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Maternal knowledge of effective breastfeeding and its benefits, as potential determinant of attitudes to infant feeding: A survey in Calabar, Nigeria

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Abstract

Appropriate breastfeeding is a cost-effective child survival strategy. This study assessed relationship between knowledge of breastfeeding and attitude towards infant feeding among pregnant women in Calabar, Nigeria. By convenience sampling, consenting antenatal clinic attendees were recruited from secondary health centers in Calabar. Pre-tested questionnaire was used to assess knowledge of different aspects of breastfeeding, while the Iowa Infant Feeding Attitude Scale (IIFAS) was used to assess attitude towards infant feeding. Data was analyzed using SPSS version 21.0, with p-value of less than 0.05 considered statistically significant. Two hundred and fifty (250) pregnant women were surveyed with mean age of 29.7 ± 6.1 years. One hundred and eight respondents (43.2%) had unsatisfactory levels of knowledge. Common areas of misconception were oral thrush effect of breastfeeding (47.2%), frequency of breast milk expression (47.6%), and effects of inverted nipples (45.6%). Most respondents (92.0%) had neutral attitude to infant feeding, and there was no significant relationship between overall knowledge of breastfeeding and infant feeding attitude ($p > 0.05$). Of all the knowledge areas assessed, only benefits to mothers ($r = 0.11$, $p = 0.08$) and effective breastfeeding ($r = 0.17$, $p = 0.01$), had knowledge scores that correlated positively with infant feeding attitude scores. These findings contribute to existing literature required for improvement in policies and strategies, for breastfeeding education and child survival, especially in resource-poor settings. There is need for further research towards improving priority content of maternal health education during the time-constrained ANC visits. (*Afr J Reprod Health* 2020; 24[3]: 69-77).

Keywords: Knowledge, breastfeeding, infant feeding attitude, pregnant women, Calabar, Nigeria

Résumé

L'allaitement maternel approprié est une stratégie rentable de survie de l'enfant. Cette étude a évalué la relation entre la connaissance de l'allaitement maternel et l'attitude envers l'alimentation du nourrisson chez les femmes enceintes à Calabar, au Nigéria. Par échantillonnage de convenance, les participants consentants des cliniques prénatales ont été recrutés dans les centres de santé secondaires de Calabar. Un questionnaire pré-testé a été utilisé pour évaluer les connaissances sur les différents aspects de l'allaitement maternel, tandis que l'Iowa Infant Feeding Attitude Scale (IIFAS) a été utilisé pour évaluer l'attitude envers l'alimentation du nourrisson. Les données ont été analysées à l'aide de la version 21.0 de SPSS, avec une valeur p inférieure à 0,05 considérée comme statistiquement significative. Deux cent cinquante (250) femmes enceintes ont été interrogées avec un âge moyen de $29,7 \pm 6,1$ ans. Cent huit répondants (43,2%) avaient des niveaux de connaissances insatisfaisants. Les points communs d'idées fausses étaient l'effet du muguet buccal de l'allaitement (47,2%), la fréquence d'expression du lait maternel (47,6%) et les effets des mamelons inversés (45,6%). La plupart des répondants (92,0%) avaient une attitude neutre à l'égard de l'alimentation du nourrisson, et il n'y avait pas de relation significative entre la connaissance globale de l'allaitement et l'attitude en matière d'alimentation du nourrisson ($p > 0,05$). Parmi tous les domaines de connaissances évalués, seuls les avantages pour les mères ($r = 0,11$, $p = 0,08$) et l'allaitement maternel efficace ($r = 0,17$, $p = 0,01$) présentaient des scores de connaissance qui étaient en corrélation positive avec les scores d'attitude en matière d'alimentation du nourrisson. Ces résultats contribuent à la littérature existante nécessaire pour améliorer les politiques et stratégies, pour l'éducation à l'allaitement maternel et la survie de l'enfant, en particulier dans les milieux pauvres en ressources. Des recherches supplémentaires sont nécessaires pour améliorer le contenu prioritaire de l'éducation à la santé maternelle pendant les visites prénatales limitées dans le temps. (*Afr J Reprod Health* 2020; 24[3]: 69-77).

Mots-clés: Connaissances, allaitement, attitude en matière d'alimentation du nourrisson, femmes enceintes, Calabar, Nigéria

Introduction

Developing countries still have unacceptably high infant mortality rates. In Nigeria, estimated infant mortality rates range from 49 in urban to 70 in rural setting per 1,000 live births¹. The causes of much of these deaths including malnutrition and diarrhoea, could be prevented through cost-effective practices such as breastfeeding². Improved immunity against common childhood infections, nutritional adequacy, and mental health stability are some of the other key child health benefits of adherence to recommended breastfeeding practices³. Therefore, proper breastfeeding is key for attainment of child health-related sustainable development goals (SDGs) in resource-poor settings⁴. Yet, compliance has been poor mainly due to poor attitude, which may be associated with misconceptions and inadequate knowledge of breastfeeding⁵. Even mothers adjudged to have adequate knowledge, may still have poor attitude towards infant feeding, perhaps due to significant degrees of misconceptions in certain areas of breastfeeding⁶.

Antenatal clinic visits provide one of the best opportunities for interactive counseling of pregnant women for correction of breastfeeding misconceptions in developing countries⁵. However, due to potentially inadequate attention span of parturients who may be distressed due to challenges of health access, the duration of counseling may not be sufficient for comprehensive health education⁷. Consequently, there may be need for prioritization of areas where mothers in the setting are likely to have misconceptions or inadequate knowledge⁵. Unfortunately, most studies assessing knowledge of breastfeeding do not identify areas of strengths and weaknesses^{8,9}.

A survey among mothers in Saudi Arabia using IIFAS instrument found significant correlation between knowledge and attitude towards breastfeeding ($r=0.71$, $p=0.00$)¹⁰. Only 7.4% had positive attitude, while most respondents (89.4%) had neutral attitude to breastfeeding. Similar survey among nursing students in the USA also found significant correlation between knowledge and attitude towards breastfeeding ($r=0.48$, $p=0.00$)¹¹. There is however paucity of

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similar studies in the sub-Saharan African region where breastfeeding studies assess knowledge and attitude separately, without considering their relationship. This study was generally aimed at furthering literature on the relationship between knowledge and attitude towards breastfeeding in a developing country setting. Specific objectives were to assess levels of knowledge of different aspects of breastfeeding, attitude towards infant feeding, and how these variables were related to each other.

Methods

Study design was cross-sectional descriptive using structured questionnaires that were interviewer-administered. Sample population comprised expectant mothers that attended antenatal clinics in General Hospital and Police Clinic in Calabar, the capital city of Cross River State, Nigeria. These far-apart urban facility-based study settings were selected, due to their high uptake of affordable maternal and child healthcare services, with wide coverage of variety of social classes and occupational groups. Convenience sampling method was used to obtain data, until estimated sample size of 250 was completed. Sample size 'n' for the study was calculated using the formula for single proportion¹², where $n = z^2pq/d^2$. In the formula, 'z' is critical value (1.96), 'd' is accepted error margin (0.05), 'p' is estimated proportion of mothers with adequate knowledge of exclusive breastfeeding (0.82), reported in previous study¹³, $q = 1 - p = 0.13$, with assumption of 10% non-response rate. An average of six (6) subjects were recruited on each of the five weekly antenatal clinic days in each of the two study settings, through the study duration of five (5) weeks. Pregnant minors that were below 18 years of age were included in the study after parental consent was obtained. Subjects who had relative or absolute medical reasons for non-breastfeeding including, HIV infection, hepatitis B and C infections, and severe psychosis, were excluded. Minors that did not give assent to participate, or whose parents/legally married spouses did not consent to their participation were also excluded.

Pre-tested questionnaire was used to assess knowledge of different aspects of

breastfeeding, including benefits to mother and child, colostrum, effective breastfeeding, timing of breastfeeding, common problems and other practical aspects of breastfeeding. The Iowa Infant Feeding Attitude Scale (IIFAS) instrument which assesses attitude towards infant feeding, has been found to be valid and reliable in diverse settings^{14,15}. It comprises a 17-item 5-point Likert scale, yielding total possible score within 17 to 85. Higher scores indicate positive attitude to breastfeeding and *vice versa*. Categories of attitude were positive towards formula feeding (17-48), neutral (49-69), and positive towards breastfeeding (70-85). To ascertain validity and reliability of the instrument, the questionnaire was pretested among twenty two (22) antenatal care clinic attendees at the University of Calabar Teaching Hospital, Calabar, with Cronbach's alpha of 0.82 before being used in the study. The questionnaire was administered by trained research assistants, who had at least first degree in a health-related discipline. They were trained to understand and communicate each of the questions in standard as well as pidgin English.

Pearson chi-square, correlation coefficient, independent t-test were used to assess relationship between level of knowledge and attitude towards breastfeeding. Consent was obtained before data collection. Data was entered and analyzed using SPSS version 21.0, with p-value set at 0.05. Ethical approval was obtained from the Cross River State Health Research Ethics Committee. Informed consent was obtained from participants before data collection, with emphasis on voluntary participation, anonymity, confidentiality, fairness, and respect.

Results

Two hundred and seventy eight (278) questionnaires were distributed, while 250 respondents provided complete information, yielding response rate of 89.9%. Of the two hundred and fifty (250) pregnant women were surveyed, mean age was 29.7 ± 6.1 years ranging from 18 to 46 years. Approximately a quarter (24.8%) and three-quarters (74.4%) were 35 years or older and within 19-35 years old, respectively (Table 1).

Most subjects were married (82.4%), had tertiary level of education (62.0%), and had business/trading as their occupation (57.2%). Mean parity was 2.32 ± 1.2 (1 to 7), and most subjects had less than 3 children.

Most respondents knew of the maternal and child benefits of breastfeeding, except for at least one-third that did not know that breastfeeding reduced frequency of child abuse (34.8%) and diarrhoea (38.0%) (Table 2). Knowledge of colostrum was generally suboptimal, with 31.6%, 36.0%, and 31.6% having misconception that it should be discarded, caused constipation, and was related to jaundice, respectively. Also, most respondents knew of the correct means and timing for effective breastfeeding.

Knowledge of common breastfeeding problems was generally suboptimal, as shown by over one-third not knowing of the effects of inverted nipples (45.6%) and breastfeeding actions when there is cracked nipples (36.0%), when baby had jaundice (37.6%), mother had engorgement (42.4%), and use of cold pack for engorgement (37.2%) (Table 3). Commonly misconceived practical aspects of breastfeeding included effect of massage on breast engorgement (36.8%), giving water after breastfeeding (36.0%), oral thrush effect of breastfeeding (47.2%), frequency of breast milk expression (47.6%), breast milk freezing (37.6%) and refrigeration (38.8%).

Mean knowledge of breastfeeding score was 32.26 ± 8.8 , ranging from 10 to 45, corresponding to mean percentage score of $71.7\% \pm 19.6$, ranging from 22.2 to 100 percent. Table 4 shows frequency distribution of categories of level of knowledge of breastfeeding, with 108 (43.2%) having unsatisfactory levels of knowledge below 70%. Most respondents (92.0%) had neutral attitude to infant feeding, with only 1 (0.4%) being supportive of breastfeeding.

There was higher frequency of satisfactory level of knowledge of breastfeeding among respondents that were 35 years or older, compared with those that were younger (67.7% vs. 53.2%), though this difference was marginally significant ($p=0.045$, Table 5). There was no significant difference in level of knowledge of breastfeeding comparing level of education and parity of respondents ($p>0.05$).

Table 1: Sociodemographic characteristics of pregnant women in Calabar, Nigeria (N=250)

| Variable | Frequency (%) |
|--------------------------|---------------|
| Age group (years) | |
| ≤18 | 2 (0.8) |
| 19-34 | 186 (74.4) |
| ≥35 | 62 (24.8) |
| Total | 250 (100) |
| Marital status | |
| Married | 206 (82.4) |
| Single | 37 (14.8) |
| Divorced/separated | 7 (2.8) |
| Total | 250 (100) |
| Educational level | |
| None | 12 (4.8) |
| Primary | 5 (2.0) |
| Secondary | 78 (31.2) |
| Tertiary | 155 (62.0) |
| Total | 250 (100) |
| Religion | |
| Catholic | 87 (34.8) |
| Pentecostal | 91 (36.4) |
| Orthodox | 51 (20.4) |
| Islam | 21 (8.4) |
| Total | 250 (100) |
| Occupation | |
| Business/trader | 143 (57.2) |
| Civil servant | 93 (37.2) |
| Unemployed | 14 (5.6) |
| Total | 250 (100) |
| Parity | |
| ≤2 | 157 (62.8) |
| 3-4 | 81 (32.4) |
| >4 | 12 (4.8) |
| Total | 250 (100) |

There was no significant relationship between knowledge of breastfeeding and infant feeding attitude ($p>0.05$, Table 6).

Table 7 shows relationship between the different areas of breastfeeding and infant feeding attitude. Of all the knowledge areas assessed, only benefits to mothers ($r=0.11$, $p=0.08$) and effective breastfeeding ($r=0.17$, $p=0.01$), were found to positively correlate with infant feeding attitude. However, statistical significant was only found for effective breastfeeding. Also, mean percentage knowledge of breastfeeding score was significantly higher among respondents that had neutral attitude, compared with those that had pro-formula attitude to infant feeding (83.4% vs. 59.6%, $p=0.00$).

Discussion

Despite WHO's recommendation for initial and uninterrupted six months of exclusive breastfeeding, there appears to be unsatisfactory and downward trend in its practice in many settings. This may be associated with poor attitude and inadequate knowledge of breastfeeding among mothers. This study found 43.2% prevalence of unsatisfactory level of knowledge of breastfeeding. A similar study in Egypt found 66.7% prevalence of general but inadequate knowledge of breastfeeding¹⁶. However, much lower rate of 14% unsatisfactory level of knowledge of breastfeeding was reported in a survey among mothers in Saudi Arabia¹⁷. Differences in degree of formal and informal educational exposure of mothers, as well as criteria for determination of unsatisfactory level of knowledge, may be responsible for differences in rates reported.

Also, in this study, common areas of inadequate knowledge were oral thrush effect of breastfeeding (47.2%), frequency of breast milk expression (47.6%), effects of inverted nipples (45.6%), breastfeeding actions when mother had engorgement (42.4%), and breast milk refrigeration (38.8%). In the study in Egypt, 33%, 77%, and 61% of mothers did not know correct breastfeeding practice, child health benefits, and maternal benefits, respectively¹⁶. A study in Saudi Arabia reported effects of inverted nipples (74.7%), management of breast engorgement (71.3%), effect of colostrum (60.0%), and prevention of osteoporosis (51.3%), as common areas of inadequate knowledge¹⁷. Difference in levels of media exposure, maternal education, and other sociodemographic characteristics of respondents, may be responsible for difference in levels of knowledge in these areas. Unfortunately, many individuals with low level of knowledge, may be highly confident and therefore adherent to their potentially socioculturally-based misconceptions^{18,19}. This may pose significant challenge, with need for identification of such high-risk individuals, and persistence in effort at maternal health education.

Table 2: Frequency distribution of knowledge of breastfeeding benefits and principles among pregnant women in Calabar, Nigeria (N=250)

| S/N | Breastfeeding Knowledge Item | Correct n (%) | Incorrect n (%) |
|---|--|------------------|--------------------|
| Benefits to babies | | | |
| 1 | Breastfeeding reduces the risk of respiratory infection among babies | 217 (86.8) | 33 (13.2) |
| 2 | Breastfeeding increases the baby's intelligence | 227 (90.8) | 23 (9.2) |
| 3 | Breastfeeding helps to reduce the incidence of child abuse and neglect | 163 (65.2) | 87 (34.8) |
| 4 | Baby who received breastfeeding is less prone to get diarrhea | 155 (62.0) | 95 (38.0) |
| 5 | Breast milk provides baby with more protection from allergy compared to formula milk | 218 (87.2) | 32 (12.8) |
| 6 | Breastfeeding causes good development of baby's teeth and gum | 219 (87.6) | 31 (12.4) |
| Benefits to mothers | | | |
| 7 | Exclusive breastfeeding is beneficial in spacing birth | 201 (80.4) | 49 (19.6) |
| 8 | Breastfeeding helps to stimulate uterine contraction | 188 (75.2) | 62 (24.8) |
| 9 | Mothers who practiced breastfeeding may achieve pre-pregnancy weight faster | 177 (70.8) | 73 (29.2) |
| 10 | Frequent breastfeeding may prevent breast engorgement | 170 (68.0) | 80 (32.0) |
| 11 | Mothers who practiced breastfeeding has a low risk of getting breast cancer | 194 (77.6) | 56 (22.4) |
| 12 | Breastfeeding may protect against osteoporosis | 187 (74.8) | 63 (25.2) |
| Colostrum | | | |
| 13 | Colostrum is the mother's early milk, which is thick, sticky, and yellowish | 205 (82.0) | 45 (18.0) |
| 14 | Colostrum is difficult to digest and needs to be discarded | 171 (68.4) | 79 (31.6) |
| 15 | Colostrum causes constipation among babies | 160 (64.0) | 90 (36.0) |
| 16 | Colostrum is not able to protect babies from jaundice | 171 (68.4) | 79 (31.6) |
| Effective breastfeeding | | | |
| 17 | Babies will gain weight if they receive effective feeding | 188 (75.2) | 62 (24.8) |
| 18 | Correct positioning helps to achieve effective breastfeeding | 210 (84.0) | 40 (16.0) |
| 19 | Babies sleep well after they receive adequate breastfeeding | 214 (85.6) | 36 (14.4) |
| Timing and duration of breastfeeding and complementary feeding | | | |
| 20 | Breastfeeding should be initiated within 30 minutes after delivery | 203 (81.2) | 47 (18.8) |
| 21 | Breastfeeding should be given on demand | 190 (76.0) | 60 (24.0) |
| 22 | Baby should be allowed to breastfeed for at least 10–20 minutes per session | 197 (78.8) | 53 (21.2) |
| 23 | Breastfeeding should be continued up to 2 years even though the baby has received complementary food | 184 (73.6) | 66 (26.4) |
| 24 | Complementary feeding should be introduced at 6 months of age | 214 (85.6) | 36 (14.4) |
| 25 | Mothers may mix breastfeeding and formula feeding once baby starts taking complementary food | 216 (86.4) | 34 (13.6) |

Table 3: Frequency distribution of knowledge of breastfeeding problems and practice among pregnant women in Calabar, Nigeria (N=250)

| S/N | Breastfeeding Knowledge Item | Correct n (%) | Incorrect n (%) |
|--------------------------------------|--|------------------|--------------------|
| Common breastfeeding problems | | | |
| 26 | Breast milk production is influenced by breast size | 180 (72.0) | 70 (28.0) |
| 27 | Mothers with inverted nipples cannot breastfeed their babies | 136 (54.4) | 114 (45.6) |
| 28 | Breastfeeding must be discontinued if mother has cracked nipple | 160 (64.0) | 90 (36.0) |
| 29 | Breastfeeding must be discontinued if baby has jaundice | 156 (62.4) | 94 (37.6) |
| 30 | Breastfeeding must be discontinued if mother has breast engorgement | 144 (57.6) | 106 (42.4) |
| 31 | Breast engorgement may be reduced with cold packs | 157 (62.8) | 93 (37.2) |
| Practical aspects | | | |
| 32 | Exclusive breastfeeding must be practiced until the infant is 6 months old | 185 (74.0) | 65 (26.0) |
| 33 | Massage may reduce breast engorgement | 158 (63.2) | 92 (36.8) |
| 34 | Giving water to baby is encouraged after every breastfeeding | 160 (64.0) | 90 (36.0) |
| 35 | Belching after feeding shows that the baby is full | 178 (71.2) | 72 (28.8) |
| 36 | Babies who get enough feeding will pass urine more frequently | 170 (68.0) | 80 (32.0) |
| 37 | Oral thrush frequently happens to babies who breastfeed | 132 (52.8) | 118 (47.2) |
| 38 | Breast milk expression may be done every 3 hours | 131 (52.4) | 119 (47.6) |
| 39 | Expressed breast milk may be stored for 3 months in a freezer | 156 (62.4) | 94 (37.6) |
| 40 | Expressed breast milk may be stored for 24-48 hours in a refrigerator | 153 (61.2) | 97 (38.8) |

| | | | |
|----|---|------------|-----------|
| 41 | It is necessary to express breast milk from one side of the breast only | 171 (68.4) | 79 (31.6) |
| 42 | Expressed breast milk may be mixed with previously expressed milk | 174 (69.6) | 76 (30.4) |
| 43 | Expressed breast milk may be warmed on a fire | 177 (70.8) | 73 (29.2) |
| 44 | Expressed breast milk may be warmed in a microwave | 171 (68.4) | 79 (31.6) |
| 45 | The leftover expressed breast milk that has been used may be stored again | 164 (72.9) | 61 (27.1) |

Table 4: Distribution of knowledge of breastfeeding and infant feeding categories among pregnant women in Calabar, Nigeria (N=250)

| Variable | Frequency (%) |
|--|---------------|
| Sub-categories of knowledge level (%) | |
| ≤30 | 8 (3.2) |
| 31-40 | 10 (4.0) |
| 41-50 | 23 (9.2) |
| 51-60 | 36 (14.4) |
| 61-70 | 31 (12.4) |
| 71-80 | 42 (16.8) |
| 81-90 | 53 (21.2) |
| >90 | 47 (18.8) |
| Total | 250 (100) |
| Main-categories of knowledge level | |
| Not satisfactory (<70) | 108 (43.2) |
| Satisfactory (≥70) | 142 (56.8) |
| Total | 250 (100) |
| Infant feeding category | |
| Pro-formula feeding | 19 (7.6) |
| Neutral | 230 (92.0) |
| Pro-breastfeeding | 1 (0.4) |
| Total | 250 (100) |

Using the IIFAS, this study found generally unsatisfactory attitude to infant feeding, with most respondents (92.0%) having neutral attitude to infant feeding, while 0.4% and 7.6% had positive and negative attitudes towards breastfeeding. High prevalence of neutrality towards breastfeeding suggests that there may be fewer mothers who are emphatic as role models for the practice of exclusive breastfeeding. Previous similar study in Saudi Arabia, found 62.2% and 37.8% prevalence of positive and negative attitude to breastfeeding, respectively¹⁵. Differences in rates may be due to use of different instruments and criteria for assessment of attitude. With absence of neutral component of attitude in the previous study, it may be difficult to compare these rates. Difference in sociocultural belief systems, presence of enabling environment for its practice, and other personality factors may be responsible for differences in infant feeding attitude found.

Previous similar study in Ibadan, South West Nigeria, found 53.6% prevalence of positive attitude towards breastfeeding, compared with

0.4% found in this study²⁰. Though this difference may be due to sociocultural diversity in study settings, as well as differences in the instruments used, it may be reflecting significant downward trend in intention to breastfeed in African settings. This downward trend may be leading to a point when breastfeeding becomes unpopular, with far-reaching untoward effects on maternal and child health in developing countries. Misconceptions, especially concerning perceived adverse cosmetic effects of breastfeeding, and easier availability of infant formula feeding options may be contributing to this trend^{21,22}. Unfortunately, the only available interventions in most African settings, comprises the grossly insufficient breastfeeding education occasionally provided at antenatal, postnatal, and immunization clinics²³.

There are few or no interventions that regularly utilize the social and other relevant mass media to correct misconceptions and consistently market breastfeeding as an invaluable and cost-effective product²⁴. Rather, the vacuum created by this long-term non-intervention, has been well occupied by formula feed advertising agencies, with remarkable industrial yield that now appears unstoppable^{25,26}.

This study's main focus was to assess relationship between knowledge of breastfeeding and attitude towards infant feeding, in view of decades of provision of breastfeeding education during ANC visits and local mass media. Despite lack of relationship considering overall level of knowledge, this study found certain areas of knowledge of breastfeeding to be associated with infant feeding attitude. Level of knowledge of effective breastfeeding was found to significantly correlate positively with infant feeding attitude ($p < 0.01$). Also, level of knowledge of maternal benefits of breastfeeding correlated positively with infant feeding attitude. Though this was not statistically significant, it may be clinically significant ($p = 0.08$). In other words, increased level of knowledge of effective breastfeeding and

Table 5: Factors associated with knowledge of breastfeeding category (N=250)

| Variable | Breastfeeding knowledge category | | Total n (100) | Chi-square (p-value) |
|------------------------------|----------------------------------|-----------------------|------------------|----------------------|
| | Not Satisfactory n (%) | Satisfactory n (%) | | |
| Age groups (in years) | | | | |
| <35 | 88 (46.8) | 100 (53.2) | 188 (100) | 4.0 |
| ≥35 | 20 (32.3) | 42 (67.7) | 62 (100) | (0.045) |
| Educational level | | | | |
| At most primary | 7 (41.2) | 10 (58.8) | 17 (100) | 0.03 |
| At least secondary | 101 (43.3) | 132 (56.7) | 233 (100) | (0.86) |
| Parity | | | | |
| ≤2 | 65 (41.4) | 92 (58.6) | 157 (100) | 0.56 |
| >2 | 43 (46.2) | 50 (53.8) | 93 (100) | (0.46) |

Table 6: Relationship between breastfeeding knowledge and attitude towards infant feeding (N=250)

| Variable | Neutral/supportive breastfeeding n (%) | of Supportive of infant feeding n (%) |
|--------------------------------------|--|--|
| Breastfeeding knowledge group | | |
| Not satisfactory | 99 (42.9) | 9 (47.4) |
| Satisfactory | 132 (57.1) | 10 (52.6) |
| Total | 231 (100) | 19 (100) |
| Chi-square (p-value) | 0.15 (0.70) | |
| Breastfeeding knowledge score | | |
| Mean percentage (SD) | 71.8 (19.3) | 70.4 (23.5) |
| t-test statistic (p-value) | 0.30 (0.77) | |

Table 7: Relationship between different breastfeeding knowledge areas and infant feeding attitude (N=250)

| Breastfeeding knowledge area | Infant feeding attitude category (IFA) | | Correlation between knowledge and IFA score Coefficient (r) | p-value |
|--------------------------------|--|----------------------------------|--|---------|
| | Neutral Mean % score (SD) | Pro-formula Mean % score (SD) | | |
| Benefits to babies | 79.6 (22.6) t=0.87; p=0.39 | 84.2 (19.6) | -0.02 | 0.71 |
| Benefits to mothers | 75.3 (28.4) t=1.64; p=0.10 | 64.0 (33.9) | 0.11 | 0.08 |
| Colostrum | 71.5 (33.2) t=1.37; p=0.17 | 60.5 (37.6) | 0.04 | 0.50 |
| Effective breastfeeding | 83.4 (29.5) t=3.22; p=0.00* | 59.6 (45.2) | 0.17 | 0.01* |
| Timing and duration of feeding | 80.6 (23.8) t=0.74; p=0.46 | 76.3 (30.1) | 0.03 | 0.69 |
| Common breastfeeding problems | 61.6 (30.3) t=0.54; p=0.59 | 65.8 (27.5) | -0.01 | 0.88 |
| Practical aspects | 65.0 (27.5) t=1.03; p=0.31 | 71.8 (26.8) | -0.03 | 0.61 |

its maternal benefits yields increased level of positive attitude towards breastfeeding. Also, since other areas of knowledge did not correlate with infant feeding attitude, these two key areas of breastfeeding may be relatively more important towards improving respondents' attitude towards infant feeding in the study setting. Knowing that

breastfeeding improved baby's weight, sleep, as well as several maternal benefits may be the attraction that improves attitude towards infant feeding among expectant mothers in the study area.

Key limitation of this study is the non-assessment of influence of self/group identity, and other

sociocultural factors on attitude towards infant feeding. These background factors may moderate the relationship between knowledge and attitude towards breastfeeding⁶. Also, this study was limited by lack of assessment of breastfeeding knowledge and infant feeding attitude among spouses and other significant family members. This potentially important group, due to their domestic closeness and regular sociocultural interaction, have been found to significantly influence pregnant women's intention towards breastfeeding^{27,28}. This is key, since this study was conducted in a typical multicultural African setting, where relatives and in-laws may have significant sociocultural influence on maternal and child health practices of expectant mothers^{29,30}. Finally, a longitudinal rather than cross-sectional study design may have been more appropriate for appreciation of effect of change in knowledge through time and experience on attitude towards infant feeding.

Conclusion

This study found unsatisfactory level of knowledge of breastfeeding and attitude towards infant feeding. It also highlights key aspects of knowledge that may be associated with attitude towards breastfeeding. These aspects may be more impactful toward improving attitude towards breastfeeding and overall child survival in developing countries. There is need for further research in other similar and dissimilar settings, to better understand how these priority areas of breastfeeding education may differ across cultures.

Conflict of Interest

There is no conflict of interest to declare.

Contribution of Authors

OO – conceptualized and designed the study, and wrote the manuscript

AA – improved on study concept, collected and entered data, reviewed draft manuscript

EB – collected and entered data, reviewed draft manuscript

KN – reviewed draft manuscript

All authors approved the manuscript.

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