



FACTORS ASSOCIATED WITH SKIN-TO-SKIN CONTACT BETWEEN MOTHER AND NEWBORN AND BREASTFEEDING WITHIN THE FIRST HOUR OF LIFE: A CROSS-SECTIONAL STUDY

FATORES ASSOCIADOS AO CONTATO PELE A PELE ENTRE MÃE E RECÉM-NASCIDO E À AMAMENTAÇÃO NA PRIMEIRA HORA DE VIDA: ESTUDO TRANSVERSAL

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ABSTRACT: The objective was to investigate factors associated with skin-to-skin contact between mother and newborn and breastfeeding within the first hour of life. Pregnant women (n=165) in the third trimester completed a pre-tested questionnaire containing sociodemographic information, pregnancy-related variables, breastfeeding-related variables, and systemic conditions. After delivery, information about childbirth and the newborn was collected from medical records. Simple and multiple logistic regression analyses were performed, considering three outcomes of interest (p<0.05): (a) skin-to-skin contact (n=165); (b) breastfeeding within the first hour (n=138); and (c) combined skin-to-skin contact and breastfeeding within the first hour (n=137). Skin-to-skin contact was recorded in 41.2% of deliveries, breastfeeding within the first hour in 26.8%, and the combined outcome in 18.2%. Vaginal delivery was consistently associated with higher odds of both skin-to-skin contact (OR=10.12; 95% CI: 3.41–30.04) and breastfeeding within the first hour of life (OR=19.34; 95% CI: 7.18–52.11). In addition, initiation of prenatal care by the second month of pregnancy was associated with higher odds of skin-to-skin contact (OR=4.54; 95% CI: 1.29–15.28), while planned pregnancy was associated with higher odds of breastfeeding within the first hour (OR=2.78; 95% CI: 1.04–7.46). For the combined outcome, early initiation of prenatal care (OR=7.38; 95% CI: 1.45–37.58) and vaginal delivery (OR=22.71; 95% CI: 6.74–76.50) remained positively associated. Low adherence to skin-to-skin contact and breastfeeding within the first hour was observed. Vaginal delivery, early initiation of prenatal care, and planned pregnancy were associated with higher odds of adherence to these practices.

KEYWORDS: Breast Feeding. Maternal and Child Health. Newborn. Postpartum Period.

RESUMO: O objetivo foi investigar os fatores associados ao contato pele a pele entre mãe e recém-nascido e à amamentação na primeira hora de vida. Gestantes (n=165) no terceiro trimestre preencheram um questionário pré-testado com informações sociodemográficas, relacionadas à gestação, ao aleitamento materno e condições sistêmicas. Após o parto, informações sobre o parto e o bebê foram coletadas em prontuário médico. Foram realizadas análises de regressão logística simples e múltipla, considerando três desfechos de interesse (p<0,05): a) contato pele a pele (n=165); b) amamentação na primeira hora (n=138); c) contato pele a pele e amamentação na primeira hora em conjunto (n=137). A prática do contato pele a pele foi registrada em 41,2% e a amamentação na primeira hora em 26,8% dos partos, sendo que o desfecho combinado ocorreu em 18,2%. O parto normal mostrou associação consistente com maiores chances tanto de contato pele a pele (OR=10,12; IC95%: 3,41–30,04) quanto de amamentação na primeira hora de vida (OR=19,34; IC95%: 7,18–52,11). Além disso, o início do pré-natal até o segundo mês da gestação associou-se à maiores chances de contato pele a pele (OR=4,54; IC95%: 1,29–15,28), enquanto a gravidez planejada associou-se à maiores chances de amamentação na primeira hora (OR=2,78; IC95%: 1,04–7,46). No desfecho combinado, o início precoce do pré-natal (OR=7,38; IC95%: 1,45–37,58) e o parto normal (OR=22,71; IC95%: 6,74–76,50) mantiveram associação positiva. Observou-se baixa adesão às práticas de contato pele a pele e amamentação na primeira hora. O parto normal, o início precoce do pré-natal e a gravidez planejada associaram-se a maiores chances de adesão a essas práticas.

PALAVRAS-CHAVE: Aleitamento Materno. Período pós-parto. Recém-nascido. Saúde Materno-Infantil.

INTRODUCTION

In Brazil, principles related to immediate newborn care after birth are incorporated into public policies for labor and birth, particularly following the consolidation of guidelines aimed at the humanization of maternal and child healthcare. The establishment of the Rede Cegonha (Stork Network) marked a milestone in the organization of obstetric and neonatal care within the Unified Health System (Sistema Único de Saúde – SUS). Implemented in 2011, the initiative promoted the qualification of care in the immediate postpartum period and the reduction of unnecessary interventions¹. Subsequently, Ministry of Health Ordinance No. 371/2014 reinforced comprehensive and humanized care for newborns at birth, including the organization of immediate care within the SUS². These principles are reaffirmed in national technical documents, such as the National Guidelines for Normal Childbirth Care and the National Policy for Comprehensive Child Health Care, highlighting the alignment of Brazilian public policies with the principles underpinning the Golden Hour^{3,4}.

During childbirth, practices such as skin-to-skin contact, breastfeeding within the first hour of life, and delayed umbilical cord clamping (≥ 60 seconds) constitute the so-called Golden Hour, defined as the first hour of life of the newborn after birth⁵. In this period, evidence-based interventions are implemented to support the fetal-to-neonatal transition⁶ and promote the establishment of an emotional bond between the mother–infant dyad.

Skin-to-skin contact refers to placing a newborn with stable vital signs, in the prone position in direct contact with the mother's abdominal or chest skin, where the infant remains during the first hour of life⁷. When combined with this practice, breastfeeding within the first hour of life provides significant benefits to the health of the mother–infant dyad, both immediately and in the long term⁸. Key benefits for the newborn include thermoregulation, reduced stress levels, regulation of heart rate, and improved breastfeeding success among full-term infants⁹. Notably, skin-to-skin contact during the Golden Hour accelerates neonatal metabolic adaptation and rapidly restores body temperature, thereby promoting more favorable adaptive conditions to extrauterine life¹⁰. In addition, early breastfeeding contributes to reductions in hypoglycemia and hyperoxia and is associated with improvements in bronchopulmonary dysplasia, as well as reductions in intraventricular hemorrhage and retinopathy of prematurity⁷.

These practices also play a central role in health promotion and disease prevention. The World Health Organization (WHO) recommends that immediate and continuous skin-to-skin contact between the mother and the newborn be facilitated and encouraged. This practice promotes early initiation of breastfeeding and increases the likelihood of exclusive breastfeeding during the first months of life, thereby reducing the risk of neonatal mortality and improving infant survival¹¹. In addition, breastfeeding within the first hour of life ensures that the newborn receives colostrum, a nutrient-rich substance containing protective factors that strengthen the immune system and help prevent common childhood infections¹². Overall, these practices represent maternal and child health promotion measures that positively influence public health indicators and contribute to reductions in morbidity and mortality among vulnerable populations.

For mothers, these practices are associated with a reduced risk of postpartum depression and greater maternal empowerment¹³. In this context, support for breastfeeding during the Golden Hour and in the first days postpartum, while the mother–infant dyad is still hospitalized, is a core component of the Hospital Amigo da Criança (Baby-Friendly Hospital Initiative – BFHI)¹⁴ and contributes to successful breastfeeding, a practice widely recognized as essential to maternal and child health¹⁵. Data from the Estudo Nacional de Alimentação e Nutrição Infantil (ENANI-2019)¹⁶ indicate that 62.4% of children under two years of age initiated breastfeeding during the Golden Hour.

However, in Brazil, a cross-sectional study reported low rates of breastfeeding within the first hour of life. Factors negatively associated with early breastfeeding included lower maternal educational level, ethnicity, unemployment, and delivery in public maternity hospitals. Conversely, positive associations were observed among mothers with at least a high school education, those who delivered in private maternity hospitals, and those employed outside the home¹⁷. Regarding skin-to-skin contact, another cross-sectional study found that its implementation is influenced by socioeconomic and obstetric factors, including higher maternal income and educational level, maternal age, mode of delivery, and the newborn's clinical condition¹⁸.

International studies have examined breastfeeding within the first hour of life, particularly in the context of the Hospital Amigo da Criança (Baby-Friendly Hospital Initiative – BFHI) and Baby-Friendly Community (BFC) initiatives. Recent reviews suggest that, although these initiatives have demonstrated positive impacts, their implementation remains limited in several countries. Moreover, gaps remain in data quality and in the availability of longitudinal studies needed to provide a more robust assessment of factors associated with early breastfeeding¹⁹.

Although most studies assess skin-to-skin contact and breastfeeding within the first hour of life separately, some investigations have examined these practices jointly, highlighting their relevance for promoting maternal and child health. Studies conducted in Brazil demonstrate that the simultaneous occurrence of skin-to-skin contact and breastfeeding within the first hour of life is associated with factors related to the model of care, mode of delivery, and maternal and institutional characteristics^{20,21}.

However, studies simultaneously examining maternal, obstetric, and neonatal factors associated with skin-to-skin contact, breastfeeding within the first hour of life, and their joint occurrence as distinct outcomes remain scarce, particularly in hospitals implementing a humanized model of childbirth care. In this context, the present study aimed to investigate factors associated with skin-to-skin contact, breastfeeding within the first hour of life, and the simultaneous occurrence of these two practices.

METHODOLOGY

STUDY DESIGN AND SETTING

This is a cross-sectional observational study involving pregnant women in their third trimester who were receiving care at a maternity hospital. Participants completed a structured questionnaire during pregnancy, and after delivery, information regarding labor and birth was collected from the maternity hospital's medical records.

The study was conducted at a public maternity hospital operating under private law, located in the central region of São Paulo State, Brazil. The institution adopts a humanized childbirth care model and operates a Human Milk Bank.

TYPE OF STUDY

This study is part of a larger cross-sectional observational study and was approved by the Research Ethics Committee of the Araraquara School of Dentistry, São Paulo State University (FOAr-UNESP) (CAAE: 64072722.5.0000.5416). The study was conducted in accordance with the ethical principles established in Resolutions No. 466 (December 12, 2012) and No. 510 (April 7, 2016) of the Brazilian National Health Council.

The study was conducted and reported in accordance with the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) guidelines.

STUDY PARTICIPANTS AND ELIGIBILITY CRITERIA

Study participants comprised pregnant women in their third trimester and their full-term newborns who met the following inclusion criteria: age ≥ 18 years, receiving care at the maternity hospital, Brazilian, and literate.

Exclusion criteria included pregnant women whose newborns were born preterm and/or required admission to the neonatal intensive care unit (NICU); known contraindications to breastfeeding (maternal infection with HIV or HTLV-2, or use of medications incompatible with breastfeeding); breast hypoplasia; maternal conditions that impaired communication (e.g., hearing or visual impairment); death of either member of the mother–infant dyad; and multiple pregnancy.

SAMPLE SIZE

The sample size was determined by the number of mother–infant dyads for whom data were collected through questionnaires and medical records during the data collection period. This was therefore a convenience sample comprising all eligible pregnant women during the study period, and no prior sample size calculation was performed.

Due to missing outcome information in the medical records, of the 295 pregnant women who completed the questionnaire, 165 mother–infant dyads were included in the analysis of the skin-to-skin contact (SSC) outcome, 138 in the analysis of breastfeeding within the first hour of life (BFH), and 137 in the combined outcome analysis.

DATA COLLECTION

Data collection was carried out through the administration of a questionnaire and review of the newborns' medical records at the maternity hospital by two researchers (MSS and LSAM), both holding degrees in Dentistry.

A self-administered semi-structured questionnaire was used to collect perinatal information from pregnant women, including sociodemographic, family, and maternal characteristics, pregnancy-related variables, and prenatal maternal intentions regarding exclusive breastfeeding.

The questionnaire was pretested with 20 pregnant women with characteristics similar to those of the target population in order to assess clarity, comprehension of the questions, and administration time. Minor revisions were made to items requiring clarification, and the final version of the questionnaire was established. Data collected during the pretest phase were not included in the analysis.

Using the final version, data were collected on the same day the pregnant women attended the maternity hospital for care. In accordance with institutional procedures, the questionnaire was administered in the outpatient reception area to avoid embarrassment or potential influence on participants' responses. Data collection took place from February 2023 to September 2024. In both the pretest and final data collection phases, pregnant women received a brief explanation before being invited to participate in the study.

After delivery, information from the mother–infant dyads' medical records was obtained at the maternity hospital, including mode of delivery, newborn sex, birth weight, Apgar scores, postpartum

complications, breastfeeding within the first hour of life (BFH), and skin-to-skin contact (SSC). Data were recorded using standardized forms.

VARIABLES

The study outcomes were:

1. Skin-to-skin contact with the mother in the delivery room (SSC) – recorded as Yes or No.
2. Breastfeeding within the first hour of life (BFH) – recorded as Yes or No.
3. Combined outcome (SSC + BFH) – recorded as Yes when both events occurred simultaneously and No otherwise.

Independent variables included sociodemographic, maternal, obstetric, and neonatal characteristics collected through the questionnaire or from maternity hospital medical records, such as maternal age, skin color, marital status, educational level, paid employment outside the home, planned pregnancy, mode of delivery, initiation of prenatal care, newborn birth weight, newborn sex, Apgar scores at the 1st and 5th minutes, among others.

DATA ANALYSIS

Statistical analyses were performed using R software (R Core Team, 2024)²², with the significance level set at 5% ($p < 0.05$). Initially, a descriptive analysis was conducted using absolute and relative frequencies.

To assess the associations between the independent variables and the three outcomes of interest — (a) skin-to-skin contact (SSC); (b) breastfeeding within the first hour of life (BFH); and (c) the simultaneous occurrence of SSC and BFH — simple and multiple logistic regression analyses were performed. No multicollinearity was detected between the two independent variables included in the multiple logistic regression models.

Crude and adjusted odds ratios (ORs) with 95% confidence intervals (95% CIs) were estimated. Model fit was assessed using statistical significance, the Akaike Information Criterion (AIC), and the Hosmer–Lemeshow test. Missing values were excluded from the estimation process, and parameters were calculated based on the available data for each variable.

No prior sample size calculation was performed, as this was a convenience sample. Statistical analyses were conducted considering the available data for each outcome.

RESULTS

SKIN-TO-SKIN CONTACT IN THE DELIVERY ROOM

Among the 165 participants with available information on skin-to-skin contact, 58.8% did not experience the practice in the delivery room. Vaginal delivery and initiation of prenatal care by the second month of pregnancy significantly increased the likelihood of skin-to-skin contact (OR = 10.12; 95% CI: 3.41–30.04 and OR = 4.54; 95% CI: 1.29–15.28, respectively; $p < 0.05$) (Table 1).

BREASTFEEDING WITHIN THE FIRST HOUR OF LIFE

Among the newborns, 26.8% were breastfed within the first hour of life. Adjusted analysis showed that planned pregnancy (OR = 2.78; 95% CI: 1.04–7.46) and vaginal delivery (OR = 19.34; 95% CI: 7.18–52.11; $p < 0.0001$) significantly increased the likelihood of early breastfeeding (Table 2).

COMBINED OUTCOME: SKIN-TO-SKIN CONTACT AND EARLY BREASTFEEDING

Considering both outcomes simultaneously, only 18.2% of mothers experienced skin-to-skin contact and breastfed within the first hour of life. Early initiation of prenatal care (OR = 7.38; 95% CI: 1.45–37.58) and vaginal delivery (OR = 22.71; 95% CI: 6.74–76.50) were associated with a higher likelihood of the combined event (Table 3).

Table 1. Crude and adjusted analyses of factors associated with skin-to-skin contact between mother and newborn in the delivery room. Public maternity hospital under private management in the interior of São Paulo State, Brazil, 2024 (n = 165).

Variable	Category	n (%)	Skin-to-skin contact		Crude OR (95%CI)	p-value	Adjusted OR (95%CI)	p-value
			No	No				
			n (%)	n (%)				
Overall	-	165 (100.0%)	97 (58.8%)	68 (41.2%)	-	-	-	-
Maternal age (years)	#≤26	88 (53.3%)	56 (63.6%)	32 (36.4%)	Ref	-	-	-
	>26	77 (46.7%)	41 (53.2%)	36 (46.8%)	1.54 (0.82-2.87)	0.1771	-	-
Maternal skin color	White	81 (49.1%)	48 (59.3%)	33 (40.7%)	Ref	-	-	-
	Non-white	82 (49.7%)	47 (57.3%)	35 (42.7%)	1.08 (0.58-2.02)	0.8015	-	-
	No response	2 (1.2%)	2 (100.0%)	0 (0.0%)	-	-	-	-
Marital status	Without partner	67 (40.6%)	37 (55.2%)	30 (44.8%)	1.26 (0.67-2.37)	0.4745	-	-
	With partner	97 (58.8%)	59 (60.8%)	38 (39.2%)	Ref	-	-	-
	No response	1 (0.6%)	1 (100.0%)	0 (0.0%)	-	-	-	-
Maternal employment	No	78 (47.3%)	48 (61.5%)	30 (38.5%)	Ref	-	-	-
	Yes	83 (50.3%)	45 (54.2%)	38 (45.8%)	1.35 (0.72-2.53)	0.3477	-	-
	No response	4 (2.4%)	4 (100.0%)	0 (0.0%)	-	-	-	-
Household income (BRL)	#≤2.500	72 (43.6%)	43 (59.7%)	29 (40.3%)	Ref	-	-	-
	>2.500	52 (31.5%)	31 (59.6%)	21 (40.4%)	1.00 (0.48-2.08)	0.9905	-	-
	No response	41 (24.8%)	23 (56.1%)	18 (43.9%)	-	-	-	-
Maternal education	# Up to completed high school	120 (72.7%)	71 (59.2%)	49 (40.8%)	Ref	-	-	-
	Higher education	42 (25.4%)	24 (57.1%)	18 (42.9%)	1.09 (0.53-2.21)	0.8181	-	-
	No response	3 (1.8%)	2 (66.7%)	1 (33.3%)	-	-	-	-
Paternal age (years)	#≤28	79 (47.9%)	45 (57.0%)	34 (43.0%)	Ref	-	-	-
	>28	66 (40.0%)	41 (62.1%)	25 (37.9%)	0.81 (0.41-1.57)	0.5291	-	-
	No response	20 (12.1%)	11 (55.0%)	9 (45.0%)	-	-	-	-
Primigravida	No	90 (54.6%)	49 (54.4%)	41 (45.6%)	1.46 (0.78-2.73)	0.2415	-	-
	Yes	74 (44.8%)	47 (63.5%)	27 (36.5%)	Ref	-	-	-
	No response	1 (0.6%)	1 (100.0%)	0 (0.0%)	-	-	-	-
Planned pregnancy	No	98 (59.4%)	57 (58.2%)	41 (41.8%)	Ref	-	-	-
	Yes	63 (38.2%)	38 (60.3%)	25 (39.7%)	0.92 (0.48-1.74)	0.7862	-	-
	No response	4 (2.4%)	2 (50.0%)	2 (50.0%)	-	-	-	-
Pregnancy complications	No	119 (72.1%)	67 (56.3%)	52 (43.7%)	1.41 (0.69-2.86)	0.3460	-	-
	Yes	45 (27.3%)	29 (64.4%)	16 (35.6%)	Ref	-	-	-
	No response	1 (0.6%)	1 (100.0%)	0 (0.0%)	-	-	-	-
Belief that the practice benefits the newborn	#≤5	80 (48.5%)	49 (61.2%)	31 (38.8%)	Ref	-	-	-
	>5	69 (41.8%)	37 (53.6%)	32 (46.4%)	1.37 (0.71-2.63)	0.3479	-	-
	No response	16 (9.7%)	11 (68.8%)	5 (31.2%)	-	-	-	-

Variable	Category	n (%)	Skin-to-skin contact		Crude OR (95%CI)	p-value	Adjusted OR (95%CI)	p-value
			No	No				
			n (%)	n (%)				
Belief that the practice benefits the mother	#≤2	75 (45.4%)	44 (58.7%)	31 (41.3%)	Ref	-	-	-
	>2	62 (67.6%)	34 (54.8%)	28 (45.2%)	1.17 (0.59-2.31)	0.6525	-	-
	No response	28 (17.0%)	19 (67.9%)	9 (32.2%)	-	-	-	-
Previous exclusive breastfeeding duration (months)	#≤6	46 (27.9%)	29 (63.0%)	17 (37.0%)	Ref	-	-	-
	>6	37 (22.4%)	16 (43.2%)	21 (56.8%)	2.24 (0.92-5.42)	0.0739	-	-
	No response	82 (49.7%)	52 (63.4%)	30 (36.6%)	-	-	-	-
Gestational age at initiation of prenatal care (months)	#≤2	117 (70.9%)	65 (55.6%)	52 (44.4%)	1.60 (0.78-3.28)	0.2002	4.54 (1.29-15.28)	0.0185
	>2	45 (27.3%)	30 (66.7%)	15 (33.3%)	Ref	-	Ref	-
	No response	3 (1.8%)	2 (66.7%)	1 (33.3%)	-	-	-	-
Prenatal care service	Private health insurance	2 (1.2%)	1 (50.0%)	1 (50.0%)	-	-	-	-
	Private care	1 (0.6%)	1 (100.0%)	0 (0.0%)	-	-	-	-
	Public health system (SUS)	153 (92.7%)	91 (59.5%)	62 (40.5%)	Ref	-	-	-
	Private health insurance and SUS	6 (3.6%)	2 (33.3%)	4 (66.7%)	-	-	-	-
	No response	3 (1.8%)	2 (66.7%)	1 (33.3%)	-	-	-	-
Maternal disease	No	144 (87.3%)	86 (59.7%)	58 (40.3%)	0.67 (0.25-1.80)	0.4318	-	-
	Yes	18 (10.9%)	9 (50.0%)	9 (50.0%)	Ref	-	-	-
	Non response	3 (1.8%)	2 (66.7%)	1 (33.3%)	-	-	-	-
Mode of delivery	Vaginal delivery	63 (38.2%)	17 (27.0%)	46 (73.0%)	9.84 (4.74-20.41)	<0.0001	10.12 (3.41-30.04)	<0.0001
	Cesarean delivery	102 (61.8%)	80 (78.4%)	22 (21.6%)	Ref	-	Ref	-
Newborn sex	Female	83 (50.3%)	47 (56.6%)	36 (43.4%)	1.12 (0.60-2.10)	0.7117	-	-
	Male	79 (47.9%)	47 (59.5%)	32 (40.5%)	Ref	-	-	-
	No response	3 (1.8%)	3 (100.0%)	0 (0.0%)	-	-	-	-
Birth weight (grams)	#≤3.300	75 (45.4%)	41 (54.7%)	34 (45.3%)	Ref	-	-	-
	>3.300	85 (51.5%)	52 (61.2%)	33 (38.8%)	0.76 (0.41-1.44)	0.4053	-	-
	No response	5 (3.0%)	4 (80.0%)	1 (20.0%)	-	-	-	-
Apgar score at 1 st minute	#<9	35 (21.3%)	25 (71.3%)	10 (28.6%)	Ref	-	-	-
	≥9	129 (78.7%)	72 (55.8%)	57 (44.2%)	1.98 (0.88-4.45)	0.0993	-	-
	No response	1 (0.6%)	0 (0.0%)	1 (100.0%)	-	-	-	-
Apgar score at 5 th minute	#<9	2 (1.2%)	2 (100.0%)	0 (0.0%)	-	-	-	-

Variable	Category	n (%)	Skin-to-skin contact		Crude OR (95%CI)	p-value	Adjusted OR (95%CI)	p-value
			No	No				
			n (%)	n (%)				
	≥9	162 (98.2%)	95 (58.6%)	67 (41.4%)				
	No response	1 (0.6%)	0 (0.0%)	1 (100.0%)	-	-	-	-
Intercurrences	No	132 (80.0%)	78 (59.1%)	54 (40.9%)	1.19 (0.44-3.21)	0.7357	-	-
	Yes	19 (11.5%)	12 (63.2%)	7 (36.8%)	Ref			
	No response	14 (8.5%)	7 (50.0%)	7 (50.0%)	-	-	-	-

* Yes: category corresponding to the outcome event (skin-to-skin contact with the mother in the delivery room). Ref: reference category for independent variables. OR: odds ratio. 95% CI: 95% confidence interval. # Values expressed as the sample median. AIC: Akaike Information Criterion (null model = 114.89; final model = 92.88). p = 0.5022 (Hosmer-Lemeshow test). Source: research data, São Paulo State, Brazil, 2024.

Table 2. Crude and adjusted analyses of factors associated with breastfeeding within the first hour of life. Public maternity hospital under private management in the interior of São Paulo State, Brazil, 2024 (n = 138).

Variable	Category	n (%)	Breastfeeding within the first hour of life		Crude OR (95%CI)	p-value	Adjusted OR (95%CI)	p-value
			No	*Yes				
			n (%)	n (%)				
Overall	-	138 (100.0%)	101 (73.2%)	37 (26.8%)	-	-	-	-
Maternal age (years)	#≤26	78 (56.5%)	56 (71.8%)	22 (28.2%)	1.18 (0.55-2.53)	0.6736	-	-
	>26	60 (43.5%)	45 (75.0%)	15 (25.0%)	Ref			
Maternal skin color	White	71 (51.4%)	47 (66.2%)	24 (33.8%)	2.04 (0.94-4.46)	0.0734	-	-
	Non-white	65 (47.1%)	52 (80.0%)	13 (20.0%)	Ref			
	No response	2 (1.4%)	2 (100.0%)	0 (0.0%)	-	-	-	-
Marital status	Without partner	60 (43.5%)	41 (68.3%)	19 (31.7%)	1.52 (0.71-3.24)	0.2797		
	With partner	77 (55.8%)	59 (76.6%)	18 (23.4%)	Ref			
	No response	1 (0.7%)	1 (100.0%)	0 (0.0%)	-	-	-	-
Maternal employment	No	68 (49.3%)	50 (73.5%)	18 (26.5%)	Ref			
	Yes	66 (47.8%)	47 (71.2%)	19 (28.8%)	1.12 (0.53-2.40)	0.7643		
	No response	4 (2.9%)	4 (100.0%)	0 (0.0%)	-	-	-	-
Household income (BRL)	#≤2.500	61 (44.2%)	45 (73.8%)	16 (26.2%)	Ref			
	>2.500	41 (29.7%)	29 (70.7%)	12 (29.3%)	1.16 (0.48-2.81)	0.7361		
Maternal education	No response	101 (73.1%)	73 (72.3%)	28 (27.7%)	Ref			
	# Up to completed high school	34 (24.6%)	25 (73.5%)	9 (26.5%)	0.94 (0.39-2.26)	0.8874		
	Higher education	3 (2.2%)	3 (100.0%)	0 (0.0%)	-	-	-	-
Paternal age (years)	#≤28	67 (48.6%)	47 (70.2%)	20 (29.8%)	1.52 (0.67-3.48)	0.3172		

Variable	Category	n (%)	Breastfeeding within the first hour of life		Crude OR (95%CI)	p-value	Adjusted OR (95%CI)	p-value
			No	*Yes				
			n (%)	n (%)				
Primigravida	>28	55 (39.9%)	43 (78.2%)	12 (21.8%)	Ref			
	No response	16 (11.6%)	11 (68.8%)	5 (31.2%)	-	-	-	-
	No	73 (52.9%)	54 (74.0%)	19 (26.0%)	0.90 (0.42-1.91)	0.7827		
	Yes	64 (46.4%)	46 (71.9%)	18 (28.1%)	Ref			
	No response	1 (0.7%)	1 (100.0%)	0 (0.0%)	-	-	-	-
Planned pregnancy	No	83 (60.1%)	67 (80.7%)	16 (19.3%)	Ref		Ref	
	Yes	51 (37.0%)	31 (60.8%)	20 (39.2%)	2.70 (1.23-5.91)	0.0129	2.78 (1.04-7.46)	0.0424
	No response	4 (2.9%)	3 (75.0%)	1 (25.0%)	-	-	-	-
Pregnancy complications	No	102 (73.9%)	76 (74.5%)	26 (25.5%)	0.75 (0.32-1.73)	0.4955	-	-
	Yes	35 (25.4%)	24 (68.6%)	11 (31.4%)	Ref			
	No response	1 (0.7%)	1 (100.0%)	0 (0.0%)	-	-	-	-
Belief that the practice benefits the newborn	#≤5	67 (48.6%)	50 (74.6%)	17 (25.4%)	Ref		-	-
	>5	57 (41.3%)	40 (70.2%)	17 (29.8%)	1.25 (0.57-2.76)	0.5801		
	No response	14 (10.1%)	11 (78.6%)	3 (21.4%)	-	-	-	-
Belief that the practice benefits the mother	#≤2	62 (44.9%)	45 (72.6%)	17 (27.4%)	Ref		-	-
	>2	51 (37.0%)	36 (70.6%)	15 (29.4%)	1.10 (0.48-2.51)	0.8151		
	No response	25 (18.1%)	20 (80.0%)	5 (20.0%)	-	-	-	-
Previous exclusive breastfeeding duration (months)	#≤6	38 (27.5%)	27 (71.0%)	11 (29.0%)	Ref		-	-
	>6	29 (21.0%)	21 (72.4%)	8 (27.6%)	0.94 (0.32-2.74)	0.9025		
	No response	71 (51.4%)	53 (74.4%)	18 (25.4%)	-	-	-	-
Gestational age at initiation of prenatal care (months)	#≤2	97 (70.3%)	68 (70.1%)	29 (29.9%)	0.53 (0.21-1.34)	0.1794		
	>2	38 (27.5%)	31 (81.6%)	7 (18.4%)	Ref			
	No response	3 (2.2%)	2 (66.7%)	1 (33.3%)	-	-	-	-
Prenatal care service	Private health insurance	2 (1.4%)	2 (100.0%)	0 (0.0%)	-	-	-	-
	Private care	1 (0.7%)	1 (100.0%)	0 (0.0%)	-	-	-	-
	Public health system (SUS)	126 (91.3%)	91 (72.2%)	35 (27.8%)	Ref			
	Private health insurance and SUS	6 (4.4%)	5 (83.3%)	1 (16.7%)	-	-	-	-
	No response	3 (2.2%)	2 (66.7%)	1 (33.3%)	-	-	-	-
Maternal disease	No	118 (85.5%)	85 (72.0%)	33 (28.0%)	1.81 (0.49-6.72)	0.3740	-	-
	Yes	17 (12.3%)	14 (82.4%)	3 (17.6%)	Ref			
	No response	3 (2.2%)	2 (66.7%)	1 (33.3%)	-	-	-	-
Mode of delivery	Vaginal delivery	44 (31.9%)	15 (34.1%)	29 (65.9%)	20.78 (7.99-54.05)	<0.0001	19.34 (7.18-52.11)	<0.0001
	Cesarean delivery	94 (68.1%)	86 (91.5%)	8 (8.5%)	Ref		Ref	
Newborn sex	Female	72 (52.2%)	53 (73.6%)	19 (26.4%)	0.92 (0.43-1.95)	0.8204	-	-
	Male	64 (46.4%)	46 (71.9%)	18 (28.1%)	Ref			

Variable	Category	n (%)	Breastfeeding within the first hour of life		Crude OR (95%CI)	p-value	Adjusted OR (95%CI)	p-value
			No	*Yes				
			n (%)	n (%)				
	No response	2 (1.4%)	2 (100.0%)	0 (0.0%)	-	-	-	-
Birth weight (grams)	#≤3.300	60 (43.5%)	42 (70.0%)	18 (30.0%)	Ref		-	-
	>3.300	73 (52.9%)	54 (74.0%)	19 (26.0%)	0.82 (0.38-1.76)	0.6112		
	No response	5 (3.6%)	5 (100.0%)	0 (0.0%)	-	-	-	-
Apgar score at 1 st minute	#<9	30 (21.7%)	24 (80.0%)	6 (20.0%)	Ref		-	-
	≥9	107 (77.7%)	76 (71.0%)	31 (29.0%)	1.63 (0.61-4.38)	0.3315		
	No response	1 (0.7%)	1 (100.0%)	0 (0.0%)	-	-	-	-
Apgar score at 5 th minute	#<9	2 (1.4%)	2 (100.0%)	0 (0.0%)	-	-	-	-
	≥9	135 (97.8%)	98 (72.6%)	37 (27.4%)				
	No response	1 (0.7%)	1 (100.0%)	0 (0.0%)	-	-	-	-
Intercurrences	No	116 (84.1%)	87 (75.0%)	29 (25.0%)	0.60 (0.19-1.94)	0.3924	-	-
	Yes	14 (10.1%)	9 (64.3%)	5 (35.7%)	Ref			
	No response	8 (5.8%)	5 (62.5%)	3 (37.5%)	-	-	-	-

* Yes: category corresponding to the outcome event. Ref: reference category for independent variables. OR: odds ratio. 95% CI: 95% confidence interval. #: Values expressed as the sample median. AIC: Akaike Information Criterion (null model = 156.69; final model = 111.16). p = 0.8376 (Hosmer–Lemeshow test). Source: research data, São Paulo State, Brazil, 2024.

Table 3. Crude and adjusted analyses of factors associated with skin-to-skin contact in the delivery room and breastfeeding within the first hour of life. Public maternity hospital under private management in the interior of São Paulo State, Brazil, 2024 (n = 137).

Variable	Category	n (%)	Skin-to-skin contact and breastfeeding within the first hour of life		Crude OR (95%CI)	p-value	Adjusted OR (95%CI)	p-value
			No	*Yes				
			n (%)	n (%)				
Overall	-	137 (100.0%)	112 (81.8%)	25 (18.2%)	-	-	-	-
Maternal age (years)	#≤26	77 (56.2%)	63 (81.8%)	22 (18.2%)	0.99 (0.41-2.37)	0.9818	-	-
	>26	60 (43.8%)	49 (81.7%)	11 (18.3%)	Ref			
Maternal skin color	White	70 (51.8%)	53 (75.7%)	17 (24.3%)	2.28 (0.91-5.73)	0.0782		
	Non-white	65 (48.2%)	57 (87.7%)	8 (12.3%)	Ref			
	No response	2 (1.5%)	2 (100.0%)	0 (0.0%)	-	-	-	-
Marital Status	Without partner	60 (43.8%)	46 (76.7%)	14 (23.3%)	1.80 (0.75-4.32)	0.1888		
	With partner	76 (55.5%)	65 (85.5%)	11 (14.5%)	Ref			
	No response	1 (0.7%)	1 (100.0%)	0 (0.0%)	-	-	-	-
Maternal employment	No	67 (48.9%)	55 (82.1%)	12 (17.9%)	Ref			
	Yes	66 (48.2%)	53 (80.3%)	13 (19.7%)	1.12 (0.47-2.68)	0.7921		
	No response	4 (2.9%)	4 (100.0%)	0 (0.0%)	-	-	-	-

Variable	Category	n (%)	Skin-to-skin contact and breastfeeding within the first hour of life		Crude OR (95%CI)	p-value	Adjusted OR (95%CI)	p-value
			No	*Yes				
			n (%)	n (%)				
Household income (BRL)	#≤2.500	60 (43.8%)	51 (85.0%)	9 (15.0%)	Ref			
	>2.500	41 (29.9%)	32 (78.0%)	9 (22.0%)	1.59 (0.57-4.44)	0.3724		
	No response	36 (26.3%)	29 (80.6%)	7 (19.4%)	-	-	-	-
Maternal education	# Up to completed high school	101 (73.7%)	79 (78.2%)	22 (21.8%)	2.78 (0.78-9.99)	0.1161		
	Higher education	33 (24.1%)	30 (90.9%)	3 (9.1%)	Ref			
	No response	3 (2.2%)	3 (100.0%)	0 (0.0%)	-	-	-	-
Paternal age (years)	#≤28	67 (48.9%)	53 (79.1%)	14 (20.9%)	1.77 (0.66-4.77)	0.2560		
	>28	54 (39.4%)	47 (87.0%)	7 (13.0%)	Ref			
	No response	16 (11.7%)	12 (75.0%)	4 (25.0%)	-	-	-	-
Primigravida	No	72 (52.6%)	58 (80.6%)	14 (19.4%)	1.16 (0.49-2.78)	0.7346		
	Yes	64 (46.7%)	53 (82.8%)	11 (17.2%)	Ref			
	No response	1 (0.7%)	1 (100.0%)	0 (0.0%)	-	-	-	-
Planned pregnancy	No	83 (60.6%)	70 (84.3%)	13 (15.7%)	Ref			
	Yes	50 (36.5%)	39 (78.0%)	11 (22.0%)	1.52 (0.62-3.71)	0.3591		
	No response	4 (2.9%)	3 (75.0%)	1 (25.0%)	-	-		
Pregnancy complications	No	102 (74.4%)	82 (80.4%)	20 (19.6%)	1.41 (0.49-4.11)	0.5244	-	-
	Yes	34 (24.8%)	29 (85.3%)	5 (14.7%)	Ref			
	No response	1 (0.7%)	1 (100.0%)	0 (0.0%)	-	-	-	-
Belief that the practice benefits the newborn	#≤5	67 (48.9%)	57 (85.1%)	10 (14.9%)	Ref			
	>5	56 (40.9%)	44 (78.6%)	12 (21.4%)	1.56 (0.62-3.93)	0.3508		
	No response	14 (10.2%)	11 (78.6%)	3 (21.4%)	-	-	-	-
Belief that the practice benefits the mother	#≤2	62 (45.3%)	50 (80.6%)	12 (19.4%)	Ref			
	>2	50 (36.5%)	40 (80.0%)	10 (20.0%)	1.04 (0.41-2.66)	0.9318		
	No response	25 (18.2%)	22 (88.0%)	3 (12.0%)	-	-	-	-
Previous exclusive breastfeeding duration (months)	#≤6	38 (27.7%)	30 (79.0%)	8 (21.0%)	Ref			
	>6	29 (21.2%)	22 (75.9%)	7 (24.1%)	1.19 (0.38-3.78)	0.7642		
	No response	70 (51.1%)	60 (85.7%)	10 (14.3%)	-	-	-	-
Gestational age at initiation of prenatal care (months)	#≤2	96 (70.1%)	74 (77.1%)	22 (22.9%)	5.35 (1.19-24.01)	0.0285	7.38 (1.45-37.58)	0.0161
	>2	38 (27.7%)	36 (94.7%)	2 (5.3%)	Ref		Ref	
	No response	3 (2.2%)	2 (66.7%)	1 (33.3%)	-	-	-	-
Prenatal care service	Private health insurance	2 (1.5%)	2 (100.0%)	0 (0.0%)	-	-	-	-
	Private care	1 (0.7%)	1 (100.0%)	0 (0.0%)	-	-	-	-
	Public health system (SUS)	125 (91.2%)	101 (80.8%)	24 (19.2%)	-	-	-	-
	Private health insurance and SUS	6 (4.4%)	6 (100.0%)	0 (0.0%)	-	-	-	-
	No response	3 (2.2%)	2 (66.7%)	1 (33.3%)	-	-	-	-
Maternal disease	No	117 (85.4%)	95 (81.2%)	22 (18.8%)	1.74 (0.37-8.16)	0.4842	-	-

Variable	Category	n (%)	Skin-to-skin contact and breastfeeding within the first hour of life		Crude OR (95%CI)	p-value	Adjusted OR (95%CI)	p-value
			No	*Yes				
			n (%)	n (%)				
Mode of delivery	Yes	17 (12.4%)	15 (88.2%)	2 (11.8%)	Ref	-	-	-
	No response	3 (2.2%)	2 (66.7%)	1 (33.3%)	-	-	-	-
	Vaginal delivery	43 (31.4%)	22 (51.2%)	21 (48.8%)	21.48 (6.69-68.95)	<0.0001	22.71 (6.74-76.50)	<0.0001
	Cesarean delivery	94 (68.6%)	90 (95.7%)	4 (4.3%)	Ref	-	Ref	-
Newborn sex	Female	71 (51.8%)	58 (81.7%)	13 (18.3%)	0.97 (0.41-2.32)	0.9476	-	-
	Male	64 (46.7%)	52 (81.2%)	12 (18.1%)	Ref	-	-	-
	No response	2 (1.4%)	2 (100.0%)	0 (0.0%)	-	-	-	-
Birth weight (grams)	#≤3.300	59 (43.1%)	46 (78.0%)	13 (22.0%)	1.44 (0.60-3.44)	0.4160	-	-
	>3.300	73 (52.3%)	61 (83.6%)	12 (16.4%)	Ref	-	-	-
	No response	5 (3.6%)	5 (100.0%)	0 (0.0%)	-	-	-	-
Apgar score at 1 st minute	#<9	30 (21.9%)	26 (86.7%)	4 (13.3%)	Ref	-	-	-
	≥9	106 (77.4%)	85 (80.2%)	21 (19.8%)	1.61 (0.50-5.10)	0.4219	-	-
	No response	1 (0.7%)	1 (100.0%)	0 (0.0%)	-	-	-	-
Apgar score at 5 th minute	#<9	2 (1.5%)	2 (100.0%)	0 (0.0%)	-	-	-	-
	≥9	134 (97.8%)	109 (81.3%)	25 (18.7%)	-	-	-	-
	No response	1 (0.7%)	1 (100.0%)	0 (0.0%)	-	-	-	-
Intercurrences	No	115 (83.9%)	92 (80.0%)	23 (20.0%)	3.25 (0.40-26.10)	0.2679	-	-
	Yes	14 (10.2%)	13 (92.9%)	1 (7.1%)	Ref	-	-	-
	No response	8 (5.8%)	7 (87.5%)	1 (12.5%)	-	-	-	-

* Yes: category corresponding to the outcome event. Ref: reference category for independent variables. OR: odds ratio. 95% CI: 95% confidence interval. #: Values expressed as the sample median. AIC: Akaike Information Criterion (null model = 127.17; final model = 89.01). p = 0.8723 (Hosmer–Lemeshow test). Source: research data, São Paulo State, Brazil, 2024.

DISCUSSION

SKIN-TO-SKIN CONTACT

Interventions performed within the first hour of a newborn's life, such as skin-to-skin contact and early breastfeeding, provide significant benefits for both the infant and the mother. In Brazil, legislation establishes guidelines aimed at humanizing childbirth and birth care, recommending practices such as skin-to-skin contact during the first hour of life, delayed umbilical cord clamping, early breastfeeding, and rooming-in of the mother–infant dyad during hospitalization². Despite these recommendations, adherence to such practices is not yet universal, even though they are widely endorsed by the World Health Organization²³. This highlights the relevance of studies evaluating their implementation in routine care.

In the present study, skin-to-skin contact in the delivery room occurred in 41.2% of births, a value similar to that observed in a nationwide study conducted in Brazil (41.9%). In international comparisons, this prevalence was higher than that reported in countries such as the United States and Japan, and lower than that observed in Croatia and Australia. This variability may be related to methodological differences among studies, lack of standardization in defining the practice, distinct models of childbirth care, and the potential for information bias²⁴.

Skin-to-skin contact, particularly when performed continuously for up to 60 minutes²⁵, has well-documented benefits for both newborns and mothers, contributing to neonatal adaptation and strengthening the maternal–infant bond²⁶. In this context, the findings of the present study reinforce the importance of promoting this practice as an essential component of childbirth care.

The variables associated with skin-to-skin contact were mode of delivery and initiation of prenatal care. Previous studies have shown that vaginal delivery is positively associated with this practice, with significantly higher prevalences compared with cesarean delivery²⁷⁻²⁹. Vaginal delivery, due to faster maternal recovery and reduced interference from surgical and anesthetic procedures, facilitates immediate contact between mother and newborn, in addition to its well-established maternal and neonatal benefits³⁰.

Conversely, implementing skin-to-skin contact after cesarean delivery still faces significant challenges, such as structural limitations in operating rooms, interventionist care routines, lack of staff training, and absence of specific protocols³¹. These factors help explain the lower occurrence of this practice in cesarean births, as observed in the present study. Thus, although vaginal delivery should be encouraged whenever possible, in accordance with the National Guideline for Normal Childbirth Care³², it is essential to implement strategies that enable skin-to-skin contact during cesarean deliveries when clinically indicated.

Initiation of prenatal care by the second month of pregnancy was positively associated with skin-to-skin contact. Similar findings have been reported in both international and national studies, indicating that timely and adequate prenatal care increases the likelihood of adopting evidence-based practices during childbirth^{18, 33}. Prenatal care represents a key opportunity for educational interventions, birth planning, and strengthening women's autonomy, as recommended by the Brazilian Program for Humanization of Prenatal and Birth Care^{34,35}, thereby contributing to care that is more aligned with humanized childbirth recommendations.

BREASTFEEDING WITHIN THE FIRST HOUR OF LIFE

Breastfeeding within the first hour of life was observed in 26.8% of births, a prevalence lower than the national average (64.2%)¹⁶ and the global estimate (42%)³⁶. This result was also lower than that

reported in a previous study conducted in the same maternity hospital³⁷. One possible explanation for this difference relates to the data collection methodology, as in the previous study the information was obtained directly from mothers through retrospective interviews, whereas in the present study the data were extracted from hospital medical records. This methodological difference is relevant because retrospective data collection based on maternal reports may be subject to recall bias, potentially compromising the accuracy of the information.

The benefits of breastfeeding within the first hour of life for both mother and newborn are widely recognized, including reduced postpartum hemorrhage, strengthening of the maternal-infant bond, immunological protection, and reduced neonatal mortality³⁶. Despite this, its implementation still faces important barriers, such as high cesarean section rates, maternal and neonatal complications, lack of awareness of its benefits among mothers and healthcare professionals, and high turnover among care teams³⁸.

In the present study, breastfeeding within the first hour of life was associated with planned pregnancy and vaginal delivery. Similar findings have been described in international studies, which identify type of delivery, reproductive planning, and prenatal care as determining factors for this practice³⁹. Pregnancy planning, in addition to being a legal right guaranteed by law³⁸, may reflect greater emotional and informational preparedness of the woman, favoring positive behaviors in newborn care^{40,42}.

The association between vaginal delivery and early breastfeeding is also consistent with the literature, as women who experience vaginal birth tend to have greater autonomy, less need for postoperative care, and better conditions to initiate breastfeeding immediately after birth^{43,45}. These aspects help explain the central role of mode of delivery in the implementation of Golden Hour practices.

ASSOCIATED FACTORS AND IMPLICATIONS FOR HEALTHCARE PRACTICE

Taken together, the results of this study indicate that mode of delivery influenced all three outcomes analyzed: skin-to-skin contact, breastfeeding within the first hour of life, and the simultaneous occurrence of these practices. These findings reinforce the importance of institutional strategies aimed at reducing unnecessary cesarean sections and improving the quality of childbirth care.

However, when a cesarean delivery is clinically indicated, it is essential that it be conducted in a humanized manner, respecting the woman's choices and incorporating, whenever possible, Golden Hour practices⁴⁶. Evidence indicates that the implementation of these practices during cesarean delivery provides significant benefits, such as improved neonatal thermoregulation, stimulation of breastfeeding, and strengthening of the mother-infant bond⁴⁷.

The differences observed between the prevalence of skin-to-skin contact and breastfeeding within the first hour of life suggest that the duration of contact may have been insufficient to support the initiation of breastfeeding. Studies indicate that the average duration of skin-to-skin contact is often shorter than recommended and that the first feeding may occur several hours after birth, particularly in cesarean deliveries⁴⁸. In the present study, the absence of records regarding the duration of skin-to-skin contact limits more detailed analyses, highlighting the need to improve medical record documentation and to review care workflows that promote the continuity of these practices.

In light of these findings, it is essential that the maternity hospital studied invest in the training of healthcare teams, the development of institutional protocols for the Golden Hour, the strengthening of prenatal care as an educational setting, and the improvement of family planning, with the aim of promoting comprehensive and humanized care during childbirth and birth.

PRACTICAL IMPLICATIONS

The findings of this study indicate the need for institutional strategies to promote the implementation of Golden Hour practices, particularly in settings with a high prevalence of cesarean deliveries. This includes ongoing training of healthcare teams, the development of standardized protocols for skin-to-skin contact and early breastfeeding, and the promotion of maternal education during prenatal care. The systematic adoption of these practices may improve neonatal outcomes, strengthen the mother-infant bond, and contribute to maternal and child health, aligning care with available scientific evidence and national policies for women's and child health care^{16,32}.

LIMITATIONS AND CONTRIBUTIONS OF THE STUDY

The limitations include the cross-sectional design, which precludes the establishment of causal relationships, and the lack of standardization in medical record documentation, which affected the completeness of some information. The transfer of medical records to a secure storage facility also hindered access to historical data. Despite these limitations, the study makes relevant contributions by identifying factors associated with Golden Hour practices and providing support for planning actions aimed at improving the quality of maternal and child care.

CONCLUSION

The findings of this study revealed low adherence to Golden Hour practices, such as skin-to-skin contact and breastfeeding within the first hour of life. Skin-to-skin contact was performed in less than half of the deliveries analyzed, whereas early breastfeeding occurred in just over a quarter of births. When considered together, these practices were observed in less than a fifth of deliveries. Vaginal delivery, early initiation of prenatal care, and planned pregnancy were significantly associated with greater adherence to these practices.

Overall, the results reinforce the importance of strategies to strengthen prenatal care, including training healthcare professionals to actively promote Golden Hour practices and expanding access to health education during pregnancy.

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