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Maternal Confidence for Breastfeeding and Infant Feeding Practices in a Brazilian Population

Confiança Materna para Práticas de Aleitamento e Alimentação Infantil em uma População Brasileira

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Abstract

Exclusive breastfeeding has not been effectively enforced in Brazil. Among the factors that can lead to early weaning is low maternal confidence for breastfeeding. The purpose of this study was to evaluate the maternal confidence for breastfeeding, the role of associated factors that could affect the practice, and the infant feeding practices. Four hundred and seventy brazilian women were interviewed about their confidence for breastfeeding by the Breastfeeding Self-Efficacy Scale - Short Form (BSES-SF), comparing it in three different periods: immediately before giving birth, and 3 and 6 months of postnatal. The influence of sociodemographic characteristics and prenatal assistance on the mother's confidence for breastfeeding was evaluated. Also, the infant feeding practices up to 6 months after birth were investigated. 77% of women felt highly confident about breastfeeding, even before the beginning of practice whereas after 3 and 6 months of delivery, 85% believed to be highly capable. The more practice time, the greater the BSES-SF scores. After 3 months of postnatal, mothers with over 31 years showed the highest values of the BSES-SF, feeling more confident for breastfeeding. The sociodemographic characteristics and prenatal care did not affect the mother's confidence to breastfeed. 52% of mothers were exclusively breastfeeding after 3 months of giving birth. After 6 months, 84.8% of mothers were performing the complementary breastfeeding. The results showed the need for planning and implementing interventions that could help the relationship between maternal confidence and practice of breastfeeding from prenatal care until the first six months after delivery.

Keywords: Breastfeeding. Trust. Weaning. Feeding Methods.

Resumo

Amamentação exclusiva não foi efetivamente aplicada no Brasil. Os fatores que levam ao desmame precoce está a baixa confiança materna para a amamentação. O objetivo deste estudo foi avaliar a confiança materna para a amamentação, fatores associados que podem afetar a prática de alimentação infantil. Quatrocentas e setenta mulheres foram entrevistadas sobre sua confiança no aleitamento materno pela Escala de Auto eficácia em Amamentar (BSES-SF), comparando em três períodos diferentes: imediatamente antes do parto, 3 e 6 meses de pós-natal. A influência das características sociodemográficas e assistência pré-natal na confiança da mãe para a amamentação foi avaliada. Além disso, as práticas de alimentação até 6 meses após o nascimento foram investigadas. 77% das mulheres sentiam-se altamente confiantes em relação à amamentação, mesmo antes do início da prática, após 3 e 6 meses de parto, 85% acreditavam ser altamente capazes. Quanto mais tempo de prática, maior a pontuação da BSES-SF. Após 3 meses do pós-parto, as mães com mais de 31 anos apresentaram os maiores valores da BSES-SF, sentindo-se mais confiantes para a amamentação. As características sociodemográficas e o pré-natal não afetaram a confiança da mãe em amamentar. 52% das mães estavam amamentando exclusivamente após 3 meses do parto. Após 6 meses, 84,8% das mães realizavam a amamentação complementar. Os resultados mostraram a necessidade de planejar e implementar intervenções que possam ajudar a relação entre a confiança materna e a prática do aleitamento materno desde o pré-natal até os primeiros seis meses após o parto.

Palavras-chave: Aleitamento Materno. Confiança. Desmame. Métodos de Alimentação

1 Introduction

Breastfeeding is one of the most effective health prevention measures, with benefits for both mother and child, favoring the establishment of emotional bonds between them. For a child, breastfeeding is fundamental for the development of feelings of safety and protection, as well as for cognitive, psychological, and emotional development [1, 2]. In addition, breastfeeding favors craniomandibular development as a result of suckling movements during breastfeeding and prevents changes in mastication, deglutition, breathing, and oral skills[3]. It also prevents food allergies, reduces the risk of diabetes mellitus types I and II, obesity, hypertension, and heart disease [4], as well as promotes neurological development [5].

For the mother, breastfeeding reduces the risk of breast cancer and osteoporosis, reduces hemorrhages, and prevents subsequent anemia by stimulating rapid uterine involution and return to pre-pregnancy weight[1,2]. Previous studies indicate that breastfeeding leads to amenorrhea induced by lactation, which allows a larger interpartum interval with a late return to ovulation[6]. Breastfeeding has been associated with social, economic, and environmental benefits and is essential for families, healthcare institutions, and society[1,2].

Because of its characteristics and properties, exclusive

breastfeeding is recommended during the first 6 months and should be complemented until the child reaches the age of 2 years[7] Therefore, breastfeeding has a fundamental role in preventing childhood morbidity and mortality[1], and has been encouraged by health organizations such as the World Health Organization (WHO), the United Nations Children's Fund, and the American Academy of Pediatrics[1,2]. Despite the efforts, the guidelines on the duration of exclusive breastfeeding have not been fully put into practice in Brazil, where only 4% of women practice exclusive breastfeeding up to 6 months[8].

Early breastfeeding discontinuation is a significant public health problem and is associated to the infant's difficulties in suckling (absent or weak suckling), slow milk letdown[9], duration of labor, excessive maternal weight, breast abnormalities such as flat or inverted nipples, breast engorgement, infection, use of pacifiers[10], and insufficient maternal milk[11]. Furthermore, maternal age, marital status, and educational and socioeconomic status may be associated to the early discontinuation of breastfeeding[12] and the return to work or school[11].

The women's low confidence to breastfeed also seems to be an important factor for early weaning[12]. Maternal self-efficacy or confidence is directly associated with the initiation and duration of breastfeeding, and women should feel confident to breastfeed before the practice is initiated[12, 13].

The objective of this study is to assess the mothers' confidence and the influence of prenatal care and sociodemographic characteristics on breastfeeding, as well as the infant feeding practices up to 6 months after birth.

2 Material and Methods

This longitudinal prospective cohort study evaluated 497 eligible women aged ≥12 years, who were about to have their births, and who were assisted at the regional Women's Health Program, in Cuiabá, Mato Grosso, Brazil. Women who planned to give up their babies for adoption, and newborns referred to the intensive care unit or with congenital malformations were excluded. 470 women were interviewed from March to July 2017, on the day of delivery at Santa Helena Hospital or at University General Hospital. Then, they were interviewed after 3 and 6 months postpartum from June 2017 to January 2018 via telephone.

During the visits, the women right before given birth were underwent the application of a Brazilian socioeconomic questionnaire (Brazilian Association of Population Studies), which classifies the population in six strata (A =US $6480.00; B1=US $4280.00; B2=US $2780.00; C1=US $1420.00; C2=US $780.00 D=US $465.00; E=US $205.00), according to estimated monthly family income and purchasing power. The clinical records of the relevant hospitals were used to obtain data on the maternal sociodemographic characteristics, prenatal care, and childbirth care.

Maternal confidence in the practice of breastfeeding was assessed before the first mother–infant contact using the Breastfeeding Self-Efficacy Scale–Short Form (BSES-SF)[14,15], translated to Brazilian Portuguese and validated to the Brazilian population, in which "I always" was replaced by "I think I will" [12]. Three and 6 months postpartum, breastfeeding self-efficacy was reassessed via telephone.

BSES-SF is composed of 14 items that measure a woman's efficacy in breastfeeding, with scores ranging from 14 to 70 points. The higher the score, the higher is a woman's confidence in breastfeeding. In the present study, breastfeeding self-efficacy was assessed using the following classification: low efficacy (14–32 points), moderate efficacy (33–51 points), and high efficacy (52–70 points).

The following categories for infant feeding practices were evaluated 3 and 6 months postpartum: (1) exclusive breastfeeding, (2) predominant breastfeeding (associated with other liquids, including tea, juice, and water), (3) mixed breastfeeding (associated with infant formula), (4) absence of breastfeeding; and (5) complemented breastfeeding (associated with fruit and purées).

In addition to exploratory analysis, the chi-square test was used to assess the association between the variables of interest and the BSES-SF scores in the three study periods. Spearman's coefficient of correlation (r), assuming that $r = 0$, was used to determine the correlation between the application of the BSES-SF in the three study periods. The null hypothesis was rejected when $p \leq 0.05$.

The study was approved by the Research Ethics Committee of the University of Cuiabá-UNIC, Brazil (Protocol No. 511.855). All the participants or their guardians signed an informed consent form.

3 Results and Discussion

The characteristics of the study population (N = 470) are described in Table 1. Among the 470 women who had recently given birth, there was a predominance of women aged 20–30 years (57%) of mixed race (73%), from socioeconomic classes C2 and C1 (35% and 30%, respectively), and with high school education (61%).

Table 1 - Description of the study population (N = 470) in terms of age range, economic class, race and educational level

Features		N	%
Age range	12-19 years	100	21
	20-30 years	267	57
	31-54 years	103	22
Economic class	A1	1	0
	A2	5	1
	B1	11	2
	B2	71	15
	C1	141	30
	C2	165	35
	D	75	16
	E	1	0

Features		N	%
Race (color self-referenced)	Branca	63	13
	Parda	342	73
	Preta	65	14
Education level	0-4 years	12	3
	5-8 years	113	24
	9-11 years	287	61
	12 years or more	58	12
Total		**470**	**100**

Source: Research data.

When we characterized prenatal care and delivery of the puerperal women investigated (Table 2), it was observed that 70% of pregnant women performed prenatal care at the Basic Public Health Units, with a predominant beggining in the first trimester of pregnancy (78%). Most puerperal women had prenatal consultations with the same healthcare professional (64%) and underwent all the recommended and requested prenatal examinations (64%). At maternity, 62% of the pregnant women gave birth by vaginal delivery assisted by a physician (97%) from 37 weeks of gestation and onwards (91%) and a pediatrician was present in 98% of the deliveries.

Table 2 - Presentation of the assistance features to prenatal and delivery of the studied women.

Features		N	%
Prenatal Care	Yes	461	98
	No	9	2
Local of Prenatal	Health Center	324	70
	Outpatient	76	16
	Private practice/ covenant	61	13
Prenatal Beggining	First trimester	360	78
	Second trimester	91	20
	Third trimester	10	2
Prenatal Monitoring By the Same Professional	Yes	291	63
	No	167	36
Tests Performed on Prenatal	Complete	302	64
	Incomplete	156	33
	Unaccomplished	12	3
Professional Responsible for Delivery	Doctor	457	97
	Other	13	3
Type of Delivery	Vaginal	291	62
	Cesarean section	179	38
Pediatric Attendance at Birth	Yes	461	98
	No	9	2
Gestational age	< 37 weeks	43	9
	≥ 37 weeks	427	91
Total		**470**	**100**

Source: Research data.

Maternal confidence for breastfeeding was assessed using BSES-SF in three different periods: before childbirth (T1), 3 months postpartum (T2), and 6 months postpartum (T3). In T1, the 470 assessed puerperal women answered the questionnaire, whereas in T2 and T3, the frequencies of participation in the interview were 53.8% (N = 253) and 30.8% (N = 145), respectively. It was impossible to access all women since many changed their phones or contact addresses or, were not found in the numerous attempts made. The analysis of the interviews in the three study periods is shown in Table 3. A positive correlation was observed for BSES-SF between T1 and T2 and between T2 and T3. In T1, 77.4% of the women believed that they would be highly effective in breastfeeding. This percentage increased to 85% when the mothers were interviewed 3 and 6 months after their children were born.

Table 3 - Correlation between the assessments of mothers' ability to breastfeed (BSES-SF) *, in the different periods investigated (T1, T2, T3) **.

Survey Period*	Statisctic (Spearman's correlation coefficient)	Variable		
		BSES-SF T1	**BSES-SF T2**	**BSES-SF T3**
Bses-sf t1	r	1		
	p-valor			
Bses-sf t2	r	0,3050	1	
	p-valor	**<.0001**		
Bses-sf t3	r	0,1427	0,3952	1
	p-valor	0,0870	**<.0001**	

* BSES-SF- Self-efficacy Scale for Breastfeeding-Short-Form;

** T1: period before childbirth, T2: 3 months after childbirth; T3: 6 months after childbirth.

Source: Research data.

The association between the characteristics of interest of the interviewed mothers (age group, socioeconomic class, race, level of education, prenatal care, and gestational age) and the results of BSES-SF, (1- low efficacy; 2- moderate efficacy; and 3- high efficacy) in the study periods (T1, T2, and T3) are shown in Table 4. In T2, there was a statistically significant difference between age group and BSES-SF, in which women aged 31–54 years had higher scores (p = 0.0467). There were no significant differences in the confidence to breastfeed, sociodemographic characteristics, and prenatal care.

Table 4 - Presentation of absolute frequencies and percentages of the characteristics of interest of the associations between the classification of the BSES-SF (1, 2, 3) *, at the different periods (T1, T2, T3) ** (Chi-square test).

Features	BSES-SF T1			Valor de p	BSES-SF T2			Valor de p	BSES-SF T3			Valor de p
	1	2	3		1	2	3		1	2	3	
	N ( )	N (%)	N (%)		N (%)	N (%)	N (%)		N (%)	N (%)	N (%)	
Age range												
12-19 years	1 (1)	26 (26)	73 (73)	0.3073	0 (0)	10 (17)	50 (83)	**0.0467**	0 (0)	2 (7)	26 (93)	0.3856
20-30 years	1 (0)	59 (22)	207 (78)		0 (0)	27 (19)	117 (81)		0 (0)	14 (16)	72 (84)	
31-54 years	2 (2)	17 (17)	84 (82)		0 (0)	2 (4)	47 (96)		0 (0)	6 (19)	25 (81)	
Economic class												
A1	0 (0)	1 (100)	0 (0)	0.8205	0 (0)	0 (0)	1 (100)	0.9340	0 (0)	0 (0)	0 (0)	0.1781
A2	0 (0)	1 (20)	4 (80)		0 (0)	1 (33)	2 (67)		0 (0)	0 (0)	2 (100)	
B1	0 (0)	3 (27)	8 (73)		0 (0)	1 (14)	6 (86)		0 (0)	0 (0)	4 (100)	
B2	0 (0)	17 (24)	54 (76)		0 (0)	3 (10)	28 (90)		0 (0)	7 (35)	13 (65)	
C1	1 (1)	26 (18)	114 (81)		0 (0)	12 (14)	72 (86)		0 (0)	5 (10)	43 (90)	
C2	1 (1)	38 (23)	126 (76)		0 (0)	14 (17)	68 (83)		0 (0)	8 (17)	40 (83)	
D	2 (3)	16 (21)	57 (76)		0 (0)	8 (18)	36 (82)		0 (0)	2 (9)	20 (91)	
E	0 (0)	0 (0)	1 (100)		0 (0)	0 (0)	1 (100)		0 (0)	0 (0)	1 (100)	
Race (color self-referenced)												
White	0 (0)	15 (24)	48 (76)	0.7061	0 (0)	5 (14)	31 (86)	0.9583	0 (0)	3 (13)	21 (88)	0.3179
Mixed race	3 (1)	70 (20)	269 (79)		0 (0)	28 (16)	152 (84)		0 (0)	18 (18)	83 (82)	
Black	1 (2)	17 (26)	47 (72)		0 (0)	6 (16)	31 (84)		0 (0)	1 (5)	19 (95)	
Educational level												
0-4 years	0 (0)	2 (17)	10 (83)	0.2805	0 (0)	0 (0)	4 (100)	0.3652	0 (0)	0 (0)	1 (100)	0.3078
5-8 years	2 (2)	32 (28)	79 (70)		0 (0)	8 (15)	44 (85)		0 (0)	4 (14)	24 (86)	
9-11 years	2 (1)	56 (20)	228 (80)		0 (0)	29 (17)	137 (83)		0 (0)	12 (13)	83 (87)	
12 years and over	0 (0)	11 (19)	47 (81)		0 (0)	2 (6)	29 (94)		0 (0)	6 (29)	15 (71)	
Prenatal care												
Yes	4 (1)	99 (21)	358 (78)	0.6744	0 (0)	38 (15)	210 (85)	0.7743	0 (0)	21 (15)	119 (85)	0.7594
No	0 (0)	3 (33)	6 (67)		0 (0)	1 (20)	4 (80)		0 (0)	1 (20)	4 (80)	
Prenatal local												
Health center	3 (1)	73 (23)	248 (77)	0.7700	0 (0)	25 (14)	149 (86)	0.8353	0 (0)	11 (11)	85 (89)	0.2338
Outpatient	1 (1)	17 (22)	58 (76)		0 (0)	7 (16)	36 (84)		0 (0)	5 (19)	21 (81)	
Private practice/ Covenant	0 (0)	9 (15)	52 (85)		0 (0)	6 (18)	27 (82)		0 (0)	5 (25)	15 (75)	
Prenatal beggining												
First trimester	4 (1)	80 (22)	276 (77)	0.6864	0 (0)	31 (16)	163 (84)	0.7763	0 (0)	18 (16)	93 (84)	0.6697
Second trimester	0 (0)	18 (20)	73 (80)		0 (0)	6 (12)	43 (88)		0 (0)	3 (11)	24 (89)	

Features	BSES-SF T1			Valor de p	BSES-SF T2			Valor de p	BSES-SF T3			Valor de p
	1	2	3		1	2	3		1	2	3	
	N ( )	N (%)	N (%)		N (%)	N (%)	N (%)		N (%)	N (%)	N (%)	
Third trimester	0 (0)	1 (10)	9 (90)		0 (0)	1 (20)	4 (80)		0 (0)	0 (0)	2 (100)	
Prenatal monitoring by the same professional												
Yes	2 (1)	56 (20)	233 (79)	0.3617	0 (0)	20 (13)	140 (88)	0.0781	0 (0)	13 (14)	78 (86)	0.6299
No	2 (1)	43 (26)	122 (73)		0 (0)	19 (21)	72 (79)		0 (0)	9 (17)	43 (83)	
Gestacional age												
< 37 weeks	1 (2)	8 (19)	34 (79)	0.4877	0 (0)	3 (16)	16 (84)	0.9687	0 (0)	1 (8)	11 (92)	0.4905
≥ 37 weeks	3 (1)	94 (22)	330 (77)		0 (0)	36 (15)	197 (85)		0 (0)	21 (16)	112 (84)	
Type of birth												
Vaginal	4 (1)	63 (22)	224 (77)	0.2911	0 (0)	24 (15)	136 (85)	0.8105	0 (0)	13 (14)	77 (86)	0.7546
Cesarean section	0 (0)	39 (22)	139 (78)		0 (0)	15 (16)	78 (84)		0 (0)	9 (16)	46 (84)	

* (1): low efficacy (N = 14-32 points); (2) moderate efficacy (N = 33-51 points); (3) high efficacy (N = 52-70 points). ** T1: period before childbirth, T2: 3 months after childbirth; T3: 6 months after childbirth.

Source: Research data.

The association between feeding practices at 3 and 6 months postpartum and age group, socioeconomic class, race, level of education, and BSES-SF scores is shown in Table 5. There were no significant differences in sociodemographic characteristics and feeding practices.

Table 5 - Presentation of the absolute frequency and percentage of the infants' feeding pattern (1, 2, 3, 4, 5)* in the different evaluation periods (3 and 6 posnatal weeks). (Chi-square test).

Features	Infants' Feeding Pattern 3 Posnatal Weeks				p-value	Infants' Feeding Pattern 6 Posnatal Weeks					p-value
	1	2	3	4		1	2	3	4	5	
	N (%)	N (%)	N (%)	N (%)		N (%)	N (%)	N (%)	N (%)	N (%)	
Age range											
12-19 years	27 (42)	17 (27)	16 (25)	4 (6)	0.4136	2 (6)	1 (3)	1 (3)	8 (22)	24 (67)	0.6468
20-30 years	80 (49)	25 (15)	39 (24)	19 (12)		7 (7)	7 (7)	2 (2)	16 (16)	70 (69)	
31-54 years	26 (50)	11 (21)	12 (23)	3 (6)		0 (0)	1 (3)	1 (3)	4 (11)	29 (83)	
Economic class											
A1	1 (100)	0 (0)	0 (0)	0 (0)	0.7718	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0.9615
A2	1 (33)	1 (33)	1 (33)	0 (0)		0 (0)	0 (0)	0 (0)	0 (0)	2 (100)	
B1	4 (57)	2 (29)	1 (14)	0 (0)		0 (0)	0 (0)	0 (0)	0 (0)	4 (100)	
B2	16 (40)	7 (18)	8 (20)	9 (23)		2 (10)	2 (10)	1 (5)	0 (0)	15 (75)	
C1	44 (47)	19 (20)	21 (23)	9 (10)		3 (5)	2 (3)	2 (3)	12 (20)	41 (68)	
C2	43 (49)	17 (19)	22 (25)	6 (7)		4 (7)	3 (5)	1 (2)	12 (20)	40 (67)	
D	23 (50)	7 (15)	14 (30)	2 (4)		0 (0)	2 (8)	0 (0)	4 (15)	20 (77)	
E	1 (100)	0 (0)	0 (0)	0 (0)		0 (0)	0 (0)	0 (0)	0 (0)	1 (100)	

Features	Infants' Feeding Pattern 3 Posnatal Weeks				p-value	Infants' Feeding Pattern 6 Posnatal Weeks					p-value
	1	2	3	4		1	2	3	4	5	
	N (%)	N (%)	N (%)	N (%)		N (%)	N (%)	N (%)	N (%)	N (%)	
Race (color selfreferenced)											
White	15 (36)	10 (24)	11 (26)	6 (14)	0.5471	3 (12)	1 (4)	0 (0)	2 (8)	20 (77)	0.6683
Mixed race	101 (51)	35 (18)	44 (22)	17 (9)		5 (4)	7 (6)	4 (3)	22 (18)	85 (69)	
Black	17 (43)	8 (20)	12 (30)	3 (8)		1 (4)	1 (4)	0 (0)	4 (17)	18 (75)	
Educational level (years)											
0-4	3 (75)	1 (25)	0 (0)	0 (0)	0.2031	0 (0)	0 (0)	0 (0)	0 (0)	1 (100)	0.3272
5-8	28 (51)	10 (18)	14 (25)	3 (5)		1 (3)	0 (0)	0 (0)	7 (20)	27 (77)	
9-11	83 (45)	41 (22)	42 (23)	17 (9)		5 (4)	9 (8)	2 (2)	18 (16)	79 (70)	
12 +	19 (51)	1 (3)	11 (30)	6 (16)		3 (13)	0 (0)	2 (8)	3 (13)	16 (67)	
BSES-SF*											
2	14 (36)	8 (21)	17 (44)	0 (0)	**0.0231**	1 (5)	2 (9)	3 (14)	0 (0)	16 (73)	**0.0073**
3	119 (56)	45 (21)	50 (23)	0 (0)		8 (7)	7 (6)	1 (1)	0 (0)	107 (87)	

***** (1) Exclusive breastfeeding; (2) Predominant breastfeeding; (3) Mixed breastfeeding; (4) No breastfeeding; (5) Supplemented breastfeeding; ******(2) moderate efficacy (N = 33-51 points); (3) high efficacy (N = 52-70 points).
Source: Research data.

Among the mothers who felt very confident to breastfeed at 3 months postpartum, 56% reported exclusive breastfeeding, and among those who felt moderately confident to breastfeed, 44% reported mixed breastfeeding (use of formulas). The percentage of mothers who reported exclusive breastfeeding 3 and 6 months postpartum was 52.5% and 6.20%, respectively. Moreover, at 6 months postpartum, 84.8% of women reported complementary breastfeeding, with the introduction of fruit and purées. The confidence of mothers to breastfeed affects their decision to initiate breastfeeding, the effort put into breastfeeding, the ability to deal with the difficulties of breastfeeding, and the period of breastfeeding[12,13]. Because BSES-SF helps identify women at a risk of discontinuing breastfeeding[12-16], the maternal self-efficacy to breastfeed was assessed shortly before delivery[14,15] to determine a pregnant women's confidence before initiating the practice and 3 and 6 months postpartum[14-17] to evaluate the mothers' real confidence to breastfeed.

The instrument used to measure maternal confidence for breastfeeding, BSES-SF, has been used in several studies with different populations[14-18]. It was chosen because of the following reasons: 1) it identifies mothers with a low level of confidence in breastfeeding and who need assistance, 2) it is a predictor of maternal compliance with exclusive breastfeeding, 3) it identifies women at a high risk of early discontinuing breastfeeding, and 4) it is useful for assisting breastfeeding women by health professionals and for planning individualized interventions within this population[14-16]. Also, BSES-SF was translated to Brazilian Portuguese and culturally adapted and validated to the Brazilian population[12].

The study population was composed of brazilian women who sought prenatal and/or obstetric care in a public healthcare service. The WHO guidelines recommends at least six prenatal visits, which were followed by the subjects in this study, considering that 78% of the pregnant women initiated prenatal care in the first trimester and 91% of the women carried their pregnancies to full term (after 37 weeks of gestation). Despite the majority of the evaluated women gave birth via vaginal delivery (62%), the rate of C-sections was 38%, which disagrees with the recommendation of vaginal deliveries in low-risk pregnancies and a maximum of 15% of C-sections[19].

When delivery was assisted by a non-medical professional (nurse or medical student) or in cases of home birth, the BSES-SF scores were higher, which is in agreement with previous studies that observed the support provided to women by healthcare staff and families in the prenatal and postnatal periods, including guidance and encouragement, increased the rates of exclusive breastfeeding[14,17-18].

Prenatal care, delivery type and full-term pregnancy did not affect maternal confidence to breastfeed, which is in line with previous study[16]. In contrast, Alus Tokat et al.[15] reported that mothers who underwent C-section had lower BSES-SF scores.

Also, the BSES-SF scores in all the assessed periods were not affected by race, level of education, and family income,

which is in line with previous findings[14,16,17]. Contrary, it was observed that the level of education and socioeconomic status strongly affected the breastfeeding confidence of pregnant women and mothers, and women with lower levels of education and low income felt less able to breastfeed[12,15]. The difference in the results could be explained by the homogeneity of the subjects included in the study population.

Interestingly, there was a significant association between maternal age and breastfeeding confidence at 3 months postpartum, indicating that women aged ≥31 years felt safer in practicing breastfeeding, as demonstrated in previous studies[12,17]. However, this association was not observed in other studies [14-16,18]. The discrepancy between studies may be explained by the characteristics of the study populations, including age group, cultural aspects, and parity.

In the antenatal interview, 77.4% of the mothers had high scores in BSES-SF (>52 points); this percentage increased to 85% at the end of the study, suggesting that after a few weeks of breastfeeding, the mothers felt even more confident to breastfeed, as observed in other studies [14,15]. In addition, it was observed that the greater the initial confidence in breastfeeding, the greater the capacity over the practice, confirming findings of previous studies[13,15].

The participation of the women was decreased between the second and third interviews, from 53.8% to 30.8%, respectively, because not answering the telephone, change in telephone number or address, or loss to follow-up. In this respect, 9.31% of the assessed mothers stopped breastfeeding at 3 months, which was reported in the phone interviews by inefficiency ("weakness") and/or insufficient breast milk production, mastitis and/or inverted nipple, and return to work or school, which is in line previous studies[11]. Brown et al.[11] reported that the mothers' concern about not having sufficient milk for nutritious feeding is one of the major reasons for early discontinuation of breastfeeding and indicated that young mothers are more prone to this behavior, probably because of the lack of knowledge about lactation or lack of prior experience with breastfeeding.

Moreover, 47.43% of the interviewed mothers reported not practicing exclusive breastfeeding at 3 months postpartum and complementing it with water or tea. The reason was the high temperatures in the cities of residence. This characteristic should be further studied to assess the real need to provide water to infants living in hotter and dryer regions. In addition to water or tea, mothers supplemented the infants' diet with powdered milk or purées because of insufficient breast milk production, which was previous described[14,15].

In the present study, the feeding practices used at 3 and 6 months postpartum were not affected by maternal characteristics, including age group, family income, race, or level of education. However, among the mothers with moderate confidence to breastfeed, 65% practiced exclusive breastfeeding or mixed breastfeeding at 3 months postpartum, whereas 56% of the mothers who reported strong confidence to breastfeed reported exclusive breastfeeding; this result agrees with other studies that reported high BSES-SF scores in mothers who practiced exclusive breastfeeding[14,15].

During data collection, recall bias (especially on sensitive information) and misreporting of in- formation by the participants and interviewers respectively may possibly affect data collected leading to error in data, analysis and interpretation. It is therefore recommended that the findings of this study be interpreted with caution in the light of these limitations.

4 Conclusion

Exclusive breastfeeding practice is poor in the studied population but the confidence of mothers for breastfeeding is remarkably high depicting significant discordance between knowledge and practice. Further multilevel analysis to understand the influence of other extraneous non-maternal factors like spousal factors, household and community and cultural practices/beliefs on exclusively breastfeeding practice is suggested in order to guide policy makers and public health organizations in planning appropriate and adequate interventions to improving exclusively breastfeeding practice.

BSES-SF is an effective and easy-to-use instrument used for identifying women at risk of discontinuing breastfeeding at an early stage, reducing the rates of early weaning, and planning interventions in the prenatal and postpartum periods to help strengthen maternal confidence in breastfeeding.

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