

Application and Validation of Breastfeeding Self-Efficacy Scale, Short Form (BSES-SF) in Adolescent Mothers

ORIGINAL

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Abstract

Objectives: Check the reliability and validity of Breastfeeding Self-Efficacy Scale - Short Form (BSES-SF) in Brazilian adolescent puerperal mothers who have recently given birth; and evaluate the association of scores of the BSES-SF with the socioeconomic and obstetric variables of the studied population.

Methods: Methodological and quantitative study developed in a public maternity in Fortaleza involving 79 adolescent puerperal mothers. The BSES-SF and a form with socioeconomic and obstetric variables were used. Data were analyzed using the SPSS program, considering the Cronbach's Alpha (α) as a measure of reliability, and Pearson's correlation, with significance of 5%.

Results: The BSES-SF is a reliable and valid measure ($\alpha = 0.807$). The teenagers proved to be confident about the practice of breastfeeding (56.15 points). Only education level showed significant association with maternal self-efficacy of adolescents in breastfeeding ($p = 0.032$).

Conclusion: The BSES-SF is a safe and effective tool in the detection of self-efficacy of adolescent mothers in breastfeeding, favoring their assistance in the process of breastfeeding and, hence, the reduction of early weaning.

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Keywords

Breastfeeding; Self-efficacy; Adolescents; Reliability and Validity.

Introduction

Exclusive breastfeeding is an isolated public health measure that has significant impact on maternal and child health. It is also considered the most economical, sensitive and effective method to reduce child morbidity and mortality [1]. It is estimated that actions that promote breastfeeding may reduce by 13% the number of deaths in children under five years of age worldwide [2].

However, the maintenance of breastfeeding still constitutes a challenge. Despite the improvement in breastfeeding rates in recent decades, efforts are still needed for Brazil to achieve satisfactory levels [3, 4]. The most recent National Survey on Maternal Lactation held in the Brazilian capitals and the Federal District found that the average duration of breastfeeding was 341.6 days and of exclusive breastfeeding was only 54.1 days [3].

It is known that some variables such as maternal age, education, family income, intention to breastfeeding during prenatal, family support and early breastfeeding, as well as confidence and maternal self-efficacy in the act of breastfeeding influence breastfeeding rates [5, 6, 7]. Among these variables, maternal self-efficacy in breastfeeding is one of the variables that can be modified.

Theoretically, maternal self-efficacy is defined as the confidence that the mother has on her ability to breast-feed her child and is influenced by four main information: performance accomplishments, previous experience of breastfeeding; indirect experiences, like watching other women breastfeeding a child; verbal persuasion, encouragement by the influence of others, such as friends, family and lactation consultants; and influence of the physiological and/or emotional state, pain, fatigue, stress and anxiety [8].

To assist in the evaluation of maternal self-efficacy in breastfeeding, the Breastfeeding Self Efficacy Scale (BSES) [9] has been created. This has as reference the theory of self-efficacy proposed by Bandura [10]. Subsequently, the BSES has been refined and shortened and became known as Breastfeeding

Self-Efficacy Scale - Short Form (BSES-SF) [11]. The BSES-SF is a structured Likert scale with 14 items that assess the maternal confidence on breastfeeding, distributed in two areas: technical and intrapersonal thoughts, to which scores ranging from 1 (strongly disagree) to 5 (strongly agree) are assigned.

This scale makes possible to learn aspects related to maternal confidence on breastfeeding that need to be improved, contributing to the implementation of more targeted and effective actions in raising self-efficacy, with consequent reduction of early weaning.

There is scientific evidence that maternal self-efficacy has been proved to be important in association with initiation, duration and exclusivity of breastfeeding in the most diverse populations of women [12, 13].

However, despite the BSES-SF have been widely used in populations of adult women worldwide, its use when it comes to the adolescent population is still little known. Considering this context, a study conducted in Canada to evaluate the reliability and validity of the BSES-SF among adolescents found that the self-efficacy of this population in breastfeeding is lower than in the adult public, and that one of the implications is that, due the immaturity of the psychological and physical development inherent to this stage of life, the teenager does not focus on breastfeeding [14].

Given the particularities of the adolescence and the need for greater knowledge about the performance of breastfeeding among this public, especially in Brazil, this study aimed to verify the reliability and validity of the BSES-SF in Brazilian adolescent recent mothers; and the correlation of the BSES-SF scores with socioeconomic and obstetric variables of the studied population.

Materials and Methods

This is a methodological and quantitative study performed in Rooming-in (RO) of a reference public maternity in Fortaleza - Ceará, whose mission is to

promote excellence in global and humanized care to the health of women and newborns.

The sample consisted of 79 adolescent recent mothers admitted to the institution under study whose age was within the age group defined by WHO which circumscribes adolescence as the period of life ranging from 10 to 19 years old. The women were selected by simple random method using medical records.

Inclusion criteria were: adolescents in the immediate postpartum period; adolescents that had not presented clinical or obstetric complications in the puerperal period, as well as pathologies that prevented or recommended the non-realization of breastfeeding (AIDS); adolescents hospitalized in the rooming-in along with the healthy newborn, effective suction capacity and thermal control.

Considering the fact that the puerperal mothers remained hospitalized on average 48 hours after delivery, data collection was carried out on Monday, Wednesday and Friday mornings. So, during the collection period, all women admitted to the research spot and who met the inclusion criteria were interviewed and the consent of the participants had been obtained through the Informed Consent (IC), which was read and signed at the beginning of the interview.

The reliability of the scale was measured to determine the homogeneity or internal coherence of the tool, that is, if the scale items correlate with each other or are complementary to each other. Thus, we used the internal consistency measured by Cronbach's Alpha (α) as indicative of reliability [12].

To measure the degree and direction of the correlation of socioeconomic and obstetric variables with the domains of BSES-SF, and the total scale score, we used the Pearson correlation coefficient. A $p < 0.05$ was adopted as indication of statistical significance of parameters.

The study was submitted to the Ethics Committee of the institution selected for the development of the study, in accordance to the Resolution N°

466/12 of the National Health Council/Ministry of Health, considering the aspects of autonomy, beneficence and justice and was approved under the Opinion 208.919.

Results

This study involving 79 adolescents allowed the construction of the socioeconomic profile (Table 1) of these puerperal mothers. The age of the mothers ranged from 13 to 19 years, with mean age of 17 years and prevalence of late adolescence (17 to 19 years - 63.3%).

Table 1. Socio-demographic characteristics of adolescents (N = 79). Fortaleza - CE.

Variable (M ± SD)	N	%
Age in years (16.94 ± 1.3)		
13 – 16	29	36.7
17-19	50	63.3
Place of birth		
Fortaleza	64	81
Others	15	19
Skin		
White	18	22.8
Brown	42	53.2
Yellow	07	8.9
Black	11	13.9
Others	01	1.3
Marital status		
Single	19	24
Common-law marriage	45	57
Married	15	19
Occupation		
Housewife	51	64.6
Sewing	03	3.8
Other	25	31.6
Level of education		
Incomplete primary education	36	45.5
Complete elementary school	07	8.9
Incomplete highschool	24	30.4
Complete highschool	11	13.9
Incomplete higher education	01	1.3

Variable (M ± SD)	N	%
Family Income (US \$ 240.12 ± US \$ 109.82)		
< One minimum wage	08	10.1
= One minimum wage	44	55.7
> One minimum wage	27	34.2
N° of household members (4.52 ± 1.85)		
03 - 5	27	75
06 - 10	09	25
§: Minimum wage during the study: US \$ 251.21		

As for socioeconomic characteristics, most adolescents live in common-law marriage with the partner (n = 45; 57.0%), had as its main occupation the housework (n = 51; 64.5%), had incomplete primary education (n = 36; 45.5%) and family income of one minimum wage (n = 44; 55.7%), generally obtained by the partner's salary or retirement of the mother or father of the puerperal women.

With regard to the obstetrical history and current pregnancy (**Table 2**), it was observed that most of the adolescents were primiparae (n = 57; 73.4%), with predominance of vaginal delivery (n = 17; 21.5%), and 15 (19.0%) had breast-fed in previous occasions. In the case of the current pregnancy, 52 (65.8%) mothers reported not having planned the pregnancy.

The descriptive analysis of data related to the BSES-SF and its domains (technical and intrapersonal thought) is presented in **Table 3**. The range obtained for technical and intrapersonal domains was near the upper end of the possible range. Thus, it is observed that the adolescents had high levels of confidence to carry out the practice of breastfeeding. The average total score was 56.58 (± 6.11) (**Table 3**).

Table 3. Descriptive statistics of the resulting scores from the responses of adolescents to the BSES-SF applied to adolescents

	N° of items	Possible range	Obtained range	Average	Standard deviation	Median
Technical	08	08- 40	22- 40	32.25	3.78	32
Intrapersonal thought	06	06- 30	17- 29	24.33	2.92	24.5
Total score	14	14- 70	42- 68	56.58	6.11	56

Table 2. Obstetrical characteristics and current pregnancy (N = 79). Fortaleza - CE

Variable	N	%
Number of Pregnancies		
1	57	73.4
2	20	25.3
3	02	2.5
Abortion		
No	76	96.2
Yes	03	3.8
Stillbirth		
Yes	01	1.3
No	78	98.7
Type of previous births		
Not applicable	57	72.2
Cesarean	05	6.3
Vaginal	17	21.5
Previous history of prematurity		
Yes	06	7.6
No	73	92.4
Previous breastfeeding practice		
Yes	15	19.0
No	64	81.0
Lives with children		
Not applicable	61	77.2
Yes	17	21.5
No	01	1.3
Current pregnancy planned		
Yes	27	34.2
No	52	65.8
Complications during pregnancy		
Yes	26	32.9
No	53	67.1
Reason for intercurrent		
Not applicable	53	67.1
ITU	18	22.8
Hypertensive syndromes	02	2.5
Others	06	7.6

Table 4. Distribution of frequency of responses to the BSES-SF applied to adolescents

Items	I totally disagree		Disagree		Sometimes I agree		Agree		Strongly Agree	
	n	%	n	%	n	%	n	%	n	%
BSES-SF 1	7	8.9	43	54.4	4	5.1	17	21.5	8	10.1
BSES-SF 2			8	10.1	4	5.1	53	67	14	17.8
BSES-SF 3			5	6.3	2	2.6	46	58.2	26	32.9
BSES-SF 4	1	1.2	4	5.1	1	1.2	45	57	28	35.5
BSES-SF 5	1	1.2	5	6.3	2	2.5	55	69.7	16	20.3
BSES-SF 6	2	2.5	7	8.9	4	5.1	46	58.2	20	25.3
BSES-SF 7	1	1.2	13	16.5	8	10.1	34	43.1	23	29.1
BSES-SF 8			13	16.5	8	10.1	38	48.1	20	25.3
BSES-SF 9			4	5.1	1	1.2	51	64.6	23	29.1
BSES-SF 10			3	3.8	7	8.9	50	63.2	19	24.1
BSES-SF 11			8	10.1	1	1.2	37	46.9	33	41.8
BSES-SF 12			1	1.2	3	3.8	60	76	15	19
BSES-SF 13			3	3.8	3	3.8	52	65.8	21	26.6
BSES-SF 14			11	13.9	8	10.1	39	49.4	21	26.6

Table 4 shows the pattern of responses of adolescents for each item of the BSES-SF and shows that, except for Item 1 (I can always determine that my baby is getting enough breast milk), all items had more than 70% agreement.

The reliability of the BSES-SF measured by Cronbach's alpha was 0.82, indicating good internal consistency among the adolescent population. **Table 5** has the details of the statistical analysis of the BSES-SF showing the mean, the variance, the correlation of each item with the total of the scale, and the Cronbach's alpha in the absence of any of the scale items. It was observed that if any of the items were removed, the scale would not suffer major changes with respect to the alpha which ranged from 0.782 to 0.809, a variation of only 0.027. Therefore, the removal of any of the items would not significantly alter the value of the alpha and, therefore, this justifies the permanence of all items according to the original study.

The correlation between socioeconomic/obstetric variables and the technical and intrapersonal thought domains of the scale and the total coeffi-

Table 5. Mean, variance, and correlation between item-total and Cronbach's alpha for the BSES-SF applied to adolescents

	Average of the scale if the item is deleted	Variance range if the item is deleted	Correlation Item-Total	Cronbach's Alpha if Item is Deleted
Personal domain				
BSES-SF 1	52.5443	34.072	.402	.799
BSES-SF 2	52.2278	34.665	.506	.790
BSES-SF 3	51.9747	35.256	.465	.793
BSES-SF 4	51.9494	34.767	.487	.791
BSES-SF 9	51.9747	34.358	.641	.782
BSES-SF 14	52.2658	33.634	.493	.790
Technical domain				
BSES-SF 5	52.1392	36.557	.308	.804
BSES-SF 6	52.1899	35.592	.306	.807
BSES-SF 7	52.3291	34.557	.345	.805
BSES-SF 8	52.3291	35.685	.283	.809
BSES-SF 10	52.0759	36.558	.359	.800
BSES-SF 1	51.9494	33.485	.555	.785
BSES-SF 12	52.0253	36.281	.565	.792
BSES-SF 13	52.0000	35.205	.561	.788

cient of BSES-SF (**Table 6**) was confirmed. A weak correlation between socioeconomic/obstetric variables and the technical and intrapersonal thought domains and the total coefficient of the scale was observed. However, despite the weak correlation, schooling showed a statistically significant association. It is evident that the lower the education level, the higher the maternal self-efficacy in breastfeeding with regard to the technical aspects of breastfeeding.

Table 6. Correlations between socioeconomic and obstetric variables and the domains and general coefficient of BSES- SF.

Variables	Technical		Intrapersonal thought		BSES-SF Total	
	Pearson (r)	P	Pearson (r)	P	Pearson (r)	P
Marital status	0.064	0.577	-0.003	0.981	0.000	0.999
Age	-0.106	0.352	-0.199	0.078	-0.142	0.213
Skin	0.049	0.671	0.089	0.438	0.035	0.761
Family income	0.040	0.726	-0.181	0.110	-0.109	0.341
Level of education	-0.289	0.010	-0.197	0.082	-0.241	0.032
Profession			0.015	0.313	0.054	0.636
Number of residents	0.056	0.622	0.026	0.819	0.033	0.771
previous pregnancy	0.115	0.313	-0.075	0.514	0.084	0.462
Previous breastfeeding					0.131	0.251
Current pregnancy planned					0.208	0.066
Satisfaction with pregnancy			0.005	0.962	-0.051	0.654

Discussion

In this study, there was a predominance of late adolescents, a fact that corroborates a study conducted at the same hospital that aimed to characterize the profile of adolescent puerperal mothers, in which

the predominant age group was 15 to 19 years (91%), with mean age of 16.76 (\pm 1.598) years [15].

The World Health Organization (WHO) considers pregnant women aged between 10 and 19 years, which is the stage of adolescence, to be at high-risk because this is a period of physical and psychological development and of impediment to social and educational development [16]. It is noteworthy that 36.7% of mothers were 16 years old or younger, representing the age group at higher risk for obstetric complications, maternal death, rates of prematurity, stillbirth and low birth weight of the newborn [17].

One of the factors that favored the practice of breastfeeding in this study was the presence of adolescents who live a common-law marriage with the partner. Study says that breastfeeding women that live without a partner are six times more likely to prematurely stop breastfeeding, showing that the presence of the companion is considered a protective factor for breastfeeding [18].

A curious fact of this study was the inverse relationship between education and self-efficacy in nursing, what contradicts other studies conducted in several countries [19, 20]. Furthermore, it is known that low educational level negatively influences the duration of breastfeeding [21, 22]. Maybe this was due to the homogeneity of the group where all patients are adolescents under academic education.

The predominance of women whose principal occupation is the realization of domestic chores was also evident in this study. A study in Fortaleza with 252 women showed that working within the house can favor the bond between mother and child and provide greater availability of the mother to breast-feed her child [23].

With respect to family income, there was a predominance of one minimum wage ($n = 44$; 55.7%) among participants. This is a worrisome finding since authors showed that the interruption of exclusive breastfeeding through the introduction of cow's milk is most significant among low-income families [24].

There was predominance of primiparae mothers, which is also reason for worrying because they are inexperienced, with more doubts and difficulties in relation to breastfeeding, and may also suffer more easily negative influences on the act of breastfeeding [25]. On the other hand, if the adolescent is confident about breastfeeding and is well guided and assisted, especially at the beginning of this process, she will develop the necessary confidence to continue breastfeeding her baby.

Moreover, it was observed that vaginal delivery was more common among adolescents who had already had a previous pregnancy, a fact that can be justified by the hospital's own profile, which has the initiative of humanization of delivery and birth. It is also worth mentioning that vaginal delivery is safer than caesarean section because it offers less risk of infection, bleeding and prematurity of newborns [26].

The data show that there were 22 women with more than one child. Among these, five had informally donated their children (mothers, aunts). Among the other 17 (77.3%) mothers, 15 (88.2%) had breast-fed their children for at least six months (regardless of the type of breastfeeding). The same occurred in another study, in which 80 adolescents were interviewed in order to trace the profile of breastfeeding among them. Among the 13 (16.3%) with previous experience, six (46.2%) maintained breastfeeding for 90 to 180 days, followed by four (30%) that maintained for 60 days and three (23%) for 10 days. The main reasons cited for early weaning were having to return to work, not enjoying breastfeeding and the report that the milk had dried up [26].

Most pregnant adolescents admitted not having planned the current pregnancy, just like what was found in another research in which 65.2 % adolescents were not expecting the pregnancy [27]. The lack of pregnancy planning in such a volatile period is adolescence can be a deconstructive factor for the plans of life of adolescents who are still acquiring psychosocial maturity. This is due to factors such as

difficult socioeconomic conditions combined with their being dependant of their partners, the low wages paid to women, that leave them to lose their autonomy and reproductive freedom.

As for the descriptive analysis of data related to the BSES-SF and its domains (Technical and Intrapersonal thought), it was observed that the obtained range for technical and intrapersonal domains was close to the maximum possible. Thus, it is observed that the adolescents had high levels of confidence to carry out the practice of breastfeeding. Other studies in the state of Ceará that have evaluated the self-efficacy of in women to breast-feed, with no specific age, has also shown that they have high self-efficacy [12, 28]. Therefore, it is evident that women from Ceará that are assisted in public systems have confidence in the practice of breastfeeding.

The adolescents tended to answer the maximum value of the scale, occurring the ceiling effect for almost all items except for item 7. The existence of floor and ceiling effects are observed when more than 15% of participants make the choice of the smallest or the largest possible score of the response scale, respectively. The ceiling effect can affect the responsiveness of the instrument, considering that participants with higher or lower scores may or may not be distinguished from each other [29].

Cronbach's alpha is the most widely used indicator to check the reliability of an instrument. Cronbach's alpha varies from zero to one and is generally considered to be a reliable tool when it reaches values from 0.7 to 0.8, and values below this are considered unreliable [30]. In this study, Cronbach's alpha was 0.807, reflecting lower degree of variance of each specific item and indicates the consistency between the items of an instrument, and then this can be considered trustworthy. The Cronbach's alpha of BSES-SF originally was 0.74 [11] and, when validated in Brazil, the alpha was also 0.7427 [28].

Confirming the reliability of the scale in question, a study conducted in western Canada with 103 adolescents that applied the BSES-SF at 34 weeks of gestation and again in one to four weeks pos-

tpartum showed that the alpha Cronbach for the scale items ranged from 0.69 to 0.84, and thus this scale was considered reliable for Canadian adolescents [14].

The correlation analysis between socioeconomic and obstetric variables and BSES-SF resulted in low Pearson coefficient values, suggesting that other confounding factors may be responsible for these results.

Conclusion

The results of this study suggest that the BSES-SF is a reliable and valid measure for assessing self-efficacy in nursing of adolescent mothers. This is an effective, reliable, valid and inexpensive instrument and, therefore, must be used among health professionals to put in practice actions that incentive breastfeeding. The adolescents in this study proved to be confident about the practice of breastfeeding. Only education level showed significant association with maternal self-efficacy of adolescents in breastfeeding ($p = 0.032$).

Thus, it is possible to use a tool to detect the self-efficacy of adolescent mothers in breastfeeding, favoring the care of these women in their process of breastfeeding and consequently the reduction of early weaning. From the knowledge of personal perceptions about the competence, capabilities and means of puerperal mothers to adequately deal with inherent requirements in breastfeeding, it will be possible to promote the health of mother and child specifically in health institutions.

This study has some limitations among which we can mention the reduced sampling and selection in one single location that is accredited to the Initiative Child Friendly Hospital and, therefore, already develops actions in favor of breastfeeding.

We suggest the importance of this scale be validated with a larger sample of adolescents, and that the recruitment be done in hospitals with different profiles.

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