	1.192 (0.913, 1.555)
3	1.235 (0.936, 1.628)	1.232 (0.838, 1.811)
4+	1.951 *** (1.377, 2.765)	1.303 (0.775, 2.190)
Birth weight		
Underweight ®	1	1
Normal and more	1.292 (0.952, 1.752)	1.314 (0.924, 1.868)
Prelacteal feeding		
Yes ®	1	1
No	3.708 *** (3.056, 4.500)	2.294*** (1.781, 2.955)
Province		
Koshi	1.198 (0.875, 1.639)	1.156 (0.764, 1.747)
Madhesh	1.616 ** (1.205, 2.166)	1.218 (0.750, 1.978)
Bagmati ®	1	1
Gandaki	1.233 (0.801, 1.897)	0.975 (0.569, 1.670)
Lumbini	2.134 *** (1.545, 2.947)	1.699* (1.121, 2.575)
Karnali	2.242 *** (1.490, 3.374)	1.273 (0.731, 2.216)
Sudur Pashchim	2.974 *** (2.006, 4.409)	1.935** (1.181, 3.170)
Rural-urban residence		
Rural	1.641 *** (1.350, 1.994)	1.274 (0.978, 1.659)
Urban ®	1	1
Wealth quantile		
Poorest ®	1	1
Poorer	0.941 (0.711, 1.245)	1.431 (0.976, 2.096)
Middle	0.791 (0.594, 1.052)	1.832** (1.216, 2.759)
Richer	0.570 *** (0.430, 0.756)	1.169 (0.773, 1.768)
Richest	0.407 *** (0.301, 0.551)	1.389 (0.869, 2.221)

Variables	Model I COR (CI)	Model II AOR (CI)
Ethnicity		
Brahmin/Chhetri ®	1	1
Terai caste	1.181 (0.896, 1.558)	1.312 (0.834, 2.063)
Hill/Terai Dalit	1.485 * (1.125, 1.961)	1.267 (0.857, 1.874)
Janajati	1.268 (0.996, 1.614)	1.388* (1.003, 1.922)
Muslim and others	1.112 (0.746, 1.644)	0.953 (0.515, 1.763)

COR=Crude odds ratio, AOR=Adjusted odds ratio

*** p<.01, ** p<.05, * p<.1

Figure 1: Plot of odds ratios for unadjusted and adjusted models, DHS 2022
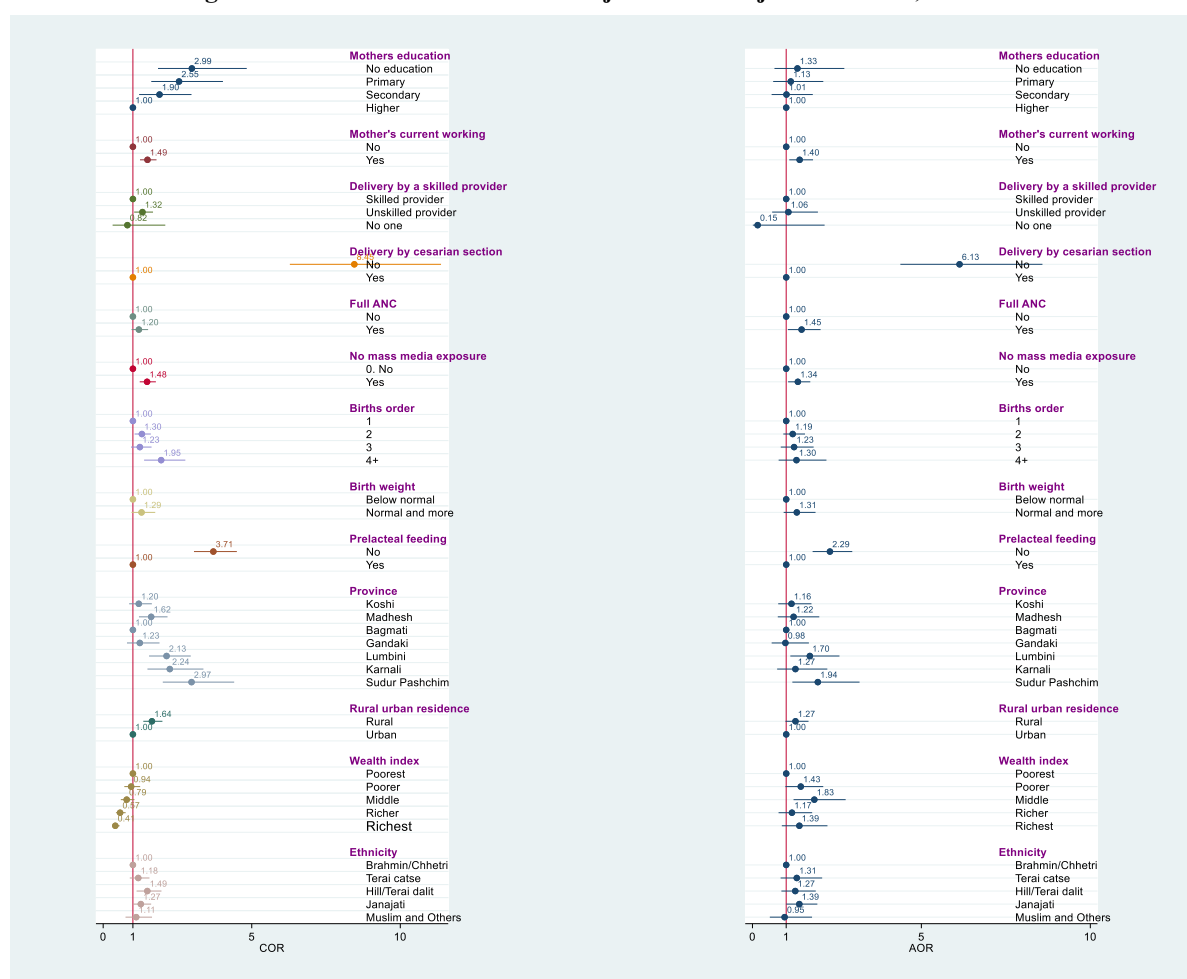
In the crude model, Hill/Terai Dalit children had higher odds of EIBF compared with Brahmin/Chhetri mothers (COR: 1.485, 95% CI: 1.125-1.961), though in the adjusted model, it became weaker (AOR: 1.267, 95% CI: 0.857-1.874). Janajati children, having significant odds for EIBF, appeared in the adjusted model (AOR: 1.388, 95% CI: 1.003-1.922), which might result in ethnic differences in breastfeeding practices after controlling for other factors.

Conclusions

Analysis of Nepal DHS data 2022 of children born in the last two years explored factors associated with EIBF. The study employed logistic regression to examine the unadjusted and adjusted models to understand the impacts of maternal education, employment status, access to healthcare, mode of delivery and socio-economic factors on the likelihood of EIBF. The

children whose mothers were at work were more likely to start breastfeeding early. Vaginal delivery and media exposure appeared to be quite strong predictors of EIBF in both models. Factors like mothers' education, delivery by skilled delivery providers, rural residence, Birth weight, and birth order showed non-significant effects once adjusted. These studies reinforce the need for interventions to improve media awareness and healthcare access and reduce socio-economic inequalities to promote early breastfeeding practices.

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