Impact of intention to become pregnant on breastfeeding in the first postpartum hour

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Abstract *This study aimed to analyze the impact of the intention to become pregnant on breastfeeding within the first hour after delivery. This is a cross-sectional study nested in the research "Birth in Brazil: national survey into labor and birth" carried out by the Oswaldo Cruz Foundation. Multiple logistic regression was used to analyze the data of 5,563 puerperae and their newborns who participated in the study. The following women evidenced a lower propensity to begin breastfeeding in the first hour of life: puerperae who did not wish to become pregnant (OR = 0.85; CI: 0.73-0.98) and who were dissatisfied upon learning that they had become pregnant (OR = 0.72; CI: 0.61-0.83). The intentionality of pregnancy affected maternal breastfeeding behavior so that women with unintended pregnancies were less likely to initiate breastfeeding in the first hour postpartum, thus evidencing that inadequate family planning may indirectly harm breastfeeding. Therefore, the quality of family planning services should be improved to reduce unintended pregnancies and prevent unfavorable outcomes for mother-and-child health, such as the late onset of breastfeeding.*
Key words *Pregnancy, Maternal behavior, Breastfeeding, Postpartum, Family planning*

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Introduction

Breastfeeding provides benefits for children, women, and society, and is the most sensitive, economical, and effective intervention for the promotion of maternal and child health[1,2].

Immediate postpartum has been identified as the most appropriate period for the onset of breastfeeding, due to the newborn's better capacity to seek and suck the nipple[3,4] spontaneously. Breastfeeding in the first hour after delivery favors its continuity and contributes to lower neonatal mortality rates due to infections[5], and is an indicator of breastfeeding excellence[2,6]. This practice is recommended by the World Health Organization (WHO) as the *Fourth Step* among the *Ten Steps to Successful Breastfeeding*, which are part of the Baby-Friendly Hospital Initiative (BFHI)[7].

A significant increase in exclusive breastfeeding rates in children under six months of age has been observed in low- and middle-income countries, with an elevation from 24.9% in 1993 to 35.7% in 2013. However, while more than 80% of newborns were breastfed in almost all countries, only half started breastfeeding in the first hour after delivery[2].

In Brazil, breastfeeding in the first hour of life is one of the health indicators recommended by the Ministry of Health, with population surveys showing prevalence rates of 32.9% in 1996[8], 42.9% in 2006[9], and 67.7% in 2008[10]. However, in a national, hospital-based study carried out from 2011 to 2012, the prevalence of this indicator in the country was only 44.5%, and the Northeast region had the lowest prevalence compared to other Brazilian regions[11], with 41.3% of newborns breastfed in the first hour of life.

Studies have shown that sociodemographic characteristics, prenatal and hospital procedures can promote or hinder breastfeeding in the first hour postpartum[12-16]. It is assumed that a significant part of the circumstances and factors related to the woman's life may also contribute to the failure to establish or discontinue breastfeeding, including the intention to become pregnant.

The intention to become pregnant is classified as intentional when the pregnancy happens at the desired time, and unintentional when women did not want the pregnancy, or when the pregnancy occurred at an unfavorable time[17].

Currently, the significant percentage of unintended pregnancies is an important public health issue because it is associated with behaviors harmful to health[18] and family planning policy failures[19,20]. Studies have pointed out that the intention to become pregnant influences maternal behavior during and after pregnancy, affecting breastfeeding and, thus, the health and well-being of the mother and child dyad[21-25].

From this perspective, when considering the relationship between intention to become pregnant and maternal behavior regarding breastfeeding, it is necessary to start from the assumption that understanding human behavior increases the ability to predict responses and enables more effective interventions, since the attitude is related to previous intention and this, in turn, is expressed in the individual's actions[26].

Therefore, understanding the impact of the intention to become pregnant on outcomes related to the mother-child binomial is essential to prevent negative repercussions of unintended pregnancies on maternal and children's health, and contribute to an improved family planning policy. Thus, given the low prevalence of breastfeeding in the first hour of life in Brazil, and especially in the Northeast region[11], and the lack of a study on the intention to become pregnant as a predictor of this indicator in the country so far, this study aimed to analyze the impact of the intention to become pregnant on breastfeeding in the first hour postpartum.

Methods

This is a cross-sectional study nested in the research *Birth in Brazil: national survey into labor and birth* carried out by the Oswaldo Cruz Foundation (Fiocruz) from February 2011 to October 2012. Methods are detailed in the literature[27].

The baseline study subjects were puerperae hospitalized for pregnancy resolution and their newborns with a gestational age of 22 weeks or more or 500g or more birth weight. Probabilistic sampling was carried out in two stages, one related to health facilities and the other to puerperae and their newborns. Health establishments were stratified by Great Geographic Region (North, Northeast, Southeast, South, and Midwest), location of the municipality (capital and inland) and type of establishment (public, private, and mixed), comprising 30 strata samples, of which at least five hospitals were selected per stratum. Thus, 1,403 of 3,961 establishments who performed 500 or more births/year were selected for the study, according to data from the 2007 Live Births Information System (SINASC). The sample of puerperae and their pairs by stratum was calculated from the cesarean rate in Brazil in 2007

(46.6%), obtaining 90 puerperae per establishment, and at least 450 puerperae per stratum. In the end, a sample of 23,940 puerperae and their newborns was distributed in 196 municipalities, 27 of which were located in the capitals and 169 in the interior[28].

This study comprised data referring to the Northeast Region, which included 6,096 puerperae hospitalized in 68 health establishments, of which 533 were excluded due to some condition that contraindicated or could hinder breastfeeding in the first hour postpartum, such as preterm newborns, with APGAR below 7 in the 5th minute of life or with some malformation; and HIV-positive puerperae or puerperae who used illicit drugs, resulting in a sample of 5,563 participants.

The data were collected by previously trained health professionals and students, using electronic forms. Only three forms were used for this study: the one applied to the mothers, after the first six hours postpartum, the one completed with data contained in medical records, and another one applied to institutional administration with questions that included whether it was a Baby-Friendly Hospital (BFH)[27].

The following variables were selected for this study from the original forms: breastfeeding in the first hour postpartum (dependent variable, generated from the recategorization of the variables breastfeeding attempt in the delivery room and time elapsed until breastfeeding attempt for the first time); sociodemographic characteristics of puerperae (maternal age, schooling, marital status and paid work); classification of the health establishment where the delivery took place (type of management and BFH certification); obstetric history (number of previous pregnancies and parity); prenatal care assistance (prenatal care, period of onset of prenatal care and number of visits); information about delivery and newborn (type of delivery, contact with the newborn in the immediate postpartum period, type of accommodation and mother-child separation time after delivery), besides variables related to the intention to become pregnant (wanted get pregnant at that time, wanted to wait longer and did not want to get pregnant), and woman's feeling when she learned about the pregnancy (satisfied, somewhat satisfied, and dissatisfied).

The data were analyzed using the software Statistical Package for Social Science (SPSS), version 20.0. The SPSS CSAMPLE module was used for complex samples when bivariate and multivariate analyses were performed. Descriptive statistics were used in the univariate analysis, while

Pearson's chi-square test (χ^2) was used for the bivariate analysis to verify associations between the dependent and the qualitative explanatory variable, with emphasis on the intention to become pregnant[29,30].

Multiple Logistic Regression (MLR) with an adjusted odds ratio (ORa) was used to explain the joint effect of independent variables on breastfeeding in the newborn's first hour of life, while independent variables, unlike the main ones, only adjusted the model. The criterion for inclusion of variables in the logistic model was the association at the 20% (p < 0.20) level in the bivariate analysis[31], and only the variables that showed an association at a 5% significance level (p < 0.05) were maintained in the model. The final MLR model was adjusted using the Enter method, which forces all variables into the model since the purpose is to explain and not predict or classify future cases[32,33].

The goodness-of-fit test (Hosmer and Lemeshow Test) showed that the final model is suitable for explaining the response variable. The multicollinearity of the explanatory variables was verified by the Variance Inflation Factor (VIF) test, adopting a VIF above four as the cutoff point for the diagnosis of multicollinearity[34]. However, the test did not detect dependence between the independent variables studied.

The baseline research *Birth in Brazil: national survey into labor and birth* was submitted and approved by the Research Ethics Committee (CEP) of the National School of Public Health of the Oswaldo Cruz Foundation. The criteria established in Resolution No 196/96 of the National Health Council[35] were met, and ethical principles were assured when participants signed the Informed Consent Form (ICF). This study was carried out with the authorization of the central coordination of the baseline study.

Results

The predominant characteristics of the participants were the age group of 20-34 years (68.0%), education up to elementary school (59.2%), living with a partner (83.0%), and not having paid work (68.4%). Most deliveries occurred in public health establishments or under the Unified Health System (SUS) (86.7%), and most of the establishments were not Baby-Friendly Hospitals (BFH) (60.3%) (Table 1).

Regarding reproductive aspects, women with one or more previous pregnancies (58.2%), mul-

Table 1. Sociodemographic and institutional health characterization, obstetric history, prenatal care, information on childbirth and newborns of puerperae in the Northeast of Brazil, 2012.

Variables (n=5,563)	%	Variables (n=5,563)	%
Sociodemographic:		Feeling when hearing about the pregnancy	
Maternal age group		Satisfied	69.4
12-19 years	21.6	Somewhat satisfied	22.4
20-34 years	68.0	Dissatisfied	8.2
35 years and over	10.4	Performed prenatal care	
Schooling level		No	1.5
ES* complete and under	59.2	Yes	98.5
SS** incomplete and over	40.8	Prenatal care onset period	
Marital status		First trimester	74.3
Without companion	17.0	Second trimester	22.2
With companion	83.0	Third trimester	3.5
Paid work		Number of visits	
No	68.4	<6	28.6
Yes	31.6	≥6	71.4
Classification of the Health establishment:		**Information about delivery and NB:**	
Type of hospital		**Type of delivery**	
Public/mixed	86.7	Vaginal	49.7
Private	13.3	Cesarean	50.3
Baby-Friendly Hospital Certification		**Contact with the NB in the immediate postpartum period**	
No	60.3	Breastfed or held the baby on her lap	25.8
Yes	39.7	Just saw the baby or had no contact	74.2
Obstetric history:		**Accommodation Type**	
Total previous pregnancies		Joint accomodation (Ward/room)	63.4
None	41.8	Nursery/incubator / heated crib	27.2
One or more	58.2	IU/ICU/pathological nursery	9.4
Parity		**Mother-child separation time after delivery**	
Primiparous	48.2	≤ 1 hour	38.3
Multiparous	51.8	> 1 hour	61.7
Prenatal care:		**Breastfeeding in the first postpartum hour**	
Planning to become pregnant		No	65.8
Wanted to get pregnant at that moment	44.8	Yes	34.2
Wanted to wait longer	25.7		
Did not want to get pregnant	29.5		

*Elementary school; **Secondary school.

tiparous women (51.8%), those who reported having become pregnant at an appropriate time (44.8%), and those who declared themselves satisfied upon discovering their pregnancy (69.4%) prevailed. Almost all puerperae received prenatal care (98.5%), and most of them started in the first trimester (74.3%) and had six or more visits (71.4%). More than half of the participants had a cesarean delivery (50.3%), and the most frequent were those who reported having only seen or not having contact with their newborn in the immediate postpartum period (74.2%). Joint accommodation (63.4%) and puerperae women who declared that the mother and child had been separated for more than one hour after delivery (61.7%) prevailed. A total of 65.8% of the 5,563 puerperae participating in the study stated that they had not breastfed in the first hour postpartum (Table 1).

In the bivariate analysis, variables marital status and prenatal care met the requirement of p < 0.20 for inclusion in the multivariate model, whi-

le the intention to become pregnant and other variables showed p < 0.05. Breastfeeding in the first hour of life among women who wanted to become pregnant at the time (38.2%) and were satisfied with the pregnancy (37.3%) predominated (Table 2).

Table 3 shows the multiple logistic regression model of the variables intention to become pregnant and feeling when learning about pregnancy associated with breastfeeding in the first hour postpartum. Women who did not want to become pregnant were 15% less likely to breastfeed their children in the first hour postpartum than women who stated that they wanted to become pregnant at the time. Women who were dissatisfied when they became aware of the pregnancy were 28% less likely to breastfeed in the first hour after delivery than those who reported satisfaction at the time.

Discussion

The "fourth step to successful breastfeeding" should be carried out[7] considering the relevance of breastfeeding in the first hour of life for the establishment and continuation of breastfeeding, especially for maternal and child health. However, this study found a low prevalence of breastfeeding in the first hour postpartum in the Northeastern population studied, lower than the prevalence levels previously found for the region and nationally in 2006[9] and 2008[10], and was classified as poor (30-49%), according to the WHO parameters for this indicator[6]. This result showed the existence of barriers to the timely initiation of breastfeeding in the studied population, such as private establishment not accredited to the BFHI, being primiparous, lack of prenatal care, cesarean delivery, absence of mother-child contact in the immediate postpartum period, and unintended pregnancy.

The lower propensity for breastfeeding in the first hour postpartum among women who did not want to become pregnant, who wanted to wait longer to become pregnant, and were dissatisfied when they found out they were pregnant, revealed an association between unintended pregnancies and unfavorable results regarding early initiation of breastfeeding among northeastern puerperae, with a worse result observed among those who were dissatisfied when they learned about the pregnancy. These findings confirm the international literature, which has shown low breastfeeding rates[21-25] and other un-

favorable outcomes associated with unintended pregnancies, such as premature birth and low birth weight[36].

From the viewpoint that the intention to become pregnant precedes maternal behavior regarding breastfeeding, the Planned Behavior Theory (PBT), proposed by Icken Ajzen in 1985 to explain behaviors over which individuals do not have total control, considers that attitude, subjective norm and perceived behavioral control correlate with previous intention, which in turn influences individual actions[26]. Thus, the maternal attitude vis-à-vis breastfeeding may show women's desire for fertility that is met or not by family planning. Therefore, the intention to become pregnant proved to be a reliable predictor of breastfeeding in the immediate postpartum period for the population studied.

However, although the results indicate that the intention to become pregnant affected the initiation of breastfeeding in the first hour after delivery, the need to consider the context in which the pregnancy occurs so that the relationship between intention to become pregnant and outcomes for maternal and child health is analyzed has been pointed out, given the influence of socioeconomic and cultural factors on maternal behavior[24,37]. In this sense, a study revealed a higher propensity for late initiation of breastfeeding among children from unwanted pregnancies. However, this result was observed only among children belonging to families of low socioeconomic status[23]. Nonetheless, in this study, the sociodemographic aspects were not significant after adjusting analyses, reinforcing that unintended pregnancy can affect timely breastfeeding regardless of women's socioeconomic context.

Thus, the adverse effects of unintended pregnancies on breastfeeding in the first hour indicate the need to strengthen public policies aimed at reproductive planning, regardless of social circumstances, to reduce the impacts of unintended pregnancy on maternal and child health. Furthermore, the implementation of differentiated strategies to provide further support to women with this type of pregnancy during prenatal care, childbirth, and puerperium, is vital to attempt to reverse the expected trend of lower bonding and care concerning the baby[22,37].

Nevertheless, although the intention to become pregnant has proved to be a determinant significantly associated with breastfeeding in the immediate postpartum period, it is necessary to recognize that most of the limitations for

Table 2. Bivariate analysis of the association between breastfeeding in the first hour of life of the newborn and the sociodemographic characteristics, institutional classification, obstetric history, prenatal care, information about delivery and the newborns. Puerperae in the Northeast of Brazil, 2012.

Variables	Breastfeeding in the first hour %	P-value*	Variables	Breastfeeding in the first hour %	P-value*
Sociodemographic and economic:			Feeling when hearing about the pregnancy		
Maternal age group			Satisfied	37.3	0.027
12-19 years	39.8	<0.001	Somewhat satisfied	35.1	
20-34 years	33.5		Dissatisfied	26.1	
35 years and over	27.6		Performed prenatal care		0.141
Schooling level		<0.001	No	34.2	
Elementary School complete and under*	40.4		Yes	42.5	
Elementary school complete and over*	25.7		Prenatal care onset period		
Marital status		0.175	First trimester	39.5	0.001
Without companion	36.2		Second trimester	35.2	
With companion	33.8		Third trimester	32.4	
Paid work		<0.001	Number of visits		
No	26.1		<6	31.5	<0.001
Yes	38.2		≥ 6	39.6	
Classification of the Health establishment:			**Information about delivery and NB:**		
Type of hospital		<0.001	Type of delivery		<0.001
Public/mixed	38.9		Vaginal	44.7	
Private	6.4		Cesarean	20.5	
Baby-Friendly Hospital Certification		<0.001	Contact with the NB in the immediate postpartum period		
No	34.4		Breastfed or held the baby on her lap	45.6	<0.001
Yes	49.2		Just saw the baby or had no contact	31.9	
Obstetric history:			Accommodation Type		
Total previous pregnancies			Joint accomodation (Ward/room)	39.2	<0.001
None	29.3	<0.001	Nursery/incubator/heated crib	19.2	
One or more	37.7		IU/ICU/pathological nursery	11.1	
Parity		<0.001	Mother-child separation time after delivery (n=5,523)		<0.001
Primiparous	29.1		≤ 1 hour	63.7	
Multiparous	42.2		> 1 hour	4.1	
Prenatal care:					
Planning to become pregnant					
Wanted to get pregnant at that moment	38.2	0.039			
Wanted to wait longer	33.8				
Did not want to get pregnant	31.6				

*Chi-square test at the 20% level.

Table 3. Multivariate analysis of the association between breastfeeding in the newborn's first hour of life with the plan to become pregnant and feeling when hearing about the pregnancy. Women in the Northeast of Brazil, 2012.

Variables	OR[a]	95% CI	p-value*
Planning to become pregnant			
Wanted to get pregnant at that moment	1		0.048
Wanted to wait longer	0.91	0.78-1.05	
Did not want to get pregnant	0.85	0.73-0.98	
Feeling when hearing about the pregnancy			
Satisfied	1		0.039
Somewhat satisfied	0.97	0.82-1.12	
Dissatisfied	0.72	0.61-0.83	

*Wald's test. 95%CI = 95% confidence interval; ORa = adjusted odds ratio. Hosmer and Lemeshow test (p = 0.901). Pseudo-correlation (r = 0.812). Adjusted by type of hospital (p = 0.001), certification as BFH (p < 0.001), parity (p < 0.001), prenatal care performed (p = 0.035), number of prenatal care visits (p < 0.001), type of delivery (p < 0.001). Contact with the NB in the immediate postpartum period (p = 0.001) and Mother-child separation time after delivery (p < 0.001). The other variables were included in the model, but all evidenced p > 0.05.

breastfeeding in the first hour of life are related to components of the hospital organization and delivery care, with little autonomy for women to decide when to start breastfeeding[12-15], given that a significant portion of the children was born in a child-friendly hospital. Even in this type of expressive hospital, many of them were not breastfed in the first hour.

It has been suggested that, besides the influence of relatives, friends, and partners, women's decisions regarding breastfeeding are built according to the interaction with the community, the newborn, their daily activities, and also subjective aspects such as personality characteristics and attitude towards breastfeeding[38,39]. Thus, the strengthening of prenatal care for women affected by unintended pregnancies can minimize unfavorable breastfeeding results, since it facilitates the provision of guidance on the benefits, adequate management, and the importance of early breastfeeding[14,40]. In this sense, a study showed that educational practices during prenatal care provided faster initiation and longer breastfeeding time[41].

Therefore, breastfeeding is an intricate experience that requires support to achieve it and may be affected by aspects of the maternal personality, emotions, cultural influences, family relationships[42], and attitudes resulting from the intention to become pregnant[24,37]. The adequacy of care in the delivery room through the postponement of routine care for healthy newborns in favor of the early approximation between mother and child[43], is an alternative to support early breastfeeding, given the establishment of the bond, which may reduce effects of unintended pregnancies on breastfeeding. Similarly, puerperal care prevents breastfeeding discontinuity and can be an opportunity for counseling on family planning[44].

Moreover, the relationship observed between worse breastfeeding results in the first hour of life and dissatisfaction with pregnancy strengthens the concept of PBT[26] that subjective aspects, such as the intention to become pregnant, influence maternal behavior concerning breastfeeding, revealing the importance of planning to reduce maternal and child health inequalities resulting from maternal behaviors resulting from unintended pregnancy.

The results reinforce the assumption that breastfeeding practices can be affected by the intention to become pregnant[21-23,25], which causes concern, as there is a high prevalence of unintended pregnancies among the participants, showing that the needs for reproductive planning may not be being met in the Northeastern population, which may have a multifactorial cause.

In this sense, a study showed the negligible objective and perceived knowledge regarding hormonal contraceptives of adolescents in the Northeastern capital[45], and a North American study evidenced that the correct use of contraceptives significantly reduced the risk of unintended pregnancy among the participants, with a predominance of this type of pregnancy among those who made incorrect use of some contraceptive method[46].

Thus, unintended pregnancy is a public health challenge as it contributes to maternal morbimortality due to exposure to possible risks related to pregnancy, unsafe abortion, and childbirth, also affecting ideal breastfeeding practices[24,47,48].

We can conclude that the intention to become pregnant affected breastfeeding in the first hour postpartum among puerperae in the Northeast of Brazil since unintended pregnancies reduced the likelihood of timely initiation of breastfeeding. Therefore, family planning shortcomings can result in unintended pregnancies, and these may affect maternal behavior regarding breast-

feeding, which can result in lower maternal and child health indicators and contribute to the perpetuation of preventable problems with adequate breastfeeding practices.

This study had a limitation typical of cross-sectional studies, which restricts the determination of causal relationships between variables and the outcome. On the other hand, its strengths are weighted sampling, representative for the entire region studied, and the findings regarding the association between intention to become pregnant and maternal behavior regard-

ing breastfeeding in the first hour postpartum, unprecedented in Latin American literature.

The study shows the need for investments in public policies aimed at reproductive planning to prevent unintended pregnancies and their impact on maternal and child health. Furthermore, the results may contribute to the proposal of longitudinal studies that precede pregnancy and investigate women and their children regarding the issue of breastfeeding up to six months after delivery, to clarify better the causal relationship and possible outcomes in the medium term.

Collaborations

AF Rocha collaborated in the production and analysis of information, design, drafting, and final review of the paper. KRO Gomes collaborated in the analysis of information, design, writing, and final review of the paper. MTP Rodrigues contributed to the drafting and final review of the paper.

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