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# Self-efficacy of puerperal women in breastfeeding: a longitudinal study

## *Autoeficácia de puérperas em amamentar: estudo longitudinal*

## *Autoeficacia de puérperas en la lactancia materna: estudio longitudinal*

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## Abstract

**Objective**: to evaluate the self-efficacy of puerperal women throughout the puerperal period regarding their potential to breastfeed. **Method:** longitudinal panel study was performed from May to December 2015 in postpartum rooms of a reference maternity hospital in Fortaleza (Ceará State, Brazil). The study was separated into four moments: the first occurred through a face-to-face meeting at the maternity hospital, and the three subsequent encounters were made by telephone two, four, and six months postpartum. The sample was composed of 66 puerperal women. **Results**: there was an increase in the mean scores of the self-efficacy scale for breastfeeding throughout the months, and most puerperal women showed a high self-efficacy level, although the practice of exclusive breastfeeding showed a progressive decline and reached 17.9% at six months. **Conclusions and implications for practice**: The puerperal women showed progressively higher self-efficacy scores over time, maintaining high and medium self-efficacy levels in breastfeeding. Therefore, this study can direct new intervention research and subsidize the holistic practice of professionals who support breastfeeding.

**Keywords**: Breastfeeding; Self-efficacy; Nursing; Postpartum Period; Health promotion.

## Resumo

**Objetivo:** avaliar a autoeficácia de puérperas, ao longo do período puerperal, quanto ao potencial em amamentar. **Método:** estudo longitudinal do tipo painel, realizado de maio a dezembro de 2015, no Alojamento Conjunto de uma maternidade de referência situada em Fortaleza, Ceará, Brasil, delimitado em quatro momentos. O primeiro ocorreu por contato presencial na maternidade e os três contatos subsequentes foram realizados por meio telefônico aos dois, quatro e seis meses pós-parto. A amostra foi de 66 puérperas. **Resultados**: observou-se aumento da mediana dos escores da escala de autoeficácia em amamentar ao longo dos meses. A maioria das puérperas apresentou nível elevado de autoeficácia, entretanto, a prática do aleitamento materno exclusivo apresentou declínio progressivo, chegando a 17,9% aos seis meses. **Conclusão e implicações para a prática:** As puérperas participantes apresentaram aumento progressivo dos escores da escala de autoeficácia ao longo do tempo, mantendo níveis de elevada e média autoeficácia em amamentar. Logo, este estudo pode direcionar novas pesquisas de intervenção, bem como subsidiar a prática holística dos profissionais que apoiam a amamentação.

**Palavras-chave:** Aleitamento Materno; Autoeficácia; Enfermagem; Período Pós-Parto; Promoção da Saúde.

## Resumen

**Objetivo:** evaluar la autoeficacia de las puérperas a lo largo del puerperio en cuanto a su potencialidad para amamantar. **Método**: estudio longitudinal del tipo panel, realizado de mayo a diciembre de 2015, en el Alojamiento Conjunto de una maternidad de referencia ubicada en Fortaleza, Ceará. Delimitado en cuatro momentos: el primero fue por contacto presencial en la maternidad y los tres contactos posteriores se realizaron telefónicamente a los dos, cuatro y seis meses posparto. La muestra fue de 66 puérperas. **Resultados**: hubo un aumento en la mediana de las puntuaciones de la escala de autoeficacia para la lactancia materna a lo largo de los meses. La mayoría de las puérperas mostró un alto nivel de autoeficacia, sin embargo la práctica de Lactancia Materna Exclusiva mostró un declive progresivo llegando al 17,9% a los seis meses. **Conclusión e implicaciones para la práctica**: Las puérperas mostraron un aumento progresivo en los puntajes de la escala de autoeficacia a lo largo del tiempo, manteniendo niveles de autoeficacia alta y media en la lactancia materna. Por lo tanto, este estudio puede orientar nuevas investigaciones de intervención, así como subsidiar la práctica holística de los profesionales que apoyan la lactancia materna.

**Palabras clave**: Amamantamiento; Autoeficacia; Enfermería; Período posparto; Promoción de la salud.

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## INTRODUCTION

Breastfeeding (BF) is universally recognized as the best way to feed and protect a child as well as strengthen the bond between mother and child, providing benefits for both individuals since children who are breastfed have fewer infections[1,2], lower risk of cardiovascular disease and diabetes[2], and better overall intellectual performance[3]. For women, breastfeeding exercises can prevent breast cancer, increase the interpartum interval, and reduce their risk of developing diabetes or ovarian cancer[4].

The World Health Organization and Brazilian Ministry of Health have recommended that children up to six months of age should be exclusively breastfed, and after six months, breastfeeding should be complemented with other foods in a timely and healthy manner until two years of age or older[5]. Nevertheless, the prevalence rates of exclusive breastfeeding (EBF) in children under six months of age in Brazil are below the recommended levels[6].

Studies have revealed that lack of knowledge about breastfeeding by the mother and family, previous inexperience with breastfeeding, extra-household work, the acquisition of baby bottles, pacifiers, and negative attitudes of the father and family members regarding breastfeeding are important factors for the prevalence of early weaning, as well as low education levels, race, low family income, not having a partner, not having been discharged from the hospital after EBF, not having received group breastfeeding counseling, and low self-efficacy during breastfeeding[7,8].

Self-efficacy is understood as a personal perception of one's ability to perform an activity or behavior[9]. Self-efficacy is based on four primary sources of information: the actual results of individual action, the vicarious experiences of observing others' performance, verbal persuasion and other similar types of social influences, and the physiological states based on which people judge ability[9].

To better assess women's self-efficacy regarding breastfeeding, the Breastfeeding Self-Efficacy Scale (BSES)[9] was developed in light of Bandura's Self-Efficacy Theory[10], which was later revised and became the Breastfeeding Self-Efficacy Scale - Short Form (BSES-SF)[11]. For this study, we used the reduced-scale version validated for Brazil[12]. The application of this scale is pivotal to recognize the relationship between maternal self-efficacy to breastfeed and factors that may trigger early weaning and to know the moments when women are more likely to interrupt breastfeeding. Based on this data, health personnel, especially nursing professionals, can implement effective strategies to improve breastfeeding rates by establishing a closer relationship with women throughout the pregnancy-puerperal period. Therefore, this study aimed to evaluate the self-efficacy of puerperal women during the puerperal period regarding their potential to breastfeed.

## METHODOLOGY

A longitudinal panel study was conducted from May to December 2015 to allow the same subjects to provide data at two or more points in time and examine the patterns of change and respective reasons[13]. To create the sample, 66 puerperal women admitted to postpartum rooms (i.e., rooming-in) of a reference maternity hospital with specialized gynecology, obstetrics, and pediatrics care in Fortaleza (Ceará State, Brazil) were recruited.

The inclusion criteria included: puerperal women with at least six hours of postpartum[14], with their newborns in the same postpartum room, who were breastfeeding, and had access to a telephone. The exclusion criteria were contraindication for breastfeeding, children admitted to the neonatal intensive care unit (NICU), children born with disabilities that make breastfeeding difficult or impossible (e.g., cleft palate and esophageal atresia), and puerperal women with hearing impairments. The discontinuation criterion was a complete interruption of breastfeeding.

The study was conducted over six months and divided into four moments: the first occurred through a face-to-face meeting with the puerperal women at the postpartum room, where they were asked to sign the informed consent form if they agreed to participate. A form with sociodemographic and obstetric data was also applied (M0) and the Breastfeeding Self-Efficacy Scale - Short Form (BSES-SF) to assess breastfeeding self-efficacy. The three subsequent contacts were made by telephone two (M1), four (M2), and six (M3) months postpartum. In each telephone contact, the researchers applied the BSES-SF and an instrument with data regarding breastfeeding duration and the child's diet.

For data analysis, two aspects were chosen as dependent variables: self-efficacy in breastfeeding practice measured by the BSES-SF, which has 14 items divided into two domains: technique and intrapersonal thoughts. The scale was answered using a Likert scale; thus, the total score of the scale can vary from 14 to 70 points. The self-efficacy level classification is as follows: low self-efficacy (14 to 32 points), medium self-efficacy (33 to 51 points), and high self-efficacy (52 to 70 points). The other aspect analyzed was the duration of breastfeeding and the child's type of diet (BF and EBF) according to the definitions of the Brazilian Ministry of Health[15].

Data were compiled and analyzed using the Statistical Package for the Social Sciences (SPSS) software (version 22.0). Continuous variables were expressed as mean ± standard deviation and categorical variables as absolute and relative frequencies. Comparisons of the means of the variables at the different times of the study were performed using the Wilcoxon test. The type of diet provided to the baby at each moment of the study was evaluated by Fisher's exact test.

The study was approved by the Research Ethics Committee of the Federal University of Ceará (protocol no. 1,026,156). The women who accepted to participate were informed of the objectives and benefits of the study and signed the informed consent form as per Resolution No. 466/12 of the National Health Council of the Ministry of Health, which covers research with human beings[16]. Notably, for underaged women, their legal guardian also signed the consent form.

## RESULTS

As for the sociodemographic profile and obstetric history, the variables that showed a significant relationship with self-efficacy were: age over 18 years ($p$ = 0.003; $p$ = 0.028), mixed-race ($p$ = 0.001), education level over nine years ($p$ = 0.026), household occupation ($p$ = 0.012), family income between R$ 788.00 and R$ 1576.00 ($p$ = <0.001), and being primiparous ($p$ = 0.003). Regardless of the marital status, women showed improved self-efficacy to breastfeeding ($p$ = 0.013; $p$ = 0.043). Previous breastfeeding did not influence improvements in breastfeeding self-efficacy ($p$ = 0.408) (Table 1).

The women were analyzed for breastfeeding self-efficacy throughout the puerperal period in the rooming-in unit at two, four, and six months postpartum. A progressive increase in mean self-efficacy scores was found until the fourth month (M2), after which there was a decline in scores until the sixth month (M3) (Figure 1).

There was a progressive increase in mean self-efficacy scores between the baseline (initial moment) and subsequent moments of the

**Table 1.** Association between BSES-SF scores, sociodemographic characteristics, and obstetric history. Fortaleza, Ceará State, Brazil, 2015.

| Variables | n | % | BSES-SF Scores | | | | | | | | $p$* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Moment 0 (rooming-in) n = 66 | | Moment 1 (2 months) n = 44 | | Moment 2 (4 months) n = 37 | | Moment 3 (6 months) n = 28 | | |
| | | | M | ± SEM | M | ± SEM | M | ± SEM | M | ± SEM | |
| **Age group**[a] | | | | | | | | | | | |
| <18 | 7 | 10.6 | 60.0 | 7.0 | 60.0 | 4.8 | 61.0 | 3.7 | 61.2 | 4.1 | 0.480 |
| 18-35 | 55 | 83.3 | 59.4 | 6.6 | 65.8 | 5.1 | 67.1 | 2.8 | 61.9 | 6.0 | **0.003** |
| >36 | 4 | 6.1 | 60.7 | 8.0 | 65.6 | 4.0 | 65.0 | 4.1 | 65.7 | 3.7 | **0.028** |
| **Race** | | | | | | | | | | | |
| Brown or black | 53 | 80.3 | 59.9 | 7.8 | 65.8 | 4.4 | 65.5 | 3.8 | 64.2 | 4.6 | **0.001** |
| White | 13 | 19.7 | 61.5 | 4.8 | 64.8 | 5.1 | 68.0 | 1.8 | 63.5 | 8.6 | 0.451 |
| **Marital status** | | | | | | | | | | | |
| With a partner | 45 | 68.2 | 60.8 | 6.8 | 65.8 | 4.5 | 65.8 | 3.6 | 64.0 | 5.6 | **0.013** |
| No partner | 21 | 31.8 | 58.8 | 8.7 | 65.4 | 4.6 | 66.0 | 4.0 | 64.3 | 4.1 | **0.043** |
| **Education**[b] | | | | | | | | | | | |
| ≤4 | 3 | 4.6 | 62.0 | 13.9 | 68.0 | 3.5 | 66.0 | 2.0 | 62.7 | 3.5 | 0.733 |
| 5-8 | 7 | 10.6 | 60.8 | 7.4 | 65.5 | 5.3 | 64.5 | 5.4 | 62.0 | 4.3 | 0.633 |
| 9-12 | 29 | 43.9 | 57.0 | 7.9 | 63.8 | 5.1 | 66.1 | 3.6 | 63.0 | 5.7 | **0.026** |
| ≥13 | 27 | 40.9 | 61.5 | 5.5 | 66.4 | 3.9 | 66.2 | 3.7 | 65.7 | 5.3 | **0.031** |
| **Family income**[c] | | | | | | | | | | | |
| >788.00 | 7 | 10.6 | 62.0 | 13.9 | 68.0 | 3.5 | 65.0 | 1.0 | 62.3 | 4.0 | 0.743 |
| 788-1576 | 53 | 80.3 | 59.5 | 6.9 | 65.1 | 4.7 | 66.1 | 3.8 | 63.8 | 5.4 | **<0.001** |
| ≥1576.00 | 6 | 9.1 | 63.0 | 3.6 | 68.0 | 1.0 | 65.0 | 5.6 | 68.0 | 2.0 | 0.294 |
| **Pregnancy** | | | | | | | | | | | |
| Primiparous | 40 | 60.6 | 60.7 | 6.3 | 66.3 | 3.9 | 66.5 | 3.4 | 64.9 | 5.9 | **0.003** |
| Secundiparous | 15 | 22.7 | 59.6 | 6.7 | 65.0 | 5.0 | 65.2 | 4.1 | 63.2 | 3.3 | 0.285 |
| Multiparous | 11 | 16.7 | 58.6 | 12.1 | 64.0 | 6.0 | 64.4 | 4.4 | 62.0 | 2.7 | 0.581 |
| **Previously breastfed** | | | | | | | | | | | |
| Yes | 21 | 80.8 | 64.0 | 5.0 | 63.8 | 4.6 | 63.0 | 4.3 | 62.9 | 3.9 | 0.408 |
| No | 05 | 19.2 | 60.0 | 3.0 | 60.0 | 3.0 | 59.8 | 2.5 | 59.9 | 2.8 | 0.543 |

[a]Age range (in years); [b]education (in years); [c]family income (Brazilian Real - R$); Student T test; M: mean; ± SEM: standard error of the mean.

survey (M0-M1, $p = <0.001$; M0-M2, $p = <0.001$; M0-M3, $p = 0.057$), showing that the adaptation period of women regarding breastfeeding and newborn care at the beginning generates insecurity and requires strategies from health professionals to raise the confidence of the puerperal women (Table 2).

At the beginning of the follow-up and while still in the rooming-in facility, 66 (100%) of the women practiced EBF, although the number of subjects who stopped practicing EBF was considerably lower during the study. No association was found between BSES-SF scores and the type of breastfeeding (Table 3).

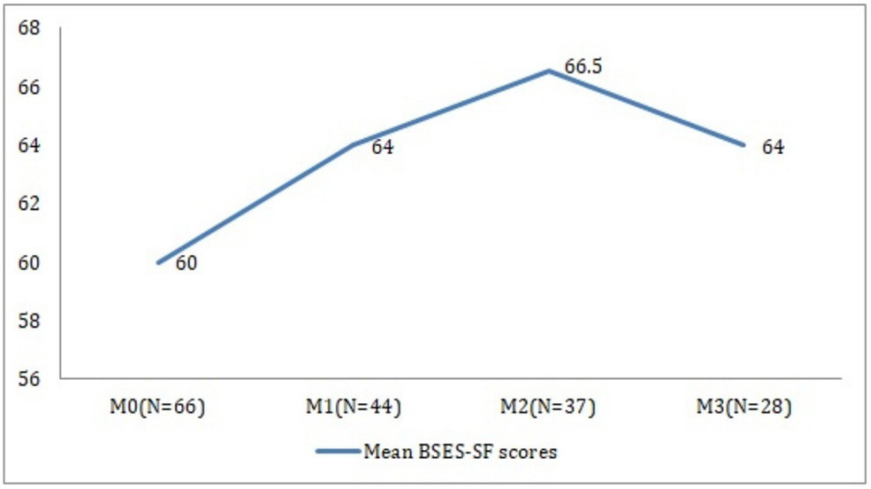


**Figure 1.** Distribution of the mean BSES-SF scores at the baseline, 2, 4, and 6 months. Fortaleza, Ceará State, Brazil, 2015.
Source: the authors.

**Table 2.** Comparison of the mean BSES-SF scores at the four moments of the study. Fortaleza, Ceará State, Brazil, 2015.

| Moments | n | Initial mean | Final mean | p* |
|---|---|---|---|---|
| **M0 - M1** | 44 | 60.0 | 66.0 | **<0.001** |
| **M0 - M2** | 38 | 61.0 | 66.0 | **<0.001** |
| **M0 - M3** | 28 | 62.0 | 66.0 | **0.057** |
| **M1 - M2** | 38 | 66.5 | 66.0 | 0.925 |
| **M1 - M3** | 28 | 67.5 | 66.0 | 0.237 |
| **M2 - M3** | 28 | 67.0 | 66.0 | 0.142 |

Wilcoxon's test

**Table 3.** Association between the BSES-SF scores and types of BF at the beginning and end of the study. Fortaleza, Ceará, Brazil, 2015.

| Type of BF | M0 | | M1 | | *p** | M2 | | *p** | M3 | | *p** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | BSES-SF | | BSES-SF | | | BSES-SF | | | BSES-SF | | |
| | High n (%) | Avg n (%) | High n (%) | Avg n (%) | | High n (%) | Avg n (%) | | High n (%) | Avg n (%) | |
| EBF | 59 (90) | 7 (10) | 28 (63.6) | - | | 14 (36.8) | - | 0.807 | 5 (17.9) | - | |
| PBF | - | - | 1 (2.3) | - | | 5 (13.2) | - | | 2 (7.1) | - | |
| MPBF | - | - | 14 (31.8) | 1 (2.3) | 0.364 | 16 (42.1) | - | | 13 (46.4) | 1 (3.6) | 1.00 |
| CBF | - | - | - | - | | 2 (5.3) | 1 (2.6) | | 7 (25) | - | |
| TOTAL | 66 (100) | | 44 (100) | | | 38 (100) | | | 28 (100) | | |

Fisher's exact test. EBF: exclusive breastfeeding; PBF: predominant breastfeeding; MPBF: mixed/partial breastfeeding; CBF: complimentary breastfeeding.

## DISCUSSION

Socioeconomic and demographic conditions (e.g., maternal age, race, marital status, education, and income) influenced the breastfeeding self-efficacy of postpartum women in the study. Moreover, we noted that older women had higher self-efficacy scores. This study corroborates the findings of other researchers who evidenced that being older positively influences maternal breastfeeding self-efficacy[17].

In this study, puerperal women classified as black or brown showed higher self-efficacy scores for breastfeeding, contradicting the findings of other studies that pointed out that black or brown women have lower self-efficacy scores than women of other races[18]. As for marital status, there was statistical significance between BSES-SF scores both for puerperal women with a partner and puerperal women without one; the fact that the woman has a partner is seen in the literature as a protective factor for EBF[17].

The data presented herein confirm the association between education and breastfeeding self-efficacy described in the literature[17]. The level of education of puerperal women facilitates learning about breastfeeding during the educational strategies provided during prenatal and postpartum periods, in addition to considering that women with higher education may have more access to information about breastfeeding. Furthermore, women with higher family incomes were more likely to have higher self-efficacy to breastfeed their children, thereby confirming a study that identified a statistically significant association between family income and BSES-FS scores[19]. There was also a positive association between BSES-SF scores and being primiparous. Similarly, a study that evaluated breastfeeding at 120 days after birth found that being primiparous was a protective factor for breastfeeding[20].

Self-efficacy interferes with individuals' health behaviors because, based on their belief that they can adhere to healthy habits, people strive to achieve this goal[9]. In breastfeeding, women must feel safe and capable of successfully performing this activity; therefore, this woman must be supported and guided throughout the pregnancy-puerperal period. The participants maintained average and high breastfeeding self-efficacy for the duration of the experimental period, and there were low self-efficacy scores. To reinforce these findings, a cohort study conducted in southeastern Brazil with 83 women demonstrated medium and high breastfeeding self-efficacy levels over time (30, 60, 90, 120, 150, 180, and 210 days)[21].

A progressive increase in self-efficacy scores was observed between baseline and subsequent moments of the study (M1, M2, and M3), which may be related to previous experience in breastfeeding and the vicarious experience of observing other people performing the practice. Personal experiences are important sources for self-efficacy expectation, albeit this aspect is still contradictory in breastfeeding as mothers with previous experience may not show high self-efficacy levels[19].

Despite the participants having maintained medium and high breastfeeding self-efficacy throughout the study, there was no association between BSES-SF scores and the type of EBF practiced by the women since EBF rates progressively declined. At the beginning of the study, 100% of the women practiced EBF, and this number dropped to 67% at two months, 37% at four months, and 17.9% at six months. This finding contradicts the data of another study that reported that medium and high self-efficacy levels were protective factors for EBF and that women with baseline BSES-SF scores above 50 were more likely to be exclusively breastfeeding at six months (odds ratio (OR): 1.95; confidence interval (CI): 95%; 1.07-3.54)[22].

Thus, it is inferred that the maintenance of EBF does not solely depend on confidence in breastfeeding but several other factors. One study involving 55 children (ages zero to 18 months) in Porto Alegre (Rio Grande do Sul State, Brazil) revealed a positive association between weaning and pacifier introduction in the first days (RP 2.30; IC 95% [1.02 to 4.91]; $p = 0.030$); nevertheless, receiving breastfeeding counseling during pregnancy was a pivotal factor to prevent early weaning (RP 0.60; IC 95% [0.37 to 0.94]; $p = 0.032$)[23]. Additionally, women returning to work is considered a highly relevant aspect for the interruption of EBF[24].

Therefore, health professionals must intervene to promote aspects related to breastfeeding self-efficacy. A clinical trial developed with mothers in Hong Kong aimed to investigate the effectiveness of an educational program on breastfeeding based on breastfeeding self-efficacy and reported higher rates of EBF in 11.4% of the intervention group compared to the control group with 5.6%, thereby reinforcing the importance of interventions that promote breastfeeding[25].

Regarding breastfeeding duration, after 120 days, 57.6% (n = 38) of women were still breastfeeding, and at the end of the study (after 180 days), 42.4% (n = 28) of participants were still breastfeeding their children. The prevalence of BF identified at the end of six months was lower than the prevalence of other studies conducted in different regions of Brazil, which showed higher percentages at 180 days (74.3% in southern Brazil and 60.8% in northeastern Brazil)[6].

The more significant discontinuity of breastfeeding after 120 days may be related to the return to work, considering that a substantial part of the participants worked and/or studied away from home. One study conducted with 280 mothers assessed the factors related to breastfeeding practice until the child's sixth month of life and identified the return to work as the leading factor of difficulty for breastfeeding continuity.

Given this scenario, health promotion strategies must be reinforced, especially at 60 and 120 days postpartum, to ensure the maintenance of EBF until the recommended period of 180 days. Educational strategies with serial album[26], telemonitoring[8], and educational group sessions[27] effectively increased maternal breastfeeding self-efficacy and breastfeeding duration.

Given this context, the use of BSES-SF by nurses in clinical practice and other health professionals has proven to be an important tool to verify the health needs of women in prenatal and postpartum periods in order to improve research on breastfeeding self-efficacy and, as a result, promote the practice of effective breastfeeding[28].

## CONCLUSIONS AND IMPLICATIONS FOR PRACTICE

The participating mothers showed a progressive increase in self-efficacy scores over time, maintaining medium and high levels of breastfeeding self-efficacy. Moreover, it was possible to observe that most mothers continued breastfeeding their children at six months, with a progressive decline in EBF over the months. In addition, we noticed that even without intervention, women increased their confidence in breastfeeding over time, raising the question that previous experience may have interfered positively. The fact that women showed high self-efficacy was not enough to maintain EBF for six months, and the need to implement initiatives that promote EBF during the pregnancy-puerperal period is unquestionable.

Therefore, it is the nurse's responsibility to develop interventions focused on the individuality of each woman to minimize factors that can negatively interfere with EBF maintenance. Despite the promising findings reported herein, the limitations of this study consisted of data being collected from a single health facility and a small sample size due to loss of data because of telephone communication. Hence, further research is recommended to include other institutions and a larger sample size. Despite these restrictions, the findings of this study can guide intervention research and support the holistic practice of professionals who support breastfeeding to improve the quality of care.

## AUTHOR'S CONTRIBUTIONS

Study design. Livia Maria Damasceno Alves dos Santos. Mônica Oliveira Batista Oriá.

Data collection or production. Livia Maria Damasceno Alves dos Santos. Mônica Oliveira Batista Oriá.

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