Exclusive breastfeeding for the first six months after birth: A cross-sectional study in health care centers in Khartoum, Sudan

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Abstract

Background: Encouraging exclusive breastfeeding (EBF) practices for the first 6 months of life is the most effective intervention for lowering childhood morbidity and death. However, compliance with breastfeeding recommendations is lacking in many developing countries. Thus, this study aimed to analyze mothers' breastfeeding knowledge, attitudes, and practices, as well as factors that impact EBF at 6 months.

Methods: This cross-sectional survey was conducted on 128 mothers who came for children's vaccination at primary health care centers using a structured questionnaire in form of dichotomous, multiple choice, and open and scaling questions.

Results: Of all mothers, 80.5% previously received information about breastfeeding. Of them, 38 (29.7%) initiated breastfeeding within 1 hour of delivery. Of the participants, <50% knew (46.1% and 44.5%, respectively) about breastfeeding, and 92.2% of mothers (118) had a negative view of EBF. The length of EBF for 1–2 months, 3–4 months, and 5–6 months were 3.9%, 82.8%, and 13.3%, respectively. Other foods are introduced before 6 months of age because of insufficient breast milk (15.6%) and the mother has work (11.7%).

Conclusion: EBF for up to 6 months was not recommended despite the high percentage of mothers who initiated breastfeeding right after birth or within a few hours. Sustained health and community-based nutritional education are recommended for pregnant and lactating mothers to promote optimal breastfeeding for the initiation and continuation of breastfeeding practices. More counseling and support are needed for working mothers.

Key words: exclusive breastfeeding, first six months, Khartoum, Sudan

Introduction

Breastfeeding is the most cost-effective method of infant feeding as it provides the infants with the required nutrition in the safest way. Breast feeding has been shown to decrease the risk of sudden infant death syndrome, childhood cancer, bronchial asthma, infectious diseases (otitis media, pneumonia, gastroenteritis), obesity, and diabetes(1-6). It is estimated that optimal breastfeeding practices prevent 13% of deaths among under-fives. Mothers who breast feed are at lower risk of breast cancer, anemia, and osteoporosis(6).

The World Health Organization (WHO) and almost all other international health bodies have recommended exclusive breastfeeding (EBF) for the first 6 months after birth. Based on the WHO guidelines, breastfeeding is classified into three categories: exclusive breastfeeding, predominant breastfeeding, and partial breastfeeding(8,9). EBF is when the infant had received only breast milk from the mother, a wet nurse, or expressed breast milk and no other liquids or solids except for drops of syrup consisting of vitamins, mineral supplements, or medicines. Predominant breastfeeding is when the infant's predominant source of nourishment had been breast milk. However, the infant may receive water and water-based drinks, such as tea and local herbal drops. Partial breastfeeding is when the infant's feeding could include non-breast milk foods, such as animal or powdered condensed milk and/or solid or semisolid food (i.e., cereals, vegetables, fruits, lentils, or meat) (10,11).

WHO growth standard recognizes the importance of EBF for healthy growth and development of children(12). Foods, other than breast milk, should not be introduced before the age of 6 months because they may be harmful. Malnutrition and stunting of growth affect more than half of children under 5 years of age in underdeveloped nations, and it typically begins in infancy, probably caused by inappropriate breastfeeding and mixed feeding patterns(13,14).

The prevalence of EBF for the first 6 months of life is extremely low despite strong evidence to support it, and the prevalence varies from country to country and society to society, depending on cultural and religious beliefs, but it is generally low worldwide. Between 2007 and 2014, only 36% of infants were exclusively breastfed between the ages of 0 and 6 months (15,16). Delayed breastfeeding initiation, colostrum deprivation, supplementary feeding of breast milk substitutes, early introduction of complementary feeding, and incorrect weaning from breast milk are commonly found practices in communities worldwide(17–19).

Global Breastfeeding Collective of United Nations International Children's Emergency Fund (UNICEF)/WHO aims to increase the percentage of exclusively breastfed babies under 6 months old from 44% to 70% by 2030. The initiation and continuation of EBF will be achieved when a mother is physically and psychologically prepared and supported and informed about the benefits of breastfeeding practices(7,10).

Breastfeeding cessation before 6 months is caused by different factors, including the return to work, low socioeconomic status, low educational level, inconvenience or fatigue associated with breastfeeding, and insufficient milk supply(20-23). Awareness has played a role in compliance with the initiation and continuation of EBF. Findings from smaller studies indicate that breastfeeding intent is associated with a positive breastfeeding attitude(24-26).

The duration of breastfeeding in urban affluent mothers is shorter compared to others, thereby demonstrating its presence as a matter of public health importance(23). This study examined the factors affecting EBF in the first 6 months of life in Khartume where exclusive breast feeding is the most cost-effective way of infant feeding(7).

Materials and Methods

Study setting

This cross-sectional qualitative study conducted from December 2021 to January 2022 included mothers who visited the vaccination clinics at two primary health centers near Khartoum City. Sampling was done on mother/child pairs using the Cochran formula. The minimum number of participants required for inclusion in the sample group was calculated as 196 based on a 95% confidence interval of (x + 0.05).

Inclusion criteria were mothers with a child from 6 months through to 5 years old and living in the study areas. Exclusion criteria were conditions where breastfeeding is contraindicated, such as galactosemia and mothers suffering from cancer, active tuberculosis, and psychosis. Questions were written and administered in Arabic and translated into English for analysis. Two experts in the research methodology field reviewed the survey and provided their feedback. Pilot testing of the questionnaire was conducted on 15 participants to ensure good reliability and validity of the instruments. The survey was revised according to all inputs. The questionnaire included mother and child characteristics (socio-demographic status and birth-related events), the practice of breastfeeding, and knowledge and attitude toward EBF.

We adhered to the WHO recommendations to define the nursing pattern(27). We focused on the first 6 months after delivery(28). EBF is when babies only received milk from their mother or a wet nurse without other food except for syrup medication. A baby that is exclusively breastfed is solely given breast milk for sustenance, and no water and water-based beverages, such as tea or regional herbal drops, are given. The newborn also consuming non-human milk feeds, such as animal milk, formula milk, vegetable soup, lentils, or other solid or semisolid foods, was referred to as partial breastfeeding. Full (exclusive or predominant) and partial breastfeeding were the two categories of the primary outcome variable, which measured breastfeeding patterns.

Age, education, and employment of the mother; socioeconomic standing; religion; caste stratification; family structure; birth order; gender; birth weight; gestational age; delivery method; and site of delivery of the child were among the demographic factors included as predictors. The timing of breastfeeding initiation, colostrum feeding, pre-lacteal feeding, self-reported breastfeeding issues, and knowledge of the suggested time frame for EBF were all factors connected to breastfeeding practices.

Results

A total of 737 children attended the two medical care centers where this study was conducted, with their mothers during the study period for different consultations or vaccines. This study included 128 infants with their mothers who met the study inclusion criteria and who agreed to participate in the study. Of the infants, 66 were males while 62 were females. Additionally, 37 (28.9%) were >24 months old and 91 (71.1%) were <24 months old. The majority of children (90%) were >2.5 kg at birth. Of the mothers, 86 (70%) have a high education level; 60 (47%) are workers, 20(1%) are students, and 48 (37%) are housewives; 84 (66%) had a middle- or high-income level according to their perception. All but 1 of the 128 mothers reported having visited the antenatal clinics during the last pregnancy. However, only 25 (19.5%) mothers mentioned not getting information about the importance of breastfeeding during their antenatal visit or before/after this study anywhere.

The majority (126 [98%]) of mothers initiated breastfeeding within the first 24 hours of delivery, and 111 (87%) exclusively breastfeed their babies at 2 months which decreased to 106 (82.8%) at 4 months. However, only 17 (13.3%) exclusively breastfed at 6 months.

Table 1 demonstrates the distribution of certain characteristics of the mother in the form of EBF practice. Data revealed that mothers with college-level and higher education exclusively breastfed their babies to a greater extent than those who were educated to middle school. Housewives were more likely to breastfeed their babies at 4–6 months compared to working mothers. A similar significant finding was observed among families with lower income and women who received antenatal education.

Regarding the workplace environment, 25.0% (32) of the mothers were provided a private place to express breastmilk while 32.0% (41) had none.

Table 2 demonstrates the rate of EBF among different infant factors, with only the mode of delivery as the significant factor. Table 3 shows the multivariate analysis of the maternal/fetal factors which influence EBF for 1–2, 3–4, and 5–6 months. Significant factors in predicting EBF at 4 and 6 months were high educational levels, unemployed mothers (housewives), low income, and mothers who received antenatal education.

Other foods were introduced within the 6 months after delivery in the majority of respondents mainly because of perceptions related to breast milk sufficiency in 65% of mothers (lack of breastmilk, excessive crying, and not gaining enough weight), approximately 30% of mothers provided no reasons, followed by 11.7% of mothers who resumed work. The majority of participants are knowledgeable about the benefit of breastfeeding, and 93% of mothers knew that breast milk is the ideal food for babies, especially in the first 6 months. Further, 82% of mothers perceived that breast milk is more easily digested than formula and 85.2% reported that breast milk contains all the essential nutrients for a newborn child.

Only 33% have a positive attitude toward breastfeeding, and the majority agree that formula feeding is a better choice if the mother intends to resume work and women should not breastfeed in public places.

Table 1: Mother characteristics concerning EBF at 1, 3, and 6 months

Mother Characteristics						
Independent variables related to the mother	*0-1*	*Exclusive breastfeeding* *2 months*	4 months	6 months	Total	*P*-value
Educational Level						
No Education (% of total)	*0*	0	2(1.6%)	2 (1.6%)	4	0.019*
Low Education (% of total)	*5(4%)*	2(1.6)	19(14.8%)	4 (3%)	30	
High Education (% of total)	*12(9.4)*	3(2.3%)	68 (53%)	11 (8.6)	94	
Work Status						
Housewife (% of total)	*0*	3(2.3%)	35(27.3%)	10 (7.8%)	48	0.013*
Student (% of total)	*6*	2(1.6%)	10 (7.9)	2 (1.6%)	20	
Employee (% of total)	*11*	0	44(34.4%)	5 (4%)	60	
Household Income as Perceived by Participants						
Low (% of total)	*7(5.5)*	5(4%)	20 (16%)	12 (9.4)	44	0.042*
Medium–High (% of total)	*10 (7.9)*	0	69 (54%)	5 (3.9%)	84	
Antenatal Education for EBF						
Yes (% of total)	*8(6.3%)*	3(2.3%)	81 69.5%)	11 (8.6%)	103	0.021*
No (% of total)	*9(7%)*	2 (1.6%)	8 (6.3%)	6 (4.7%)	25	

Table 2: Baby characteristics concerning EBF at 1, 3 and 6 months

Baby Characteristics						
Independent variables related to the baby	*0-1*	*Exclusive breastfeeding for:* *1–2 months*	*3–4 months*	*5–6 months*	Total	*P*-value
Type of Delivery						
Normal Vaginal (% of total)	*10(8%)*	3(2.3%)	79(62%)	10 (7.8%)	102	0.063
Caesarian (% of total)	*7(5.5%)*	2 (1.6%)	10 (8%)	7 (5.5%)	26	
Birth of The Baby						
≥2.5 kg (% of total)	*13(10%)*	5 (3.9%)	81 (63 %)	16 (12.5%)	115	0.872
<2.5 kg (% of total)	*4 (3%)*	0	8(6%)	1	13	
Gender of The Baby						
Boy (% of total)	*9(7%)*	3(2%))	48 (37.5%)	6 (4.7%)	66	0.221
Girl (% of total)	*8(6%)*	2 (1.5%)	41 (32%)	11 (8.5%)	62	
Initiation of Breastfeeding						
<1 hour (% of total)	*5(3.9%)*	0	33 (25.8)	12 (9.3)	50	0.093
Within 24 Hours (% of total)	*12(9.3)*	3(2%)	56 (43.8)	5(%)	77	
More than 24 hours *(% of total)*	*0*	2(1.5%)	0	0	2	

Table 3: Factors associated with exclusive breastfeeding at 1, 3, and 6 months in multivariant analysis

Independent variables related to the mother and infant	Exclusive breastfeeding for: 1-2 months	3-4 months	5-6 months	Total	ARR	95% CI interval	P-Value
EDUCATIONAL LEVEL							
No Education (% of total)	1	1	2	4	0.73	0.49-1.01	<0.001
Low education (% of total)	11	7	10	28	0.96	0.79-1.18	
High Education (High and above)	13	11	72	96	1.05	0.86-1.29	
WORK STATUS							
Housewife (% of total)	4	19	25	48	1.24	0.96-1.62	0.007
Student (% of total)	3	4	11	18	0.98	0.76-1.29	
Employee (% of total)	15	16	31	62	5.72	0.50-6.01	
HOUSEHOLD INCOME AS PERCEIVED BY PARTICIPANTS							
Low (% of total)	16	19	20	55	1.06	0.80-1.40	0.009
Medium-High (% of total)	19	20	34	73	0.99	0.58-1.71	
ANTENNAL EDUCATION FOR EBF							
Yes (% of total)	28	29	46	103	0.61	0.25-1.51	<0.001
No (% of total)	8	7	10	25	1.20	0.91-158	

ARR: adjusted odds ratio

Results

EBF through the first 6 months is the goal of The Global Breastfeeding Collective of UNICEF/WHO. Understanding the local practice, knowledge, and attitude is the first step in achieving such a goal. Many maternal and fetal factors could influence successful EBF continuation, and these factors may differ from one community to another. These factors could be related to education, socioeconomic status, and availability of support. Our data revealed that only 13.3% of the participants continue EBF through 6 months while the worldwide reported rate is <38% (29). Developed countries reported that a minority of infants are exclusively breastfed at 6 months (40% in the Netherlands; 13% in the USA) (30,31).

Of our 128 participants, 38 (29.7%) initiated breastfeeding within the first hour after birth, which was lower than a cross-sectional survey conducted in Ethiopia at 57.2%(10). The number increases to 126 (98%) mothers within the first 24 hours. The majority of mothers exclusively breastfed their babies at 4 months which decreased to only 13% at 6 months. The mother's perception of milk insufficiency is the major cause for introducing formula milk, followed by 30% without any reason for introducing other food before 6 months. This low rate of breastfeeding is one of the lowest rates in developing countries. The rate of EBF is 41% in North Africa, 44% in Asia, and 30% in Latin America. Despite the recognizable economic benefits of breastfeeding, the breastfeeding practice, particularly EBF, is reported in only 25% of infants in Africa(31).

Our data revealed that the factors associated with the increased rate of breastfeeding continuation are high education level, unemployment, high socioeconomic status, and perinatal breastfeeding classes, similar to previous reports(32–34).

A meta-analysis of over 100 publications about breastfeeding initiation and continuation revealed only six significant factors, including maternal smoking, vaginal delivery, multiparity, dyad separation and connection, maternal education level, and breastfeeding education or support(35). Our study revealed a quite rare maternal smoking that is usually not declared, and the mode of delivery was not a significant factor for breastfeeding continuation although it was a significant factor in breastfeeding initiation. Breastfeeding initiation did not increase the possibility of EBF continuation by 6 months among our participants which was reported as a significant factor in other reports(36).

Mothers of poor socioeconomic status are less likely to practice EBF through 6 months of age which is a similar finding from other studies(37). Social determinants shape individual interaction and play a significant role in the well-being of the individual, family, and community (38). Cross-sectional data

from a study in Nigeria looked into inequality concerning EBF and estimated the proportion of linear population redistribution of EBF practices to eliminate the inequality (achieving zero inequality) and found that only 10.7% redistribution was needed to eliminate the inequality. Attendance of at least four antenatal clinic visits was the most significant contributor to the inequality in EBF practice(39). This study revealed that the majority of the mothers had good knowledge about breastfeeding but hada negative attitude toward it. Misconception, customs, and pseudo beliefs regarding breastfeeding practices remained prevalent in this community which needs to be addressed. Similarly, findings from smaller studies indicate that breastfeeding intent is associated with positive breastfeeding attitudes and having family, peer, and partner support, while others found prenatal factors, such as an increased number of prenatal visits and having a breastfeeding mother influence the decision to breastfeed(40).

It was found that mothers who attended breastfeeding classes were significantly more likely to practice EBF during the first six months of life, and most mothers introduced other foods before they reached the age of six months because they lacked knowledge or support. Previously published data (20) support the same finding of our study, which indicates no clear reason for discontinuing breastfeeding before 6 months, which is mainly related to a lack of motivation and support, wherein not many centers continue education and support as strong as in antenatal and early post-natal periods. Our data revealed that while most of the mothers had a good knowledge of breastfeeding, they had poor attitudes and wrong practices toward it.

Conclusion

Continued education and support for mothers and families will influence the EBF practice. This can be done via formal and informal education, as well as the availability of antenatal support after delivery, especially for the first year.

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