

Cultural Barriers to Exclusive Breastfeeding among Children Aged 0-6 Months in Tamale Metropolitan Area of Ghana

Habibu Issah^{*1}, Salifu Abukari², Yussif Hamdan Adam²

¹Department of Global and International Health, ²Department of Social and Behavioural Science, School of Public Health, University for Development Studies, Ghana

*Corresponding Author: E-mail: i.habib@uds.edu.gh

How to cite this paper: Issah, H.,

Abukari, S. and Adam, H.Y. (2022) Cultural barriers to exclusive breastfeeding among children aged 0-6 months in Tamale metropolitan area of Ghana, *Annals of Medical Laboratory Science* 2(1): 1 - 12

Received: September 15, 2021

Accepted: February 18, 2022

Published: March 30, 2022

Copyright © 2022 by author(s) and Annals of Medical Laboratory Science

This work is licensed under the Creative Commons Attribution (4.0) International License (CC BY 4.0)

<https://creativecommons.org/licenses/by/4.0/>

ISSN No: 2805-4024

ABSTRACT

Background: The World Health Organization recommends exclusively breastfeeding (EBF) for 6-months commencing at birth, with early breastfeeding commencing within 30 minutes of delivery. Cultural factors have been discovered to influence women's choice to EBF. The research was to determine the cultural influences on EBF and its implications on the nutritional status of infants 0-6 months.

Methods: A descriptive cross-sectional study was conducted. The study included 300 women of reproductive age (18-45 years old) who had infants of 0-6 months and were accessing services at child welfare clinics in Tamale, Ghana. Data was collected using interviewer-administered questionnaire between mid-July to mid-August 2021.

Results: Most of the mothers (54%) had poor knowledge of exclusive breastfeeding. More than half (72%) did not practice exclusive breastfeeding. Most mothers (57%) did not offer colostrum to their newborns. Mothers-in-law influenced their daughters-in-laws breastfeeding behaviours. Over 50% of those who did not practice EBF said it was taboo to indulge in sex while EBF, to EBF when pregnant, to EBF when there was insufficient breast milk for infants signified by their frequent crying, and to EBF when mothers are likely to face challenges introducing complementary foods after 6 months. Most of the newborns had indications of underweight (69%), stunting (68%), and wasting (66%).

Conclusion: There are greater needs to develop health teaching, health education, and counselling strategies to change knowledge, attitude, and practices. Again, negative attitudes and behaviours of mothers and the community as whole regarding EBF could also be addressed using community-based social marketing approach.

Annals of Medical Laboratory Science (2022) 2(1), 1 - 12

Keywords: Exclusive breastfeeding, infant 0-6months, nutritional status, cultural factors, Tamale Metropolitan Area

INTRODUCTION

The importance of nutrition early in life cannot be overstated. Adequate infant breastfeeding has shown to improve a child's nutritional condition and long-term health by reducing under-five mortality, obesity, cardiovascular diseases later in life (Lucas, 1998; Nabulsi et al., 2019; Victora et al., 2016). Some nutritional issues that arise early in life are difficult to rectify later in life (Darnton-Hill *et al.*, 2004; Northwest Center for Public Health Practice, 2017).

Thus, a child's dietary health till the age of 24 months is crucial. Children's nutritional status are determined by several factors, including infant feeding methods (Darnton-Hill *et al.*, 2004; Northwest Center for Public Health Practice, 2017; Pereira et Al., 2021).

A growing body of evidence shows how important it is to promote exclusive breastfeeding to improve newborn nutrition, health, and survival (Lucas,

1998; Nabulsi *et al.*, 2019; Victora *et al.*, 2016). Exclusive breastfeeding (EBF) refers to the practice of exclusively feeding newborns breast milk, with no other liquids, breast milk replacements, or solid foods (WHO, 2007; Yeboah *et al.*, 2019). EBF is often recognized as the most effective method of reducing child mortality in impoverished countries (Sika-Bright & Oduro, 2013; Thet *et al.*, 2016), since breast milk is considered to be the optimal source of nutrition for infants (Lessen & Kavanagh, 2015; Yeboah *et al.*, 2019). As a result, efforts to improve breastfeeding behaviors among lactating mothers will result in a rise in the proportion of infants who benefit from EBF (Jefferson, 2016).

About one in every three newborns within 6 months of age is exclusively breastfed globally (UNICEF, 2015). However, EBF remains a rare practice in emerging nations, with prevalence of 33% in Sub-Saharan Africa (WHO, UNICEF, 2003). To ensure that infants are exclusively breastfed, Ghana has implemented a number of initiatives and this include Baby-Friendly Hospital Initiative (BFHI) in 1991; LI 1667 (i.e., Ghana's Breastfeeding Promotion Regulation 2000); and the design and implementation of Information, Education and Communication (IEC), including advocacy materials (International Breastfeeding Food Action Network; 2000; Otoo *et al.*, 2009; Tampah-naah & Kumi-kyereme, 2013). The design and implementation of these initiatives were meant to promote EBF in Ghana (Tampah-naah & Kumi-kyereme, 2013). In Ghana, 52% of newborns are said to be breastfed within an hour of birth, and 43% of infants under 6 months are exclusively breastfed (GSS, GHS, ICF International, 2015). Mothers with less education are less likely to commence exclusive breastfeeding in the industrialized world (Sutherland *et al.*, 2012). Additionally, in developing nations, exclusive breastfeeding practice is connected with marital status as well as mothers understanding of its benefits (Boakye-yiadom *et al.*, 2016; Maonga *et al.*, 2016; Yeboah *et al.*, 2019).

Despite the globally identified factors seen to be associated with EBF practice, efforts to promote

EBF have either yielded modest gains or encountered significant obstacles, partly due to a lack of awareness of the myriad factors affecting the practice (Seidu, 2013). Additionally, the majority of research ignored the effect of locality-based culturally-related factors on exclusive breastfeeding practice and its implications on infant nutrition. The study therefore, assessed the cultural factors affecting exclusive breast feeding and its implication on nutritional status of infants in Tamale Metropolitan Area of Ghana. The outcomes from this research will contribute to the scientific body of knowledge on exclusive breastfeeding practice. It will as well help us come up with how to design and implement health interventions to improve its practice among mother in these communities. Additionally, the findings from this study may contribute to the reduction of newborn illnesses and fatalities and to the achievement of the United Nations' health-related sustainable development goals.

MATERIALS AND METHODS

Ethical considerations

The Metropolitan Health Directorate approved the study after receiving an introductory letter from the Department of Advanced Nursing. Again, moms whose children fit the study's criteria were asked for verbal consent. Participants were guaranteed of the study's anonymity and their ability to withdraw at any time.

Study setting, population and sampling

The study was conducted in selected peri-urban health facilities in the Tamale Metropolitan Area (TAMA). The TAMA comprises of Tamale Metropolitan Assembly (TaMA) and the Sagnarigu Municipal Assembly. The TAMA is Ghana's second fastest developing metropolis after Kumasi (Ghana Statistical Service, 2014). It is located between latitudes 9°16 and 9°34 North, and longitudes 0°36 and 0°57 West and covers a total land area of 922 km² (Fuseini *et al.*, 2017; Ghana Statistical Service, 2014). It borders Mion District to the east, North-East Gonja District to the south, and Central Gonja to the south-west. It has over 200 communities, comprising of urban, peri-urban, and rural communities (Fuseini *et al.*, 2017; Ghana

Statistical Service, 2014). Four peri-urban health facilities (Kalpohina, Fuo, Vitting, and Belpela) delivering mother and child health care in the Tamale Metropolitan Area (TAMA) were randomly selected.

A health facility-based descriptive cross-sectional design was employed specifically to describe mothers' knowledge and practice of EBF, identify the cultural factors influencing its practice, and to describe its implications on infants' nutrition status. The sample size of the study was obtained using Charan & Biswas, (2013) formula for medical research sample size estimation with an alpha of 0.05 and a prevalence of EBF of 43% in infants under the age of six months (GSS, GHS, ICF International, 2015), a sample size of 377 mother-infant pair was achieved, however 300 mothers and their infants were sampled because of time constraints and difficulty in accessing respondents. Using a convenient sampling technique, 75 mother-infant pair aged 0-6 months were selected from four health facilities to take part in the study. This procedure was repeated until the required sample size was attained.

Data collection technique

Because most study participants were uneducated, data was collected in their native language. The interviews were mainly performed in the respondents' homes or health facilities, whichever was preferred. The data collection tool was built around participant demographics, knowledge of EBF, perspectives and concerns about exclusive breastfeeding, and cultural factors influencing the practice of exclusive breastfeeding. Exclusive breastfeeding knowledge among mothers was assessed using 20 questions that mainly focused on the importance of EBF and breast milk, duration of feeding, early initiation, breastfeeding on-demand, colostrum, the appropriate time to begin complementary feeding, benefits of EBF to mothers and babies, the hazard of bottle feeding, among others. Anthropometric data such as age of infants in months, Weight-for-length (W/L), Weight-for-age (W/A) and Length-for-weight (L/W) used to assess

nutritional status were extracted from the child's health record book.

Signs of stunting, wasting, and underweight were defined by z-scores less than -2 standard deviations (SD) from the median based on the WHO's 2006 child growth criteria (WHO, 2006b). Eligible mothers (with their pair infants) for interview were all those aged 15–49 years who were permanent residents of Tamale. With the infants, consideration was given only to the extraction of most recent anthropometric data of those with records of recent visits at the child welfare clinics in the selected facilities. Those with anthropometric data older than a month were excluded.

Data analysis

Data validation was conducted and subsequently analyzed using Stata version 15. Descriptive statistics was conducted to describe the data collected and cross tabulations were also done to establish link between participants demographic characteristics and infants' nutritional status (Tables 1-4). The Z scores of the newborns were calculated using WHO (2006b) as the cut-off point to determine signs of stunting (length-for-weight), wasting (weight-for-length), and underweight (weight-for-age).

RESULTS

Socio-Demographic Characteristics of Study Participants

A total of 300 eligible mothers with their infants (0-6 months) participated in the study. Of the 300 participants, over 50% of mothers (i.e., 55%, 163/300) were within 18-25 years old age brackets, and the rest (45%) of them were within 26 and over years old respectively. All mothers (93%; 278/300), except 7% of them were married. Again, majority of mothers (80%; 240/300) had basic education, with 11% of them completing secondary (9%) or tertiary (2%) education. Majority of them were Muslims (61%) and traders (40%). Among all the babies' mothers were nursing, majority of them (196/300; 65%) were 0-3 months old, and were female (181/300; 60%). Fifty-five percent of (165/300) were delivered in health facilities (i.e.,

through supervised delivery) and a substantial number of mothers (36%; 108/300) gave some form of liquids to their babies during outdoorings, while majority of them (70%:210/300) gave breast milk to babies within one hour upon delivery (Table 1).

Knowledge on exclusive breastfeeding

Knowledge and practice of exclusive breastfeeding including nutritional status of infants 0-6 months varies across respondents (Table 2). Those without knowledge of exclusive breastfeeding were 54%

Table 1: Socio-Demographic Characteristics of Study Participants

Variable	Frequency (300)	Percent (%)
Age of Mothers		
<21	83	28
21-25	80	27
26-30	71	23
31-35	45	15
36+	21	7
Age of infants (Months)		
0 – 3	196	65
4 – 6	104	35
Sex of Infants		
Male	119	40
Female	181	60
Marital Status		
Single	41	14
Married	259	86
Mothers Education		
None	28	9
Basic	240	80
Secondary	26	9
Tertiary	6	2
Mothers Religion		
Muslims	184	61
Christianity	116	39
Mothers Occupation		
Traders	120	40
Seamstress	60	20
Farmers	50	17
Hairdressers	28	9
Teachers	16	5
Others	26	9
Place Baby was Delivered		
Hospital	165	55
Maternity Home	22	7
TBA	46	15
Home	67	23
Give Liquid at Outdoorings		
No	192	64
Yes	108	36
Give Breast Milk Within an Hour of Delivery		
No	210	70
Yes	90	30

Data presented as frequency and percent

(163/300), while those who reported not to have been practising exclusive breastfeeding were 72% (216/300). Of the total (216) who reported not practicing EBF, they belief: a) in the influence of the family (56%); b) it is a taboo for lactating mother to have sex while breastfeeding (45%); c) the mother cannot breastfeed while pregnant (87%); d) the infants will refuse complementary food when introduce after 6months (91%); e) a child crying too much indicates insufficient breast milk (47%).

Again, those who reported not to have given colostrum to their newborns immediately following

delivery (i.e., expressed the initial breast milk away) were 57% (172/300). Regarding knowledge of the colour/texture of colostrum, 51% (154/300) of the respondents reported it was yellowish; 33% (98/300) referred to it as dirty milk; 14% (42) saw it to be made of fat, among others. Eighty-one percent (81%; 243/300) of the respondents identified grandmother (mainly mother-in-law's) to be those who influence mothers' practice of exclusive breastfeeding.

Analysis of the data also showed that 66% (202/300) of the babies were showing signs of

Table 2: Knowledge and Practice of EBF and Nutritional Status of Infants 0-6 Months

Variable	Frequency (300)	Percent (%)
Knowledge of Exclusive Breastfeeding		
No	163	54
Yes	137	46
Practice of Exclusive Breastfeeding		
No	216	72
Yes	84	28
Not Practicing EBF: Reasons		
Influence of the family	120	56
Taboo to have sex when breastfeeding	97	45
Taboo to breastfeed when pregnant	187	87
Child cries too much indicating insufficient breast milk	102	47
Challenges with complementary food after 6months	196	91
Knowledge of Texture of Colostrum/Nutritional Value		
Yellowish	154	51
Dirty Milk	98	33
Made of Fat	42	14
No Idea	6	2
Gave Colostrum to Babies at Delivery		
No	172	57
Yes	128	43
Influencers of Infant Feeding (EBF)		
Grand Mothers	243	81
Mothers	39	13
Fathers	18	6
Length-for-Weight (Signs of Stunting)		
Normal (-2z-score and above)	96	32
Signs of stunting (< -2z-score)	204	68
Weight-for-Length (Signs of Wasting)		
Normal (-2z-score and above)	98	34
Signs of wasting (< -2z-score)	202	66
Weight-for-Age (Underweight)		
Normal (-2z-score and above)	94	31
Underweight (< -2z-score)	206	69

Data presented as frequency and percent

wasting when their weight-for-age were measured. Sixty-eight percent (68%; 204/300) showed signs for stunting when their length-for-age was measured. Sixty-Nine percent (69%; 206/300) were found to show signs of underweight, with 31% measured to have normal weight.

Mothers' Demographic Characteristics Stratified by Practice of Exclusive Breastfeeding

The distribution of mothers' demographic characteristics and exclusive breastfeeding practice is shown in Table 3. The most common mothers who did not practice exclusive breastfeeding were within the age brackets 15-20 years (20.7%); were mostly married (63.7%); had basic education (55.7%); and were traders (32.5%).

Mothers' Demographic Characteristics Stratified by Underweight (Weight-for-Age)

The distribution of mothers' demographic characteristics and the development of signs of underweight is shown in Table 4. The most common mothers whose infants were showing signs of

underweight were within the age brackets of 21-25 years (20.7%); were mostly married (58.3%); had basic education (53.6%); delivered their babies in the hospital (41.6%); gave liquid substance to their babies at naming ceremony (43.3%); and did not give colostrum to their babies immediately following child delivery (37%).

DISCUSSION

The purpose of this study was to determine the frequency and predictors of EBP among breast-feeding moms in TAMA. The study discovered that 28% of respondents were practicing exclusive breastfeeding. Our finding was lower than the findings of Boakye-yiadom *et al.* (2016) in Ghana; Yeboah *et al.* (2019) in Ghana; World Health Organization, (2007) in India; Tan, (2011) in Malaysia; Mekuria & Edris, (2015) in Northwest Ethiopia; but higher than the prevalence rates (24.1%) reported Northeastern Tanzania (Maonga *et al.*, 2016; Reinsma *et al.*, 2012). These differences could be explained by variances in knowledge and sociocultural influences. As with a prior study, this

Table 3: Mothers' demographic characteristics stratified by practice of exclusive breastfeeding

Variable	Practice Exclusive Breastfeeding		
	YES, Freq (%)	NO, Freq (%)	TOTAL, Freq (%)
Age of Mothers			
<21	21(7.0)	62(20.7)	83(27.7)
21-25	26(8.7)	54(18.0)	80(26.7)
26-30	23(7.7)	48(16.0)	71(23.7)
31-35	9(3.0)	36(12.0)	45(15.0)
36+	5(1.6)	16(5.3)	21(6.9)
Marital Status			
Single	16(5.3)	25(8.3)	41(13.6)
Married	68(22.7)	191(63.7)	259(86.4)
Mothers Education			
None	5(1.7)	23(7.7)	28(9.4)
Basic	73(24.3)	167(55.7)	240(80.0)
Secondary	5(1.7)	21(7.0)	26(8.7)
Tertiary	1(0.3)	5(1.6)	6(1.9)
Mothers Occupation			
Traders	35(11.7)	97(32.5)	132(44.2)
Seamstress	17(5.6)	36(12.0)	53(17.6)
Farmers	6(2.0)	21(7.0)	27(9.0)
Hairdressers	14(4.6)	28(9.3)	42(13.9)
Teachers	1(0.3)	7(2.4)	8(2.7)
Others	11(3.6)	27(9.0)	38(12.6)

Data presented as frequency and percent

Table 4: Mothers' demographic characteristics stratified by weight-for-age of infants

	Weight-for-Age (Underweight)		
Variable	Underweight (<-2z-score)	Normal (-2z-score & above)	TOTAL Freq (%)
Age of Mothers			
<21	54(18.0)	29(9.7)	83(27.7)
21-25	62(20.7)	18(6.0)	80(26.7)
26-30	40(13.3)	31(10.3)	71(23.3)
31-35	35(11.7)	10(3.3)	45(15.0)
36+	17(5.3)	4(1.7)	21(7.3)
Marital Status			
Single	32(10.7)	19(3.0)	41(13.6)
Married	174(58.3)	75(28.0)	259(86.4)
Mothers Education			
None	22(7.3)	6(2.0)	28(9.3)
Basic	159(53.6)	81(26.4)	240(80.0)
Secondary	20(6.7)	6(2.0)	26(8.7)
Tertiary	5(1.7)	1(0.3)	6(2.0)
Place of Delivery			
Hospital	123(41.6)	42(13.7)	165(55.0)
Maternity Home	16(5.3)	6(2.0)	22(7.3)
TBA	26(8.7)	20(6.7)	46(15.4)
Home	41(13.7)	26(8.6)	67(22.3)
Give Liquid on or before Outdooring			
Yes	130(43.3)	62(20.7)	192(64.0)
No	76(25.7)	32(10.3)	108(36.0)
Gave Colostrum to Babies			
No	111(37.0)	61(20.3)	172(57.3)
Yes	95(32.0)	33(10.7)	128(42.7)

Data presented as frequency and percent

study discovered that the majority of information about EBP came from health care practitioners (Tadele *et al.*, 2016).

A cross tabulation conducted provided putative indicator of the nonexistence of a link between EBP and mothers' educational attainment. To confirm this however, further analysis using inferential statistic need to be conducted to establish whether or not there is any association between maternal educational attainment and EBF. Our finding may be attributed to the widespread nondiscriminatory availability of information on EBF in Ghana through the various interventions implemented especially during antenatal care visits.

However, this does not make educational attainment less important, since it is critical to the practice of

EBF and the adoption of other child welfare behavioural change practices. Seventy percent of mothers sampled for the study indicated introducing their newborns to breast milk within an hour upon delivery which is higher (67.7%) than finding reported by Boakye-yiadom *et al.* (2016), but lower (73.5%) than the finding of Saaka & Iddrisu, (2013) conducted in the Kumbungu District in Northern region of Ghana. The study discovered that maternal age had no link with EBF practice, and this corroborated findings from other studies (Chudasama *et al.*, 2009; Saaka & Iddrisu, 2013), but contrary to what Sholeye *et al.*, (2015) and Maonga *et al.* (2016) found. However, there may be some underlying reasons contributing to the existence of no link between maternal age and EBF practice, necessitating additional research to identify whether the promotion of universal breastfeeding practice

contributes to bridging maternal age differential in EBF practice among lactating mothers.

As with other prior research (Arts *et al.*, 2011; Bezner Kerr *et al.*, 2008; Fjeld *et al.*, 2008; Kakute *et al.*, 2005; Otoo *et al.*, 2009; Reinsma *et al.*, 2012), this study discovered cultural factors influencing the practice of EBF to include family influence, belief that lactating mother cannot have sex while breastfeeding, lactating mother cannot breastfeed while pregnant, challenge with complimentary foods when introduce to infant after 6months, insufficient breast milk for infants signified by their frequent crying, and considering colostrum 'dirty milk' that can harm the newborn. Thus, colostrum continues to appear unpleasant to most mothers, and they have been badly impacted by grandmothers and other senior members of the community, leading to mothers thinking about it as "dirty milk."

This demonstrates that when individuals have a firm conviction about a behaviour, their attitude toward it instantly changes. Thus, irrespective of mothers' level of knowledge about colostrum, their belief that it is 'dirty milk' that causes stomach upset in their infants will continue to be a reason to withhold it from newborns. This reaction is consistent with those of Adjei & Schubert (2003); FAO/FSAU (2007); Legesse *et al.* (2015); Rogers *et al.* (2011); and Tamiru *et al.* (2012), who revealed that in many African cultures, colostrum is viewed as filthy, toxic, and hazardous to baby health and is thus discarded. Is not this identical to Awumbila's (2003) study, in which a fourth of mothers described colostrum as blood that had remained in the breast for 9 months and hence should be jettisoned, with proper breastfeeding beginning only once the 'white milk' begins to flow? This accounts for why majority of women initiate supplemental feeding within the first six months of their newborn's life. There is therefore the need to conduct qualitative study to gain a deeper understanding of these beliefs so as to design intervention to address these challenges.

In accordance with Reinsma *et al.* (2012), we propose that community-based social marketing approach could help provide deeper knowledge and

understanding from the perspective of mother to enable policy makers and implementers to address the misconceptions, integrate cultural and family norms, and suggest strategies to address perceived constraints.

Newborns that are not breastfed exclusively are offered foods and beverages that may be polluted and/or challenging to digest (Arifeen *et al.*, 2001; Khan & Islam, 2017; Quigley, Kelly, & Sacker, 2007). Lack of cleanliness and related knowledge, particularly in developing countries, exacerbates this pollution, hence making it the primary cause of the high infection rate among children from lower socioeconomic backgrounds (Graf *et al.*, 2008; Khan & Islam, 2017). These elements, taken collectively, may account for EBF's progressive anti-infective impact.

A cross tabulation conducted provided indication of a link, between EBF and underweight, although no inferential statistical analysis was conducted to establish any association given the study design used. According to the WHO, infant malnutrition is estimated to account for a third of all malnutrition cases globally (WHO, 2006a). This is however contrary to the findings of research undertaken in underdeveloped countries by Ayisi & Wakoli, (2014); Brown *et al.* (1995); and Khan & Islam, (2017) who found EBF to have a negligible or insignificant connection with stunting, wasting, and underweight.

When breast milk only is unable to sufficiently cover the nutritional needs of the developing newborn, complementary feeds are recommended. It may have a harmful influence on the child's nutritional health if it is initiated too early or too late. Too early introduction of supplemental foods, particularly in impoverished countries, may lead to more frequent microbial contamination, hence raising the chances of diarrhea and severe respiratory illness (Brown *et al.*, 1995; Khan & Islam, 2017). As a result, the weaning problem, as well as the likelihood of illness and death associated with an early exposure to supplemental foods, are of particular concern in poor economies. This conundrum has split public health professionals,

and there are differences concerning the optimal timing of supplemental food introduction. Our findings support the use of exclusive breastfeeding for the first 6 months of an infant's life because it has shown signs of being a protective factor and does not result in insufficient nutritional intake; however, not practicing exclusive breastfeeding or starting complementary foods during the first six months may result in underweight.

The study's strength is that it is one of the few to have investigated the cultural factors influencing EBF practice in lactating women having children age 0 to 6 months within TAMA of Ghana, as well as its link with infants' nutritional status. The study is noteworthy in that it produced perspectives from breastfeeding mothers from a variety of ethnic groups and cultural backgrounds. Additionally, this work is crucial for progress toward the United Nations Sustainable Development Goal 3 of ensuring healthy lives and promoting wellbeing for all by 2030.

LIMITATIONS

Because the study collected data on the perspectives of mothers, there is a strong likelihood that exclusive breastfeeding habits were underestimated or overestimated. Additionally, the study used a descriptive cross-sectional survey, that precluded establishing association or drawing causal inferences between and/or among putative factor(s) with the strongest influence on EBF practice.

CONCLUSION

The prevalence of EBP in this study was much lower than the United Nations International Children's Emergency Fund's recommendation of 90 percent exclusive breastfeeding coverage (UNICEF). The study discovered that EBF practice was associated with certain cultural characteristics, which in turn had an effect on the nutritional status of newborns in the study region. The findings highlight the critical role of health care stakeholders like the World Health Organization, the Ministry of Health, Ghana Health Services, and District, Municipal, and the Health Directorates in

considering the design of interventions that address cultural and other related factors through a community-based social marketing approach. This method to intervention planning placed a focus on considering clients/customers' viewpoints - that is planning from the perspectives of mothers; hence, it needs to be adopted when formulating policies on EBF practice, as this has been linked to changing individuals' behaviors for the greater good of society.

COMPETING INTEREST

Authors declare that they have no competing interests

ACKNOWLEDGEMENTS

The authors are extremely grateful to the Directors, Sagnarigu Municipal and Tamale Metropolitan Health Directorates, as well as to the leadership of the various health facilities, who contributed in diverse ways to the success of the study. Special thanks to the mothers, without whom this work would have been impossible.

AUTHORS' CONTRIBUTIONS

Authors HI, SA, and HAY designed the study and wrote the protocol. Authors SA and HAY managed literature searches and synthesis. Author HI supervised data collection, analysis, and wrote the first draft of the manuscript. All authors read through and approved the final manuscript.

REFERENCES

- Adjei, E., & Schubert, J. (2003). Follow-up survey iii: a rapid appraisal of breastfeeding and complementary feeding knowledge and practices in Ghana. Retrieved from http://www.linkagesproject.org/media/static_pdfs/rap/ghanarap2003.pdf.
- AArifeen, S., Black, R., Antelman, G., Baqui, A., Caulfield, L., & Becker, S. (2001). Exclusive breastfeeding reduces acute respiratory infection and diarrhea deaths among infants in Dhaka slums. *Pediatrics*, 108(4), e67.
- Arts, M., Geelhoed, D., De Schacht, C., Prosser, W., Alons, C., & Pedro, A. (2011). Knowledge, beliefs, and practices regarding

- exclusive breastfeeding of infants younger than 6 months in Mozambique: a qualitative study. *J Hum Lact.*, 27(1), 25–32.
- Awumbila, M. (2003). Social Dynamics and Infant Feeding Practices in Northern Ghana. *NS*, 19 (2), 85–98.
- Ayisi, R., & Wakoli, A. (2014). Exclusive breastfeeding practice: its implication on nutrition status, growth and morbidity pattern among infants aged 0-6 months. *GJBAHS.*, 3(1), 254–258.
- Bezner Kerr, R., Dakishoni, L., Shumba, L., Msachi, R., & Chirwa, M. (2008). ‘We grandmothers know plenty’: breastfeeding, complementary feeding and the multifaceted role of grandmothers in Malawi. *Soc Sci Med.*, 66(5), 1095–1105.
- Boakye-yiadom, A., Yidana, A., Sam, N. B., Kolog, B., & Abotsi, A. (2016). Factors Associated with Exclusive Breastfeeding Practices among Women in the West Mamprusi District in Northern Ghana: A Cross-Sectional Study. *Public Health Research*, 6(3), 91–98. <https://doi.org/10.5923/j.phr.20160603.03>
- Brown, K., Creed-Kanashiro, H., & Dewey, K. (1995). Optimal complementary feeding practices to prevent childhood malnutrition in developing countries. *Food Nutr Bull.*, 16(4), 320–339.
- Charan, J., & Biswas, T. (2013). How to Calculate Sample Size for Different Study Designs in Medical Research? *Indian J Psychol Med*, 35(2), 121–126. <https://doi.org/10.4103/0253-7176.116232>
- Chudasama, R., Amin, C., & Parikh, N. (2009). Prevalence of exclusive breastfeeding and its determinants in first 6 months of life: a prospective study. *Online J Health Allied Sci.*, 8(1), 3.
- Darnton-Hill, I., Nishida, C., & James, W. (2004). A life course approach to diet, nutrition and the prevention of chronic diseases. *Public Health Nutrition*, 7(1A), 101–121. <https://doi.org/10.1079/PHN2003584>
- FAO/FSAU. (2007). Infant and Young Child a Feeding and Health Seeking Practices. Somali Knowledge Attitude Practices Study (KAPS). Published by United Nations Food and Agricultural Organisation/Food Security Analysis Unit, PO Box 1230, Village Market, Nairobi, Kenya.
- Fjeld, E., Siziya, S., Katepa-Bwalya, M., & et al. (2008). ‘No sister, the breast alone is not enough for my baby’ a qualitative assessment of potentials and barriers in the promotion of exclusive breastfeeding in southern Zambia. *Int Breastfeed J.*, 3(1), 26.
- Fuseini, I., Yaro, J. A., & Yiran, G. A. B. (2017). City profile: Tamale, Ghana. *Cities*, 60, 64–74. <https://doi.org/10.1016/j.cities.2016.07.010>
- Ghana Statistical Service. (2014). 2010 Population and Housing Census: District Analytical Report, Tamale metropolis. Retrieved from [http://www.statsghana.gov.gh/docfiles/2010_District_Report/Northern/Tamale Metropolitan.pdf](http://www.statsghana.gov.gh/docfiles/2010_District_Report/Northern/Tamale%20Metropolitan.pdf)
- Ghana Statistical Service (GSS) Ghana Health Service (GHS) ICF International. (2015). Ghana demographic and health survey 2014. Rockville.
- Graf, J., Meierhofer, R., Wegelin, M., & Mosler, H.-J. (2008). Water disinfection and hygiene behaviour in an urban slum in Kenya: impact on childhood diarrhoea and influence of beliefs. *Int J Environ Health Res.*, 18(5), 335–355.
- International Breastfeeding Food Action Network: (2000). Ghana Law - Breastfeeding promotion regulation. Accra. Accra, Ghana.
- Jefferson, T. (2016). Closing the gap: breastfeeding strategies and vulnerable population. *West J Nurs Res.*, 38(5), 527–528.
- Kakute, P., Ngum, J., Mitchell, P., & et al. (2005). Cultural barriers to exclusive breastfeeding by mothers in a rural area of Cameroon, Africa. *J Midwifery Womens Health*, 50(4), 324–328.
- Khan, M. N., & Islam, M. M. (2017). Effect of exclusive breastfeeding on selected adverse health and nutritional outcomes: A nationally representative study. *BMC Public Health*, 17(1), 1–7. <https://doi.org/10.1186/s12889-017-4913-4>
- Legesse, M., Demena, M., Mesfin, F., & Haile, D. (2015). Factors associated with colostrum

- avoidance among mothers of children aged less than 24 Months in Raya Kobo district, North-eastern Ethiopia: Community-based cross-sectional study. *Journal of Tropical Pediatrics*, 61(5), 357–363. <https://doi.org/10.1093/tropej/fmv039>
- Lessen, R., & Kavanagh, K. (2015). Position of the academy of nutrition and dietetics: promoting and supporting breastfeeding. *J Acad Nutr Diet*. 2015;115:444–9., 115, 444–449.
- Lucas, A. (1998). Programming by early nutrition: an experimental approach. *J Nutr.*, 128(suppl 2), 401-6S.
- Maonga, R., Mahande, J., Damian, J., & Msuya, E. (2016a). Factors affecting exclusive breastfeeding among women in Muheza District Tanga Northern-eastern Tanzania. A mixed method community based survey. *Matern Child Health J.*, 20, 77–87.
- Masarenhas, M., Singh, K., & Sukhwinder, S. (2006). Prevalence of Exclusive Breast Feeding and its determinants in the first 3 months of life in South of Brazil. *Journal of Paediatrics*, 82, 289–294.
- Mekuria, G., & Edris, M. (2015). Exclusive breastfeeding and associated factors among mothers in Debre, Markos, Northwest Ethiopia. A cross sectional study. *Int Breastfeeding J*, 10(1), 1–7.
- Nabulsi, M., Tamim, H., Shamsedine, L., Charafeddine, L., Yehya, N., Kabakian-Khasholian, T., & et al. (2019). A multi-component intervention to support breastfeeding in Lebanon: A randomized clinical trial. *PLoS ONE*, 14(6), e0218467.
- Northwest Center for Public Health Practice. (2017). Nutrition: Maternal and Child Health Strategies for Public Health. Washington DC.
- Otoo, G., Lartey, A., & Perez-Escamilla, R. (2009). Perceived incentives and barriers to exclusive breastfeeding among peri-urban Ghanaian women. *J Hum Lact*, 25(1), 34–41.
- Otoo, G., Lartey, A., & Pérez-Escamilla, R. (2009). Perceived incentives and barriers to exclusive breastfeeding among periurban Ghanaian women. *J Hum Lact.*, 25(1), 34–41.
- Pereira, T. A. de M., Freire, A. K. G., & Gonçalves, V. S. S. (2021). Exclusive breastfeeding and underweight in children under six months old monitored in primary health care in Brazil, 2017. *Rev Paul Pediatr.*, 39(e2019293), 1–10. <https://doi.org/10.1590/1984-0462/2021/39/2019293>
- Quigley, M., Kelly, Y., & Sacker, A. (2007). Breastfeeding and hospitalization for diarrheal and respiratory infection in the United Kingdom millennium cohort study. *Pediatrics*. 2007;119(4):E837–42., 119(4), e837-42.
- Reinsma, K., Bolima, N., Fonteh, F., Okwen, P., Yota, D., & Montgomery, S. (2012). Incorporating cultural beliefs in promoting exclusive breastfeeding. *Afr J Midwifery Womens Health*, 6(2), 65–70. <https://doi.org/10.12968ajmw.2012.6.2.65>. Incorporating
- Rogers, N., Abdi, J., & Moore, D., et al. (2011). Colostrum avoidance, prelacteal feeding and late breast-feeding initiation in rural Northern Ethiopia. *Public Health Nutr* 14:2029–36.
- Saaka, M., & Iddrisu, M. (2013). Patterns and Determinants of Essential Newborn Care Practices in Rural Areas of Northern Ghana. *International Journal of Population Research*, 2014, 1–10.
- Seidu, I. (2013). Exclusive breastfeeding and family influences in rural Ghana: A qualitative study. Malmö University Health.
- Sholeye, O., Abosede, A., & Salako, A. (2015). Exclusive breastfeeding and its associated factors among mothers in Sagamu, Southwest Nigeria. *J Health Sci.*, 5(2), 25–31.
- Sika-Bright, S., & Oduro, G. (2013). Exclusive breastfeeding practices of mothers in Duakor, a traditional migrant community in Cape Coast, Ghana. *J Glob Init Policy Pedagogy Perspect*, 8(1), 87–102.
- Sutherland, T., Pierce, C., Blomquist, J., & Handa, V. (2012). Breastfeeding practices among first-time mothers and across multiple pregnancies. *Matern Child Health J.* 2012;16(8):1665–71., 16(8), 1665–1671.
- Tadele, N., Habta, F., Akmel, D., & Deges, E. (2016). Knowledge, attitude and practice towards exclusive breastfeeding among lactating mothers in Mizan Aman town, Southern west Ethiopia. Descriptive cross-

- sectional survey. *Int Breastfeeding J.* 11(3):1–7.
- Tamiru, D., Belachew, T., & Loha, E, et al. (2012). Sub-optimal breastfeeding of infants during the first six months and associated factors in rural communities of Jimma Arjo Woreda, Southwest Ethiopia. *BMC Public Health*, 12, 363.
- Tampah-naah, A. M., & Kumi-kyereme, A. (2013). Determinants of exclusive breastfeeding among mothers in Ghana: a cross-sectional study. *International Breastfeeding Journal*, 8(13), 1. <https://doi.org/10.1186/1746-4358-8-13>
- Tan, K. (2011). Factors associated with exclusive breastfeeding among infants under six months of age in peninsular Malaysia. *Int J Breastfeeding*, 6(2), 1–7.
- Thet, M., Khaing, E., Diamond-Smith, N Sudhinaret, M., & Aung, T. (2016). Barriers to exclusive breastfeeding in the Ayeyarwaddy Region in Myanmar. Qualitative findings from the mothers, grandmothers, and husbands. *Appetite*, 96(62–69).
- United Nation Children's Fund. (2015). Nutrition: improving breastfeeding, complementary foods and feeding practices. New York.
- Victora, C., Bahl, R., Barros, A., Franca, G., Horton, S., & Krusevec, J. (2016). Breastfeeding in the 21st century: epidemiology, mechanisms, and lifelong effect. *Lancet*, 387 (10017), 475–490.
- WHO. (2006a). Infant and young child nutrition, Quadrennial secretariat report, World health assembly. 9th ed. Geneva.
- WHO. (2006b). WHO Child Growth Standards: Length/height-for-age, weight-for-age, weight-for-length, weight-for-height and body mass index-for-age: Methods and development. <https://doi.org/10.1111/j.14698749.2009.03503.x>
- WHO UNICEF. (2003). Global strategy for infant and young child feeding. Geneva, New York.
- World Health Organization. (2007). Indicators for assessing infant and young child feeding practice: part I. Definitions. Conclusions of a consensus meeting held 6–8 November 2007. Washington DC.
- Yeboah, J. Y., Forkuor, D., & Duah, W. A. (2019). Exclusive breastfeeding practices and associated factors among lactating mothers of infants aged 6–24 months in the Kumasi Metropolis, Ghana. *BMC Research Notes*, 12 (689), 12–17. <https://doi.org/10.1186/s13104-019-4723-0>

