

## Factors associated with breastfeeding continuation for 12 months or more among working mothers in a general hospital

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**Abstract** *This article aims to identify factors associated with breastfeeding continuation for at least 12 months among working mothers in a hospital in the south of Brazil. We conducted a cross-sectional study, interviewing 251 women who breastfed after returning to work. Eligibility criteria included non-twin biological children aged between 12 and 36 months and the absence of an illness (mother and/or child) that could affect breastfeeding. The association between breastfeeding continuation and the exposure variables was tested using Poisson multivariate regression. Only one work-related variable showed a significant association with the outcome. Working only during the day increased the prevalence of BF continuation for at least 12 months by 37%. The following non-work-related factors showed a positive association with the outcome: mothers without a college degree; mothers with at least 12 months' prior breastfeeding experience; child not given milks other than breast milk when the mother returned to work, and not using a pacifier. The following variables showed a negative association with the outcome: older maternal age; older gestational age; mother receiving support from the child's caregiver; and mother receiving professional breastfeeding support. Non-work-related factors had a greater influence on breastfeeding continuation for at least 12 months among working mothers.*

**Key words** *Breastfeeding, Working mothers, Risk factors*

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## Introduction

In view of the benefits of breastfeeding (BF) for the health of children and mothers<sup>1-3</sup>, the prevention of early breastfeeding cessation is essential, even when the mother expresses the wish to breast feed for longer.

One of the multiple reasons for early interruption of BF, particularly exclusive breastfeeding (EBF), is maternal employment<sup>4-6</sup>. In this regard, studies show that measures supporting the maintenance of breast feeding after women's return to work have a positive impact on BF continuation. These measures include flexible working hours, breastfeeding or milk expression breaks, appropriate facilities for expressing and storing milk, support from employers and work colleagues<sup>7</sup>, and child care near or at the workplace<sup>6</sup>.

A nationwide survey in Brazil<sup>8</sup> showed that 26.8% of working women with children under six months exclusively breastfed, compared to 53.4% of women on maternity leave and 43.9% of women who did not work. With regard to women with children under 12 months, 81.2% of women who did not work were breastfeeding, compared to 65% of working women, thus demonstrating the impact of maternal employment on BF rates.

Support for breastfeeding at the work place has been shown to be an important factor influencing BF continuation after return to work. Despite the fact that maternal employment is an important risk factor for early breastfeeding cessation, few studies on this topic have been published, especially in Brazil. Little is therefore known about the barriers and facilitators for BF continuation after return to work. Nevertheless, our understanding of the factors that influence breastfeeding by working mothers is very relevant to the planning of actions aimed at extending the duration of BF among this population. Therefore, the aim of this study was to identify factors associated with BF continuation for at least 12 months among working women in a large general hospital, with emphasis on work-related factors.

## Materials and methods

We conducted a cross-sectional study with 251 female staff of a large university hospital in Porto Alegre in the south of Brazil. The data were collected between June 2016 and July 2017.

The hospital has around 6,000 staff, most of whom are women of child bearing age. The hospital offers the following conditions and facilities for workers with infants: 180 days of maternity leave; breastfeeding breaks of up to one hour per working day until the child's first birthday; crèche located close to the hospital; human milk bank (HMB), breastfeeding helpline; and trained lactation consultants in the neonatal inpatient unit.

The inclusion criteria for participation in the study were as follows: women with non-twin biological children aged between 12 and 36 months born while the mother was employed at the hospital; women breastfeeding after returning to work; absence of an illness (mother and/or child) that could significantly affect BF, such as orofacial malformations or neurological diseases in the infant.

Infant minimum age was set at 12 months because the outcome was defined as BF continuation for at least 12 months, while maximum age was defined as 36 months to minimize recall bias.

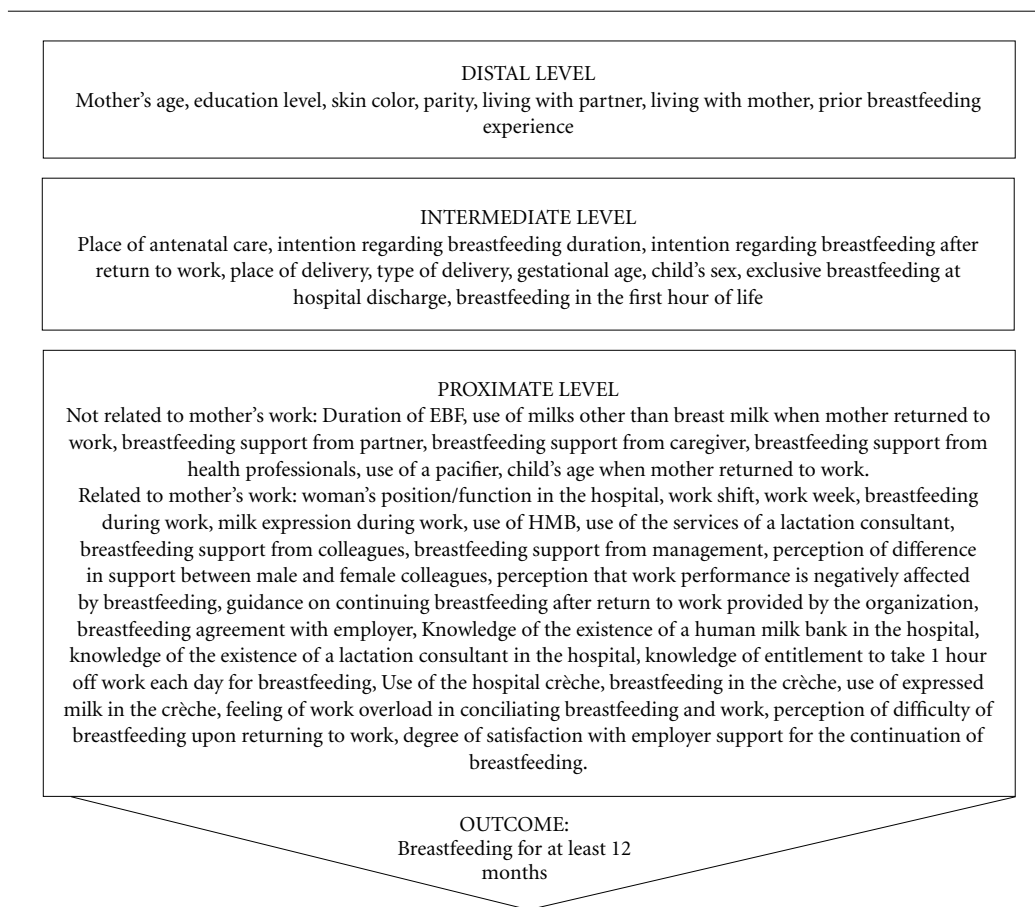
In the case of women with more than one child in the stipulated age group, the youngest child was selected.

The data were collected using a structured questionnaire prepared by the researchers and administered during pre-scheduled interviews held at the hospital. Each interview lasted an average of 30 minutes.

Sample size was calculated using an alpha of 5%, power of 80%, prevalence of BF for at least 12 months of 50%<sup>9</sup>, prevalence of the main independent variables of between 50 and 60% (based on a pilot study with seven women), and odds ratio (OR) of 2.0, resulting in a minimum sample of between 296 and 317, depending on the frequencies of the independent variables.

The data were entered twice and checked for mistakes. Statistical analysis was performed using SPSS version 23. The quantitative variables were described using means and standard deviations or medians and interquartile ranges, while the categorical variables were presented using absolute and relative frequencies.

Due to the large number of variables used to explain the outcome, we used a hierarchical regression model<sup>10</sup> in which the variables were grouped into blocks according to their proximity to the outcome<sup>11</sup>, forming three hierarchical levels: distal, intermediate and proximate. The levels and respective variables are shown in Figure 1.



**Figure 1.** Hierarchical conceptual model used to identify factors associated with BF continuation for at least 12 months among working women.

Source: Elaborated by the authors.

First, we tested the association between the outcome and the variables in each block using univariate Poisson regression. The variables with a significance level of  $p < 0.20$  in the univariate analysis were included in the multivariate analysis in their respective blocks in the Poisson regression (intra-block analysis). The variables with a significance level of  $p < 0.20$  in the intra-block analysis remained in the model until the end of the analysis, adjusting for potential confounding factors. The strength of association was determined using crude and adjusted prevalence ratios (PR and PRa, respectively) and their respective 95% confidence intervals (95% CI), adopting a significance level of  $p < 0.05$ . The re-

search protocol was approved by the hospital's research ethics committee and registered on the *Plataforma Brasil*. All participants signed an informed consent form.

## Results

We contacted 300 women, 49 of whom were excluded because they were not breastfeeding after their return to work, resulting in a final sample of 251 women who met the inclusion criteria. Table 1 shows the characteristics of the study population.

Median duration of EBF was 150 days and 95% of the children were given milk other than

breast milk when the mother returned to work, which occurred between 4 and 11 months (median of 6 months).

Most of the women reported that they intended to breastfeed for at least 12 months and practically all the sample said that they wanted to continue breastfeeding after returning to work; 62.3% of the children were breastfed for at least 12 months.

**Table 1.** Sociodemographic characteristics, obstetric history, breastfeeding and work in the study population. Porto Alegre-RS, 2016-2017 (n=251).

Variables	n (%)
Sociodemographic characteristics	
Average age $\pm$ SD (years)	35 $\pm$ 3.7
College degree	149 (59.4)
Mother's skin color white	213 (84.9)
Living with partner	234 (93.2)
Living with mother	9 (3.6)
Child sex female	110 (43.8)
Obstetric history	
Primiparous	146 (58.2)
Antenatal care	251 (100.0)
Private antenatal care	238 (94.8)
Private delivery	210 (83.3)
Average gestational age $\pm$ SD (weeks)	38.2 $\pm$ 1.7
Cesarean delivery	206 (82.1)
Intention to breastfeed for at least 12 months	235 (93.0)
Intention to breastfeed after return to work	244 (97.2)
Breastfeeding	
Breastfeeding within the first hour of life	150 (59.8)
Prior experience of breastfeeding for at least 12 months	46 (18.3)
Breastfeeding for at least 12 months	156 (62.3)
Exclusive breastfeeding on discharge from the maternity clinic	215 (85.7)
Received breastfeeding support from partner	232 (92.4)
Received breastfeeding support from child's caregiver	203 (80.9)
Received professional breastfeeding support	177 (70.5)
Child given milks other than breast milk when the mother returned to work	238 (94.8)
Used a pacifier	161 (64.1)

Source: Elaborated by the authors.

Table 2 shows data related to return to work and breastfeeding. Most of the women worked with patient care and only during the day. The average work week was 35.5 hours. Approximately three-quarters of the women reported that they were not informed by the organization about matters relating to breastfeeding after return to work, and level of unfamiliarity with facilities and conditions for workers with infants varied according to each facility and condition.

Around one-third of the workers expressed breast milk during work and/or used the HMB. A little under one-quarter of the children went to the crèche and 13.5% were breastfeeding the crèche. More than half the women said that the place for breastfeeding in the crèche was inadequate.

Table 3 presents the results of the final hierarchical multivariate model run to determine the association between continuation of breastfeeding for at least 12 months and the study variables.

The following variables showed a positive association with breastfeeding continuation for at least 12 months: mothers without a college degree; mother with previous experience of breastfeeding for at least 12 months; child not given milk other than breast milk when the mother returned to work; child had not used a pacifier; and mother works only during the day. The following variables showed a negative association with the outcome: maternal age (3% reduction in prevalence for each year of age); gestational age (7% reduction in prevalence for each week of gestation); mother received breastfeeding support from the child's caregiver and professional breastfeeding support.

## Discussion

This study is the first in Brazil to conduct a detailed investigation of work-related factors influencing BF after return to work and their relation to breastfeeding duration.

Surprisingly, only one of the 22 variables was associated with BF continuation for at least 12 months: work shift. Working only during the day increased the prevalence of BF continuation for at least 12 months by 37%. This association was reported by a previous study in Brazil, suggesting that working night shifts may act as a barrier to breastfeeding due to night-shift fatigue<sup>12</sup>.

Unlike other studies<sup>6,7,13,14</sup>, the current study did not find an association between maintenance of BF after return to work and flexible working

**Table 2.** Data related to work and breastfeeding. Porto Alegre-RS, 2016-2017 (n=251).

Variables	n	%
Mother's position/function		
Patient care	198	78.9
Administrative	19	7.6
Other	34	13.5
Work shift		
Daytime	186	74.1
Night/both	65	25.9
Working week (hours)* - Median (SD)	35,5 (5,3)	
Breastfeeding during work		
Yes	56	22.3
No	195	77.7
Use of human milk bank		
Yes	86	34.3
No	165	65.7
Use of the services of lactation consultant		
Yes	25	10.0
No	226	90.0
Breastfeeding support from work colleagues		
Yes	150	59.8
No	101	40.2
Perception of difference in support between male and female colleagues		
Women provide more support	49	19.5
Men provide more support/no difference	202	80.5
Breastfeeding agreement with employer		
Yes	50	19.9
No	201	80.1
Guidance on continuing breastfeeding after return to work provided by the organization		
Yes	63	25.1
No	188	74.9
Knowledge of the existence of a human milk bank in the hospital		
Yes	178	70.9
No	73	29.1

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hours, breaks for breastfeeding or milk expression, appropriate facilities for expressing and storing milk, support from employers and work colleagues, and child care near or at the workplace. This may be partially explained by differences between our study and the other studies, such as study population and workplace characteristics, duration of maternity leave, and definition of outcome.

Our findings show that individual and non-work-related factors showed more associations with BF continuation for at least 12 months than work-related factors. Some of the individual factors associated with maintenance of BF after

return to work in the present study – such as maternal age, education level, prior experience of breastfeeding, gestational age, use of milks other than breast milk, breastfeeding support, and using a pacifier – were associated with duration of BF by previous studies<sup>11,15-18</sup>. Therefore, these factors should also be taken into account when designing strategies for promoting BF after return to work.

The negative association between professional support and maintenance of BF for longer found in this study is an apparently paradoxical result. A possible explanation is that the women who reported not having received professional

**Table 2.** Data related to work and breastfeeding. Porto Alegre-RS, 2016-2017 (n=251).

Variables	n	%
Knowledge of the existence of a lactation consultant in the hospital		
Yes	65	25.9
No	186	74.1
Knowledge of entitlement to take 1 hour off work each day for breastfeeding		
Yes	226	90.0
No	25	10.0
Milk expression during work		
Yes	94	37.5
No	157	62.5
Use of the hospital crèche		
Yes	58	23.1
No	193	76.9
Use of expressed milk in the crèche		
Yes	6	2.4
No	245	97.6
Breastfeeding in the crèche		
Yes	34	13.5
No/did not use the crèche	217	86.5
Feeling of work overload in conciliating breastfeeding and work		
Yes	152	60.6
No	99	39.4
Perception that work performance is negatively affected by breastfeeding		
Yes	58	23.1
No	193	76.9

\*Data analyzed continuously.

Source: Elaborated by the authors.

support may have had less problems breastfeeding and thus needed less support and were less likely to seek professional help.

Despite the importance of information for breastfeeding management upon return to work<sup>17</sup>, our findings reveal that the women in our sample were uninformed. Most of the women reported that they had not received guidance from their employer on breastfeeding upon return to work and were unaware that they could have used the services of lactation consultants. In addition, some were unaware that the hospital had a HMB and others did not even know they were entitled to take one hour off work each day for breastfeeding until the child's first birthday.

Despite offering various conditions and facilities to promote and protect breastfeeding – for example, being a Baby-Friendly certified hospital and the provision of six months of maternity leave, a HMB, breastfeeding specialists, and child care near the workplace – the hospital does not develop specific actions directed at women

returning to work who want to continue breastfeeding. This is probably why just one-third of the women expressed milk during work, which is essential for maintaining an adequate milk supply. This may also explain why half of the women who expressed milk discarded the milk, despite the hospital providing the necessary facilities for safely expressing and storing milk, thus depriving the child the chance of receiving BM at home in the mother's absence.

A study conducted in Australia with female health professionals also showed that women were uninformed about aspects related to breastfeeding after return to work<sup>19</sup>. The findings showed that very few women spoke to managers about breastfeeding after return to work and were aware of the existence of breaks for breastfeeding or milk expression. More than half of the respondents reported that they would have probably breastfed for longer after return to work if they had received more information and support at the workplace.

**Table 3.** Factors associated with breastfeeding continuation for at least 12 months among women working in a large general hospital in the south of Brazil - results of the hierarchical Poisson regression. Porto Alegre-RS, 2016-2017.

Variables	Sample (n=251)		BF Prevalence $\geq$ 12m	PR <sub>c</sub> (IC95%)	p	PR <sub>a</sub> (IC95%)	p
	n	%	%				
<b>Distal Block</b>							
Maternal age(years)* - Average (SD)	35.7 (3.7)	-	-	0.97 (0.95-0.99)	0.024	0.97 (0.95-0.99)	0.021
Mother has college degree							
Yes	149	59.4	56.4	1.00		1.00	
No	102	40.6	70.6	1.25 (1.04-1.51)	0.020	1.23 (1.02-1.48)	0.033
Prior experience of breastfeeding							
<12 months	53	21.1	49.1	0.79 (0.59-1.07)	0.132	0.81 (0.60-1.08)	0.152
$\geq$ 12 months	46	18.3	78.3	1.27 (1.04-1.54)	0.019	1.32 (1.07-1.63)	0.008
No experience	152	60.6	61.8	1.00		1.00	
<b>Intermediate Block</b>							
Antenatal care							
Public	13	5.2	84.6	1.39 (1.08-1.79)	0.011	1.03 (0.67-1.60)	0.883
Private	238	94.8	60.9	1.00		1.00	
Intention with regard to breastfeeding duration							
$\geq$ 12months	235	93.6	64.3	2.06 (0.99-4.28)	0.054	1.79 (0.88-3.64)	0.107
<12 months	16	6.4	31.3	1.00		1.00	
Intention to breastfeed after return to work							
Yes	244	97.2	63.1	2.21 (0.68 - 7.16)	0.186	1.53 (0.49-4.79)	0.470
No/Maybe	7	2.8	28.6	1.00		1.00	
Delivery							
Public	41	16.3	73.2	1.22 (0.98-1.51)	0.071	1.15 (0.88-1.49)	0.305
Private	210	83.3	60.0	1.00		1.00	
Type of delivery							
Vaginal	45	17.9	73.3	1.23 (0.99-1.51)	0.054	1.13 (0.89-1.42)	0.312
Cesarean	206	82.1	59.7	1.00		1.00	
Gestational age (weeks)* - Average (SD)	38.2 (1.7)	-	-	0.95 (0.91-0.99)	0.035	0.93 (0.88-0.97)	0.003
Sex of child							
Female	110	43.8	70.0	1.25 (1.03-1.51)	0.022	1.17 (0.97-1.42)	0.106
Male	141	56.2	56.0	1.00		1.00	
EBF upon discharge from maternity clinic							
Yes	215	85.7	64.7	1.37 (0.96-1.96)	0.087	1.39 (0.97-1.98)	0.069
No	36	14.3	47.2	1.00		1.00	
<b>Proximate Block</b>							
Duration of EBF (days)* - Median (P25-P75)	150 (90-180)	-	-	1.002 (1.001-1.004)	0.007	1.001 (1.000-1.003)	0.126
Use of milks other than breast milk when mother returned to work							
Yes	238	94.8	60.1	1.00		1.00	
No	13	5.2	100	1.66 (1.50-1.85)	<0.001	1.36 (1.06-1.74)	0.016

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**Table 3.** Factors associated with breastfeeding continuation for at least 12 months among women working in a large general hospital in the south of Brazil - results of the hierarchical Poisson regression. Porto Alegre-RS, 2016-2017.

Variables	Sample (n=251)		BF Prevalence $\geq$ 12m	PR <sub>c</sub> (IC95%)	p	PR <sub>a</sub> (IC95%)	p
	n	%	%				
Breastfeeding support from child caregiver							
Yes	203	80.9	60.1	0.85 (0.69-1.05)	0.131	0.77 (0.61-0.97)	0.027
No/parents are the child's sole caregiver	48	19.1	70.8	1.00		1.00	
Professional breastfeeding support							
Yes	177	70.5	58.8	0.84 (0.69-1.01)	0.069	0.78 (0.64-0.94)	0.008
No	74	29.5	70.3	1.00		1.00	
Using a pacifier							
Yes	161	64.1	56.5	1.00		1.00	
No	90	35.9	72.2	1.28 (1.06-1.54)	0.010	1.29 (1.07-1.54)	0.006
Mother's position/function in the hospital							
Care	198	78.9	63.1	1.26 (0.89-1.80)	0.195	1.33 (0.98-1.81)	0.063
Support	19	7.6	73.7	1.47 (0.96-2.27)	0.077	1.41 (0.92-2.17)	0.116
Administrative	34	13.5	50.0	1.00		1.00	
Shift							
Daytime	186	74.1	66.7	1.35 (1.04-1.77)	0.026	1.37 (1.05-1.77)	0.019
Night/both	65	25.9	49.2	1.00		1.00	
Expression of breast milk during work							
Yes	94	37.5	68.1	1.16 (0.96-1.41)	0.123	1.05 (0.87-1.26)	0.605
No	157	62.5	58.6	1.00		1.00	
Breastfeeding support from work colleagues							
Yes	150	59.8	66.0	1.17 (0.95-1.44)	0.137	1.20 (0.99-1.46)	0.070
No	101	40.2	56.4	1.00		1.00	
Guidance from organization on breastfeeding continuation after return to work							
Yes	63	25.1	69.8	1.17 (0.96-1.43)	0.120	1.17 (0.96-1.43)	0.124
No	188	74.9	59.6	1.00		1.00	
Use of the hospital crèche							
Yes	58	23.1	72.4	1.23 (1.01-1.49)	0.043	0.95 (0.68-1.35)	0.785
No	193	76.9	59.3	1.00		1.00	
Breastfeeding in the crèche							
Yes	34	13.5	76.5	1.28 (1.03-1.58)	0.027	1.13 (0.80-1.61)	0.493
No/did not use crèche	217	86.5	59.9	1.00		1.00	
Perceptions of difficulty of breastfeeding upon returning to work							
Easy/very easy	38	15.1	76.3	1.32 (1.05-1.66)	0.019	1.14 (0.87-1.49)	0.332
Neither easy nor hard	82	32.7	62.2	1.07 (0.86-1.34)	0.541	1.02 (0.83-1.26)	0.852
Difficult/very difficult	131	52.2	58.0	1.00		1.00	

\*Data analyzed continuously; PR<sub>c</sub>=Crude prevalence ratio; PR<sub>a</sub>=Adjusted prevalence ratio; 95%CI=95% confidence interval; SD=Standard deviation; BF=Breastfeeding; EBF=exclusive breastfeeding; P25-P75=25th - 75th percentile.

Source: Elaborated by the authors.



In the current study, a little over half of the respondents reported having received support from colleagues and management for continuing breastfeeding after return to work. Despite this lack of support, the rate in our study was higher than that observed by Weber et al.<sup>7</sup> in Australia, where only 11% of respondents mentioned having received support from management and 13% from colleagues. It is interesting to note that, according to the women in the present study, there was no difference between the support offered by male and female colleagues.

Studies show that mothers who are unable to breastfeed during work are more likely to stop breastfeeding early<sup>20</sup> and that keeping children close to or at the workplace helps promote BF continuation after return to work by providing the opportunity to directly feed the infant from the breast<sup>6</sup>. This did not occur with the women in our study, which may be explained by the fact that most of the children that went to the crèche were not breastfed there. The inadequacy of the place for breastfeeding at the crèche reported by the mothers in the present study may have contributed to the low adherence to breastfeeding in this space.

It is interesting to note that, despite not having a specific program for welcoming women returning to work after maternity leave, most of the respondents reported that they were satisfied with the support they received. This may be due to the general level of worker satisfaction with the organization.

It is also interesting to note that duration of EBF was greater among the women in the present study than in the general population of Porto Alegre (150 days versus 52 days<sup>8</sup>). One of the reasons for this difference is that the women in our study are professionals working in a Baby-Friend-

ly certified hospital. Other factors that may have contributed to this finding include the provision of six-month maternity leave and exclusion of women who weaned their babies before returning to work from the study.

Despite the importance of this study's findings, it is important to highlight some of its limitations. First, the study was conducted in a single location with a population made up predominantly of health professionals. Second, the women in our study have a number of privileges that most working women in Brazil do not have, including six months of maternity leave, high level of education, and access to a HM Band child care near the workplace. Future research should therefore focus on organizations with different conditions and facilities for breastfeeding women and different groups of women in order to better understand work-related factors that act as barriers and facilitators for BF continuation after return to work.

In conclusion, our findings show that work-related factors that would usually be expected to negatively influence the maintenance of BF after return to work were not associated with BF continuation for at least 12 months. This may be partially explained by the benefits offered by the organization, in particular six months of maternity leave. However, it is probable that a specific program designed to welcome women who want to continue breastfeeding after return to work would increase the prevalence of breastfeeding continuation for at least 12 months and make conciliating breastfeeding and working an easier and more pleasurable experience. The factors associated with BF continuation identified by this study, including those not directly related to the workplace, should be taken into consideration when designing strategies to promote BF after-return to work.

## Collaborations

MS Mendes contributed at all stages, from data collection, tabulation, analysis and writing. M Schorn contributed to the stages of data collection, tabulation and analysis. LC Espírito Santo contributed to the orientation for: data collection, analysis, writing and design of the study. LD Oliveira contributed to the guidance for: data collection, analysis, writing and design of the study. ERJ Giugliani contributed to the guidance for: data collection, analysis, writing and design of the study.

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