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Maternal Country of Birth and Exclusive Breastfeeding During the First In-Hospital Day in Portugal: The Influence of the Baby-Friendly Hospital Initiative

Cosima Lisi, MD[1,2], Cláudia De Freitas, PhD[1,2,3], and Henrique Barros, MD, PhD[1,2]

Abstract

Background: Early breastfeeding practices are important determinants of later breastfeeding behaviors and can be influenced by multiple factors. Despite the *Baby-Friendly Hospital Initiative* reported positive influence on breastfeeding initiation, its influence on the association between maternal country of birth and first day in-hospital breastfeeding has not been examined.
Research aims: To determine (1) if association between maternal country of birth and first day in-hospital exclusive breastfeeding exists in Portugal and (2) if any association is affected by giving birth in a Baby-Friendly Hospital.
Methods: Data were drawn from baMBINO—a longitudinal, 2017–2019 nationwide study designed to assess the perinatal health and healthcare experiences of migrant and native Portuguese women. Data from participants (N = 5,340) were collected during their hospital stay from 32 maternity units. Missing data were handled through multiple imputation. After stratifying by *Baby-Friendly Hospital Initiative* accreditation, a multivariate logistic regression was performed.
Results: First day in-hospital exclusive breastfeeding rates were high among both migrant and native participants (89.2% vs. 87.4%). Migrants were more likely to exclusively breastfeed when compared to natives (*OR* = 1.19, 95% *CI* [1.00, 1.41]). In non-Baby-Friendly Hospitals, a positive association was found between participants from Eastern European countries (a*OR* = 2.46, 95% *CI* [1.27, 4.78]) and first day in-hospital exclusive breastfeeding. In accredited hospitals, maternal country of birth did not influence exclusive breastfeeding during the first 24 hr.
Conclusions: The Baby-Friendly Hospital Initiative attenuates differences between migrant and native participants, promoting optimal breastfeeding practices among natives.

Keywords

Baby-Friendly Hospital Initiative, breastfeeding, cultural norms, exclusive breastfeeding

Resumo

Introdução: As práticas precoces de aleitamento são importantes determinantes dos comportamentos de aleitamento posteriores e podem ser influenciadas por vários fatores. Apesar dos efeitos positivos da Iniciativa Hospitais Amigos dos Bebés no início do aleitamento, a sua influência na associação entre país de nascimento da mãe e aleitamento exclusivo no primeiro dia após o parto não foi ainda examinada.
Objetivo de Pesquisa: Avaliar a associação entre país de nascimento da mãe e aleitamento materno exclusivo no primeiro dia, em Portugal, e se essa associação é afetada pelo parto num Hospital Amigo dos Bebés.
Métodos: Os dados foram extraídos do baMBINO – um estudo nacional longitudinal, que avalia a saúde perinatal de mulheres imigrantes e portuguesas nativas. Foram recolhidos dados de 5,340 participantes em 32 maternidades, durante o internamento. Após estratificação segundo acreditação na Iniciativa Hospitais Amigos dos Bebés, realizou-se uma regressão logística multivariada.
Resultados: As taxas de aleitamento materno exclusivo no primeiro dia após o parto foram elevadas tanto entre mães imigrantes quanto nativas (89.2% vs. 87.4%). As imigrantes mostraram mais propensão para amamentar exclusivamente quando comparadas às nativas (*OR* = 1.19, 95%*IC* [1.00, 1.41]). Em hospitais não acreditados, observou-se uma associação positiva entre mães de países do Leste Europeu (a*OR* = 2.46, 95%*IC* [1.27, 4.78]) e aleitamento materno exclusivo no primeiro dia. Em hospitais acreditados, o país de nascimento da mãe não influenciou o aleitamento materno exclusivo nas primeiras 24h.

Conclusões: A Iniciativa Hospital Amigos dos Bebés atenua diferenças entre mães imigrantes e nativas, promovendo práticas ideais de aleitamento entre nativas.
Back translated by Dr. Elisabete Alves, PhD

Key Messages

- The influence of the *Baby-Friendly Hospital Initiative* on the association between maternal country of birth and first day in-hospital exclusive breastfeeding has not been investigated in previous literature.
- In Portugal, mothers from Eastern Europe giving birth in a non-Baby-Friendly Hospital were more likely to exclusively breastfeed when compared with native Portuguese mothers.
- However, for deliveries occurring in a Baby-Friendly Hospital there was no significant relationship between the maternal country of birth on first day in-hospital and exclusive breastfeeding.
- The Baby-Friendly Hospital Initiative attenuated the differences between natives and migrants reducing the likelihood of suboptimal breastfeeding among natives.

Background

Breastfeeding benefits children, participants, society, and the environment. Its lifelong positive outcomes on children's health, nutrition, and development, as well as on women's health, carry the potential to increase socioeconomic equity while fostering environmental sustainability (Rollins et al., 2016; Victora et al., 2016). Consequently, several efforts have been undertaken globally to protect, promote, and support breastfeeding. The *Baby-Friendly Hospital Initiative* (BFHI) is one of the most far-reaching efforts (World Health Organization, 2018), with implementation in more than 152 countries since its launch in 1991 (WHO, n.d.). Grounded in the *International Code of Marketing of Breast-milk Substitutes* (IC; WHO, 1981), the *Ten Steps to Successful Breastfeeding* statement (WHO & United Nations Children's Fund [UNICEF], 1989) and the *Innocenti Declaration* (WHO & UNICEF, 1991), the BFHI aims to set into practice the WHO's recommendations for early breastfeeding initiation (i.e., within the first hour after birth), exclusive breastfeeding during 6 months and continued breastfeeding until 2 years and beyond (WHO, 2003).

Human milk is the biological norm for feeding infants. Additionally, breastfeeding improves neurodevelopment and increases protection against infectious diseases (Sankar et al., 2015; Victora et al., 2016). These outcomes increase with breastfeeding duration, higher in children who are breastfed for longer periods than those who are breastfed for a shorter duration, or not breastfed (Victora et al., 2016). Optimal infant feeding in the early stages of a newborn's life is fundamental since it predicts later infant feeding behaviors (Vehling et al., 2018). While in-hospital exclusive breastfeeding after birth has been associated with longer breastfeeding duration (Vehling et al., 2018), formula supplementation during the postnatal hospital stay increases the risk of early breastfeeding cessation by reducing maternal self-confidence and sense of self-efficacy (Hinic, 2016, Vehling et al., 2018).

Early breastfeeding practices can be influenced by a range of factors acting at individual, setting, and structural levels (Rollins et al., 2016). At an individual level, mother and newborn characteristics are useful for predicting exclusive breastfeeding at discharge (McDonald et al., 2012). The type of antenatal care provider and the level of care of the hospital may also impact breastfeeding initiation (McDonald et al., 2012). Structural factors entail the sociocultural and market contexts, which can be influenced by legislation, policy, media, and mobilization efforts to change attitudes and practices (Rollins et al., 2016). The BFHI plays a relevant role at this level, by increasing breastfeeding initiation and duration (Kramer et al., 2001; Pérez-Escamilla et al., 2016). Additionally, breastfeeding attitudes and practices may be shaped by culture. Maternal country of birth is viewed as an indicator of cultural values and beliefs and there is a growing literature investigating its influence on breastfeeding (Aguilar-Ortega et al., 2019; Dennis et al., 2019; Farchi et al., 2016; Henderson et al., 2018; Kana et al., 2018; Nolan & Layte, 2015). Implementation of the BFHI in Portugal started in 1991. There are currently 14 accredited Baby-Friendly Hospitals (BFHs) in the country (UNICEF Portugal, 2018). Thirteen are located in mainland Portugal, representing 33% of the 39 public maternity units in this part of the country.

Despite the BFHI's positive outcomes related to breastfeeding initiation (Pérez-Escamilla et al., 2016), its influence

[1]EPIUnit – Instituto de Saúde Pública, Universidade do Porto, Portugal
[2]Departamento de Ciências de Saúde Pública e Forenses e Educação Médica, Faculdade de Medicina da Universidade do Porto, Portugal
[3]Centre for Research and Studies in Sociology, University Institute of Lisbon (ISCTE-IUL), Portugal

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Corresponding Author:
Cosima Lisi, MD, Instituto de Saúde Pública, Universidade do Porto, Rua das Taipas 135, 4050-600 Porto, Portugal.
Email: clisi@ispup.up.pt

on the association between maternal country of birth and first day in-hospital breastfeeding has not been examined. Drawing on a nationwide study carried out in Portugal, we sought to determine (1) if association between maternal country of birth and first day in-hospital exclusive breastfeeding exists in Portugal, and (2) if any association is affected by giving birth in a Baby-Friendly Hospital.

Methods

Design

This was a comparative, cross-sectional study using prospectively collected data and retrospectively collected medical record data. Our study was part of the *Migrant and Perinatal Health: Barriers, Incentives and Outcomes* study (baMBINO)—a nationwide project designed to assess the perinatal health and healthcare experiences of migrant and native Portuguese women giving birth in Portugal. Ethical approval was obtained from the Ethic Committee of the Institute of Public Health of the University of Porto (Proc. No. CE14013/14th March 2014), the Institutional Review Board of each maternal unit enrolled in the project, and the Portuguese Data Protection Authority.

Setting

In Portugal, maternal healthcare is delivered free of charge to all childbearing women, regardless of their country of origin, nationality, or legal status. In 2017, 85.1% ($n = 68,591$) of all deliveries reported in mainland Portugal occurred in public maternity units (Instituto Nacional de Estatística, 2017). All the 39 public hospitals in mainland Portugal that have a maternity unit were invited to participate in the study. Thirty-two (82%) accepted, and 11(34%) of the participating hospitals were accredited BFHs. In 2018, these 32 maternity units accounted for 84% of the total live births in Portugal (Serviços Partilhados do Ministério da Saúde, 2018). No significant differences were found between the hospitals enrolled in the study and those that did not participate.

Sample

All migrant women admitted for delivery in the maternity units enrolled in the project between April 2017 and March 2019 were invited to take part in the study. Migrants were defined as being born abroad, according to the definition of the International Organization for Migration (2019). For each migrant woman who consented to participate, a native woman was also invited. The only inclusion criterion was to be at least 18 years old. After delivery, women were excluded from the total sample if they had a stillbirth. In the case of a multiple pregnancy, women with a stillbirth were included if they had at least one live birth.

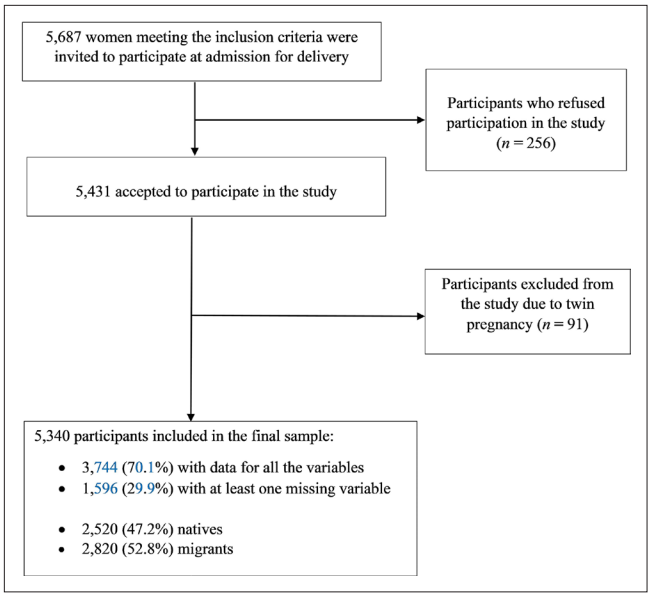

Figure 1. Flow Chart Showing the Selection of Participants for the Study ($N = 5,340$).

A total of 5,687 women were invited to take part in the study, of whom 256 refused to participate. After excluding 91 participants with twin pregnancies, 5,340 participants were included in the final sample (Figure 1); 2,820 migrant participants and 2,520 native Portuguese participants. The discrepancy between the number of foreign-born and native participants was due to difficulties in implementing the recruitment strategy in hospitals with a high percentage of migrants, where the number of babies born to foreign-born participants was not able to be matched by the number of babies born to natives.

Measurement

Outcome Measures. Type of feeding was investigated according to whether the newborn was given human milk, infant formula, mixed feeding (i.e., both human milk and infant formula) or parenteral nutrition during the first 24 hr after birth. Our main outcome was first day in-hospital exclusive breastfeeding, defined as receiving only human milk during the first 24 hr after delivery (WHO, 2008) and categorized as "yes" (exclusively breastfed) or "no" (other). The questionnaire is available as Supplemental File S1.

Exposure Measures. Maternal country of birth was our exposure of interest. This variable is stable and objective as it does not depend on current legislation on citizenship in the host country (Rechel et al., 2012). For this reason, it is considered a better indicator of migration status than citizenship, allowing for comparisons between studies done in different countries (Rechel et al., 2012).

In our study, migrant participants were grouped by origin into seven categories: Portuguese-speaking African countries (PSAC), Brazil, Eastern European countries, other European countries, Asian countries, and other countries. PSAC (i.e., Angola, Cape Verde, Guinea-Bissau, Mozambique, and São Tomé and Príncipe) and Brazil have historical and cultural ties with Portugal and were the largest migrant groups in the country. Migrants from Eastern European countries (e.g., Russia, Ukraine, Romania, Macedonia) also represented an important share of the migrant population in Portugal. Grouping countries into Eastern European, other European, and Asian is based on the United Nations Statistics Division classification for countries (2011). The category "Other countries" included participants whose origins did not fit into the previous categories and whose group size was small.

Covariates. The following covariates were included in the analysis: Maternal age (categorized as 18–24, 25–34 and ≥ 35 years old); education, defined as the highest level achieved (none or primary, secondary, and tertiary education); parity (multiparous vs. primiparous); gestational age (< vs. ≥ 37 weeks); first antenatal visits (≤ 12 weeks vs. > 12 weeks); mode of delivery (vaginal/instrumental vs. cesarean section); smoking during pregnancy (yes or no); diabetes during pregnancy (yes or no); Apgar score after 5 min (< 7 vs. ≥ 7); congenital malformations (yes or no). Congenital malformations were defined according to the guidelines of the European Network for Surveillance of Congenital Anomalies (2019). Newborns with major malformations (except limb and genital malformations) and with aberrant frenula (a minor anomaly) were categorized as a "yes" since breastfeeding might be challenging in these cases. The variable BFH referred to whether participants gave birth in a BFH or in a non-BFH. Maternity units were classified according to the most recent list of BFHI facilities in Portugal (UNICEF Portugal, 2018).

Data Collection

The study was conducted between April 2017 and March 2019. Healthcare providers working at each maternity unit enrolled in the project explained the study to eligible women admitted for delivery and invited them to participate. An information sheet clarifying the study's aims and methods was available in 15 different languages and distributed to potential participants. After accepting, women were asked to sign a written informed consent form. Each participant was identified through an ID number in all documents and any electronic databases. To ensure participants' anonymity and privacy, data were stored securely and only accessible to the research team and authorized staff.

Baseline data were collected by focal points through a questionnaire available in Portuguese. Participants were asked about country and date of birth, education, marital status, ethnicity, and intention to stay in Portugal for the upcoming 3 months. Clinical records were also gathered, including information about (1) pregnancy and antenatal care; (2) delivery; and (3) the newborn's characteristics. Prenatal information was obtained through pregnancy "notes," while data about delivery and the postpartum period were retrieved from medical records. For the purposes of this study, we used baseline information collected at recruitment during the larger baMBINO study. Clinical record data were also collected.

Data Analysis

Descriptive statistical analyses were carried out comparing participants' sociodemographic and obstetric characteristics and 1st day in-hospital infant feeding by maternal country of birth. Chi-Square tests were used to test for differences between groups (Study Aim 1).

Crude odds ratios (*OR*s) and corresponding 95% confidence intervals (95% CI) were estimated to assess the association of maternal country of birth with 1st day in-hospital infant feeding (Study Aim 2). A multivariate logistic regression model was fitted in order to assess the association of maternal country of birth with 1st day in-hospital exclusive breastfeeding, adjusting for potential confounders and stratifying by BFHI accreditation. All the relevant covariates that were significant in the tests of univariate logistic regressions were included in the multivariate model. When we observed collinearity between two variables (e.g., between newborn birth weight and gestational age, and complications during pregnancy and gestational age), only one variable was included in the final model. Native Portuguese participants were the reference group. Missing data were handled by means of multiple imputation. All analyses were performed using IBM SPSS Statistics 24.0.

Results

A comparison of the maternal sociodemographic and obstetric characteristics along with the infant feeding during the 1st day in hospital between migrant and native Portuguese women is displayed in Table 1. Migrants were less likely to have no or primary education and to smoke during pregnancy. They were more frequently multiparous and tended to initiate antenatal care visits after the first trimester more often. They also had a higher prevalence of diabetes during pregnancy. First day in-hospital exclusive breastfeeding rates were high among both migrant and native participants.

Our examination of maternal country of birth (Table 2) shows that most migrant participants were from PSAC (50.6%), followed by Brazil (17.8%), Eastern European countries (10.2%), other European countries (9.2%), Asian countries (5.4%), and by a range of countries other than those mentioned above (6.8%). The proportion of older participants (≥ 35 years) was higher among participants from other countries, Brazil, and other European

Table 1. Comparison of the Participants' Characteristics and Their 1st Day In-Hospital Infant Feeding With Their Migration Status (N = 5,340).

Characteristic	Native (n = 2,520) n (%)	Migrant (n = 2,820) n (%)	χ^2	p
Maternal age (years)				
18–24	446 (17.8)	487 (17.3)	1.96	.376
25–34	1,361 (54.3)	1,576 (56.1)		
≥ 35	701 (28.0)	745 (26.5)		
Maternal education				
Primary/none	788 (34.3)	783 (31.7)	13.68	.001
Secondary	775 (33.8)	960 (38.9)		
Tertiary	733 (31.9)	724 (29.3)		
Parity				
Multiparous	1,217 (50.4)	1,508 (56.7)	20.61	< .001
Primiparous	1,200 (49.6)	1151 (43.3)		
Gestational age (weeks)				
≥ 37	2,297 (92.8)	2,555 (92.7)	0.02	.892
< 37	1,79 (7.2)	202 (7.3)		
Mode of delivery				
Vaginal/instrumental	1,790 (71.0)	1,939 (68.8)	3.26	.071
Cesarean section	730 (29.0)	881 (31.2)		
Smoking during pregnancy				
No	2,007 (81.4)	2,561 (93.4)	173.02	< .001
Yes	458 (18.6)	181 (6.6)		
First antenatal visit				
≤ 12 weeks	2,022 (84.9)	1,827 (71.5)	129.67	< .001
Diabetes during pregnancy				
No	2,282 (92.7)	2,479 (90.1)	10.63	.001
Yes	180 (7.3)	271 (9.9)		
Apgar score after 5 minutes				
≥ 7	2,437 (99.3)	2,700 (99.0)	1.46	.227
< 7	16 (0.7)	26 (1.0)		
Congenital malformations				
No	2,418 (99.4)	2,673 (99.5)	0.07	.791
Yes	14 (0.6)	14 (0.5)		
Gave birth in a BFH				
No	732 (29.0)	806 (28.6)	0.14	.707
Yes	1,788 (71.0)	2,014 (71.4)		
First day in-hospital infant feeding				
Exclusive breastfeeding	2,087 (87.4)	2,357 (89.2)	3.72	.054
Other	300 (12.6)	286 (10.8)		

Note. BFH = Baby-Friendly Hospital. Formula feeding, mixed feeding, and parenteral nutrition have been collapsed into the category "other." Missing values: maternal age = 24; maternal education = 577; parity = 264; gestational age = 107; smoking during pregnancy = 133; first antenatal visit = 403; diabetes during pregnancy = 128; Apgar score after 5 min = 161; congenital malformations = 221; 1st day in-hospital infant feeding = 310.

countries, and the lowest among participants from Asian countries. While over one third of participants from other European countries and Asian countries had completed tertiary education, 38.3% of the participants from PSAC had no or primary education. Except for women from other European countries, all migrant participants were more likely than Portuguese natives to be multiparous and to initiate antenatal care visits after the first trimester. Although no differences were found between natives' and migrants' likelihood to deliver in a BFH, disaggregated data showed that PSAC-born participants were more likely to give birth in a BFH.

Table 2. A Comparison of the Participants' Characteristics and Their Infant Feeding During the 1st Day in Hospital with the Maternal Country of Birth (N = 5,340).

Characteristic	Portugal (n = 2,520) n (%)	PSAC[a] (n = 1,427) n (%)	Brazil (n = 501) n (%)	Eastern European countries[b] (n = 287) n (%)	Other European countries[c] (n = 260) n (%)	Asian countries[d] (n = 153) n (%)	Other countries[e] (n = 192) n (%)	χ^2	p
Maternal age (years)									
18–24	446 (17.8)	270 (19.0)	84 (16.8)	60 (20.9)	27 (10.4)	24 (15.9)	22 (11.5)	61.99	< .001
25–34	1,361 (54.3)	811 (57.2)	246 (49.2)	166 (57.8)	145 (56.0)	105 (69.5)	103 (53.6)		
≥ 35	701 (28.0)	338 (23.8)	170 (34.0)	61 (21.3)	87 (33.6)	22 (14.6)	67 (34.9)		
Maternal education									
Primary /none	788 (34.3)	494 (38.3)	106 (24.4)	75 (32.6)	41 (18.6)	33 (25.4)	34 (20.7)	149.74	< .001
Secondary	775 (33.8)	473 (36.7)	233 (53.7)	80 (34.8)	79 (35.9)	44 (33.8)	51 (31.1)		
Tertiary education	733 (31.9)	322 (25.0)	95 (21.9)	75 (32.6)	100 (45.5)	53 (40.8)	79 (48.2)		
Parity									
Multiparous	1,217 (50.4)	786 (59.5)	276 (57.9)	146 (52.7)	123 (48.4)	79 (53.4)	98 (53.6)	35.32	< .001
Primiparous	1,200 (49.6)	534 (40.5)	201 (42.1)	131 (47.3)	131 (51.6)	69 (46.6)	85 (46.4)		
Gestational age (weeks)									
≥ 37	2,297 (92.8)	1,290 (92.6)	453 (92.6)	259 (92.2)	236 (92.2)	142 (94.7)	175 (93.1)	1.15	.979
< 37	179 (7.2)	103 (7.4)	36 (7.4)	22 (7.8)	20 (7.8)	8 (5.3)	13 (6.9)		
Mode of delivery									
Vaginal/instrumental	1,790 (71.0)	943 (66.1)	332 (66.3)	225 (78.4)	190 (73.1)	120 (78.4)	129 (67.2)	31.57	< .001
Cesarean section	730 (29.0)	484 (33.9)	169 (33.7)	62 (21.6)	70 (26.9)	33 (21.6)	63 (32.8)		
Smoking during pregnancy									
No	2,007 (81.4)	1,336 (96.3)	453 (93.4)	228 (82.3)	216 (85.4)	150 (100.0)	178 (94.2)	236.47	< .001
Yes	458 (18.6)	52 (3.7)	32 (6.6)	49 (17.7)	37 (14.6)	0 (0.0)	11 (5.8)		
First antenatal visit									
≤ 12 weeks	2,022 (84.9)	825 (64.6)	347 (76.9)	202 (77.1)	220 (87.6)	92 (65.7)	141 (80.6)	226.77	< .001
> 12 weeks	359 (15.1)	452 (35.4)	104 (23.1)	60 (22.9)	31 (12.4)	48 (34.3)	34 (19.4)		
Diabetes during pregnancy									
No	2,282 (92.7)	1,264 (90.9)	432 (88.9)	256 (92.8)	236 (91.5)	120 (80.5)	171 (90.0)	32.89	< .001
Yes	180 (7.3)	127 (9.1)	54 (11.1)	20 (7.2)	22 (8.5)	29 (19.5)	19 (10.0)		
Apgar score after 5 minutes									
≥ 7	2,437 (99.3)	1,358 (98.8)	480 (99.6)	278 (98.9)	251 (99.2)	150 (99.3)	183 (99.5)	4.82	.504
< 7	16 (0.7)	17 (1.2)	2 (0.4)	3 (1.1)	2 (0.8)	1 (0.7)	1 (0.5)		
Congenital malformations									
No	2,418 (99.4)	1,350 (99.4)	479 (99.8)	266 (99.3)	252 (98.8)	149 (100.0)	177 (100.0)	3.68	.633
Yes	14 (0.6)	8 (0.6)	1 (0.2)	2 (0.7)	3 (1.2)	0 (0.0)	0 (0.0)		
Giving birth in a BFH									
No	732 (29.0)	160 (11.2)	209 (41.7)	142 (49.5)	146 (56.2)	55 (35.9)	94 (49.0)	452.66	< .001

(Continued)

Table 2. Continued

Characteristic	Portugal (*n* = 2,520) *n* (%)	PSAC[a] (*n* = 1,427) *n* (%)	Brazil (*n* = 501) *n* (%)	Eastern European countries[b] (*n* = 287) *n* (%)	Other European countries[c] (*n* = 260) *n* (%)	Asian countries[d] (*n* = 153) *n* (%)	Other countries[e] (*n* = 192) *n* (%)	χ^2	*p*
Yes	1,788 (71.0)	1,267 (88.8)	292 (58.3)	145 (50.5)	114 (43.8)	98 (64.1)	98 (51.0)		
First day in-hospital infant feeding									
Exclusive BF	2,087 (87.4)	1,189 (90.6)	423 (89.6)	242 (89.0)	214 (84.3)	128 (87.1)	161 (86.6)	14.35	.026
Other	300 (12.6)	123 (9.4)	49 (10.4)	30 (11.0)	40 (15.7)	19 (12.9)	25 (13.4)		

Note. BF = breastfeeding; BFH = Baby-Friendly Hospital. PSAC = Portuguese-speaking African countries. Formula feeding, mixed feeding, and parenteral nutrition have been collapsed into the category "other." Missing values: maternal age = 24; maternal education = 577; parity = 264; gestational age = 107; smoking during pregnancy = 133; first antenatal visit = 403; diabetes during pregnancy = 128; Apgar score after 5 min = 161; congenital malformations = 221; 1st day in-hospital infant feeding = 310.
[a]Includes Angola, Cape Verde, Guinea-Bissau, Mozambique, and São Tomé e Príncipe. [b]The most represented countries include Ukraine, Romania, Moldavia, Russian Federation, and Bulgaria. [c]The most represented countries include France, Spain, Germany, and the United Kingdom. [d]The most represented countries include China, Nepal, India, and Pakistan. [e]Includes women whose origins did not fit into the previous categories and whose group size was small.

Exclusive breastfeeding during the first hospital day was more common among migrants from PSAC, Brazil, and Eastern European countries (Table 2). Participants from other European Countries had the lowest 1st day exclusive breastfeeding rate, which was still high.

The proportion of missing values in the study sample across all variables ranged from 0.4% (maternal age) to 10.8% (maternal education; Supplemental Table S1), 26.9% of participants had at least one missing value. To account for potential bias, we performed a multiple imputation. First, we estimated the *OR*s and relative 95% CI for the association between maternal country of birth and 1st day in-hospital infant feeding using the imputed sample (Tables 3 and 4). We found that migrant groups as a whole, and PSAC-born participants in particular, were more likely to exclusively breastfeed during the 1st day after birth when compared to natives. Then, we stratified by giving birth in a BFH and adjusted for other potential confounders (Tables 3 and 4), and we observed that, when the birth occurred in a non-BFH, migrants were more likely to exclusively breastfeed during the1st day of hospital stay compared with natives (a*OR* = 1.35, 95% CI [1.01, 1.81]). This association was stronger among Eastern European participants (a*OR* = 2.46, 95% CI [1.27, 4.78]). No differences in exclusive breastfeeding during the first hospital day were observed between native and foreign-born participants who gave birth in a BFH.

Discussion

The proportion of native and foreign-born participants who initiated breastfeeding during the first 24 hr after birth was high. This was in contrast to the proportions of exclusive breastfeeding initiation in the first few days observed in a study undertaken in England, which ranged from 65.5% to 73.6% among migrants (long- and short-term migrants respectively) as opposed to 59.5% of natives (Henderson et al., 2018).

The high rates of first day in-hospital exclusive breastfeeding observed may be explained by a supportive sociopolitical environment that has led several hospitals to obtain accreditation as BFH and a favorable sociocultural context where breastfeeding is generally encouraged and not frowned upon when done in public, unlike what has been reported for other high income countries (Hauck et al., 2020).

Additionally, we have reported that exclusive breastfeeding rates during the first day of hospital stay were higher among migrants than natives. Comparisons with other researchers who carried out studies across European settings is challenged due to the use of multiple, and sometimes unspecific, outcome definitions. Breastfeeding "during hospital stay" or "at discharge" is likewise referred to as breastfeeding "initiation," and the term also was used to indicate breastfeeding at any point after birth. Nevertheless, our findings were consistent with researchers who reported higher

Table 3. Exclusive Breastfeeding During the 1st Day in Hospital Grouped by Migration Status Then Stratified by Giving Birth in a Baby-Friendly Hospital (*N* = 5,340).

	Total *N*	Not BFH		BFH	
Migration Status	*OR* (95% *CI*)	*OR* (95% *CI*)	a*OR* (95% *CI*)	*OR* (95% *CI*)	a*OR* (95% *CI*)
Native	Reference	Reference	Reference	Reference	Reference
Migrant	1.19 [1.00, 1.41]	1.37 [1.04, 1.81]	1.35 [1.01, 1.81]	1.08 [0.87, 1.35]	1.07 [0.83, 1.39]

Note. BFH = Baby-Friendly Hospital; a*OR* = adjusted odds ratio for maternal age and education, parity, gestational age, mode of delivery, smoking during pregnancy, first antenatal visit, diabetes during pregnancy, Apgar score after 5 min, and congenital malformations.

rates of exclusive and prevalent breastfeeding initiation (i.e., giving the newborn one or more meals of glucose solution) among foreign-born participants (Henderson et al., 2018; Zuppa et al., 2010). Another two research teams reported the opposite, with migrant participants presenting lower rates of exclusive breastfeeding initiation than the native-born (Aguilar-Ortega et al., 2019; Farchi et al., 2016). Researchers who assessed the influence of maternal country of birth on any breastfeeding initiation also had mixed results. Two reported that foreign-born participants were more likely to initiate breastfeeding (Nolan & Layte, 2015; Tavoulari et al., 2015), and one group of researchers reported no differences between native- and foreign-born participants' rates for any and exclusive breastfeeding initiation (Kana et al., 2018).

The percentage of participants exclusively breastfeeding during the 1st day of postnatal hospital stay was higher among participants from PSAC, Brazil, and Eastern European countries. Similar results were found in Italy by Zuppa et al. (2010) where participants from Africa, Eastern Europe, and Latin America had higher exclusive and prevalent breastfeeding rates than natives. It is worth noting that the majority of PSAC participants in our sample gave birth in BFHs, which may have influenced their breastfeeding outcomes. This is explained by the participants within this group residing in the Lisbon and Vale do Tejo Region, where the recruitment of participants occurred mostly in BFHs.

Additionally, in our study, participants from Asian countries initiated exclusive breastfeeding at a rate similar to those of Portuguese natives. This finding is at odds with other researchers who have pointed to lower rates of exclusive breastfeeding among infants born to Asian participants when compared to natives in Spain and Italy (Aguilar-Ortega et al., 2019; Farchi et al., 2016). The favorable sociocultural context observed in Portugal may be proving helpful in overcome barriers to breastfeeding described by Chinese women in other host countries, which include embarrassment related to breastfeeding and perceived convenience of bottle feeding (Zhou et al., 2010).

A key finding of our study is that the influence of maternal country of birth on exclusive breastfeeding during the first hospital day disappeared when delivery occurred in a BFH. While participants from Eastern Europe were more likely than Portuguese natives to exclusively breastfeed their infants when they were born in non-BFHs, that association was not found in BFHs. To our knowledge, this is the first study investigating whether giving birth in a BFH affects the association between maternal country of birth and 1st day in-hospital exclusive breastfeeding. Recently, researchers

Table 4. Exclusive Breastfeeding During the 1st Day in Hospital Grouped by Maternal Country of Birth then Stratified by Giving Birth in a Baby-Friendly Hospital (*N* = 5,340).

		Giving birth in a BFH			
	Total *N*	No		Yes	
Maternal country of birth	*OR* (95% *CI*)	*OR* (95% *CI*)	*aOR* (95% *CI*)	*OR* (95% *CI*)	*aOR* (95% *CI*)
Portugal	Reference	Reference	Reference	Reference	Reference
PSAC	1.39 [1.11, 1.72]	1.32 [0.81, 2.17]	1.23 [0.74, 2.06]	1.20 [0.93, 1.55]	1.24 [0.92, 1.67]
Brazil	1.28 [0.94, 1.75]	1.61 [1.02, 2.54]	1.52 [0.94, 2.46]	1.21 [0.78, 1.87]	1.24 [0.76, 2.01]
Eastern European countries	1.14 [0.76, 1.71]	2.17 [1.17, 4.02]	2.46 [1.27, 4.78]	0.77 [0.46, 1.28]	0.64 [0.37, 1.11]
Other European countries	0.76 [0.53, 1.09]	1.18 [0.72, 1.91]	1.22 [0.73, 2.04]	0.60 [0.35, 1.02]	0.66 [0.36, 1.23]
Asian countries	0.88 [0.54, 1.45]	0.80 [0.40, 1.59]	0.54 [0.26, 1.09]	1.07 [0.52, 2.17]	0.96 [0.45, 2.06]
Other countries	0.94 [0.61, 1.46]	1.13 [0.63, 2.04]	1.22 [0.66, 2.24]	1.00 [0.51, 1.95]	0.89 [0.42, 1.87]

Note. BFH = Baby-Friendly Hospital; PSAC = Portuguese-speaking African countries; *OR* = odds ratio; CI = confidence interval; *aOR* = adjusted odds ratio for maternal age and education, parity, gestational age, mode of delivery, smoking during pregnancy, first antenatal visit, diabetes during pregnancy, Apgar score after 5 min, and congenital malformations.

compared exclusive breastfeeding at discharge among women delivering at BFHs and non-BFHs in Belgium, finding that the BFHI increased exclusive breastfeeding practices among native participants (Robert et al., 2019). The authors of this study argued that BFHI implementation could act as a booster promoting breastfeeding practices by participants whose beliefs were already favorable to exclusive breastfeeding and who perhaps needed additional support to engage in optimal breastfeeding practices (Robert et al., 2019). A similar explanation may underpin our results. BFHs seem to provide a more supportive environment for native participants, who would otherwise tend to have lower rates of 1st day in-hospital exclusive breastfeeding, thus attenuating the disparity with specific migrant groups.

Eastern European participants' greater likelihood to exclusively breastfeed in non-BFHs may be explained by sociocultural factors. Eastern European women living in Portugal have described breastfeeding while in hospital as a habitual practice (Coutinho et al., 2014). They were keen to be involved in maternal care, actively seeking information (Almeida et al., 2014), which might have supported their adoption of optimal infant feeding practices. Future research into the role of structural factors on breastfeeding beliefs, attitudes, and practices, comparing native and migrants' perspectives, is needed to fully understand the differences found in early breastfeeding behavior.

Limitations

Information about previous breastfeeding experience for multiparous women, breastfeeding intention, reason for formula supplementation, which are predictors of breastfeeding initiation, was not collected. Also, we did not assess the influences of length of stay in the host country on the main outcome. Length of stay is a proxy for acculturation. Finally, all the maternity units enrolled in the study were public. The percentage of cesarean sections, which was negatively associated with the onset of lactation and breastfeeding, is almost double in private hospitals. This may limit the generalizability of our findings to those settings.

Conclusions

In Portugal, exclusive breastfeeding rates during the first hospital day were high among both migrants and natives. Migrants were more likely to exclusively breastfeed than natives during the first 24 hr after birth. However, this was only observed in non-BFHs. In BFHs, maternal country of birth does not influence 1st day exclusive breastfeeding. The BFHI thus attenuates differences between migrant and native participants, perhaps promoting exclusive breastfeeding among natives. Our findings strengthen the evidence base supporting the implementation of the BFHI as a key effort in the promotion of exclusive breastfeeding initiation.

Authors' Note

Ethical approval was obtained from the Ethic Committee of the Institute of Public Health of the University of Porto (Proc. No. CE14013/ 14th March 2014), the Institutional Review Board of each maternal unit enrolled in the project and the Portuguese Data Protection Authority.

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ORCID iDs

Cosima Lisi, MD https://orcid.org/0000-0002-6519-7014
Cláudia De Freitas, PhD https://orcid.org/0000-0002-1828-8642
Henrique Barros, MD, PhD https://orcid.org/0000-0003-4699-6571

Supplemental Material

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