DETERMINANTS OF PRELACTEAL FEEDING AMONG CHILDREN UNDER TWO YEARS OLD OF HEAD PORTERS IN GHANA

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ABSTRACT

Prelacteal feeding (PF) is considered a suboptimal breastfeeding practice and also a barrier to early initiation of breastfeeding (EIBF) and exclusive breastfeeding (EB) practice. Little is known about the determinants of PF among head porters (HPs). Therefore, this study investigated the determinants of PF among HPs in Ghana. The study was an observational cross-sectional study design undertaken in two commercial cities in Ghana, Kumasi and Accra among 456 HPs who were also caregivers using a multistage sampling method.PF was defined as the percentage of infants who received any liquid or powder substance other than breast milk within the first three days after birth. Logistic regression analysis with a p-value less than 5% and an adjusted odds ratio (AOR) with a 95% confidence interval (CI) were used to determine the significant factors associated with PF practice. About 13% of infants received a PF mainly as water (63.9%) and infant formula (36.5%). Children from nuclear (OR= 0.383, 95% CI= 0.159-0.918) and extended families (OR= 0.318, 95% CI=1.23-5.38) had a reduced risk of receiving PF. Also, mode of delivery (OR= 4.319, 95% CI= 1.35-4.75), and ethnic groups Kusasi (OR= 10.841, 95% CI= 3.81-7.21) and Mamprusi (OR=6.159, 95% CI= 1.41-6.89) significantly predicted PF. It was concluded that the caregivers practiced PF, and the determinants were ethnic groups, type of family, and mode of delivery. Therefore, these predictors should be considered when developing strategies to address breastfeeding among these caregivers to achieve optimal breastfeeding.

Keywords: Head Porters, prelacteal feeding, infants, breastfeeding, caregivers.

INTRODUCTION

Optimal breastfeeding practices, including exclusive breastfeeding (EB) and early initiation of breastfeeding (EIBF), are crucial for improving infant health outcomes through the provision of essential nutrients, enhancing cognitive development, and reducing the risk of infections and chronic diseases. Despite the numerous benefits, global rates of optimal breastfeeding practices remain disappointingly low. Globally, only 44% of infants under 6 months were exclusively breastfed between 2015 and 2020. In Africa and low-middle-income countries, less than 51% of infants were exclusively breastfed (Birhan et al., 2021; Neves et al., 2022). One of the main barriers to these optimal breastfeeding practices is prelacteal feeding (PF) (Birhan et al., 2021; Neves et al., 2022).

Prelacteal feeding, which is the provision of solid or liquid feeds in the first three days

after birth, poses serious health risks to newborns, including increased susceptibility to diarrhoea, pneumonia, and starvation. Prelacteal feeds can also prevent neonates from receiving colostrum, which is rich in nutrients and immunoglobulins. In Ghana, the prevalence of prelacteal feeding is estimated to be between 15-21% (Adepoju, 2011; Dubik & Amegah, 2021; Ghana Statistical Survey & United Nations Children's Fund (UNICEF), 2019).

Research in Ghana has identified several factors associated with PF, including delayed initiation of breastfeeding, lack of exposure to breastfeeding knowledge, and mode of delivery. Understanding these factors is essential for developing targeted interventions (Dubik & Amegah, 2021; Ghana Statistical Survey & UNICE, 2019).

This study aims to investigate PF practices among head porters (HPs) in Ghana, a vulnerable population with unique health and nutrition challenges who migrate from northern Ghana in search of greener pastures in the southern part of the country. Many studies on HPs in Ghana assessed their socioeconomic (Abunyewah, Ackuayi & Nana, 2014; Alhassan & Alice, 2018) health and living conditions (Ahlvin, 2012; Yaaba Baah-Ennumh et al., 2012), resulting in a paucity of information on the care and nutrition of their newborns. This study therefore focused on assessing the practice of PF among HPs, using the UNICEF conceptual framework for child and maternal malnutrition (Black et al., 2020). Specifically, the investigated the prevalence, types and predictors of PF.

The findings of this study will contribute to designing effective and tailor-made public health interventions to promote optimal breastfeeding practices among HPs and other vulnerable populations.

METHODOLOGY

Study design, setting, sample and sampling procedure, and data collection procedures

A cross-sectional survey design using a quantitative research approach was employed. The study was undertaken in two selected cities in Ghana, namely Accra and Kumasi, out of the six metropolises in Ghana based on earlier studies which revealed these two cities as a hub for HPs activities (Abunyewah et al., 2014; Ahlvin, 2012; Yaaba Baah-Ennumh et al., 2012). Kumasi is a city located in the Ashanti Region of Ghana (Boateng et al., 2017) and the markets that HPs operate most are in the areas of Racecourse, Kejetia, Adum, and Central Market, which are all within the metropolis' central business district (Abunyewah et al., 2014). Accra, is Ghana's biggest city and the busiest markets where these HPs mostly undertake their activities in the city are Tudu, Agbogbloshie, Mallam Atta, Tema lorry station, and Cocoa Marketing Board, which are all within the Central Business District (CBD) of Accra (Ahlvin, 2012).

The study sample size was determined using the Cochrane formula as follows $= \frac{^2}{^2}$; where N is the desired sample size,

Z is the selected critical value of the desired confidence level, p is the estimated prevalence of 0.21%,
q = 1-p,

e is the desired level of precision fixed at 5%, 10% estimated non-response rate and a design effect of 20% for multi-staging (Uakarn, Chaokromthong, & Sintao, 2021; Schillaci, 2022).

A multistage sampling method was employed. In the first stage, two commercial cities, Accra and Kumasi, were chosen purposively because earlier studies reported that the HPs activities are predominant in these two cities because of the high economic activities. Moreover, 20 markets were identified in the two metropolises and stratified into market centres. Each formed a stratum from which eight markets, which earlier studies reported to have high HP activities, were randomly selected at the second stage, using the lottery method to create the enumeration (Abunyewah *et al*., 2014).

Furthermore, assisted by their market leaders, the total list of HPs in these eight markets for Accra (Tudu, Tema Station, Madina, and Agbobloshie) and Kumasi (Bantama, Suame, Kronum, and Racecourse) who met the eligibility criteria were used to form the sampling frame. A sampling interval was further determined using the formula N/n where *N* is the number of units in the target population (494), and *n* represents the number of units or stratum (markets), which equalled 8. To create the sample size, 62 caregivers were systematically chosen from each of these markets. However, because of their comparatively smaller size, 61 caregivers were selected from Tudu and Suame.

Eligible caregivers who agreed to participate in the study were given a pretested interview schedule after they were informed of its purpose and assured of anonymity.

Three research assistants assisted with data collection after completing training that included translating the questions into a native language (Asante Twi) to facilitate easy communication and data recording into English. The interview guide was adapted from the standard Demographic and Health Service (DHS) questionnaire to fit the study's setting. It included sections on breastfeeding practices and household and demographic factors of caregivers.

In this study, PF, which was the outcome variable, was based on reports by caregivers and was expressed in a binary form, with Yes (1 denoting food ingestion during the first three days after birth) and No=0 denoting the opposite. The following liquids food lists were provided to caregivers: infant formula, gripe water, plain water, sugar/salt solution, sugar or glucose water, fruit juice, tea infusion, and honey. Further, they were asked if their baby had anything to drink other than breastmilk within the first three days following delivery.

The following categories of explanatory variables were chosen based on evidence in the literature: proximate determinants (maternal characteristics such as age, marital status, number of years as HP, and child characteristics such as sex, age) and health level factors (ANC visits, PNC visits, place of delivery, and type of delivery), socioeconomic level factors (maternal education, wealth index, daily amount earned, religion, ethnicity, type of family, and household size), and community variables (city, place of residence).

Data analysis

STATA version 15.0 was used for data analysis. Descriptive statistics like frequencies and percentages were used to summarize the data on the caregivers' socio-demographic characteristics. Further, Chi-square was used to examine associations between independent and dependent categorical variables. The relationship between predictor variables and outcome indicators was modelled using multivariate logistic regression. All statistical tests were two-sided, and the alpha level was set at 0.05 as significant.

Ethical Clearance

The Institutional Review Board (IRB) at Zhengzhou University's School of Public Health approved this study (ZZUIRB 2020-58). Prior to the data collection, the Ghana HPs Association issued a letter of consent, which the caregivers signed or thumb-printed.

RESULTS AND DISCUSSIONS

Table 1 shows the demographic and household characteristics of the study respondents. Overall, 456 caregivers participated in the study, yielding a response rate of approximately 92%.

Table 1: Demographic and Household Characteristics of Caregivers and Children.

Characteristics	**Frequency**	
	N = 456	**(%)**
City		
Accra	237	52.0
Kumasi	219	48.0
Mean Age of caregiver ± SD	25.3 ± 5.7 SD	
Caregivers' age (years)		
15-24	197	47.2
25-34	176	42.2
35-50	44	10.6
Marital Status		
Single	50	10.9
Married/Living together	386	84.7
Divorced/Separated	13	2.9
Widowed	7	1.5

Highest educational level		
No Education	281	61.6
Primary	150	32.9
Secondary	25	5.5
Ethnicity		
Dagomba	62	13.0
Kusasi	13	2.9
Mamprusi	277	60.8
Sisaala	37	8.1
Tampauri	20	4.4
Others	47	10.3
Religion		
Christianity	63	13.8
Islam	390	85.5
African Traditional Religion	3	0.7
Mean No. of years as a HP	1.7 ±1.1 SD	
No. of years as a HP		
0-6mths	160	35.1
7-11mths	33	7.2
1-2yrs	67	14.7
> 2yrs	196	42.9
Mean daily earning ± SD (GH₵)	26.3 ± 10.9 SD	
Average daily earning daily (GH₵)		
< 10	34	7.5
10-29	223	48.9
30-40	149	32.7
>40	50	10.9

Table 1: Demographic and Household Characteristics of Caregivers and Children cont'd

Characteristics	**Frequency N = 456**	**(%)**
Type of family		
Single Parent	50	11.0
Nuclear	164	35.9
Extended	242	53.1
Mean household size	7.9 ± 3.9SD	
Household size (person)		
1-4	110	24.1
5-9	182	39.9
10+	164	36.0
Type of residence		
Single room	77	16.9
Shared room	140	30.7

Pavement	12	2.6
Bus Station	89	19.5
Kiosk	138	30.3
Wealth Index		
Poor	120	26.4
Middle	279	61.3
Richest	56	12.3
Mean number of children	2.9 ±1.6 SD	
No. Children		
1-2	228	50.0
3-4	156	34.2
5+	72	15.8
Mean child's age	13.6 ±5.1SD	
Child's age (months)		
0-5	33	7.24
6-11	142	31.1
12-23	281	61.6
Sex of child		
Male	224	49.1
Female	232	50.9

The mean (x) age of the caregivers was 25.3 ± 5.7 standard deviation (SD) in years, with almost half (47.2%) in the age range of 15-24 years. The caregivers were predominantly Muslims (85.5%), and 42.9% of them had been HPs for more than two (2) years, while only a few (19.6%) reported having other sources of income. More than half (61.6%) had no formal education while over half (60.8%) of the caregivers were of Mamprusi ethnic origin.

Also, approximately 53% and 40% of them belonged to an extended family and a household size of 5-9 members, respectively. Again, almost a third of the caregivers (31.7%) lived in shared rooms, while 30.3% reported living in kiosks. More than half (61.3%) were classified as middle based on their wealth index score.

In Table 2, the obstetric characteristics of the caregivers have been shown.

Table 2: Obstetric Characteristics of Caregivers

Characteristics	**Frequency N = 456**	**(%)**
Place of delivery		
Health facility	323	70.8
Non-health facility	133	29.2
Mode of delivery		
Vaginal delivery	437	95.3
Cesarean section	19	4.2
Attended ANC		
No	28	6.1
Yes	428	93.9
Meanno. of ANC Visits	5.1 ±1.1 SD	
No. of ANC Visits		
< 4 visits	68	15.9
4+ visits	360	84.1
Attended PNC		
No	18	3.9
Yes	438	96.1
Meanno. of ANC Visits	4.1 ±1.3 SD	
No. of PNC Visits		
<4 visits	115	26.9
4+ visits	323	73.7

ANC: Antenatal clinic; PNC: Postnatal clinic

The results showed that approximately 95% were delivered in the hospital, and 95.3% had a vaginal or normal delivery. Most of the caregivers (93.6%) attended ANC, while about 84% made at least four (4) visits.

Figure 1 presents the types of food consumed by infants in the first three days after birth. The results revealed that water and infant formula were the predominant feed given to the infants.

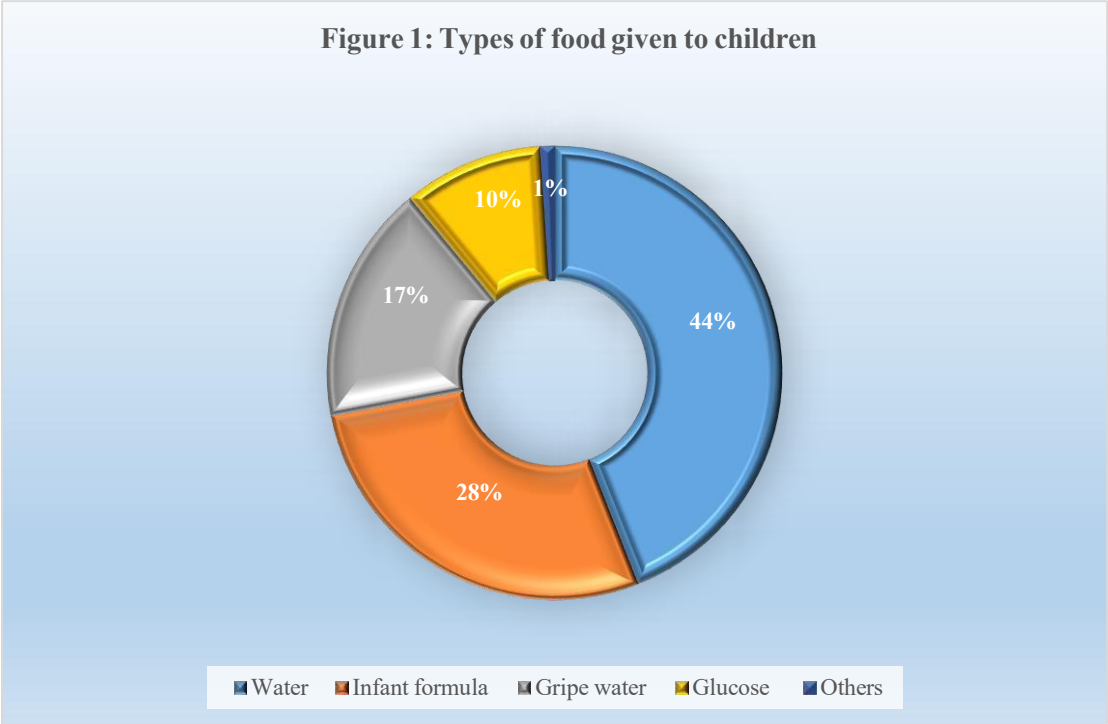

Figure 1: Types of PF given to children

Note: Results are multiple responses

Table 3: Factors associated with PF among <24 months old children

Characteristics	Total	PF	
		Yes (%)	*P*-value
City			**0.065**
Accra	237 (100)	25 (10.5)	
Kumasi	219 (100)	36 (16.4)	
Maternal education			
No Education	260(100)	41 (15.7)	**0.050**
Primary	138(100)	17 (11.3)	
Secondary	25(100)	0 (0)	
Caregivers age (years)			**0.651**
15-24	197 (100)	31 (15.7)	
25-34	176 (100)	23 (13.1)	
35-50	44 (100)	5 (11.4)	
Marital Status			**0.528**
Single	50 (100)	6 (12.0)	
Married/Living together	386 (100)	54 (14.0)	
Divorced/Separated	13 (100)	0 (0.0)	
Widowed	7 (100)	1 (14.3)	
Religion			**<0.001**
Christianity	63 (100)	5 (7.9)	
Islam	390 (100)	53 (13.6)	
African Traditional Religion	3 (100)	3 (100)	
Type of family			**0.041**
Single Parent	50 (100)	12 (24.0)	
Nuclear	164 (100)	23 (14.0)	

Extended	242 (100)	26 (10.7)	
Birth order			0.604
First	113 (100)	16 (14.2)	
Second	137 (100)	15 (10.9)	
Third and above	206 (100)	30 (14.6)	
Sex of child			0.050
Male	224 (100)	23 (10.3)	
Female	232 (100)	38 (16.4)	
Place of delivery			0.115
Healthcare facility	323 (100)	38 (11.8)	
Others	133 (100)	23 (17.3)	
Mode of delivery			**0.017**
Vaginal delivery	437 (100)	55 (12.6)	
Cesarean section	19 (100)	6 (31.6)	
No. of ANC Visits			0.314
<4 visits	68 (100)	12 (17.6)	
4+ visits	360 (100)	47 (13.1)	

Table 3: Factors associated with PF among <24 months old children

Characteristics	**PF**		**Total**
	Yes (%)	***P*-value**	
Wealth Index		0.403	
Poor	18 (15.0)		120 (100)
Middle	33 (11.8)		279 (100)
Richest	10 (17.9)		56 (100)
Household size		0.314	
1-4	15 (13.6)		110 (100)
5-9	29 (15.9)		182 (100)
10+	17 (10.4)		164 (100)
Ethnicity		**<0.001**	
Dagomba	2 (3.2)		62 (100)
Kusasi	5 (38.5)		13 (100)
Mamprusi	46 (16.6)		277 (100)
Sisaala	0 (0.0)		37 (100)
Tampauri	4 (20.0)		20 (100)
Others	4 (8.5)		47 (100)

P<0.05

In a Chi-square test presented in Table 3, higher proportions of children who received a PF were those whose mothers were Muslims (P<0.001), had no education (P=0.050), from a single-parent family (P=0.041), Kusasi tribe (P<0.001), born through cesarean (P=0.017) and females (P=0.050).

Table 4: Multivariate Logistic Regression of factors associated with PF

PF	Odds Ratio	95% CI	*P*-value
Sex			
Male	Reference		
Female	1.495	(0.816-2.739)	0.193
Type of family			
Single Parent	Reference		
Nuclear	0.383	(0.159-0.918)	**0.031**
Extended	0.318	(1.23 - 5.38)	**0.008**
Maternal education			
No Education	Reference		
Primary	0.649	(0.33-1.28)	0.211
Secondary	1		
Religion			
Christianity	Reference		
Islam	2.202	(0.79-6.09)	0.129
Mode of delivery			
Vaginal delivery	Reference		
Cesarean section	4.319	(1.35-4.75)	**0.013**
Ethnicity			
Dagomba	Reference		
Kusasi	10.841	(3.81-7.21)	**0.001**
Mamprusi	6.159	(1.41-6.89)	**0.016**
Sisaala			
Tampauri	5.057	(0.625-40.89)	0.129
Others	4.034	(0.676-24.09)	0.126

OR= Odds ratios, CI= 95% Confidence Interval, p<0.05

The type of family, mode of delivery, and ethnicity significantly predicted PF. Children from nuclear (OR= 0.383, 95% CI= 0.159-0.918) and extended families (OR= 0.318, 95% CI= 1.23-5.38) had a reduced risk of receiving PFs than those from single families. Also, those who were delivered through caesarean had four times greater odds of being fed PF than those born normally (OR= 4.319, 95% CI= 1.35-13.75). Further, children from Kusasi (OR= 25.841, 95% CI= 3.81-7.21) and Mamprusi ethnic groups (OR= 6.159, 95% CI= 1.41-6.89) had 10 and 6 times higher odds, respectively, of receiving a PF than those from the other ethnic groups.

DISCUSSION

A high proportion of caregivers were between 15-24 years old which corroborates with earlier studies, which reported that about 70% of their study sample was between 15-24 years but this has a potential of impacting childcare and nutrition due to limited resources and experience (Ahsan et al., 2017; Adda et al., 2020).

Again, over 60% of caregivers lack formal education, which confirms earlier studies but this may hinder access to healthcare and nutrition information (Boateng et al., 2017; Yaaba Baah-Ennumh et al., 2012). Research shows highly educated caregivers have access to better nutrition information, understand better educational messages presented to them, and may enjoy regular income from their jobs, all of which may translate into child-care practices (Sienso & Lyford, 2018; Solomon et al., 2017).

Overall, about 13% of the children received PF. National surveys in 2014 and 2017 documented that 15% of Ghanaian children are fed PF after birth. Therefore, the study's results are slightly lower than the national prevalence, probably because of differences in study settings and relatively smaller sample sizes compared to national data and the high rate of ANC (93.9) and PNC (96.1) attendance, as presented in Table 2, among the caregivers. Water and infant formula were the prevalent PF among the population under study. This validates reports by the DHS in 2014 and MICS in 2017 in Ghana (Ghana Demographic and Health Survey, 2014; Ghana Statistical Survey & UNICE, 2019) and studies elsewhere in Ethiopia (Ebroshe, et al., 2022; Wolde et al., 2019), and Nigeria (Ogundele, Ogundele & Adegoke, 2019). The provision of PF is prominent in African countries like Ghana. A study in Northern Ghana reported a 21% prevalence, while another one in Sudan had a PF rate of 53% (Berde & Ozcebe, 2017; Dubik & Amegah, 2021; Wolde et al., 2019). Evidence from national data sets in 22 sub-Saharan African countries revealed that the prevalence of PF was 32% and was higher in Cote d'Ivoire, Nigeria, and Guinea, with a prevalence of 67%, 60%, and 59.8 %, respectively.

The mode of delivery was a predictor of PF as children who were delivered through the caesarean section were more likely to be given a PF than those born through spontaneous vaginal delivery. This could be because the caesarean section involves longer post-operative care and hence delays mother-child contact, which may lead to late initiation of breastfeeding, resulting in the introduction of a PF until the mother gains consciousness. Studies from Ethiopia (Ebroshe et al., 2022), Nigeria (Ogundele et al., 2019), and sub-Saharan Africa (Berde & Ozcebe, 2017) confirmed this trend. However, structural improvements in health facilities like mother-friendly policies, baby-friendly initiatives, staff training and support and availability of equipment and resources for women with caesarean births can help improve optimal breastfeeding rates.

Mothers from single families were more likely to provide PF probably because they lacked the support of other family members who could educate them on properly feeding newborns since families are important networks that influence the breastfeeding behaviours of mothers (Seidu & Stade, 2013).

Ethnicity was significantly associated with the provision of PF in this study. This finding confirms studies in Ghana (Appiah et al., 2017; Dubik & Amegah, 2021). In African and Ghanaian communities, most ethnic groups have cultural beliefs and food taboos restricting mothers' dietary and Infant and Young Child Feeding (IYCF) practices. The practices of a group could be a barrier or enabler as some beliefs contradict medical recommendations and negatively impact optimal breastfeeding. PF has cultural roots, and some customary practices are shared across cultures. Therefore,

the ethnicity of people influences its practice (Appiah et al., 2017).

Religion was associated with PF probably because it shapes breastfeeding choices and the decisions of some caregivers (Baum, 2017). On the contrary, some cultural and religious rites do hinder a mother's intention and decision to breastfeed (Sulaiman, et al., 2016). The current study revealed that being a Muslim was associated with the provision of PF compared to religious groups, which corroborates a study in Nigeria in which over 89% of respondents providing PF were Muslims (Sulaiman, et al., 2016). This observation could be attributed to the fact that, among Muslims, a ritual is performed for newborns called Taaneek, where newborns are greeted with something sweet like dates or honey before consuming breastmilk to make life enjoyable for the newborn. Also, colostrum is considered dirty, harmful, and not nutritious for newborns (Baum, 2017; Sulaiman, et al., 2016).

A limitation of this study is that PF relied on self-reports, and it therefore may be subject to measurement and recall bias. Also, because of the cross-sectional nature of the data used, this study has not been able to separate possible reciprocal and other complex causal linkages. As a result, conclusions drawn from this research should only discuss the relationships between the explanatory and outcome factors.

This study's strength stems from its high response rate and its broader coverage of HPs, who are rarely investigated in Ghana despite their vulnerability. Further, in contrast to nationally representative data, which resort to generalizing estimates that can mislead the estimation of the magnitude and trends in malnutrition and its associated factors, the type of data used in this study increases the possibility of gaining deeper insights and a true picture of PF issues of these HPs.

CONCLUSION

The results of this study have revealed that some of the caregivers practiced PF. The main risk factors were ethnicity, mode of delivery, religion, and type of family. All these factors are relevant and should be considered when developing strategies to address breastfeeding among these caregivers to enable Ghana to reduce the high infant mortality and morbidity rates.

RECOMMENDATIONS

It is recommended that the HPs should be educated on the benefits of exclusive breastfeeding and the potential risks of PF. Further, interventions to stop PF in Ghana should concentrate on offering breastfeeding support to mothers who underwent cesarean sections. Healthcare facilities should ensure early skin-to-skin contact and breastfeeding within the first hour after birth and in instances when the mother is unable to breastfeed, breastmilk can be expressed for the neonate. The Ghana Health Service should enforce the implementation of hospital policies that support early initiation of breastfeeding, such as the Baby-Friendly Hospital Initiatives. Again, culturally appropriate interventions should be developed by stakeholders in addressing PF practices among HPs because they may be restricted by cultural barriers to childcare in their ethnic groups which frustrate their decisions on optimal breastfeeding.

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