

Original Research

The Moderating Effect of Urban Versus Rural Residence on the Relationship Between Type of Birth Attendant and Early Initiation of Breastfeeding in Ghana

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Abstract

Background: Early initiation of breastfeeding increases the likelihood of longer duration of breastfeeding. Factors associated with breastfeeding include maternal sociodemographic, behavioral and health-related characteristics, infant health characteristics, and perinatal factors.

Research aim: This study aimed to determine the association between type of birth attendant and early initiation of breastfeeding among women in Ghana.

Methods: A cross-sectional study was conducted using women ($N = 3,087$) who participated in the 2014 Ghana Demographic and Health Survey. The main outcome of interest was early initiation of breastfeeding, defined as provision of mother's milk to the infant within 1 hr of birth. Chi-square tests and multivariable logistic regression modeling were performed.

Results: Breastfeeding was initiated within 1 hr of birth by 58.3% of women. In the multivariable model, there was a significant interaction between type of birth attendant and place of residence on early initiation of breastfeeding. For rural areas, compared with women who had a nurse or midwife as their birth attendant, the multivariable odds ratios [95% confidence intervals] for early initiation of breastfeeding were lower among women whose birth attendant was a relative or other, 0.20 [0.07, 0.55], $p = .002$; village health volunteer or traditional health practitioner, 0.21 [0.07, 0.62], $p = .005$; none, 0.34 [0.12, 0.93], $p = .035$; community health officer, 0.42 [0.21, 0.85], $p = .016$; and doctor, 0.48 [0.24, 0.96], $p = .037$. For urban areas, no significant association was detected between type of birth attendant and early initiation of breastfeeding.

Conclusion: Findings from the study highlight the need for focused, context-specific, early initiation of breastfeeding promotion and intervention, especially for women and their birth attendants in rural areas.

Keywords

breastfeeding, breastfeeding initiation, breastfeeding practices, breastfeeding support, epidemiological methods

Background

Human milk is recommended by both the World Health Organization (WHO, 2001) and Ghana Health Service (GHS, 2015) within 1 hr of birth and as the exclusive source of nutrition through the first 6 months of life. In addition to promoting a bond between mother and infant, breastfeeding has been positively associated with decreased rates of ear infections and asthma among children, as well as improved neurologic and cognitive development among them (Eidelman et al., 2012). In infants, early breastfeeding initiation correlates with reduced all-cause mortality and deaths from infection (Debes, Kohli, Walker, Edmond, & Mullany, 2013).

Approximately 52% of children in Ghana are exclusively breastfed until 6 months of age (Okertchiri, 2016). Exclusive

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breastfeeding is defined as the provision of only human milk, vitamins, and necessary medicines to the infant and complete restriction of all other solids and liquids, including water (WHO, 2017). United Nations International Children's Emergency Fund (UNICEF) data suggest that only 46% of Ghanaian newborns meet WHO recommendations for breastfeeding initiation (Ghana Statistical Service, 2011). An estimated 135 million infants are born annually worldwide; however, only 57 million receive human milk within the 1st hr after birth (Dun-Dery & Laar, 2016). This becomes even more concerning in light of a study that reported that approximately 16% of neonatal deaths in Ghana could have been prevented if infants were breastfed from their 1st day of life and almost 22% could have been prevented if breastfeeding had been initiated within the 1st hr (Edmond et al., 2006).

Several factors have been identified as possible explanations for the variation in breastfeeding initiation among Ghanaian women. One group of researchers found that traditional cultural practices such as tasting the colostrum for sweetness, prelacteal feeding, and bathing the mother and infant may lead to delays in breastfeeding (Aborigo et al., 2012). Pressure from family members, particularly male partners and mothers-in-law, has also been identified as a potential deterrent to breastfeeding (Aborigo et al., 2012; Otoo, Larrey, & Pérez-Escamilla, 2009).

Several researchers have found that services provided by healthcare practitioners such as prenatal and neonatal lactation counseling improved exclusive breastfeeding rates both at Day 1 and throughout the duration of breastfeeding (Aidam, Pérez-Escamilla, & Larrey, 2005; Petrova, Ayers, Stechna, Gerling, & Mehta, 2009). Healthcare providers are often targeted and encouraged to promote early initiation of breastfeeding through global health programs. The Baby-Friendly Hospital Initiative, a 10-step program implemented worldwide by UNICEF and the WHO, advocates additional training to staff members to promote breastfeeding at maternity facilities (UNICEF & WHO, 2006). Similarly, the LINKAGES Project, a U.S.-funded program implemented to improve breastfeeding outcomes in developing nations from 1996 to 2006, identified proper training of birth attendants as one of the two key interventions shown to improve early breastfeeding initiation (Green, 2009).

Despite the emphasis that these programs have placed on proper training of healthcare workers, few studies have demonstrated the influence of healthcare providers on initiation, continuation, and intensity of breastfeeding. Our literature review for Ghana revealed no such studies; however, researchers in the United States found that women cared for by a midwife or nurse midwife were more than twice as likely to intend to exclusively breastfeed than women cared for by an obstetrician (Balyakina, Fulda, Franks, Cardarelli, & Hinkle, 2016). Similarly, Canadian researchers found that women cared for by midwives were more likely to exclusively breastfeed than expectant mothers cared for by obstetricians (McDonald et al., 2012). However, neither of these

Key Messages

- Despite being one of the most important factors that play an important role in infant feeding practices, the influence of healthcare providers on early initiation of breastfeeding in non-Western settings remains largely unknown.
- In the Ghanaian context, there is a significant interaction between type of birth attendant and place of residence on early initiation of breastfeeding.
- For rural areas, women who had a birth attendant other than a nurse or midwife were less likely to initiate breastfeeding within 1 hr of birth.
- There is a need for focused, context-specific, early initiation of breastfeeding interventions, especially for women and their birth attendants in rural areas.

studies involved our target population or analyzed initiation of breastfeeding. The purpose of the current study was to determine whether there is an independent association between type of birth attendant and early breastfeeding initiation. Furthermore, as disparities in quality of newborn care between rural and urban areas in developing nations have been well documented, we will further stratify the study by location in order to accurately analyze the target population (Althabe et al., 2008; Koblinsky et al., 2006).

Methods

Design

The study utilized secondary data from the 2014 Ghana Demographic and Health Survey (GDHS). The GDHS is a nationally representative, cross-sectional, household survey implemented by the Ghana Statistical Service (GSS), the Ghana Health Service (GHS), and the National Public Health Reference Laboratory of the GHS. Data collection for the 2014 GDHS was funded by the Government of Ghana, the U.S. Agency for International Development, UNICEF, and other international organizations. A detailed description of the study design for the 2014 GDHS is available elsewhere (GSS, GHS, & ICF International, 2015). In brief, the main purpose of the 2014 GDHS was to generate reliable information on population and reproductive health to make informed policy decisions and for planning, monitoring, and evaluating programs.

Setting

The Republic of Ghana is located on the West African coast. It has 10 administrative regions, namely, Western, Central, Greater Accra, Volta, Eastern, Ashanti, Brong, Ahafo, Northern, Upper East, and Upper West. More than 50% of the country's population resides in the Ashanti, Eastern, and

Greater Accra regions. The Ghanaian economy has changed minimally over the past 2 decades, with service and agricultural sectors contributing the highest portions of the country's gross domestic product. The service sector was the fastest growing sector of the economy by 2014. However, approximately 45% of the country's economically active population was engaged in agriculture during the 2014 Ghana DHS survey, and 59% and 22% of households owned agricultural land in rural and urban areas, respectively. Greater Accra is the wealthiest region of the country (GSS, GHS, & ICF International, 2015). Ghana is a patriarchal country with more than half of the households headed by men. The average household size in 2014 was 3.5 individuals. More than half of the 2014 Ghana DHS survey participants were younger than 30 years. The majority of the survey participants were Christian. Approximately half of the survey participants belonged to the Akan ethnic group (GSS, GHS, & ICF International, 2015).

Sample

Data for the 2014 Ghana DHS survey were collected using a two-stage sampling design. The first stage involved selecting sample points (clusters) consisting of enumeration areas, which had been previously delineated in the 2010 Population and Housing Census to include all 10 Ghanaian regions. A total of 427 clusters were selected across the country. The second stage involved systematic sampling of households. Approximately 30 households were randomly selected from each cluster. A total of 12,831 households were selected, of which 12,010 were occupied and 11,835 were successfully interviewed, thus yielding a household response rate of 99%. Among women age 15 to 49 years in the selected households, the response rate was 97.3%. A detailed description of the 2014 Ghana DHS study design and methods is available elsewhere (GSS, GHS, & ICF International, 2015). The sampling frame for the current study consisted of 4,294 women who had a live birth in the 5 years preceding the 2014 survey. We excluded women with missing data on the question related to initiation of breastfeeding of the last-born child ($n = 59$) on type of birth attendant and other covariates adjusted in the multivariable model ($n = 1,148$). The final study sample consisted of 3,087 participants. This study was deemed exempt by the Ohio University Institutional Review Board.

Measurement

Standard DHS instruments that translated into major local languages, namely, Akan, Ga, and Ewe, were utilized. The women's questionnaire included information on education, residential history, media exposure, reproductive history, knowledge and use of family planning methods, antenatal and delivery care, breastfeeding, infant and early childhood feeding practices, vaccinations and childhood illness,

woman's occupation, husband's background characteristics, childhood mortality, AIDS awareness and behavior, and other health issues. The standard DHS questionnaire was pretested and adapted to reflect health issues relevant to Ghana. Stakeholders that include government ministries and agencies, nongovernmental organizations, and international donors participated in validating the questionnaire (GSS, GHS, & ICF International, 2015).

Outcome assessment. As part of the individual questionnaire, to determine early breastfeeding initiation, participants were asked, "How long after birth did you first put the index child to the breast?" Responses include immediately, within the 1st hr, more than 1 hr after birth, and days after birth. For the purpose of analysis, this variable was dummy coded so that women who responded "immediately" and "within the 1st hr" were coded as "within 1 hr of birth," and mothers who responded "more than 1 hr after birth" and "days after birth" were coded as "more than 1 hr after birth." The weighted prevalence for breastfeeding was "within 1 hr of birth."

Exposure assessment. Participants were asked, "Who assisted with the delivery of the index child?" Responses included doctor, nurse or midwife, community health officer, traditional birth attendant, village health volunteer or traditional health practitioner, relatives or other, and none. When a participant mentioned that more than one person assisted delivery, only the most qualified person was counted.

Covariates. Based on findings from previous studies, the following variables were adjusted in the multivariable model: maternal age (15-24, 25-39, 40-49 years), marital status (currently married or living with partner, other), maternal education (no education, primary, secondary, college or higher), maternal occupation (unemployed, agricultural, nonagricultural), household wealth index (poorest, poorer, middle, richer, richest), health insurance (yes, no), type of place of residence (urban, rural), husband's or partner's education (no education, primary, secondary, college or higher), type of place of delivery (institutional, noninstitutional), mode of delivery (vaginal, cesarean), birth order (1, 2, 3, 4-13), pre-lacteal feed (yes, no), and type of prenatal care provider (doctor, nurse or midwife, community health officer or nurse, no one).

Statistical Analysis

Descriptive statistics were used to describe and summarize the data. Rao-Scott chi-square test statistic (χ^2) was used to compare breastfeeding initiation by the type of birth attendant and each of the covariates. Multivariable logistic regression analysis was performed to determine the association between the type of birth attendant and study outcome. As each covariate had been associated with early breastfeeding initiation in prior studies, covariates were retained in the

multivariable model regardless of their statistical significance in the bivariate analysis. Pairwise interactions between the type of birth attendant and each covariate adjusted in the multivariable model were analyzed. The analysis found a significant interaction between type of birth attendant and type of place of residence (p for interaction = .042). The corresponding odds ratio, 95% confidence interval, and p value for the association between type of birth attendant and timing of breastfeeding initiation were determined. The potential presence of multicollinearity was assessed and ruled out using variance inflation factor and tolerance values. Two-tailed p value < .05 was considered statistically significant. As recommended, sampling weights that accounted for complex survey design were incorporated in all analyses. All analyses were performed using SAS 9.4 (SAS Institute, Inc., Cary, NC).

Results

Table 1 presents characteristics of the study sample. Approximately 60.1% and 78.9% of the study participants had a nurse or midwife as a birth attendant and a prenatal care provider, respectively. About 58.1% of the study participants initiated breastfeeding within 1 hr of birth. Timing of breastfeeding initiation significantly differed by place of delivery, mode of delivery, prenatal care provider, and type of birth attendant. Compared with women who delivered at home, a greater proportion of women who delivered at a healthcare facility initiated breastfeeding within 1 hr of birth (52.9% vs. 60.6%; p = .013). Compared with women who had a cesarean delivery, a significantly higher proportion of women who had a vaginal delivery initiated breastfeeding within 1 hr of birth (30.2% vs. 61.0%; p < .001). Compared with all other birth attendant types, a significantly higher proportion of women who had a nurse or midwife as a birth attendant initiated breastfeeding within 1 hr of birth (p < .001; see Table 1).

In the multivariable model, there was a significant interaction between type of birth attendant and place of residence on the timing of breastfeeding initiation. Table 2 presents the association between type of birth attendant and timing of breastfeeding initiation by the type of place of residence. Among study participants residing in rural areas, compared with women who had a nurse or midwife as their birth attendant, the multivariable odds ratio [95% confidence interval] for breastfeeding initiation within 1 hr of birth was lower among women whose birth attendant was a doctor, 0.48 [0.24, 0.96], p = .037; community health officer, 0.42 [0.21, 0.85], p = .016; village health volunteer or traditional health practitioner, 0.21 [0.07, 0.62], p = .005; relative or other, 0.20 [0.07, 0.55], p = .002; and none, 0.34 [0.12, 0.93], p = .035. For participants residing in urban areas, no significant association was found between type of birth attendant and timing of breastfeeding initiation. In both urban and rural areas, women who had a cesarean section had lower odds of

initiating breastfeeding within 1 hr of birth compared with women who had a vaginal delivery. Prelacteal feeding practices were negatively associated with initiating breastfeeding within 1 hr of birth, in both rural and urban areas.

Discussion

Early breastfeeding initiation within an hour of birth is considered critical for child survival and is the recommended best practice for optimal feeding and overall health of a child and mother (WHO, 2017). We examined the association between type of birth attendant and early breastfeeding initiation among women in Ghana. More than half of the participants initiated breastfeeding within 1 hr of birth.

The decision to initiate early breastfeeding is influenced by many factors including place of delivery, mode of delivery, mother's socioeconomic and cultural position, newborn health status, mother's health status, healthcare providers' breastfeeding knowledge, and access to prenatal care (Berde & Yalçın, 2016; Diji et al., 2017; Horii, Guyon, & Quinn, 2011; Montalto, Borg, Buttigieg-Said, & Clemmer, 2010). In the current study, we found a statistically significant association between early initiation of breastfeeding and place of delivery, mode of delivery, prenatal care provider, and type of birth attendant. However, we found no significant association between early initiation of breastfeeding and household wealth index.

We found a significant interaction between type of birth attendant and place of residence. In the rural setting, compared with women who had a nurse or midwife as their birth attendant, decreased odds of early breastfeeding initiation were observed among women whose birth attendant was a doctor, community health officer, village health volunteer, or traditional health practitioner, whereas in the urban setting, no significant association was observed between type of birth attendant and early breastfeeding initiation. This finding could partly be explained by urban–rural differences in quality of care and patient safety standards in Ghana (Alhassan & Nketiah-Amponsah, 2016). Alternatively, disparities in provider skill level and access to resources are known to exist between urban and rural settings in developing nations, which could also explain these findings (Althabe et al., 2008). Future studies should investigate the potential role of urban–rural differences in motivation levels of skilled birth attendants.

Researchers who examined early breastfeeding initiation and type of birth attendant indicated a higher rate among women who were assisted by midwives as birth attendants compared with women who delivered with the assistance of a trained doctor (Althabe et al., 2008; GSS, GHS, & ICF International, 2015; Hauck, Fenwick, Dhaliwal, & Butt, 2011; Senarath et al., 2010). For example, in a study conducted in rural Ethiopia, the odds of delayed initiation were less when women delivered with the assistance of a traditional birth attendant or midwife than when the delivery was

Table 1. Characteristics of Study Sample by Breastfeeding Initiation ($N = 3,087$)

Characteristic	Breastfeeding initiation			p
	Overall	Within 1 hr of birth	More than 1 hr after birth	
		No. (wt. %)	No. (wt. %)	
Mother's age				.314
15-24 years	550 (17.2)	324 (60.6)	226 (39.4)	
25-39 years	2,102 (69.4)	1,224 (58.4)	878 (41.6)	
40-49 years	435 (13.4)	247 (54.9)	188 (45.1)	
Marital status				.936
Currently married or living with partner	2,870 (93.0)	1,669 (58.3)	1,201 (41.7)	
Other	217 (7.0)	126 (58.6)	91 (41.4)	
Mother's education				.072
No education	1,213 (32.2)	699 (59.8)	514 (40.2)	
Primary	632 (19.8)	346 (52.7)	286 (47.3)	
Secondary	1,151 (44.5)	693 (59.1)	458 (40.9)	
College or higher	91 (3.5)	57 (67.2)	34 (32.8)	
Mother's occupation				.898
Unemployed	486 (15.5)	288 (58.9)	198 (41.1)	
Nonagricultural	1,495 (54.2)	887 (58.8)	608 (41.2)	
Agricultural	1,106 (30.3)	620 (57.3)	486 (42.7)	
Household wealth index				.721
Poorest	1,099 (25.5)	633 (57.9)	466 (42.1)	
Poorer	668 (21.0)	393 (58.8)	275 (41.2)	
Middle	537 (18.5)	298 (55.6)	239 (44.4)	
Richer	453 (18.2)	275 (61.7)	178 (38.3)	
Richest	330 (16.8)	196 (57.7)	134 (42.3)	
Health insurance				.365
Yes	2,176 (68.0)	1,270 (59.2)	906 (40.8)	
No	911 (32.0)	525 (56.5)	386 (43.5)	
Residence				.820
Urban	1,176 (43.6)	693 (58.7)	483 (41.3)	
Rural	1,911 (56.4)	1,102 (58.0)	809 (42.0)	
Husband's or partner's education				.479
No education	1,031 (25.2)	598 (58.5)	433 (41.5)	
Primary	392 (11.4)	230 (59.5)	162 (40.5)	
Secondary	1,413 (54.5)	814 (57.2)	599 (42.8)	
College or higher	251 (8.9)	153 (63.6)	98 (36.4)	
Place of delivery				.013
Institutional	2,086 (70.7)	1,259 (60.6)	827 (39.4)	
Noninstitutional	1,001 (29.3)	536 (52.9)	465 (47.1)	
Mode of delivery				< .001
Vaginal	2,869 (91.3)	1,720 (61.0)	1,149 (39.0)	
Cesarean	218 (8.7)	75 (30.2)	143 (69.8)	
Birth order				.366
1	477 (16.0)	259 (54.1)	218 (45.9)	
2	590 (19.8)	356 (60.3)	234 (39.7)	
3	556 (19.1)	324 (58.7)	232 (41.3)	
≥ 4	1,464 (44.9)	856 (58.8)	608 (41.2)	
Prelacteal feed				< .001
No	2,739 (86.5)	1,645 (60.4)	1,094 (39.6)	
Yes	348 (13.5)	150 (45.1)	198 (54.9)	

(continued)

Table 1. (continued)

Characteristic	Breastfeeding initiation			<i>p</i>
	Overall	Within 1 hr of birth	More than 1 hr after birth	
	No. (wt. %)	No. (wt. %)	No. (wt. %)	
Prenatal care provider				.123
Doctor	203 (9.1)	110 (52.5)	93 (47.5)	
Nurse or midwife	2,415 (78.9)	1,446 (60.1)	969 (39.9)	
Community health officer or nurse	353 (8.6)	180 (52.6)	173 (47.4)	
No one	116 (3.4)	59 (47.9)	57 (52.1)	
Birth attendant				< .001
Doctor	164 (7.3)	61 (32.6)	103 (67.4)	
Nurse or midwife	1,785 (60.1)	1,136 (64.6)	649 (35.4)	
Community health officer or nurse	158 (4.0)	81 (54.8)	77 (45.2)	
Traditional birth attendant	607 (17.3)	366 (59.9)	241 (40.1)	
Village health volunteer or traditional health practitioner	150 (4.5)	57 (40.9)	93 (59.1)	
Relatives or other	114 (3.4)	42 (34.0)	72 (66.0)	
No one	109 (3.5)	52 (46.0)	57 (54.0)	

Note. No. = frequency; wt. % = weighted percentage.

Table 2. Association Between Type of Birth Attendant and Early Initiation of Breastfeeding by Place of Residence (N = 3,087).

Characteristic	Rural [<i>n</i> = 1,911]				Urban [<i>n</i> = 1,176]			
	Unadjusted OR [95% CI]	<i>p</i>	Adjusted OR [95% CI]	<i>p</i>	Unadjusted OR [95% CI]	<i>p</i>	Adjusted OR [95% CI]	<i>p</i>
Mother's age								
15-24 years	Reference		Reference		Reference		Reference	
25-39 years	0.70 [0.47, 1.04]	.043	0.68 [0.37, 1.23]	0.196	0.96 [0.59, 1.56]	.868	0.82 [0.41, 1.64]	.566
40-49 years	0.86 [0.66, 1.12]	.109	0.78 [0.55, 1.11]	0.172	1.01 [0.72, 1.42]	.946	0.87 [0.56, 1.35]	.538
Marital status								
Currently married or living with partner	Reference		Reference		Reference		Reference	
Other	1.16 [0.77, 1.75]	.558	1.29 [0.84, 1.98]	0.250	0.86 [0.52, 1.43]	.555	0.87 [0.49, 1.52]	.616
Mother's education								
No education	Reference		Reference		Reference		Reference	
Primary	0.81 [0.59, 1.10]	.092	0.75 [0.55, 1.03]	0.072	0.60 [0.38, 0.95]	.030	0.58 [0.34, 0.97]	.038
Secondary	1.19 [0.88, 1.61]	.479	1.11 [0.78, 1.58]	0.567	0.71 [0.47, 1.06]	.095	0.69 [0.41, 1.17]	.168
College or higher	0.95 [0.27, 3.35]	.208	0.79 [0.14, 4.56]	0.790	1.26 [0.65, 2.45]	.486	1.73 [0.65, 4.60]	.270
Mother's occupation								
Unemployed	Reference		Reference		Reference		Reference	
Nonagricultural	1.06 [0.65, 1.72]	.542	1.02 [0.59, 1.77]	0.949	0.93 [0.57, 1.53]	.783	0.97 [0.59, 1.59]	.888
Agricultural	1.02 [0.70, 1.48]	.394	1.08 [0.70, 1.67]	0.727	0.76 [0.41, 1.40]	.373	0.51 [0.28, 0.96]	.037
Household wealth index								
Poorest	Reference		Reference		Reference		Reference	
Poorer	1.08 [0.82, 1.42]	.354	0.98 [0.75, 1.29]	0.893	0.69 [0.37, 1.27]	.226	0.88 [0.44, 1.75]	.720
Middle	0.95 [0.64, 1.40]	.337	0.81 [0.56, 1.18]	0.267	0.61 [0.32, 1.17]	.136	0.64 [0.31, 1.34]	.236
Richer	1.52 [0.74, 3.11]	.135	1.18 [0.59, 2.35]	0.642	0.76 [0.40, 1.42]	.385	0.86 [0.39, 1.90]	.716
Richest	0.98 [0.26, 3.65]	.295	0.54 [0.10, 2.87]	0.466	0.68 [0.35, 1.32]	.249	0.86 [0.37, 1.99]	.719
Health insurance								
Yes	Reference		Reference		Reference		Reference	
No	1.00 [0.73, 1.36]	.304	1.09 [0.77, 1.52]	.634	0.78 [0.53, 1.14]	.195	0.89 [0.58, 1.37]	.592

(continued)

Table 2. (continued)

Characteristic	Rural [n = 1,911]				Urban [n = 1,176]			
	Unadjusted OR [95% CI]	p	Adjusted OR [95% CI]	p	Unadjusted OR [95% CI]	p	Adjusted OR [95% CI]	p
Husband's or partner's education								
No education	Reference		Reference		Reference		Reference	
Primary	1.08 [0.78, 1.51]	.415	1.11 [0.77, 1.60]	.579	0.88 [0.46, 1.69]	.708	1.01 [0.52, 1.97]	.982
Secondary	1.01 [0.77, 1.32]	.281	1.01 [0.75, 1.38]	.933	0.75 [0.46, 1.23]	.251	0.95 [0.55, 1.64]	.858
College or higher	1.87 [0.90, 3.91]	.362	2.14 [0.96, 4.77]	.062	0.86 [0.49, 1.51]	.604	0.89 [0.46, 1.74]	.734
Place of delivery								
Institutional	Reference		Reference		Reference		Reference	
Noninstitutional	0.69 [0.51, 0.93]	.016	1.40 [0.58, 3.40]	.457	0.76 [0.50, 1.16]	.196	0.69 [0.17, 2.76]	.600
Mode of delivery								
Vaginal	Reference		Reference		Reference		Reference	
Cesarean	0.31 [0.17, 0.54]	< .001	0.35 [0.19, 0.65]	.001	0.25 [0.15, 0.41]	< .001	0.26 [0.14, 0.51]	< .001
Birth order								
1	Reference		Reference		Reference		Reference	
2	1.14 [0.78, 1.67]	.510	1.11 [0.72, 1.70]	.634	1.44 [0.93, 2.21]	.100	1.14 [0.71, 1.82]	.598
3	1.03 [0.71, 1.50]	.858	1.14 [0.74, 1.77]	.555	1.37 [0.87, 2.18]	.177	1.37 [0.79, 2.38]	.256
≥ 4	0.90 [0.67, 1.19]	.439	1.10 [0.67, 1.79]	.717	1.78 [1.17, 2.69]	.007	1.82 [1.05, 3.15]	.032
Prelacteal feed								
No	Reference		Reference		Reference		Reference	
Yes	0.67 [0.45, 0.99]	.048	0.68 [0.46, 1.01]	.054	0.42 [0.28, 0.64]	< .001	0.53 [0.33, 0.84]	.007
Prenatal care provider								
Nurse or midwife	Reference		Reference		Reference		Reference	
Doctor	0.52 [0.30, 0.88]	.015	0.54 [0.31, 0.95]	.033	0.88 [0.56, 1.38]	.569	1.23 [0.78, 1.94]	.371
Community health officer or nurse	0.73 [0.40, 1.34]	.311	0.98 [0.55, 1.75]	.953	0.73 [0.33, 1.60]	.430	0.67 [0.30, 1.51]	.329
No one	0.61 [0.33, 1.14]	.121	0.81 [0.45, 1.45]	.479	0.60 [0.19, 1.90]	.385	0.74 [0.28, 1.96]	.537
Birth attendant								
Nurse or midwife	Reference		Reference		Reference		Reference	
Doctor	0.24 [0.12, 0.48]	< .001	0.48 [0.24, 0.96]	.037	0.28 [0.16, 0.49]	< .001	0.76 [0.40, 1.46]	.412
Community health officer or nurse	0.47 [0.22, 0.97]	.042	0.42 [0.21, 0.85]	.016	1.18 [0.54, 2.57]	.680	1.55 [0.68, 3.51]	.296
Traditional birth attendant	0.80 [0.54, 1.18]	.258	0.57 [0.22, 1.43]	.228	0.77 [0.45, 1.32]	.336	1.05 [0.24, 4.57]	.943
Village health volunteer or traditional health practitioner	0.33 [0.17, 0.62]	.001	0.21 [0.07, 0.62]	.005	0.75 [0.25, 2.23]	.601	1.05 [0.19, 5.91]	.955
Relatives or other	0.28 [0.16, 0.51]	< .001	0.20 [0.07, 0.55]	.002	0.24 [0.09, 0.65]	.005	0.28 [0.06, 1.27]	.098
No one	0.47 [0.26, 0.84]	.011	0.34 [0.12, 0.93]	.035	0.38 [0.11, 1.27]	.115	0.43 [0.09, 2.07]	.294

Note. OR = odds ratio; CI = confidence interval.

assisted by a health worker or doctor (Horii et al., 2011). This finding is also consistent with a study conducted in Canada, where the authors found that women who were exclusively under the care of midwives had 4.5 times the odds of exclusive breastfeeding compared with women who were cared for by obstetricians (Senarath et al., 2010). Other researchers suggested that women in rural settings were more likely to trust information on breastfeeding from midwives because of their specialized and primary role in child deliveries and their support for early breastfeeding initiation (Hauck et al., 2011; Senarath et al., 2010). Previous researchers found that midwives had more time to bond with mothers and share their own experiences with breastfeeding (Bäckström, Wahn, & Ekström, 2010). It is, however, unclear why there is no

significant association between type of birth attendant and the rate of early initiation of breastfeeding in the urban setting. One possible explanation might be the lack of time to provide breastfeeding support due to busier maternity care wards in urban settings.

In the current study, we found higher rates of early initiation of breastfeeding among women who delivered at a healthcare facility compared with those who delivered at home. This is consistent with other studies conducted in Nigeria (Babatunde Yahya & Adebayo, 2013; Berde & Yalçin, 2016), Ethiopia (Horii et al., 2011), and Sri Lanka (Senarath et al., 2010) that had shown delivering in a health-care facility to be positively associated with early breastfeeding initiation. Evidence from these studies suggests that

Table 3. Sample Characteristics Comparing Participants in the Final Analytic Sample With Those Who Were Excluded Due to Missing Data.

Characteristic	Analytic sample	Missing data	<i>p</i>
	(<i>n</i> = 3,087)	(<i>n</i> = 1,148)	
	No. (wt. %)	No. (wt. %)	
Mother's age			< .001
15-24 years	550 (17.2)	360 (31.1)	
25-39 years	2,102 (69.4)	673 (59.5)	
40-49 years	435 (13.4)	115 (9.4)	
Marital status			.001
Currently married or living with partner	2,870 (93.0)	715 (88.4)	
Other	217 (7.0)	79 (11.6)	
Mother's education			< .001
No education	1,213 (32.2)	193 (12.8)	
Primary	632 (19.8)	228 (19.1)	
Secondary	1,151 (44.5)	652 (60.8)	
College or higher	91 (3.5)	75 (7.3)	
Mother's occupation			< .001
Unemployed	486 (15.5)	262 (21.9)	
Agricultural	1,106 (30.3)	198 (13.9)	
Nonagricultural	1,495 (54.2)	680 (64.2)	
Wealth index			< .001
Poorest	1,099 (25.5)	205 (10.9)	
Poorer	668 (21.0)	247 (19.2)	
Middle	537 (18.5)	264 (23.4)	
Richer	453 (18.2)	222 (23.0)	
Richest	330 (16.8)	210 (23.5)	
Health insurance			.044
Yes	2,176 (68.0)	749 (64.0)	
No	911 (32.0)	398 (36.0)	
Residence			.013
Urban	1,176 (43.6)	572 (51.7)	
Rural	1,911 (56.4)	576 (48.3)	
Husband's or partner's education			< .001
No education	1,031 (25.2)	117 (11.0)	
Primary	392 (11.4)	68 (7.3)	
Secondary	1,413 (54.5)	441 (66.5)	
College or higher	251 (8.9)	106 (15.2)	
Place of delivery			< .001
Institutional	2,086 (70.7)	972 (86.0)	
Noninstitutional	1,001 (29.3)	176 (14.0)	
Mode of delivery			< .001
Vaginal	2,869 (91.3)	891 (76.5)	
Cesarean	218 (8.7)	257 (23.5)	
Birth order			< .001
1	477 (16.1)	439 (37.6)	
2	590 (19.8)	239 (21.4)	
3	556 (19.1)	166 (14.7)	
≥ 4	1,464 (45.0)	304 (26.3)	
Prelacteal feed			.032
Yes	348 (13.5)	183 (17.4)	
No	2,739 (86.5)	965 (82.6)	

(continued)

Table 3. (continued)

Characteristic	Analytic sample	Missing data	<i>p</i>
	(<i>n</i> = 3,087)	(<i>n</i> = 1,148)	
	No. (wt. %)	No. (wt. %)	
Prenatal care provider			.066
Doctor	203 (9.1)	47 (9.1)	
Nurse or midwife	2,415 (78.9)	489 (83.3)	
Community health officer or nurse	353 (8.6)	36 (6.1)	
No one	116 (3.4)	13 (1.5)	
Birth attendant			< .001
Doctor	164 (7.3)	58 (8.6)	
Nurse or midwife	1,785 (60.0)	534 (70.5)	
Community health officer or nurse	158 (4.0)	13 (1.5)	
Traditional birth attendant	607 (17.3)	91 (11.6)	
Village health volunteer or traditional health practitioner	150 (4.5)	36 (3.9)	
Relatives or other	114 (3.4)	19 (1.6)	
No one	109 (3.5)	20 (2.3)	
Breastfeeding initiation			< .001
Within 1 hr of birth	1,795 (58.3)	562 (48.3)	
More than 1 hr after birth	1,292 (41.7)	586 (51.7)	

Note. No. = frequency; wt. % = weighted percentage.

the plausible reason behind the observed association would be the guiding role that health workers play in providing information to mothers on best practices about infant feeding, and the attribution of visible promotional communication about breastfeeding practice in the healthcare facilities (Petrova et al., 2009). Our finding, however, contrasted a study conducted in Ireland in which researchers found a significant association between home delivery and initiation of breastfeeding (Quigley et al., 2016). These different findings could be related to cultural differences associated with home birth in sub-Saharan African countries and Northern Europe as well as knowledge and practice differences of those engaging in home deliveries in the respective countries.

Women's obstetric experiences can have a negative effect on early initiation of breastfeeding. We found that a higher proportion of women who had vaginal births initiated breastfeeding within an hour of birth compared with cesarean delivery. Other researchers have found a significant association between type of delivery and early breastfeeding initiation (Balyakina et al., 2016; Green, 2009). Factors such as discomfort after cesarean surgery, effects of anesthetics, and bonding issues between the mother and child have been associated with delayed initiation of breastfeeding (Babatunde Yahya & Adebayo, 2013; Balyakina et al., 2016; Green, 2009). Additionally, consistent with studies in Africa and other countries (Hazir et al., 2013; Örün et al., 2010; Pandey, Tiwari, Senarath, Agho, & Dibley, 2010), prelacteal feeding practices were negatively associated with initiating breastfeeding within 1 hr of birth in both rural and urban areas.

Limitations

The current study has several limitations. First, the cross-sectional study design prevents the inference of a causal relationship between place of residence and type of provider on early initiation of breastfeeding. In addition, although the study was able to adjust for many factors known to influence early breastfeeding initiation, other confounding variables (e.g., prenatal intention to breastfeed) were not captured. Additionally, as data were collected in the form of a self-reported survey, results are subject to recall bias and social desirability bias. The fact that 996 of the households selected for the study were either unoccupied or unable to be interviewed could have introduced selection bias. Furthermore, even though this study was based on a large nationally representative sample of women, we found statistically significant differences between the characteristics of women in the analytic sample and those of women who gave birth in Ghana during a similar period but were excluded due to missing data (see Table 3). As such, findings from the current study may not be generalizable to all women in Ghana.

Conclusion

In conclusion, our findings indicate that type of birth attendant may play an important role in early initiation of breastfeeding in rural Ghana. These findings highlight the need for focused, context-specific, early breastfeeding interventions, especially for women and their birth attendants in rural areas. A culturally appropriate breastfeeding education program that acknowledges contextual differences can positively

influence breastfeeding outcomes. Given that early breastfeeding initiation is one of the strongest predictors of exclusivity and continuation of breastfeeding, any attempt toward improving breastfeeding outcomes should consider addressing context-specific barriers for early breastfeeding initiation. Future studies should examine the potential role of additional factors such as sociocultural environment and birth attendant's beliefs, attitude, and perception toward early initiation of breastfeeding.

Declaration of Conflicting Interests

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