

Relationship between skin-to-skin contact during the first hour of life and duration of exclusive breastfeeding

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Abstract

Background: Exclusive breastfeeding (BF) has the greatest potential impact on child mortality of any preventive intervention. Skin-to-skin contact (SSC) during the first hour of life is beneficial for initiating BF; however, routine separation of mother and infant is still common. This work aimed to demonstrate that SSC during the first hour of life is associated with a greater frequency and duration of exclusive BF. **Methods:** This is an observational case-control study. We reviewed the medical records of patients born between 2016 and 2022 classified as cases or controls based on the history of SSC in the first hour of life. Statistical analysis was performed using SPSS version 28. **Results:** We included 362 medical records, of which 200 (55.2%) had SSC and were considered cases; the 162 (44.8%) who did not have SSC were considered controls. Those who received SSC were more likely to receive exclusive BF at 3 (163 [81.5%] vs. 94 [58%], $p < 0.001$) and 6 months of age (147 [73.5%] vs. 83 [51.2%], $p < 0.001$). **Conclusions:** Patients who received SSC in the first hour of life were more likely to receive exclusive BF at 3 and 6 months of age. Promoting and respecting this practice is essential to increase the possibility of a newborn to be exclusively breastfed for the first 6 months of life.

Keywords: Skin-to-skin contact. Breastfeeding. Exclusive breastfeeding.

Relación entre el contacto piel con piel durante la primera hora de vida y la duración de la lactancia materna exclusiva

Resumen

Introducción: La lactancia materna exclusiva (LME) es la intervención preventiva con mayor impacto en mortalidad infantil. El contacto piel con piel (CPP) durante la primera hora de vida es un periodo crítico para establecer la lactancia; sin embargo, la separación rutinaria del recién nacido de su madre es frecuente. El objetivo de este trabajo fue demostrar que el CPP durante la primera hora se asocia con mayor frecuencia y duración de LME. **Métodos:** Se llevó a cabo un estudio observacional de casos y controles. Se revisaron expedientes de pacientes de nuestra consulta pediátrica que nacieron entre 2016 y 2022. Se clasificaron como casos y controles de acuerdo con el antecedente de haber recibido CPP durante la primera hora de vida. Se realizó el análisis estadístico en SPSS version 28. **Resultados:** Se incluyeron 362 expedientes, de los cuales 200 (55.2%) recibieron CPP en la primera hora de vida y fueron considerados casos; los 162 (44.8%) que no lo hicieron fueron considerados controles. Aquellos que recibieron CPP tuvieron con mayor frecuencia LME a los 3 (163 [81.5%] vs. 94 [58%], $p < 0.001$) y 6 meses de edad (147 [73.5%] vs. 83 [51.2%], $p < 0.001$).

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Conclusiones: *La frecuencia con la cual los pacientes lograron tener lactancia materna exclusiva a los 3 y 6 meses es mayor en aquellos en los que se respeta el CPP en la primera hora de vida. Promover y respetar esta práctica es fundamental para incrementar las probabilidades de que los lactantes reciban LME durante sus primeros 6 meses de vida.*

Palabras clave: *Contacto piel con piel. Lactancia. Lactancia materna exclusiva.*

Introduction

Breastfeeding (BF) is universally recognized as a human right for all women and children. It is considered the most cost-effective intervention for reducing child mortality and promoting the health of the mother and the breastfed infant¹. For this reason, the World Health Organization (WHO) recommends breast milk as the only food a newborn should receive from birth to 6 months of age, defined as exclusive BF (EBF)². Many actions are being taken every day to increase EBF rates worldwide; however, many social, cultural, environmental, and economic barriers impact, resulting in global EBF rates of around 38%³.

It is now recognized that the first hour after birth is a critical period for the establishment and continuation of BF. At this time, the newborn exhibits feeding and survival behaviors⁴ that, together with the sudden drop in maternal progesterone due to placental expulsion and the concomitant peak in prolactin⁵, allow the newborn to be fed. This is considered the optimal initiation of BF⁶. For direct BF to occur due to these biological processes, direct contact of the newborn with the mother is invariably required within the first hour of life, which has important immediate and long-term implications⁷. Among the many components of the first hour of life (which vary depending on the gestational age and condition of the newborn) are skin-to-skin contact (SSC) and the initiation of BF⁴. The initiation of BF in the first hour of life is one of the most important and determining factors in the continuation of BF in the following months; however, other factors such as maternal age, marital status, education, mode of delivery, history of previous BF counseling, and previous BF experience also have a strong influence⁸⁻¹⁰.

SSC refers to the practice of placing the exposed newborn in a prone position directly on the mother's chest, without any barrier, immediately after birth or as soon as possible¹¹. It was first described in 1970 as "extra contact"¹² and later in Bogotá, Colombia, where it was called the "kangaroo method"¹¹. The benefits of this practice have become so widespread that it is now considered a fundamental part of the Baby-Friendly Hospital Initiative (BFHI) of the WHO and the United Nations Children's Fund (UNICEF)¹³.

In Mexico, the National Health and Nutrition Survey (ENSANUT, for its Spanish acronym) reported in 2018 that 28.8% of the country's children receive EBF during the first 6 months of life¹⁴. Although this figure has doubled compared to what was reported in 2012 (14.4%)¹⁵, it still represents a serious public health problem, as it means that 71.2% of Mexican children are not exclusively breastfed. This information becomes particularly important when we consider that suboptimal BF practices contribute to 11.6% of mortality in children under 5 years of age².

In Mexico and many other parts of the world, it has become a common practice to separate newborn babies from their mothers within the first hour of birth⁷. The newborn is placed in a special crib or incubator that provides warmth and helps monitor their breathing patterns to prevent heat loss and ensure their safety⁶. Unfortunately, this practice has detrimental effects on many aspects of infant and maternal health, particularly the establishment and duration of BF⁴. Considering that there is no reason why we cannot monitor the physiological transition of newborns without separating them from their mother, the importance of changing our routine practices can be emphasized when we realize that 820,000 deaths of children under 5 years of age could be avoided each year if all children were properly breastfed¹³.

Studies have shown that SSC during the first hour of life is significantly associated with optimal initiation and longer duration of EBF⁷. This work aimed to demonstrate that SSC is associated with a greater frequency and duration of EBF in a Mexican population. The publication of the results obtained will contribute to the medical literature to promote the generalization of this practice in the country¹⁶. In this way, we will contribute to the WHO goal of increasing the rate of EBF in the first 6 months of life to at least 50% by 2025².

Methods

We conducted a case-control observational study. All records of patients in Dr. Alejandra Prian's pediatric practice who were born between January 2016 and January 2022 were reviewed using a data collection

sheet. Files that did not have the required information for the two main variables of the study were excluded from the study: history of SSC at birth during the first hour of life and duration of BF. The following data were collected: sex of the newborn, age, education and marital status of the mother, vaginal or cesarean delivery, and history of SSC in the first hour of life (60 min). The number of months that the infant was breastfed was recorded. The variable was then divided into categories based on whether the patient was exclusively breastfed up to 3 or 6 months of age. In addition, whether or not the mother had previous experience with BF and received prenatal counseling on BF was noted. The study also recorded the number of children to which this birth corresponded. The data were then added to a database created in Microsoft Excel for export and analysis in SPSS version 24. Patients were initially divided into cases and controls according to whether or not they had received SSC during the first hour of life. The description of the studied variables was performed using frequencies and percentages for categorical variables; for numerical variables, the Kolmogorov–Smirnov normality test was performed (the test was chosen because the population studied was > 50). Subsequently, the median was used as a measure of central tendency and the range as a measure of dispersion since the variable had an abnormal distribution.

The difference between the variables studied was examined by comparing cases and controls, using χ^2 for categorical variables and Mann-Whitney's U test for numerical variables with an abnormal distribution.

Results

Of a total of 362 patients, 190 (51.6%) were male while 172 (46.7%) were female. Of all the patients, 201 were delivered vaginally (54.6%), and 161 (43.8%) were born through a cesarean delivery. From the total, 162 patients (44%) did not receive SSC during the first hour after birth, while 200 patients (54.3%) received it. [Table 1](#) presents the frequency of each variable studied concerning the history of receiving or not receiving SSC in the first hour of life.

Patients with a history of vaginal delivery were more likely to receive SSC in the first hour of life than those with a history of cesarean delivery (122 [61%] vs. 79 [48.8%], $p = 0.02$). Similarly, at the first assessment at 3 months of age, patients with a history of SSC were more likely to continue EBF than those who did not receive SSC (163 [84%] vs. 94 [58.8%], $p < 0.001$), as shown in [Fig. 1](#). Moreover, a higher proportion of mixed

feeding was found in those who did not have SSC (55 [34.4%] vs. 25 [12.9%], $p < 0.001$). In a second assessment at 6 months, there were more patients with EBF in the group that received SSC than in those that did not (147 [77.8%] vs. 83 [52.9%], $p < 0.001$) ([Fig. 2](#)). However, the proportion of patients with mixed feeding was still higher in the group that did not receive SSC (51 [32.5%] vs. 31 [16.4%], $p < 0.001$). At this cut-off point, the difference between patients fed exclusively with formula was significantly higher in patients who did not receive SSC (23 [14.6%] vs. 11 [5.8%], $p = 0.007$). Similarly, the frequency of patients who received prior BF counseling (164 [82.4%] vs. 80 [49.7%], $p < 0.001$) and who continued BF until the end of the study (80 [44%] vs. 35 [23.2%], $p < 0.001$) was higher in the group that received SSC than in the group that did not.

Discussion

Our results show that the frequency of EBF at 3 and 6 months of age is higher in those who receive SSC in the first hour of life. In Mexico, 71.2% of Mexican infants do not receive EBF by 6 months¹⁴. Although evidence of the benefits of SSC in the first hour of life¹⁷ and its influence on BF initiation¹⁸ continues to grow, routine separation of newborns from their mothers remains common, and BF rates remain low³.

In this study, patients who underwent vaginal delivery were more likely to receive SSC in the first hour of life than those who underwent cesarean delivery (122 [61%] vs. 79 [48.8%], $p = 0.02$). It has been previously published that SSC after a cesarean delivery can be challenging, particularly in cases of emergency cesarean delivery^{16,19}. This practice requires the involvement of not just pediatricians but also anesthesiologists, obstetricians, and nurses. Unfortunately, opposition or interference from medical personnel is common due to a lack of awareness regarding the benefits of SSC²⁰.

At 3 (163 [84%] vs. 94 [58.8%], $p < 0.001$) and 6 (147 [77.8%] vs. 83 [52.9%], $p < 0.001$) months of age, patients in this study with a history of SSC were more likely to continue EBF than those who did not receive SSC. This observation confirms many of the findings previously published in the literature where the establishment and duration of BF are recognized as one of the multiple benefits of SSC¹⁸. At 3 months of age, the highest proportion of patients with mixed feeding was found in those who did not have SSC (55 [34.4%] vs. 25 [12.9%], $p < 0.001$), indicating that in the group of patients who did not receive SSC, there were mothers who intended to breastfeed and continued with mixed

Table 1. Description of the variables studied according to the history of receiving or not SSC in the first hour of life

Studied variable	SSC, n = 200 (%)	No SSC, n = 162 (%)	p
Sex			0.668
Female	93 (46.5%)	79 (48.8%)	
Male	107 (53.5%)	83 (51.2%)	
Mode of birth			0.02*
Vaginal delivery	122 (61%)	79 (48.8%)	
Cesarean section	78 (39%)	83 (51.2%)	
Feeding at 3 months			< 0.001 [†]
Exclusive breastfeeding	163 (84%)	94 (58.8%)	
Mixed feeding	25 (12.9%)	55 (34.4%)	< 0.001 [†]
Exclusive formula	6 (3.1%)	11 (6.9%)	0.099
Missing data	6 (3.1%)	2 (1.2%)	
Feeding at 6 months			< 0.001 [†]
Exclusive breastfeeding	147 (77.8%)	83 (52.9%)	
Mixed feeding	31 (16.4%)	51 (32.5%)	< 0.001 [†]
Exclusive formula	11 (5.8%)	23 (14.6%)	0.007 [†]
Missing data	11 (5.8%)	5 (3%)	
Previous breastfeeding experience	38 (19.1%)	20 (12.4%)	0.087
Previous breastfeeding counseling	164 (82.4%)	80 (49.7%)	< 0.001 [†]
Continued breastfeeding at the end of the study	80 (44%)	35 (23.2%)	< 0.001 [†]
Number of birth			0.174
First child	155 (77.9%)	138 (85.2%)	
Second child	38 (19.1%)	22 (13.6%)	
Third child	7 (3.5%)	2 (1.2%)	

*p ≤ 0.05.

[†]p ≤ 0.001.

SSC: skin-to-skin contact.

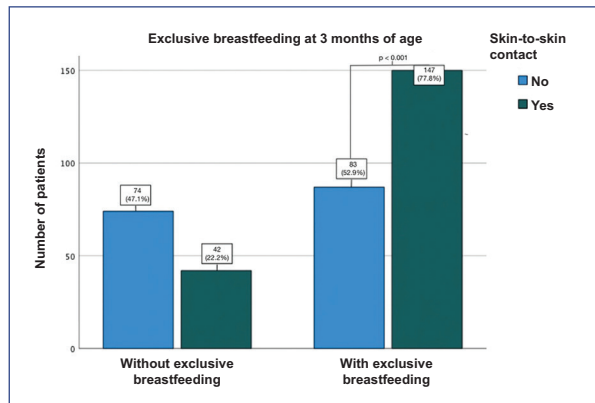


Figure 1. Exclusive breastfeeding at 3 months of age in patients with and without a history of skin-to-skin contact during the first hour of life.

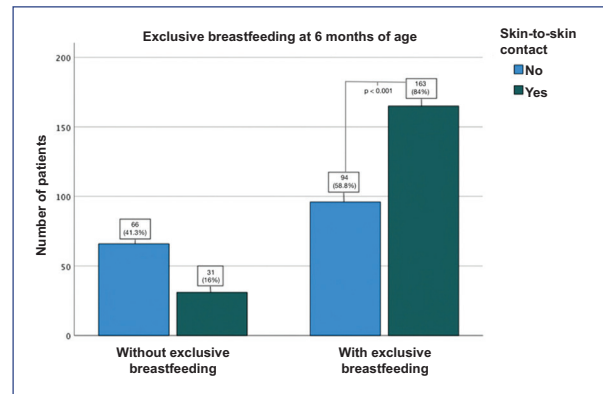


Figure 2. Exclusive breastfeeding at 6 months of age in patients with and without a history of skin-to-skin contact during the first hour of life.

feeding; however, the lack of SSC probably influenced their ability to return to EBF. Although this is a speculation not intended to be proven by the design of this study, it invites us to conduct future research to show how the lack of support from health-care personnel

affects the outcome of BF²¹. Reinforcing the same idea, at 6 months after birth, in addition to the proportion of patients with mixed feeding remaining higher in the group that did not receive SSC (51 [32.5%] vs. 31 [16.4%], p < 0.001), the difference between patients fed

exclusively with formula became statistically significant in favor of those who did not SSC (23 [14.6%] vs. 11 [5.8%], $p = 0.007$). Similarly, we can highlight that there are more patients who continued BF until the end of the study in the group that received SSC compared to the group that did not (80 [44%] vs. 35 [23.2%], $p < 0.001$).

The effectiveness of BF counseling and its effects on BF initiation and duration have been recognized in the literature²². This study confirms that more patients who received previous BF counseling had SSC (164 [82.4%] vs. 80 [49.7%], $p < 0.001$). Consequently, patients who receive information about the benefits of this practice are more likely to choose health-care professionals who support this practice and to request hospital support to achieve it.

Currently, the benefits of SSC at birth are widely recognized in the medical literature¹⁷; however, this is not new information. Since 1998, the WHO has recommended that SSC should be performed as soon as possible after birth²; the Norma Oficial Mexicana (official Mexican standard) NOM-007-SSA2-2016 recommends that BF should be initiated within the first hour of life²³, and the BFHI recognizes SSC as one of the necessary steps to establish BF. As a result, great efforts have been made to promote this practice, as in the Instituto Nacional de Perinatología²⁴ (National Institute of Perinatology) case, which reports that SSC was provided in the first hour of life in 78.91% of term newborns. However, despite the lack of medical literature describing the prevalence of this practice nationwide, the author's personal experience is that health-care workers who devote sufficient time to ensuring SSC and promoting exclusive BF of newborns are still a minority.

The situation of EBF in Mexico is far below the target set by the WHO for 2025, where at least 50% of infants should be exclusively breastfed². Similarly, the frequency of SSC and initiation of BF within the first hour of life is unknown. Therefore, the publication of the present results contributes to the medical literature to demonstrate the significant benefits of these practices in establishing and maintaining BF in the Mexican population. In doing so, we expect to contribute to generalizing this practice¹⁶, which is essential to increase the possibility that Mexican infants will be exclusively breastfed during the first 6 months of life.

Ethical disclosures

Protection of human and animal subjects. The authors declare that no experiments were performed on humans or animals for this study.

Confidentiality of data. The authors declare that they have followed the protocols of their work center on the publication of patient data.

Right to privacy and informed consent. The authors have obtained the written informed consent of the patients or subjects mentioned in the article. The corresponding author has this document.

Conflicts of interest

The authors declare no conflicts of interest.

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