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Predictors of Exclusive Breastfeeding Among Health Care Workers in Urban Kano, Nigeria

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ABSTRACT

Objective: To investigate knowledge, attitudes, and predictors of exclusive breastfeeding (EBF) among female health care workers.

Design: Cross-sectional survey.

Setting: Kano, northern Nigeria.

Participants: The study population ($N = 261$) included all consenting female health care workers (nurse/midwives, $n = 157$; physicians, $n = 39$; pharmacists, $n = 16$; and other health care workers, $n = 49$) at an urban teaching hospital who were of reproductive age (18–49 years) with children less than 5 years of age (0–59 months).

Methods: The respondents completed a structured, self-administered questionnaire. Knowledge and attitude scores for EBF were computed and adjusted odd ratios (aORs) generated from a logistic regression model.

Results: Of 261 respondents, including nurse/midwives, doctors, pharmacists, and other health care workers, 61 (23.4%), 184 (70.5%), and 16 (6.1%) had good, fair, and poor knowledge of EBF, respectively. Approximately 70% ($n = 182$) of the respondents exclusively breastfed their infants for 6 months. About one half (50.5%, $n = 132$) of the respondents supported breastfeeding in the workplace. Being a nonphysician (aOR = 4.68, 95% confidence interval [CI] [2.24, 9.79]), having an older index child (age ≥12 months; aOR = 2.12, 95% CI [1.13, 4.49]), spontaneous vaginal birth (aOR = 3.31, 95% CI [1.49, 7.37]), and good knowledge of the benefits of EBF (aOR = 1.34, 95% CI [1.12, 3.53]) increased the odds of EBF.

Conclusion: We found knowledge, support, and practice of EBF among health care workers in Kano, Nigeria, to be suboptimal. Type of health care worker, age of the index child, type of birth, and breastfeeding knowledge independently predicted EBF. We recommend continuing education to address knowledge deficits and promote EBF among health care workers in Nigeria.

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Breast milk is an excellent, optimal, and safe source of nutrients for infants and is species specific. The World Health Organization and United Nations International Children's Emergency Fund (2018) promote the concept of exclusive breastfeeding (EBF), which entails feeding infants with breast milk only, including expressed breast milk, and excluding water, other liquids, breast milk substitutes, and solid foods for the first 6 months of life. Thereafter, complementary feeds are introduced, and breastfeeding continues until 2 years or beyond (World Health Organization & United Nations International Children's Emergency Fund, 2018). Apart from facilitating the achievement of optimal growth, EBF reduces the incidence of major causes of childhood deaths, such as diarrheal diseases and acute respiratory infections (Gizaw, Woldu, & Bitew, 2017; Quigley, Kelly, & Sacker, 2007; World Health Organization & United Nations International Children's Emergency Fund, 2018).

In Nigeria, less than one fourth (23.6%) of mothers exclusively breastfed their infants for the first 6 months (National Bureau of Statistics & United Nations International Children's Emergency Fund, 2018), and 37%, 18%, and 29% of children younger than 5 years of age were growth stunted, wasted, and underweight,

Female health care workers play critical roles in infant and child nutrition as educators and role models for women.

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respectively (National Population Commission, 2014). The corresponding data were worse in Kano, northwest Nigeria, where only 18.6% of mothers breastfed exclusively (National Bureau of Statistics & United Nations International Children's Emergency Fund, 2018), and 48% of children younger than 5 years of age had stunted growth, 40% were wasted, and 58% were underweight (National Population Commission, 2014). In these reports, stunting, wasting, and underweight were defined as children having *z* scores of less than 2 standard deviations for length/height for age, weight for height, and weight for age, respectively (World Health Organization, 2006).

In a previous study, more than half (52.7%) of primiparous women in the third trimester who attended antenatal care in a health facility in Nigeria identified health care workers as their main sources of information and support for EBF (Ihudiebube-Splendor et al., 2019). Specifically, women considered health care workers, especially nurses, midwives, and physicians, to be well-informed role models for infant and young child feeding, including EBF (Castro, Silva, & Silva, 2015). However, findings from studies in some settings have shown very low rates of EBF among health care workers; for instance, only 3% of health care workers in a tertiary hospital in eastern Nigeria exclusively breastfed their infants, whereas the proportion was 11.1% among female physicians at a tertiary hospital in Benin City, Nigeria (Anyanwu, Ezeonu, Ezeanosike, & Okike, 2014; Sadoh, Sadoh, & Oniyelu, 2011). These rates are even lower than the national EBF rate of 23.7% for Nigeria (National Bureau of Statistics & United Nations International Children's Emergency Fund, 2018). The major reasons reported by health care workers for the low practice of EBF were work related and included demanding shift duties and patient care (Sadoh et al., 2011). Lack of preparation and a nonsupportive workplace were contributory factors. Working women encountered difficulties breastfeeding, expressing breastmilk, or pumping in the workplace. These women require the support of their employers, coworkers, and family to overcome workplace barriers to breastfeeding (Winegar and Johnson, 2017).

Results of a previous study showed that the presence of a dedicated breastfeeding facility in the workplace increased EBF practice among female office and factory workers almost threefold, whereas knowledge of the breastfeeding support program increased EBF practice by almost six times (Basrowi, Sulistomo, Adi, & Vandenplas, 2015). Extending maternity leave from 4 to 6 months; providing facilities in the workplace such as a refrigerator, breast pumps, space, and privacy; and allowing breaks during work for women to breastfeed or pump also increased EBF rates at 6 months (Stratton & Henry, 2011). In Nigeria, the national policy on infant and young child feeding is for women to be provided with 4 months of paid maternity leave, shortened work hours, and crèches and breastfeeding spaces in the workplace (Federal Ministry of Health, Department of Family Health, Abuja, 2010). Assessment of the practice and challenges of EBF among female health workers in a region with low EBF rates could inform interventions that might be used to reverse the trend among other women who look up to these workers as well-informed role models.

The objectives of our study were to determine the knowledge, attitudes, and predictors of EBF among female health care workers in Aminu Kano Teaching Hospital, Kano, Nigeria. Our findings could guide the implementation of interventions to increase EBF rates in these professionals.

Methods

Design and Setting

This cross-sectional study was conducted in Aminu Kano Teaching Hospital, a tertiary hospital that serves more than 13 million inhabitants in northern Nigeria. This 536-bed referral hospital has 2,188 health care employees and provides outpatient consultations and inpatient care. Women who attend antenatal and postnatal clinics and those who give birth at the hospital are routinely counseled on EBF, primarily by female health care staff.

Participants

For the purpose of our study, we defined health care workers as professional workers engaged in direct clinical services and counseling of pregnant women and mothers; we categorized them as physicians, nurse/midwives, pharmacists, and others, including social workers, community health officers, and community health extension workers. Administrative, clerical, and other

support staff who did not directly provide clinical care were excluded. The study population included all consenting female health care workers employed at Aminu Kano Teaching Hospital between the ages of 18 and 49 years (reproductive age group) with children younger than 5 years of age (0–59 months). We excluded nulliparous staff, those on leave, or those who refused consent. The Aminu Kano Teaching Hospital Ethics Committee provided ethical approval for our study.

Participant Recruitment and Sampling

We estimated a sample size of 264 with the use of Fisher's formula (Lwanga & Lemeshow, 1991); a previously reported prevalence of EBF (19%) in Ibadan, Nigeria (Agunbiade & Ogunleye, 2012); a 95% confidence level (CI); a tolerable error of 5%; and an anticipated nonresponse rate of 10%. We used a two-stage sampling method. In the first stage, female health care workers were stratified by professional category as physicians, nurse/midwives, pharmacists, and others. Sample sizes were allocated to each category proportionate to numbers. In the second stage, systematic sampling was used to select participants from each professional category. To conduct this process, we first determined those who were eligible followed by computation of the sampling interval. The first respondent in each category was obtained by the selection of a random number between 1 and its sampling interval. The health care worker whose serial number tallied with the sampling process was approached to provide informed consent. Subsequent respondents were identified by adding the sampling interval to the preceding respondent's serial number. Two eligible health care workers declined participation for personal reasons, and one failed to submit the questionnaire.

Measures

A pretested, structured, self-administered questionnaire was adapted from previous studies (Dachew & Bifftu, 2014; de la Mora, Russell, Dungy, Losch, & Dusdieker, 1999). We pretested the questionnaire for clarity and revalidated the questionnaire among a sample of 30 health care professionals in the Murtala Mohammed Specialist Hospital in Kano, Nigeria, to determine whether the questionnaire elicits the information it is meant to elicit (content validity) and whether the questions in each subsection are reliable. Content validity was confirmed by specialist pediatricians, whereas reliability was supported using Cronbach's alpha with values of 0.86, 0.81, and 0.83 for the knowledge, attitude, and practice sections, respectively.

The questionnaire had five sections. The first section included items related to the respondent's sociodemographic characteristics, including age, ethnicity, marital status, professional category, work experience, parity, age of youngest infant, and mode of delivery. The second section was related to the level of knowledge of EBF (8 items) and included questions that elicited *yes*, *no*, or *don't know* responses. A score of 1 was awarded for each correct response, and a response of *don't know* was awarded a score of 0. Scores of less than or equal to 3 were categorized as *poor knowledge*, those of 4 to 6 were designated as *fair knowledge*, and those of 7 to 8 were designated as *good knowledge* (Dachew & Bifftu, 2014; de la Mora et al., 1999).

The modified Iowa Infant Feeding Attitude Scale (de la Mora et al., 1999) and a 5-point Likert-type scale response format were used to score attitudes in the third section (total of 9 items). Negative statements were scored in the reverse direction. Total scores were computed and the mean score calculated. Individuals with scores greater than the mean were considered to have positive attitudes, whereas those with scores less than the mean were considered to have negative attitudes.

Section 4 was used to assess personal EBF practice based on self-report. The nine questions included the following: *Are you/did you exclusively breastfeed your last child? How long after birth did you initiate breastfeeding following your last childbirth? What have you fed (or been feeding) your baby with in the first 6 months? How long did you/do you plan to breastfeed your baby without water or other feeds? How frequently did you/do you breastfeed the baby before 6 months? Have you introduced complementary feeds? If yes, at what age did you introduce complementary feeds? Have you weaned your last child?* and *If yes, at what age did you wean the child off breast milk?* Respondents who reported that they exclusively breastfed for up to 6 months or were exclusively breastfeeding their youngest infants from birth without water or other feeds were considered to be practicing EBF. In the fifth section, respondents were asked to list the challenges encountered while breastfeeding their youngest infants exclusively.

Table 1: Participant Demographics, Obstetric History, and Years of Work Experience, Kano, Nigeria, 2016 ($N = 261$)

Characteristic	Frequency, *n* (%)
Age group, years	
<30	64 (24.5)
30–39	169 (64.8)
≥40	28 (10.7)
Ethnicity	
Hausa	175 (67.0)
Fulani	48 (18.4)
Others	38 (14.6)
Religion	
Islam	241 (92.3)
Christianity	20 (7.7)
Marital status	
Married	243 (93.1)
Divorced/widowed	18 (6.9)
Professional category	
Physician	39 (14.9)
Pharmacist	16 (6.1)
Nurse/midwife	157 (60.2)
Others	49 (18.8)
Years of experience	
<5	64 (24.5)
5–9	98 (37.5)
≥10	99 (37.9)
Parity	
1	29 (11.1)
2–4	130 (49.8)
≥5	102 (39.1)
Age of youngest child (months)	
<12	85 (32.6)
12–23	80 (30.7)
24–35	40 (15.3)
36–47	26 (10.0)
48–59	30 (11.5)
Type of birth (index child)	
Spontaneous vaginal	216 (82.8)
Caesarean/vacuum or forceps extraction	45 (17.2)

Procedures

First, the cooperation of the professional unions, permission of the hospital management, and approval of the ethics committee were obtained. Health care workers were informed about the study during departmental meetings, seminars, and hospital presentations. Health care workers whose serial numbers were selected through the sampling process were individually contacted by trained research staff and informed about the study, the eligibility criteria, the selection process, and what participation entails. They were informed that participation was voluntary and were assured of confidentiality. Health care workers who provided signed informed consent were provided a paper questionnaire in an envelope. The research staff returned afterward to collect the completed questionnaire at an agreed time. Completed questionnaires were checked and double-entered independently by 2 data clerks into a password-protected database at the Medical Research Consultancy Unit. Steps were taken to protect privacy and confidentiality. Research staff were trained on the protection of human research participants. Personal identifiers were not collected; participants were identified by serial numbers in the database.

Analysis

SPSS Version 22 was used to analyze the data. Numeric data were summarized as the mean ± standard deviation or the median and range. Categoric data were presented as frequencies and percentages. At the bivariate level, Pearson's chi-square and Fisher's exact tests were used, as appropriate, to test for the significance of associations, with $p < .05$ considered significant. Practice of EBF was dichotomized as yes and no. A logistic regression model was developed that included variables with $p < .10$ or those that were considered conceptually important irrespective of significance (Katz, 2011). Adjusted odds ratios (aORs) and the associated 95% CIs were used to measure the strength of association between the independent variables and the practice of EBF.

Results

A total of 261 of 264 health care workers completed the questionnaires (response rate = 98.9%). The mean age of the respondents was 33.1 ± 6.4 years (see Table 1). Most respondents were Hausa/Fulani (85.4%, $n = 223$) and Muslim (92.3%, $n = 241$). Most (93.1%, $n = 243$) respondents were married,

Table 2: Knowledge of Exclusive Breastfeeding Among Health Care Workers, Kano, Nigeria, 2016 ($N = 261$)

Question	Frequency, *n* (%)		
	Correct response	Incorrect response	*Do Not Know*
If a mother is practicing exclusive breastfeeding, how soon after birth should she initiate breastfeeding?	237 (90.8)	22 (8.4)	2 (0.8)
When breastfeeding exclusively, how frequent should the mother breastfeed the baby?	59 (22.6)	201 (77.0)	1 (0.4)
Can working women express breast milk and keep for their infants while practicing exclusive breastfeeding?	132 (50.8)	70 (26.8)	59 (22.6)
What else is allowed during the period of exclusive breastfeeding?	194 (74.3)	66 (25.3)	1 (0.4)
How long should the infant be breastfed exclusively?	223 (85.4)	21 (8.0)	17 (6.5)
At what age should complementary feeds (other non-milk feeds) be introduced?	114 (43.7)	144 (55.2)	3 (1.1)
At what age should the infant be weaned off breast milk?	32 (12.3)	196 (75.1)	33 (12.6)

and three fourths (75.4%, $n = 197$) had greater than or equal to 5 years of work experience. The respondents included nurse/midwives ($n = 157$), physicians ($n = 39$), pharmacists ($n = 16$), and other health care workers ($n = 49$). Almost half (49.8%) of the respondents had two to four children. Slightly more than two thirds of the children (67.4%, $n = 176$) were in the second year of life or older.

All ($N = 261$) respondents had heard of EBF. Based on knowledge scores, 61 (23.4%), 184 (70.5%), and 16 (6.1%) of the respondents had *good*, *fair*, and *poor knowledge* of EBF, respectively (see Table 2). Knowledge was associated with parity and attitude. The proportion of primiparous respondents (parity = 1) who had *good* and *fair knowledge* of EBF were 13.8% and 86.2%, respectively, compared with 24.6% and 68.5% of those with greater parity (parity >1; chi-square test = 11.9, $p = .018$). Similarly, the proportion of the respondents with positive attitudes who had *good* and *fair knowledge* were 24.0% and 73.0%, respectively, compared with 22.3% and 66.0% of those with negative attitudes (chi-square test = 7.9, $p = .019$). Knowledge was not associated with professional category, years of experience, or EBF practice.

Overall, 167 (64.0%) of the respondents had a positive attitude toward EBF, whereas the rest ($n = 94$, 36.0%) had a negative attitude. Although 53.9% of physicians had positive attitudes toward EBF compared with 65.8% of nonphysicians, this difference was not statistically significant (chi-square test = 2.05, $p = .15$).

More than a third ($n = 99$, 37.9%) of the respondents agreed that health care workers should breastfeed or express breast milk in the workplace. However, similar proportions felt it interfered with productivity ($n = 81$, 31.0%) or were embarrassed to express breast milk in the workplace ($n = 90$, 34.4%). Although more than one third ($n = 95$, 36.4%) of the respondents agreed or strongly agreed that hospital management should support breastfeeding in the workplace, there was ambivalence with regard to special breaks for breastfeeding women to breastfeed or pump. Approximately 64.0% of the respondents planned to exclusively breastfeed their next children (see Table 3).

A total of 182 (69.7%) respondents exclusively breastfed their index children. Initiation was immediate in nearly three in four respondents ($n = 190$, 72.8%). More than one third (37.5%) breastfed every 2 hours. Three fourths ($n = 197$, 75.5%) of the respondents had introduced complementary feeds at the time of the study. Of these, half ($n = 99$, 50.3%,) did so at 4 months, and one fourth ($n = 50$, 25.4%) introduced complementary feeds at 6 months. More than half ($n = 154$, 59.0%) of the respondents had weaned their infants at the time of the study. Of these, 90

(58.4%) and 46 (29.9%) did so at 20 and 24 months, respectively (see Table 4).

About one third of the respondents felt EBF was stressful (30.7%) and that prolonged breastfeeding could cause nipple soreness (33.4%). Similar proportions agreed (39.9%) or strongly agreed (39%) that short maternity leaves and long working hours were inimical to EBF. In addition, 40.2% of the respondents agreed or strongly agreed that support from their partners was essential to sustain EBF. A proportion (33.7%) of the respondents expressed the belief that exclusively breastfed infants could be thirsty in hot environments if not given water. They also listed maternal weight loss (26.5%), dizziness (24.5%), and suboptimal infant weight gain (49.0%) as disadvantages of EBF.

At the bivariate level, EBF was significantly associated with the respondent's professional category (chi-square test = 23.5, $p = .000$) and type of birth (chi-square test = 11.2, $p = .001$). Although knowledge was not significantly associated with EBF practice at the bivariate level (chi-square test = 5.5, $p = .065$), at the multivariate level, knowledge, age of the index child, professional category, and type of birth significantly predicted EBF practice (see Table 5). After adjusting for potential confounders, pharmacists ($n = 10$, 62.5%), nurse/midwives ($n = 117$, 74.5%), and other health care workers ($n = 40$, 81.6%) had more than threefold (aOR = 3.38, 95% CI [1.16, 12.09]), sixfold (aOR = 6.43, 95% CI [2.74, 15.09]), and eightfold (aOR = 8.27, 95% CI [2.84, 24.08]), respectively, increased odds of practicing EBF compared with physicians ($n = 15$, 38.5%). Similarly, a respondent whose index child was older (age 12–35 months) had twofold odds of having exclusively breastfed the child compared with a respondent who still had an infant (younger than 12 months). Compared with the same group of respondents with infants, respondents with young children (ages 48–59 months) had three times increased odds of EBF (aOR = 3.05, 95% CI [1.16, 9.63]). Furthermore, respondents who experienced spontaneous vaginal birth were three times as likely to have exclusively breastfed their child compared with those who had cesarean or operative vaginal birth (aOR = 3.31, 95% CI [1.49, 7.37]). Finally, respondents who had *good* and *fair knowledge* of EBF had 34% and 23% increased likelihood of practicing EBF, respectively (see Table 5).

Table 3: Attitudes of Health Care Workers Toward Exclusive Breastfeeding in the Workplace, Kano, Nigeria, 2016 ($N = 261$)

	Frequency, *n* (%)				
Statement	*Strongly Agree*	*Agree*	*Undecided*	*Disagree*	*Strongly Disagree*
Health care workers should breastfeed or express breast milk during working hours	33 (12.6)	99 (37.9)	71 (27.2)	51 (19.5)	7 (2.7)
Breastfeeding or expressing breast milk in the workplace interferes with productivity	15 (5.7)	81 (31.0)	59 (22.6)	68 (26.1)	38 (14.6)
Health care workers are embarrassed when they breastfeed or express breast milk at work	45 (17.2)	45 (17.2)	64 (24.5)	75 (28.7)	32 (12.3)
Working women should be entitled to few hours break to breastfeed in the workplace	36 (13.8)	59 (22.6)	40 (15.3)	55 (21.1)	71 (27.2)
Hospital management should support breastfeeding in the workplace	15 (5.7)	10 (3.8)	22 (8.4)	72 (27.6)	142 (54.4)
Breast milk is sufficient for the baby in the first 6 months of life	88 (33.7)	44 (16.9)	27 (10.3)	61 (23.4)	41 (15.7)
Exclusive breastfeeding contributes to child spacing	87 (33.3)	84 (32.2)	25 (9.6)	23 (8.8)	42 (16.1)
Breast milk is cheap, hygienic, and readily available	69 (26.4)	60 (23.0)	74 (28.4)	36 (13.8)	22 (8.4)
I will exclusively breastfeed my next child	107 (41.0)	60 (23.0)	52 (19.9)	12 (4.6)	30 (11.5)

Discussion

In this survey of health care workers in Kano, Nigeria, we found low rates of *good knowledge* of EBF but high rates of current and planned/future EBF. Most of the respondents were comfortable breastfeeding at work. The most common challenges to EBF included lack of support from partner, short maternity leave, long working hours, nipple soreness, and perception of suboptimal infant weight gain. Respondents' knowledge, professional category, age of index infant, and type of birth predicted EBF practice.

The proportion of respondents who had good knowledge of EBF (23.4%) was lower than those reported from Ghana (100%; Danso, 2014) and Saudi Arabia (88.5%; Hatamleh & Sabeeb, 2015). However, our numbers are greater than those reported from Pakistan (Hasnain & Majrooh, 2012), where 99% of respondents had knowledge scores of greater than 50%. With regard to specific components of EBF, a greater proportion of our respondents (51.7%) indicated that newborns should be breastfed immediately after birth compared with their colleagues in Keffi, Nigeria (20.8%; Okolo & Ogbonna, 2002). Approximately 16.9% of our respondents would give their infants water before age 6 months compared with 91.2% of their peers in Keffi, Nigeria (Okolo & Ogbonna, 2002) and 42% of their peers in Australia (McLaughlin, Fraser, Young, & Keogh, 2011). This finding has implications, especially in developing countries where the risk of diarrheal disease from contaminated water is high. Furthermore, the proportion of our respondents who would introduce complementary feeds at less than or equal to 4 months (52.5%) was greater than that (29%) reported from Australia (McLaughlin et al., 2011). In contrast, the proportion of our respondents who knew that breastfeeding should be continued to 2 years (12.3%) was lower than those reported from Keffi (36%) and Benin City (60%) in Nigeria and among health care workers in Ethiopia (67%; Dachew & Bifftu, 2014; Okolo & Ogbonna, 2002; Sadoh et al., 2011). These differences could be related to sample characteristics, methods, measurements, and timing of the studies. As part of their prequalification training, health institutions incorporate the contents of Nigeria's national policy on infant and young child feeding in their curriculum, which includes breastfeeding, complementary feeding, and feeding in special circumstances. However, the extent to which the various professions implement these training programs varies. There are also differences in work hours between physicians, nurses/midwives, and other health workers.

Exclusive breastfeeding among health care workers was independently associated with type of health care worker, age of index child, type of birth, and breastfeeding knowledge.

Nurses/midwives usually work in shifts, whereas physicians work fixed daytime hours with occasional calls after hours. Furthermore, because of the frequency of their interaction with pregnant and parturient women, counseling on breastfeeding is often perceived as the responsibility of nurse/midwives. Physicians are expected to handle more difficult situations. Misconceptions among female health care workers could influence their messages to women. Therefore, preservice and continuing education programs are needed to address these knowledge gaps.

Although nearly all female health workers are expected to exclusively breastfeed their infants based on their knowledge and training, the proportions (67%–70%) reported in this study could be considered high relative to the low background EBF rates among female health workers in other parts of Nigeria and among all women. For instance, the proportion (69.7%) of our respondents who exclusively breastfed their infants for 6 months was greater than the proportions reported from Abakaliki, Nigeria (25%), Benin City, Nigeria (11.1%), and the national rate in Nigeria (23.7%; Anyanwu et al., 2014; National Bureau of Statistics & United Nations International Children's Emergency Fund, 2018; Sadoh et al., 2011). As was the case in our sample, 49.4%, 53.8%, and 45.7% of health professionals in Ethiopia, Turkey, and Saudi Arabia, respectively, breastfeed exclusively for significantly shorter periods (<4 months; Dachew & Bifftu, 2014; Hatamleh & Sabeeb, 2015; Yaman & Akçam, 2004). Specifically, the proportion of our respondents who initiated breastfeeding immediately (72.8%) was greater than in the general population in Nigeria (32.8%; National Bureau of Statistics & United Nations International Children's Emergency Fund, 2018) and among health care workers (31%) in Saudi Arabia (Al-Binali, 2012).

Some of the reasons proffered by our respondents for not breastfeeding exclusively were mainly work related (embarrassment, low

Table 4: Exclusive Breastfeeding Practice Among Health Care Workers, Kano, Nigeria, 2016 ($N = 261$)

Question	Frequency, *n* (%)
Are you/did you exclusively breastfeed your last child?	
(1) Yes	182 (69.7)
(2) No	79 (30.3)
How long after birth did you initiate breastfeeding following your last child birth?	
(1) Immediately	190 (72.8)
(2) 30 minutes	36 (13.8)
(3) <1 hour after	29 (11.1)
(4) >1 hour after	6 (2.3)
What have you fed (or been feeding) your baby with in the first 6 months?	
(1) Breast milk only	182 (69.7)
(2) Breast milk and water	41 (15.7)
(3) Breast milk and other feeds	22 (8.4)
(4) Infant formula only	16 (6.2)
How long did you/do you plan to breastfeed your baby without water or other feeds?	
(1) Did not plan to breastfeed	16 (6.2)
(2) 1–2 months	28 (10.7)
(3) <4 months	35 (13.4)
(4) 6 months	182 (69.7)
How frequent did you/do you breastfeed the baby before 6 months?	
(1) Hourly	50 (19.2)
(2) Two hourly	98 (37.5)
(3) Four hourly	47 (18.0)
(4) Anytime	7 (2.7)
(5) On demand	59 (22.6)
Have you introduced complementary feeds?	
(1) Yes	197 (75.5)
(2) No	64 (24.5)
If yes, at what age did you introduce complementary feeds? ($n = 197$)	
(1) 2–3 months	40 (20.3)
(2) 4 months	99 (50.3)
(3) 6 months	50 (25.4)
(4) >6 months	8 (4.0)

productivity, stress, dizziness, and busy work schedule). These reasons are similar to those offered by their counterparts in Abakaliki, Nigeria (61.8%; Anyanwu et al., 2014), Kumasi, Ghana (90.5%; Danso, 2014), and Saudi Arabia (41.4%; Al-Binali, 2012), but there were some differences. For instance, 15.7% of our respondents mentioned infant refusal as a reason versus 32.6% in Abakaliki, Nigeria (Anyanwu et al., 2014). Although studies on dizziness and breastfeeding are hard to identify, anecdotes from mothers indicate that dizziness could be caused by hunger, dehydration, or exhaustion as a result of the energy expended at work, especially if the woman is not eating or drinking adequately.

In Abakaliki, Nigeria, and Kumasi, Ghana, 3.9% and 7.5% of respondents, respectively, mentioned antagonism from family members, including their insistence on giving water to infants before age 6 months, as a major challenge (Anyanwu et al., 2014; Danso, 2014). Although reports from the United Kingdom indicated that it is not realistic to expect nurses to be perfect role models for healthy behavior generally, evidence suggests that with regard to breastfeeding, apart from the benefit to their infants from EBF, female health care workers could influence other women

Table 5: Logistic Regression Model for Predictors of Health Care Workers' Practice of Exclusive Breastfeeding (EBF), Kano, Nigeria, 2016 ($N = 261$)

Characteristic	Practiced EBF[a] *n* (%)	Did Not Practice EBF *n* (%)	Adjusted Odds Ratio [95% C][b]	*p* Value
Age group, years				
<30	42 (65.6)	22 (34.4)	Ref	
30–39	114 (71.7)	45 (28.3)	1.60 [0.74, 3.46]	.32
40–49	26 (68.4)	12 (31.6)	1.73 [0.48, 6.23]	.46
Ethnicity				
Hausa	125 (69.4)	55 (30.6)	Ref	
Fulani	35 (72.9)	13 (27.1)	1.21 [0.54, 2.70]	.53
Others	22 (66.7)	11 (33.3)	0.84 [0.33, 2.14]	.74
Professional category				
Physician	15 (38.5)	24 (61.5)	Ref	
Pharmacist	10 (62.5)	6 (37.5)	3.38 [1.16, 12.09]	.03[c]
Nurse/midwife	117 (74.5)	40 (25.5)	6.43 [2.74, 15.09]	.022[c]
Others	40 (81.6)	9 (18.4)	8.27 [2.84, 24.08]	.015[c]
Parity				
1	19 (65.5)	10 (34.5)	Ref	
2–4	86 (65.7)	45 (34.3)	0.37 [0.12, 1.08]	.34
≥5	77 (76.2)	24 (23.8)	0.47 [0.13, 1.72]	.54
Age of youngest child, months				
<12	49 (57.6)	36 (42.4)	Ref	
12–23	59 (73.8)	21 (26.2)	2.12 [1.13, 4.49]	.026[c]
24–35	30 (75.0)	10 (25.0)	2.25 [1.07, 5.71]	.034[c]
36–47	20 (76.9)	6 (23.1)	2.40 [0.77, 7.49]	.18
48–59	24 (80.0)	6 (20.0)	3.05 [1.16, 9.63]	.025[c]
Type of birth				
Spontaneous vaginal	160 (74.1)	56 (25.9)	3.31 [1.49, 7.37]	.034[c]
Cesarean/vacuum/forceps extraction	22 (48.9)	23 (51.1)	Ref	
Knowledge of EBF				
Good	44 (72.1)	17 (27.9)	1.34 [1.12, 3.53]	.037[c]
Fair	131 (71.2)	53 (28.8)	1.23 [1.10, 4.57]	.041[c]
Poor	7 (43.8)	9 (56.3)	Ref	

Note. CI = confidence interval. Ref = reference group.
[a]Fed infant with breast milk exclusively in the first 6 months. [b]The logistic model includes the following variables: age group, ethnicity, professional category, parity, age of youngest child, type of birth, and knowledge. [c]Significant at $p < .05$.

Continuing education is needed to address knowledge deficits and promote exclusive breastfeeding among health care workers in Nigeria.

to understand and practice EBF by addressing any doubts that women have about the benefits of EBF (Editorial, 2016).

Our respondents perceived maternal weight loss as a drawback although evidence suggests that women who feed well and ingest adequate amounts of fluid during the postpartum period do not lose substantial weight when breastfeeding exclusively and that EBF is not associated with postpartum maternal weight or body fat percentage change after adjusting for other variables (Mullaney et al., 2016). In our setting, weight loss may not necessarily be viewed in the same positive light as in developed countries (Jarlenski, Bennett, Bleich, Barry, & Stuart, 2014). Apart from the recognized health gains for infants and mother, some mothers in developed countries may be motivated to breastfeed by the prospects of losing weight and enhancing their physical appearance. The accelerated return to prepregnancy body shape was one of the highly valued benefits mentioned by mothers in a U.K. study (Schalla, Witcomb, & Haycraft, 2017). In developing countries, this may not be the case because some cultures cherish obesity. For instance, 15.5% of respondents in a prior Nigeria study considered obesity as socially desirable and indicative of good health and affluence (Iliyasu et al., 2013). Apart from differences in sample mix, methods, measurements, and currency, the variations in practice could be attributed to cultural factors, maternity leave policies, and support for breastfeeding in the workplace. However, our findings highlight the need for health professionals to strive to practice EBF, especially in consideration of their important roles as models for other women.

We found knowledge, professional category, type of birth, and age of index child to be significant predictors of EBF. Specifically, good or fair respondent knowledge, being a social worker/community health officer/community extension worker or nurse/midwife, having an older infant, and vaginal birth increased the odds of practicing EBF. The positive effect of knowledge of EBF on practice has been reported by others in Nigeria (Oche, Umar, & Ahmed, 2011; Sadoh, 2011) and elsewhere (Danso, 2014; Sabin, Manzur, & Adil, 2017). In one such study, individuals with good knowledge of EBF had a fivefold increased likelihood to practice EBF (Sabin et al., 2017). Similarly, the disparity in knowledge of EBF among health professionals seen in the present study is not unique. Studies in the United States found that nurses and nurse-midwives had better understanding of breastfeeding and an increased sense of effectiveness than physicians in managing breastfeeding problems (Hellings & Howe, 2000; Hellings & Howe, 2004).

The lower rates of EBF among women who had cesarean births compared with vaginal births concurs with earlier reports (Hobbs, Mannion, McDonald, Brockway, & Tough, 2016; Zanardo et al., 2010). The slow recovery from general anesthesia, postoperative pain, restriction of movement, and medications prevent early initiation of breastfeeding, an essential element of EBF (Beake, Bick, Narracott, & Chang, 2017; Chen et al., 2018). A report from southern Nigeria indicated that 34% of mothers who had vaginal births initiated breastfeeding early, whereas none of their counterparts who had cesarean births had early initiation of breastfeeding (Awi & Alikor, 2006). Effective interventions to encourage EBF among women who have cesarean births include prenatal education, immediate or early postoperative skin-to-skin contact with newborn, rooming in with sidecar bassinets, and the use of breast pumps (Chaplin, Kelly, & Kildea, 2016).

The increased likelihood of EBF among women with older index children could reflect a decreasing trend in the practice among health care workers, partly because of increased workload, staff shortages, and unsupportive work environments (Tsai, 2013). Women who work in organizations that support EBF are reported to have greater chances of practicing it (Sabin et al., 2017).

Our study has limitations. First, we restricted recruitment to female health care workers who had children under 5 years old. The exclusion of nulliparous women limits the generalizability of our findings because they are not exempt from counseling women about EBF. Similarly, male health care workers could be involved in breastfeeding counseling. Therefore, we recommend the inclusion of nulliparous female health workers and male health workers in future studies. Second, awareness of societal expectations could alter health care workers' responses on infant and young child feeding practices, resulting in social

desirability bias. The conduct of individual interviews in private by trained medical students from the same culture minimized this possibility. The strengths of our study include the use of validated instruments adapted from previous studies (Dachew & Bifftu, 2014; de la Mora et al., 1999), an adequate sample size, and a very high participant response rate (98.9%).

Conclusion

We found respondents' knowledge and practice of EBF to be suboptimal among female health care workers in Kano, Nigeria. In addition, the practice of EBF among respondents was independently associated with knowledge, infant's age, professional category, and type of birth. Our findings underscore the need for targeted education for health professionals regarding infant and young child nutrition. The workplace should also be enhanced to protect and promote EBF by health care workers.

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