

Determinants of the low practice, knowledge and attitude of exclusive breastfeeding in four health centres of the Talangai Health District, Congo

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Abstract

Objectives The objective of the study is to assess the determinants of the low practice, knowledge and attitudes of breastfeeding mothers in the Talangai district of Congo.

Study design An analytical knowledge, attitudes and practice (KAP) study about EBF in mothers of children aged 0-6 months was conducted.

Methods A KAP analytical study was carried out from December 3, 2017, to July 15, 2018, based on the four health centers of the Talangai health district in Congo Brazzaville. Using formula from Wayne W. Daniel, 357 mothers were included. The practice of EBF was determined based on a 24-h recall. The main variables studied were the socio-demographic characteristics of the mothers and their knowledge, attitudes and practices regarding EBF based on WHO recommendations. A logistic regression analysis was performed, and the odds ratio was calculated with a 95% confidence interval.

Results The mean age was 26.8 years (\pm 5.9 years). Mothers with 2-3 children represented 42.6% of the sample. The prevalence of EBF among infants 0–6 months old was 33.9%. Mothers' knowledge, attitudes and practices were unsatisfactory (78.4%), favourable (79.5%) and bad (67.2%), respectively. Factors associated with satisfactory knowledge were being a public official [OR: 3.18 (1.39-7.28)] and/or multiparous [OR: 2.25 (1.23-4.11)]. Mothers who had satisfactory knowledge had a higher rating of having good practices on EBF.

Conclusions Factors related to good knowledge among mothers are multiparity, age and being a civil servant. Promoters' EBF must target mothers in all sectors of activity and even in the community by sensitizing them on the subject.

Introduction

Exclusive breastfeeding (EBF) consists of feeding one's infant exclusively with secretions produced by the mother's mammary glands (breast milk) until the age of six months. The World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) recommend that mothers start breastfeeding from the first hour after birth¹⁻⁵. Thereafter, mothers should continue to feed their babies with breast milk alone (including expressed milk or use of a wet nurse) for at least the first six months of life before diet diversification, thus contributing to the reduction of malnutrition, one of the main causes of death of children under 5 years of age^{6,8,9}. Exclusive breastfeeding allows for the possibility for infants to receive oral rehydration solutions, vitamins, minerals, and prescribed medications. Scientific studies carried out by the WHO and UNICEF have proven that the risk of developing breast cancer is reduced by 6% in a breastfeeding woman^{3,10,11}. The increase in breastfeeding rates could save the lives of 820,000 children annually and prevent 20,000 maternal deaths from cancer⁸. In low- and middle-income countries, infants who received foods and fluids other than breast milk before six months of age had a 2.8 times higher risk of dying than those who were exclusively breastfed^{6,9}. Many African mothers breastfeed their babies beyond one year, but EBF for up to six months is still not widely practiced⁷. Approximately 22% of infant deaths could be avoided if mothers practiced EBF^{3,12}. Its benefits are numerous, of which the following can be enumerated: rich nutritional content, psycho/emotional bonding attributes, anti-infective properties and harmonious growth with optimal cognitive development of infants^{3,13}. According to the WHO, only 38% of children aged 0 to 6 months are exclusively breastfed in 194 countries³. In sub-Saharan Africa, the percentage of EBF is estimated at 31% and varies from country to country^{3,13-15}. There are multiple factors responsible for this decline¹⁵⁻¹⁶. In the Republic of Congo, according to the Congo Demographic Health Survey, the prevalence of EBF was 32.9%¹⁷. The knowledge of infants' mothers could be insufficient to motivate the latter to adopt good exclusive breastfeeding practices. To increase the prevalence of EBF, this hospital-based study aims to analyze the determinants of the low practice, knowledge and attitudes of breastfeeding mothers in the Talangai district of Congo.

Methods

Study design: Population and procedure sampling

A KAP analytical study was carried out from December 3, 2017, to July 15, 2018, based on the four health centers of the Talangai health district in Congo Brazzaville. This is the largest health district in the city of Brazzaville, with a total population estimated at 324,718 inhabitants and 59,118 households as of 2018. The number of children under 11 months of age in the health district was 8,104 children. Respectively partitioned into four health centers: Maman Mboulé (3,360 children), Intendance (1,935 children), Marien Ngouabi (1,499 children) and Congo River (1,310 children).

The target population consisted of mothers of children aged 0 to 6 months who had attended the vaccination services of four health centers in the Talangai health district.

A probability sampling approach was used. The sample size was calculated using Daniel Wayne W. formula¹⁸ $n = z^2s^2 / e^2$, where n = the required sample size, z = the standard deviation at a confidence level of 95% (1.96), s = the estimated standard deviation of 0.36; and e =

desired level of precision of 0.05. After calculation, the minimum sample size for mothers interviewed was approximately 200. A 20% attrition was anticipated; hence, the final adjusted sample size was approximately 369 mothers. The first mother to be interviewed was selected by a simple random sampling technique using a random number table to select a number between 1 and the sampling interval of 2. The number chosen at random (1 or 2) represented the first mother sampled. The next respondent was selected by adding the sampling interval to the selected number. This procedure was used to select the rest of the mothers to be interviewed over the course of the day. Mothers were sampled in the lobby while waiting to be attended to. The same procedure was carried out over the following days until the required sample size was attained. Since women come to the health centre by appointment only, we considered all women who came for consultation during the day by following the selection procedure.

Inclusion and exclusion criteria

We included biological mothers with at least one child alive during the period of our study who gave their verbal consent. We excluded mothers of infants who were unable to respond to our study questions, as well as infant caretakers. In total, we considered 369 women, of which 12 (3.3%) were excluded.

Variables

Variables relating to socio-demographic characteristics (age, level of education, profession, marital status and parity), knowledge, attitude and practice on EBF were collected.

Data analysis

We recruited and trained undergraduate sociology students as investigators. The questionnaire was pretested in the Mougali health district, after which corrections were made to remove any inconsistencies. Data were collected using a structured questionnaire by direct interviews with mothers. The questionnaires were prepared and administered in Lingala (local language) and in French for those who wished to do so. The data on the knowledge, attitude and practice of mothers were assessed with maximum possible scores of 19, 4 and 6 points, respectively. Each proposition under the knowledge, attitude and practice sections was scored and cumulated to obtain the total score of participants for each of the three variables of interest (knowledge, attitude and practice). The rating of the level of knowledge and attitude was modeled based on Bruno De Finetti¹⁹ and Likert's method²⁰, respectively. As for the level of practice, it has been structured to mirror certain works on the quantification of levels of practice in previous KAP studies²¹. To assess the interaction between knowledge, attitude and practice, we stratified the level of knowledge, attitude and practice into two modalities, namely, for knowledge: unsatisfactory and satisfactory [0–8 points; 9 to 19 points]; for attitudes: unfavorable and favorable [0–2 points; 3–4 points] and for practices: bad and good [0–2 points; 3 to 6 points], respectively. EBF practice was determined on the basis of a 24-hour recall. Data were analyzed using Epi-Info 7.2.2.2.6 software. Absolute and relative frequencies as well as parameters of central tendency (mean) for a normal distribution and dispersion (standard deviation) were calculated for our qualitative and quantitative variables, respectively.

A simple logistic regression was used to establish the relationship between knowledge and sociodemographic characteristics (age, marital status, educational level, profession and number of children). The Chi-square and Wald tests were used as well as the odds ratio with their 95% confidence interval at the 5% threshold. Multiple logistic regression was used to establish the relationship between attitudes and knowledge and practices with knowledge and attitudes. Multivariable logistic regression analyses with backward elimination stepwise selection with $p < 0.20$ were used to identify baseline explanation that predicts practices or attitudes of mothers.

Ethical considerations

Ethical clearance and research authorization were obtained for this study. Informed consent was written and submitted to mothers who had read before agreeing to participate in this study. The ethics committee of the Inter-State Centre for Higher Education in Public Health in Central Africa (CIESPAC) approved the study, and the ethical clearance was number C005/ CSERC/CIESPAC/2018. Further permission was obtained from the Ministry of Health of the Republic of Congo and the hospital under study.

Results

Sociodemographic characteristics of participants

A total of 357 mothers were interviewed. The average age was 26.8 years (\pm 5.9 years). Single mothers constituted the majority of sampled participants, 333 women, 93.3%. Many mothers (257/357) were in secondary school. The majority of participants were students (112/357) and traders (129/357) (Table 1).

Table 1. Sociodemographic characteristics of mothers and children in Talangai Health District, Brazzaville, Congo 2018

Sociodemographic characteristics	Women surveyed (N = 357)	
	n	%
Mother's age (years)		
Mean (sd) 26.8 (\pm 5.9)		
16-20	52	14.6
21-25	104	29.1
26-30	117	32.8
31-35	54	15.1
36-40	26	7.3
41-43	4	1.1
Marital status		
Single/cohabiting	333	93.3
Married	21	5.9
Divorced	2	0.6
Widowed	1	0.3
Educational level		
Primary	14	3.9
Secondary	257	72.0
Higher	86	24.1
Profession		
Household	77	21.6
Student	112	31.4
Trader	129	36.1
Staff officer	39	10.9
Number of children		
Mean (sd) 2.2 (\pm 1.3)		
1	143	40.1
2-3	153	42.9
4-6	58	16.2
7-8	3	0.8

Mothers' knowledge, attitudes and practices

Almost all the mothers surveyed, 98.9% had already heard of EBF. The number of mothers who gave the correct definition of EBF was 318 (89.1%). The yellow colour of the colostrum was revealed by more than half of the respondents (72.8%). As benefits of EBF, 13.7% of mothers cited child protection from diseases (Table 2). Mothers reported EBF in 79.8% of cases ; 355 women (99.4%) ascertained the mother's key role in EBF ; 292 women (81.8%) reported the importance of EBF, and 122 mothers (34.2%) intended breastfeeding their infants. The prevalence of EBF was 33.9%. The reasons given by mothers for practising EBF were to prevent their child from getting sick (26.5%), to comply with medical advice (50.4%) and to ensure physical/emotional bonding (23.1%). The number of women who gave colostrum to the child immediately after delivery was 164 (45.9%), and the rest of the mothers reported throwing it away. Other measures of EBF practice evaluated were the number of feedings per day (12 or more times: 16.5%, less than 12 times: 37.2%, on demand: 43.1% and at fixed times: 2.2%), and 189 women (52.9%) reported that their spouse did not accept EBF (Table 3).

Table 2. Breakdown of respondents according to their knowledge of EBF in Talangai Health District, Brazzaville, Congo 2018

Mothers' knowledge of EBF	Mothers of children interviewed (N = 357)	
	n	%
Heard about EBF		
Yes	353	98.9
No	4	1.1
Information source		
Health Agent	303	84.9
Entourage	33	9.2
Medias	6	1.7
Others	11	3.1
Without information	4	1.1
Definition of EBF		
Give only breast milk up to 6 months	318	89.1
Give breast milk and water	9	2.5
Give breast milk and porridge	1	0.3
Other	25	7.0
No idea	4	1.1
The right milk for children		
Breast milk	357	100.0
Artificial milk	00	0.0
Colostrum knowledge		
Yes	261	73.1
No	96	26.9
What is the color of colostrum ?		
Yellow	260	72.8
I don't know	97	27.2
What is its importance ?		
It's rich in antibodies	15	4.2
It contains vitamins	19	5.3
Allows the baby to feed before the milk itself rises	1	0.3
I don't know	322	90.2
What are the advantages of EBF ?		
Protection of children against diseases	49	13.7
It contains antibodies	41	11.5
Most suitable food for baby	1	0.3
Strengthening the bond of love	6	1.7
Allows a good growth of the child	36	10.1
It gives the child intelligence	11	3.1
Economic	5	1.4
Easy to digest	2	0.6
It contains vitamins	196	54.9
I don't know	10	2.8

Table 3. Distribution of mothers' attitudes and practices on EBF in Talangai Health District, Brazzaville, Congo 2018

Attitude and practice	Mothers of children interviewed (N = 357)	
	n	%
Mothers' attitudes about EBF		
Position on EBF		
I am in agreement with	285	79.8
I'm against it.	72	20.2
Mothers' opinion about EBF		
EBF make children strong	355	99.4
EBF is not good for mothers	2	0.6
Importance of EBF		
Yes	292	81.8
No	65	18.2
Intention to give breast milk		
Yes	122	34.2
No	235	65.8
Mothers' practice on EBF		
What food do you give your child ?		
Breastfeeding only*	121	33.9
Breastfeeding and other	236	66.1
Use of colostrum after childbirth		
Given to the child	164	45.9
Thrown away	193	54.1
When did you start breastfeeding ?		
Immediately after delivery	112	31.4
Between the first and the eighth hour	172	48.2
More than eight hours	47	13.2
Two days later	26	7.3
How many times a day do you breastfeed?		
More than 12 times	61	17.1
Less than 12 times	133	37.3
On request	154	43.1
No response	09	2.5
Does your husband accept EBF ?		
Yes	168	47.1
No	189	52.9
Reasons given by mothers accepting EBF (N=121)		
To prevent the child from getting sick	32	26.4
I respected the hospital's advice	61	50.4
Attachment link between mother and child	28	23.1

*: On the basis of a 24-hour recall

Thus, 77 women had a satisfactory level of knowledge on EBF, 21.6% compared to 280 women (78.4%) who had a level of knowledge deemed unsatisfactory. Regarding participant attitudes, 73 women (20.4%) had an attitude considered unfavourable on EBF compared to 284 women (79.6%). Regarding the level of EBF practices, 117 women had a good practice (32.8%) compared to 67.2% of participants with bad practices (Table 4).

Table 4. Distribution of mothers' levels of knowledge, attitude and practice on EBF in the Talangai health district, Brazzaville, Congo 2018

	Score (points)	Mothers of children interviewed (N = 357)	
Knowledge and attitude levels			
Knowledge level (19 points)			
Very insufficient	0-4	24	6.7
Insufficient	5-8	256	71.7
Good	9-14	77	21.6
Very Good	15-19	00	0.0
Attitude level (4 points)			
Negative	0-1	61	17.1
Slightly negative	2	12	3.3
Positive	3	172	48.2
Very positive	4	112	31.4
Practice level (6 points)			
Very low	0-1	137	38.3
Low	2	103	28.8
Good	3	76	21.5
Very good	4 - 6	41	11.4

Factors associated with best knowledge

The factors associated with the best (satisfactory) knowledge of EBF were being a public servant [15.6% vs 37.0%; OR: 3.18 (1.39-7.28); p = 0.004] or multiparous [18.9% vs 34.4%; OR: 2.25 (1.23-4.11); p=0.007]. Mothers' level of knowledge had no influence on their level of attitudes towards EBF [76.6% vs. 80.3%; OR=1.24 (0.68-2.28); p=0.27] (Table 5).

Table 5. Factors associated with Mothers' best knowledge of EBF in Talangai Health District, Brazzaville Congo 2018

Sociodemographic characteristics	N = 357 %		Knowledges				OR (95% CI)	p
			Satisfactory N = 77 %		Unsatisfactory N = 280 %			
Mother's age								
16-25	156	43.7	25	32.5	131	47.0	-	
26-35	168	47.1	45	58.4	123	44.1	0.52 (0.30-0.90)	0.018
36-43	33	9.2	7	9.1	26	8.9	0.71 (0.27-1.81)	0.470
Marital status								
Single/concubine	333	93.3	72	93.5	261	93.1	-	
Married	21	5.9	4	5.2	17	6.4	1.17 (0.38-3.59)	0.780
Divorced/Widowed	3	0.8	1	1.3	02	0.5	0.55 (0.05-6.17)	0.624
Educational level								
Primary	14	3.5	1	1.4	13	4.6	-	
Secondary	257	71.8	50	64.9	207	73.9	0.32 (0.04-2.49)	0.215
Superior	86	24.7	26	33.7	60	21.5	0.18 (0.02-1.43)	0.071
Profession								
Housewife	77	21.6	12	15.6	65	23.3	-	
Student	112	31.4	20	26.0	92	32.8	0.84 (0.39-1.86)	0.682
Saleswoman	114	31.9	25	32.5	89	31.8	0.66 (0.31-1.40)	0.276
Civil servant	54	15.1	20	25.9	34	12.1	0.31 (0.14-0.72)	0.004
Number of children								
1	143	40.1	22	28.6	121	43.2	-	
2-3	153	42.9	34	44.1	119	42.6	0.64 (0.35-1.15)	0.133
≥ 3	61	17.0	21	27.3	40	14.2	0.35 (0.17-0.70)	0.002

Influence of knowledge and attitudes on EBF practice

Mothers who had satisfactory knowledge had a higher odds of having good practices on EBF. This odds remains significant after adjusting for confounding factors. [28.2% vs 49.3%; ORa =2.11 (1.38-3.50); (p = 0.0003)]. Participants' attitudes did not influence their level of practice on EBF [27.4% vs 34.1; OR=1.37 (0.7-2.4); (p = 0.27)] (Table 6).

Table 6. Influence of mothers' knowledge level and attitude on their practice of EBF in the Talangai health district, Brazzaville Congo 2018

Knowledge	Total N=357	Practice		Unadjusted		Adjusted	
		Good n=117 %	Bad n=240 %	OR (CI95%)	P	OR (CI95%)	P
Satisfactory	77	38 49.3	39 50.7	2.47 (1.4-4.1)	0.0004	2,1 ^a (1.38-3.50)	0.0003
Unsatisfactory	280	79 28.2	201 71.8	1			
Attitude	284	97 34.1	187 65.9	1.37 (0.7-2.4)	0.27		
Unfavorable	73	20 27.4	53 72.6	1			

Discussion

Sociodemographic characteristics

The mean age of the participants was 26.8 (\pm 5.9) years. Some authors did work on the same subject as us. In these studies, the average age ranged from 26 to 30 years old^{13,14,22,23}. This narrow variation in the average age reported could be explained by the fact that, like our study, these studies were carried out in other African countries (Cameroon, Tanzania, Tunisia and Mali).

Knowledge, attitudes and practices of infants' mothers

Exclusive breastfeeding is practiced by 33% of women surveyed. This corroborates the results reported by UNICEF and some authors concerning the low prevalence of EBF in sub-Saharan Africa^{3,13,14,22-25}. In our case, the lack of awareness among women could explain this low prevalence, even though we have not explored other underlying reasons for the low practice of EBF. In contrast, this prevalence is higher in Western countries, ranging from 57% to more than 70%²³⁻²⁷. In our case, the lack of awareness among women could explain this low prevalence, even though we have not explored the other deep reasons for the poor practice of EBF.

The level of knowledge of mothers on EBF is considered unsatisfactory at 78.43%. The main reason is the lack of information on this concept. Indeed, 147/357 mothers (48.08%) mentioned health services as the sole source of information, which sporadically sensitizes women on EBF. Otherwise, the participants' attitudes do not correlate with their practice of EBF.

Influence of sociodemographic characteristics on knowledge

The factors linked to a better (satisfactory level) knowledge of EBF were being between 26 and 35 years old, being a civil servant and being multiparous. Kazaura's work in Tanzania has similar results to ours¹⁴. These results differ from those of Ihudiebube-Splendor *et al.* in Nigeria, who showed that neither age, marital status, nor profession were associated with a satisfactory level of knowledge of EBF²⁸. This difference is explained by the fact that our study concerned all women, unlike Ihudiebube-Splendor, who worked only with primiparas. In addition, mothers who were civil servants have much more access to information on EBF by having sources of information other than health services such as the media. Compared to primiparas, multiparous women have had frequent contacts with health care personnel, who represent the major source of information on EBF.

Influence of knowledge on mothers' attitudes towards EBF

Satisfactory levels of knowledge did not necessarily imply favorable attitudes towards EBF in our study. Some authors have been able to establish factors influencing the favorable attitude towards EBF, namely, the age of the mother and her profession²⁹. This difference could be explained by Noubbissi's theory, which stipulates, apart from the knowledge that people could have about any fact with regards to their adoption of a given behavior, other intermediate factors such as social values, viewpoints and beliefs are likely to explain the attitude of these people³⁰.

Influence of mothers' knowledge and attitudes on the practice of EBF

Multiple logistic regression analysis revealed that the level of knowledge of mothers influences their practice on EBF. However, we have observed that regardless of whether participants' attitudes are favourable, they do not necessarily imply good EBF practices. This study did not discuss the reasons or hurdles to the non-practice of EBF, as discussed by several authors in sub-Saharan Africa or in developing countries^{15, 31, 32, 33,34,35,36}. There may be other hurdles obscuring the correlation between a favourable attitude and the practice of EBF. These obstacles are present when the mother has to make a decision, as underlined by Noubbissi's theory, stating that individuals' practices are sometimes influenced by beliefs, viewpoints and society³⁰.

Limitations of the study

The retrospective nature of some questions asked to mothers could induce a memory bias. Although the mothers' consent was obtained before the administration of the questionnaire, some of them were reluctant, which could lead to information bias. Finally, the study took place only in health structures and not in the community. When selecting our study population, we found that more than three-quarters of the participants were single women, i.e., 93.3%. The high proportion of single women resulting from our research work is explained by the fact that we defined

the single matrimonial status as all women not legally married with respect to the country's constitutional law to a man, any woman living without a husband and/or any woman having a cohabitation relationship with the man.

Conclusion

The results of our study show that mothers have unsatisfactory knowledge about exclusive breastfeeding. EBF was only practiced at 33.9% with an inadequate level (67.2%) because the mothers had an unsatisfactory level of knowledge on the subject. Factors associated with a satisfactory level of knowledge on EBF were being a civil servant and/or being multiparous. Factors associated with good EBF practice were educational level, occupation and parity. The level of attitude doesn't influence the practice of mothers in relation to exclusive breastfeeding. Intensive breastfeeding education for women of childbearing age in different locations could help achieve the goal set by the World Health Assembly's 2012, to achieve an EBF rate of 50% by 2025.

Ethical Approval and Consent to participate

Authority to conduct the research was sought from the Inter-State Center for Higher Education in Public Health in Central Africa (CIESPAC), Brazzaville, Congo. Ethical clearance to conduct the study was sought from the Ethical Review Committee of the CIESPAC with reference number c005/CSERC/CIESPAC/2018 and permission to conduct the research from the Talangai Health District Direction. Participants were assured of confidentiality. All the participants were also assured that the information they gave would only be used for purposes of research and that findings would be communicated to them. Informed written or thumb print consent was sought from the respondents who were selected to take part in the study.

Abbreviations

EBF: Exclusive Breastfeeding

KAP: Knowledge, Attitude and Practice

OR: odds ratio

WHO: World Health Organization

Declarations

Consent for publication: Not applicable

Availability of data and materials

The datasets used and analysed during the current study are available from the corresponding author upon reasonable request. The datasets generated and/or analysed during the current study are not publicly available due to the promise made to mothers to keep the data confidential when they are questioned but are available from the corresponding author on reasonable request.

Competing interests: The authors declare that they have no competing interests.

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Authors' contributions

SHW designed the study, wrote the protocol and text and supervised the data analysis. MBOE and JSA participated in the drafting of the protocol, data analysis and text writing. FEYM participated in the revision of the manuscript. Finally, PMT coordinated the entire study. All authors have read and approved the manuscript.

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