Factors associated with the birth of children of immigrants in southern Brazil

Fatores associados ao nascimento de filhos de imigrantes no sul do Brasil

Factores asociados al nacimiento de hijos de inmigrantes en el sur de Brasil

Viviane Cazetta de Lima Vieira[1] https://orcid.org/0000-0003-3029-361X
Sonia Silva Marcon[1] https://orcid.org/0000-0002-6607-362X
Guilherme Oliveira de Arruda[2] https://orcid.org/0000-0003-1690-4808
Elen Ferraz Teston[2] https://orcid.org/0000-0001-6835-0574
Evelin Matilde Arcain Nass[1] https://orcid.org/0000-0002-5140-3104
Pamela dos Reis[1] https://orcid.org/0000-0003-1000-4649
Verônica Francisqueti Marquete[1] https://orcid.org/0000-0002-8070-6091
Patrícia Chatalov Ferreira[1] https://orcid.org/0000-0001-9409-5888

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Corresponding author
Viviane Cazetta de Lima Vieira
E-mail: vivianecazettadelimavieira@gmail.com

Associate Editor (Peer review process):
Ariane Ferreira Machado Avelar
(https://orcid.org/0000-0001-7479-8121)
Escola Paulista de Enfermagem, Universidade Federal de São Paulo, SP, Brazil

Abstract

Objective: To identify factors associated with the birth of children of immigrants in southern Brazil.

Methods: This is a cross-sectional study with data on births that occurred in the state of Paraná, from 2014 to 2019, obtained from the Live Birth Information System. The step wise forward method, Poisson multiple regression and Prevalence Ratios (PR) were used in the analysis, being considered when $p \leq 0.005$.

Results: Of the 948,316 births, 12,665 (1.33%) were children of immigrants. Factors associated with the birth of children of immigrants were: mother's age between 20 and 34 years (PR: 1.36; CI: 1.20-1.55), non-white race/color (PR: 1.90; CI: 1.77-2.03), higher education (PR: 2.15; CI: 1.97-2.34), four living children (PR: 0.58; CI: 0.45-0.74). The associated perinatal characteristics were late onset of prenatal care, in the second trimester (PR:1.29; CI:1.16-1.43) and in the third trimester (PR: 2.14; CI: 1.73-2.65), pelvic or foot presentation (PR: 0.74; CI: 0.63-0.86), Apgar <7 in the 1st minute (PR: 1.30; CI: 1.14-1.47), absence of previous cesarean delivery (PR:1.20; CI:1.12-1.28) and low birth weight (PR: 0.79; CI: 0.70-0.90). They were also associated with factors, father age, responsible for filling out the statement and the category of ignored data in different variables.

Conclusion: The main factors associated with the birth of children of immigrants were: higher education, lower ratio of cesarean delivery and low birth weight newborns, lower Apgar score at the 1st minute, late start of prenatal care and number of variables ignored when filling out the statement, signaling specificities of immigrants to be considered in planning the health actions, especially regarding early access to prenatal care services.

Resumo

Objetivo: Identificar fatores associados ao nascimento de filhos de imigrantes na região Sul do Brasil.

Métodos: Estudo transversal com dados sobre nascimentos ocorridos no estado do Paraná, de 2014 a 2019, obtidos no Sistema de Informação de Nascidos Vivos. Na análise foi utilizado o método *step wise forward*, regressão múltipla de Poisson e Razões de Prevalência (RP), sendo considerado quando $p \leq 0,005$.

Resultados: Dos 948.316 nascimentos, 12.665 (1,33%) eram filhos de imigrantes. Os fatores associados ao nascimento de filhos de imigrantes foram: idade da mãe entre 20 e 34 anos (RP:1,36; IC:1,20-1,55), raça/cor não branca (RP:1,90; IC:1,77-2,03), maior escolaridade (RP:2,15; IC:1,97-2,34), quatro filhos vivos (RP: 0,58; IC: 0,45-0,74). As características perinatais associadas foram o início tardio do pré-natal, no segundo trimestre (RP:1,29; IC:1,16-1,43) e no terceiro trimestre (RP:2,14; IC:1,73-2,65), apresentação pélvica ou podálica (RP: 0,74; IC: 0,63-0,86), apgar <7 no 1º minuto (RP:1,30; IC:1,14-1,47), ausência de parto cesáreo anterior (RP:1,20; IC:1,12-1,28); e baixo peso ao nascer (RP:0,79; IC:0,70-0,90). Também apresentaram associação aos fatores, idade do pai, responsável pelo preenchimento da declaração, e a categoria de dados ignorados em distintas variáveis.

[1]Universidade Estadual de Maringá, Maringá, PR, Brazil.
[2]Universidade Federal de Mato Grosso do Sul, Pioneiros, MS, Brazil.
Conflicts of interest: nothing to declare.

Conclusão: Os principais fatores associados ao nascimento de filhos de imigrantes foram: maior escolaridade, menor proporção de parto cesáreo e de recém-nascidos com baixo peso, apgar mais baixo no 1º minuto, início tardio do pré-natal e número de variáveis ignoradas no preenchimento da declaração, sinalizando especificidades das imigrantes a serem consideradas no planejamento das ações de saúde, sobretudo quanto ao acesso precoce aos serviços de atenção pré-natal.

Resumen

Objetivo: Identificar factores asociados al nacimiento de hijos de inmigrantes en la región sur de Brasil.

Métodos: Estudio transversal con datos sobre nacimientos ocurridos en el estado de Paraná, de 2014 a 2019, obtenidos del Sistema de Información de Nacidos Vivos. En el análisis se utilizó el método *step wise forward*, regresión múltiple de Poisson y Razón de prevalencia (RP), considerado cuando $p \leq 0,005$.

Resultados: De los 948.316 nacimientos, 12.665 (1,33 %) eran hijos de inmigrantes. Los factores asociados al nacimiento de hijos de inmigrantes fueron: edad de la madre entre 20 y 34 años (RP:1,36; IC:1,20-1,55), raza/color no blanco (RP:1,90; IC:1,77-2,03), mayor escolaridad (RP:2,15; IC:1,97-2,34), cuatro hijos vivos (RP: 0,58; IC: 0,45-0,74). Las características perinatales asociadas fueron: comienzo tardío del control prenatal, en el segundo trimestre (RP:1,29; IC:1,16-1,43) y en el tercer trimestre (RP:2,14; IC:1,73-2,65), presentación pélvica o podálica (RP: 0,74; IC: 0,63-0,86), Apgar <7 en el primer minuto (RP:1,30; IC:1,14-1,47), ausencia de parto por cesárea anterior (RP:1,20; IC:1,12-1,28); y bajo peso al nacer (RP:0,79; IC:0,70-0,90). También se demostró asociación con los factores: edad del padre, responsable de completar la declaración y la categoría de datos ignorados en distintas variables.

Conclusión: Los principales factores asociados al nacimiento de hijos de inmigrantes fueron: mayor escolaridad, menor proporción de parto por cesárea y de recién nacidos con bajo peso, Apgar más bajo en el primer minuto, comienzo tardío del control prenatal y número de variables ignoradas al completar la declaración, lo que indica especificidades de las inmigrantes que deben ser consideradas en la planificación de acciones de salud, sobre todo con relación al acceso temprano a los servicios de atención prenatal.

Introduction

Contemporary migratory processes are a global phenomenon and have been acquiring specific shapes in each continent. In Brazil, at the beginning of this century, there has been an increase in immigration of people from various countries for very different reasons and conditions. Although Brazil is not yet considered a country of immigration and emigration, the set of problems related to immigrants' health continues to mobilize policies, services and the academic sector.[1]

In this regard, it is worth noting that the sociopolitical contexts and social processes that migrants commonly go through produce unfavorable conditions for the care and maintenance of health. It is estimated that women represent approximately half of the world's billion migrants,[2] and the effects of migration on their health are varied, unpredictable, and determined by factors such as conditions that led them to migration, characteristics of the health services that assist them, and status in the host society.[3]

With regard to maternal and child care, it is observed that reducing inequities is a challenge for public health and society, especially for the most vulnerable population.[4] A study showed that when comparing the determinants of maternal healthcare for migrants with the native population, social, economic, behavioral and environmental factors explain the worst results among them in terms of premature birth, congenital anomalies, low birth weight, growth restriction fetal and infant mortality.[5]

However, contradictory results are found worldwide in relation to perinatal health, such as higher risk of stillbirth,[6] higher risk of premature birth[7] and lower risk of pre-eclampsia[8] among immigrants. It is worth considering that linguistic, social, political and economic barriers result in less access to health systems and greater morbidity, which may interfere with immigrants' maternal and perinatal health.[9]

It is observed, then, that different factors related to immigration status expose this population to greater risks. Although, among immigrants, women use health services more, as was identified in relation to Haitian immigrants in center-western Brazil,[10] studies investigating the health of mother and child immigrants in Brazil are scarce and have focused on qualitative studies, aiming to recover the female presence in the immigration process, addressing the daily experiences, work activities and cultural background of immigrant women,[11] and also to understand the experiences lived by immigrant women during healthcare in their pregnancy, childbirth and postpartum.[12]

Therefore, there is a gap in relation to measuring the occurrence of births of immigrants in Brazil, which helps to understand the results of maternal

and perinatal health that impact the lives of women and their children. Given this scenario, this study aimed to identify factors associated with the birth of children of immigrants in southern Brazil.

Methods

This is a quantitative and cross-sectional study, carried out in accordance with the recommendations of the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) based on secondary and retrospective data referring to all births of residents in the state of Paraná, Brazil, which occurred in the period from January 1, 2014 to December 31, 2019. The time frame considered that, in 2014, the number of immigrants exceeded statistical projections[13] and that 2019 was the most recent year completed, minimizing the variability of data referring to the year of birth registration.

The data used are available in the Information System on Live Births (SINASC - *Sistema de Informações sobre Nascidos Vivos*), according to the year of birth. However, to access other important variables, including the mother's birthplace, the complete database provided by the 15th Regional Health Department of the state of Paraná was used.

The "mother's naturalness" was defined as a dependent variable, recategorized as "immigrant" women born outside Brazil, and "Brazilian" the woman born in any Brazilian municipality. In turn, independent variables were:

a. Maternal: age (<20 years, from 20 to 34 years; from 35 years and over), education (< eight years, ≥ eight years), ethnicity (white, other ethnicities), occupation (according to the large groups of the Brazilian Occupation Classification – CBO (*Classificação Brasileira de Ocupações*)), marital status (with a partner, without a partner) and number of children (1, 2, 3 and 4 or more);
b. Paternal: age (full years, categorized into seven age groups);
c. Prenatal care and delivery characteristics: year of birth, gestational age at the beginning of prenatal care (first, second or third trimester), number of prenatal visits (none, 1 to 2, 3 to 6, 7 or more), birthplace (hospital, others), type of delivery (cesarean, vaginal), induced labor (yes, no), cesarean section prior to labor (yes, no), professional who attended the birth (doctor, nurse/midwife, others), professional who completed the SLB (doctor, nurse, midwife, clerk, others) and type of birth financing (public, private);
d. Newborn: sex (male, female), birth weight (<2,500g, ≥2,500g), Apgar score at the 1st (<7, ≥7) and 5th minute (<7, ≥7), gestational age (< 37 weeks, ≥ 37 weekly), congenital malformations (yes, no) and presentation (cephalic, pelvic or foot and transverse).

To identify the variable type of childbirth financing not available in the database, initially the "birth establishment code" entered in the database was consulted in the Brazilian National Register of Health Establishments (CNES - *Cadastro Nacional de Estabelecimentos de Saúde*) and identified the one that did not assist the Unified Health System (SUS – *Sistema Único de Saúde*). Among those who assisted, the legal nature was consulted and then, among the total obstetric beds available, the ratio reserved for SUS was identified. The financing of childbirth was classified in public or private, and the establishments with mixed care were classified as public when the majority of beds (80% or more) were SUS.

Statistical data analysis was performed using Statistical Package for the Social Sciences (SPSS), version 20. For the description of the data, absolute and relative frequency distributions were verified, with presentation of means. Pearson's chi-square test was performed in bivariate (simple) analysis, and the variables that presented a value of $p<0.20$ were inserted, using the step wise forward selection method in the Poisson multiple regression analysis with robust estimation (variance). The Prevalence Ratio (PR) was used as a measure of association, with a 95% confidence interval. The significance was established when $p \leq 0.05$ for the maintenance of the variables in the multiple model for all tests.

The research was approved by the Institutional Review Board of the *Universidade Estadual de Maringá*, under Opinion 3.032.650/2018.

Results

The number of births in the state of Paraná during the study period was 948,316, of which 12,665 (1.33%) were immigrant mothers. There was a 27.4% increase in the number of immigrant births between 2014 (1,917) and 2019 (2,424), with a higher ratio between 2018 (1.47%) and 2019 (1.60%). The foreign mothers were from 108 different countries, coming from the five continents, demonstrating the diversity of immigration received.

The mean age of Brazilian mothers was 26.9 years, with no difference compared to immigrant mothers (27 years). However, there is a different distribution when commencing the ratio of births according to maternal age, because the ratio of women who had children in the age group considered ideal (20 to 34 years) was significantly higher among immigrants (PR: 1.36; p<0.001).

In addition to age, other maternal characteristics that were associated, in order to make up the multiple model that explains the birth profile of immigrants in Paraná, were: race/non-white color (PR:1.90; p<0.001), schooling equal to or greater than eight years (PR: 2.15; p<0.001), more living children (PR: 0.58; p<0.001) and late onset of prenatal care in the second (PR: 2,14; p<0.001) and third trimester (PR: 1.97; p<0.001).

It is noteworthy that 76.2% of Brazilian women declared themselves white, while among immigrants this percentage was lower (53.7%). Although immigrant women had higher education, data not contained in the tables show that, in a greater ratio than Brazilian women, they performed low-paying activities (55.6% x 44.6%). An average number of 8.9 prenatal consultations was observed among immigrants and the mean gestational age of prenatal onset of 5.4 months, i.e., they started late prenatal care.

As for perinatal characteristics, the following variables were included in the model: pelvic/foot presentation (PR: 0.74; p<0.001) and transverse (PR: 0.50; p=0.016), absence of cesarean delivery before the current delivery (PR: 1.20; p<0.001), Apgar at the 1st minute < 7 points (PR: 1.30; p<0.001) and low birth weight (PR: 0.79; p<0.001) (Table 1).

Cesarean section was the most frequent mode of delivery in both groups, however, with the highest percentage among Brazilian women (62.3% x 56.9%). When the mode of delivery was compared with the baby's low birth weight, it was observed that, regardless of the mother's birthplace, low weight was higher in cesarean births and with a higher ratio among Brazilian women (64.3% x 55.6%). In turn, the profile of women with a previous cesarean section shows that, regardless of birthplace (Brazilian mother and immigrant), most of them were aged between 20 and 34 years (72.4% and 78.3%), were white. (79.1% and 64.8%), with education greater than or equal to eight years of study (88.8% and 79.4), without previous vaginal delivery (83.1% and 80.9%), started prenatal care in the first trimester of pregnancy (90, 2% and 86%), had seven or more prenatal consultations (88.3% and 79.6%) and the delivery was not induced (93.1% and 94.5%). Regarding the type of financing for childbirth, it was found that 59.8% of births occurred in public maternity hospitals, and 18.1% in private maternity hospitals. It is noteworthy that in 22.1% of the remaining births, it was not possible to categorize the type of birth financing due to inconsistency or lack of data. The following variables were also included in the model: father's age and the professional who filled out the Statement of Live Birth. The father's age was associated with the birth of a child of immigrants, so that the older the age group, the higher the PR values. Nurses and other professionals were the ones who most filled the Statement of Live Birth, and this activity was performed in a higher percentage by nurses in relation to immigrants (47.3%) than by Brazilians (41.1%). In both groups, the hospital was the place where childbirth occurred in its entirety (99%). The lack of information regarding marital status, education, prenatal trimester and fetal presentation at delivery among the immigrants is noteworthy, as for most of these variables, statistically significant results and considerable PR values were observed, as in the case of ignored education (PR: 8.04). In contrast, data on cesarean delivery prior to labor were more frequently ignored in relation to births to children of Brazilian mothers (PR: 0.77).

Table 1. Poisson multiple regression model and Prevalence Ratios of factors associated with immigrant birth, Paraná State

Variables	Mother's naturalness*				
	Immigrants n(%)	Non-immigrants n(%)	p-value	PR	95%CI
Mother's age group					
< 20 years	1349(10.7)	140353(15.0)	-	1	-
20 to 34 years	9778(77.2)	659196(70.5)	<0.001	1.36	1.20 – 1.55
35 years and older	1538(12.1)	136102(14.5)	0.356	0.93	0.79 – 1.09
Mother race/color					
White	6728(53.7)	705434(76.2)	-	1	-
Non-white	5790(46.3)	219914(23.8)	<0.001	1.90	1.77 – 2.03
Mother's marital status					
With a partner	7103(56.3)	557532(59.8)	-	1	-
Without a partner	5436(43.1)	373425(40.0)	0.269	1.04	0.97 – 1.12
Ignored	70(0.6)	1803(0.2)	0.013	1.95	1.15 – 3.30
Mother's education level					
< 8 years	9320(73.9)	777829(83.3)	-	1	-
> 8 years	3105(24.6)	154314(16.5)	<0.001	2.15	1.97 – 2.34
Ignored	180(1.4)	1175(0.1)	<0.001	8.04	5.81 – 11.13
Living children					
None	5730(45.4)	416084(44.7)	-	1	-
1 child	4056(32.1)	314986(33.9)	<0.001	0.84	0.78 – 0.90
2 children	1807(14.3)	127508(13.7)	<0.001	0.78	0.70 – 0.87
3 children	623(4.9)	43801(4.7)	<0.001	0.61	0.51 – 0.73
4 or more children	403(3.2)	27516(3.0)	<0.001	0.58	0.45 – 0.74
Trimester from the beginning of PNC					
1st trimester	9929(79.3)	793235(85.6)	-	1	-
2nd trimester	1778(14.2)	106342(11.5)	<0.001	1.29	1.16 – 1.43
3rd trimester	437(3.5)	14460(1.6)	<0.001	2.14	1.73 – 2.65
Ignored	384(3.1)	12418(1.3)	<0.001	1.97	1.47 – 2.63
Presentation					
Cephalic	11975(95.7)	880058(94.7)	-	1	-
Pelvic or foot	436(3.5)	39543(4.3)	<0.001	0.74	0.63 – 0.86
Transverse	27(0.2)	2966(0.3)	0.019	0.50	0.28 – 0.89
Ignored	76(0.6)	6876(0.7)	0.042	1.36	1.01 – 1.83
Cesarean delivery before LB					
Yes	4166(58.6)	356675(62.2)	-	1	-
No	2509(35.3)	178167(31.1)	<0.001	1.20	1.12 – 1.28
Not applicable	322(4.5)	23706(4.1)	0.658	0.96	0.80 – 1.15
Ignored	115(1.6)	14745(2.6)	0.052	0.77	0.59 – 1.00
Apgar at the 1st minute					
< 7 points	929(7.4)	55489(5.9)	<0.001	1.30	1.14 – 1.47
> 7 points	11695(92.6)	877883(94.1)	-	1	-
Weight at birth					
< 2500 g	987(7.8)	79915(8.5)	<0.001	0.79	0.70 – 0.90
2500 to 3999 g	11030(87.1)	814757(87.1)	-	1	-
4000 g or more	641(5.1)	40935(4.4)	0.174	1.10	0.96 – 1.25
Father age					
Up to 17 years	45(0.6)	8169(1.1)	-	1	-
18 to 24 years	1471(18.6)	165661(22.6)	0.026	1.76	1.07 – 2.90
25 to 29 years	1922(24.3)	174549(23.8)	0.001	2.26	1.37 – 3.73
30 to 39 years	3403(43.0)	295938(40.4)	<0.001	2.47	1.50 – 4.07
40 to 49 years	930(11.8)	75527(10.3)	<0.001	3.05	1.84 – 5.07
50 to 59 years	110(1.4)	10943(1.5)	0.001	2.46	1.41 – 4.29
60 years and older	24(0.3)	1833(0.3)	0.001	3.20	1.58 – 6.49
Professor filled out the SLB					
Doctor	86(0.8)	16136(1.9)	-	1	-
Nurse	5991(56.0)	384717(45.9)	<0.001	2.27	1.64 – 3.14
Midwife	0.0(0.0)	46(0.0)	0.999	0.00	-
Clerk	10(0.1)	1463(0.2)	0.974	0.98	0.24 – 3.97
Others	4612(43.1)	435350(52.0)	0.001	1.77	1.28 – 2.45

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Continuation.

PNC - prenatal care; LB - labor; SLB - Statement of Live Birth; PR - Prevalence Ratio; CI - Confidence Interval; *Poisson multiple regression model adjusted for confusion variable "Year of birth"

Discussion

The limitations of the study are related to the use of a secondary database, subject to incomplete records and with predetermined variables, which made it impossible to explore important information in the context of immigration, including time of residence in Brazil, being or non-refugee and socioeconomic status. Furthermore, the heterogeneity of immigrant populations in the researched region made the analysis by ethnic group unfeasible. However, when analyzing the associated factors, it was possible to insert the variable "year of birth", which allowed for a better adjustment of the model and a reduction in the bias related to the time frame. Thus, the results found are valid and can trigger reflections on existing public policies, in addition to directing the performance and actions in the maternal and child area, especially for nurses who are on the front line of care, in order to meet the specific needs of immigrant women.

It is noteworthy that the research results point to disparities between immigrants and Brazilians in relation to maternal-fetal characteristics, which should be considered in the planning of health actions, especially in the pregnancy-puerperal period. It was observed, for example, that immigrant women who had children in the study period were associated with education greater than or equal to eight years of study, aged between 20 and 34 years and non-white color, which corroborates the results of studies carried out in Australia[6] and Belgium,[14] which indicated a lower risk for adverse pregnancy outcomes among immigrants.

In contrast, a study carried out in Turkey, which analyzed 7,115 births of native and immigrant

women, found that the latter had lower age and educational level.[15] These differences show that the profile of immigrants varies between countries and can be influenced by immigration policies and the socioeconomic level of immigrant women.

The ratio of women with higher education among immigrants stands out in this study. It is important to consider that the organization of the educational system differs between the various countries, making it difficult to standardize this information for the format collected in the Statement of Live Birth. However, one must consider the possibility that they have already emigrated with more years of study, including undergraduate and graduate courses, as a study with African immigrants in Brazil pointed to a considerable presence of immigrants with complete higher education, especially in the southern region.[16]

Nevertheless, it is important to highlight that the immigrants under study had low-paid work activities, which corroborates the results of a study carried out with Haitian immigrants in southern Brazil, which found that the jobs they have are informal activities and not related to the training obtained in the country of origin.[17] These circumstances, characterized as stressful, can have a negative impact on the progress of the pregnancy and on mothers' and newborns' health.[15]

The beginning of prenatal care among immigrant women occurred late, which is worrying, as studies show an association between the late start of prenatal care and low birth weight.[18,19] However, in the present study, although the immigrants started prenatal care after the first trimester of pregnancy, their children had a lower ratio of low birth weight compared to Brazilian women, which indicates that other variables may have influenced this result, opening possibilities for further studies in order to elucidate this relationship.

It is noteworthy that the late start of prenatal care may indicate the existence of barriers in accessing health services. It is noteworthy that, similar to what happens with the Brazilian population, immigrant women seek health services more than men.[10] However, linguistic issues and issues related to the behavior of professionals who assist them can hinder the access of immigrants to maternal and child care.[20]

In Spain, a study carried out with immigrant women from sub-Saharan Africa revealed that access to healthcare in the Basque country was limited by institutional barriers, which included disrespect for rights, lack of documentation and difficulties in complying with legal access conditions. Immigrants' poor communication with the health center staff and the professionals' attitude, guided by a stereotyped social image of immigrants and blacks, also hampered the quality of care.[21]

In this sense, studies point to the need to develop the capacity for intercultural communication between professionals and immigrants.[22] Thus, to work with diversity and help overcome difficulties, intercultural interpreters play an important role[22] and need to be inserted in the context of healthcare for immigrants. However, many countries that receive immigrants, such as Brazil, do not have these professionals in health services and, therefore, need to strive for alternatives that favor the establishment of more effective communication.

The unpreparedness of professionals to establish effective communication or use translation tools must be contextualized in a system that, for example, does not reward knowledge of non-local languages for the team and, at the same time, pressures professionals to perform a number high number of consultations in a short period of time.[21] In Brazil, public policy guarantees the access of immigrants to health services; however, communication, cultural and prejudice barriers can influence the service to this population.[23]

These cultural issues become even more pressing in prenatal care. Inadequate care for pregnant women increases the chances of unfavorable outcomes. In the present study, the Apgar score at the first minute of less than seven was associated with the birth of children of immigrants, which corroborates the result of a cohort study carried out in Brussels, with 892 recent immigrant pregnant women who have been in the host country for less than three years old.[24] In this context, it is worth considering that immigration is an important risk factor for neonatal outcomes, and may be related, for exam-

ple, to the time when prenatal care begins and the quality of care for this population. However, multicenter studies are needed for a better understanding of the phenomenon analyzed.

On the other hand, the prevalence of low birth weight was significantly lower among the children of immigrants, who started prenatal care later. This fact allows us to infer that, in the Brazilian context, other factors related to previous and current health conditions, such as a history of hospitalization during pregnancy[25] and socioeconomic and sanitary conditions, can more forcefully influence low birth weight.

Regarding this aspect, it is important to highlight the higher ratio of previous cesarean delivery among Brazilian women. In Brazil, cesarean rates exceed vaginal births since 2009, and remain higher until today.[26] Historically, the highest rates of cesarean sections in Brazil are associated with more privileged socioeconomic status, white skin color and use of private health services. On the other hand, vaginal delivery is performed more frequently in public services and in women of lower socioeconomic status,[27] factors found more frequently in immigrant women.

In this sense, a nationwide study showed that there is a difference between cesarean rates in relation to the source of financing for childbirth, with values expressly higher (more than double) in the private sector (87.9% x 42.9%).[28] This difference, in relation to the type of financing, was also identified in a study carried out only with data from private hospitals that provide services to supplementary health operators and to SUS in center-western, northern, southeastern and southern Brazil. According to the same study, of the 91,894 births that occurred, 70.7% were by cesarean, the ratio being much higher in supplementary health (74.1% vs. 45.7%). This same study also found that the percentage of pregnant women without comorbidities who underwent cesarean section was higher in the group assisted by supplementary health (56.4%) when compared to the public service (43.6%).[29]

The justification for the difference between the types of delivery of Brazilian women is quite diverse and is related to the remuneration model offered by the supplementary health plans, the qualification of professionals and cultural factors.[28]

It is important to consider that, despite the pauperization of the Brazilian population, cesarean rates are still high and on the rise. However, data from the Brazilian National Survey on Childbirth and Childbirth have already produced positive results in relation to changes in public policies on childbirth care and corresponding practices, there is still a long way to go.[30]

In Germany, a study conducted in three public maternity hospitals in Berlin, through interviews with 7,100 women (2,821 first-generation immigrants, 958 second- or third-generation immigrants and 3,321 non-immigrants), showed that cesarean rates were similar for immigrants of different generations and non-immigrant women, and that indications for cesarean delivery and neonatal outcomes did not show statistically significant differences.[31] Thus, it is likely that the mode of delivery is more related to obstetric practices in the host country than to variables related to mothers' naturalness.

Some studies have cited race/color to assess health inequities.[32,33] In the present study, 76.2% of Brazilian women declared themselves white, while the percentage among immigrants was 53.7%. Analyzing the multiple ethnicities in the context of Brazilian immigration, in addition to the expressive number of black immigrants, one must consider the greater biological predisposition of black women to hypertension and diabetes mellitus,[34] major public health problems in Brazil and in the world and which may have influenced the higher frequency of birth weight ≥ 4,000 grams in children of mothers immigrants.

The highest birth weight of children of women with a history of immigration was also found in a study carried out in Berlin with 3,002 women, 999 of whom were Vietnamese.[35] It is worth considering that birth weight greater than four kilos is often found in children of women with gestational diabetes. In Australia, a study compared the perinatal outcomes of 73,517 births and found that immigrant Chinese women had four times the risk of gestational diabetes than Australian women. However, Chinese immigrants with diabetes had a

lower risk of large-for-gestational-age babies,[36] signaling that, in addition to biological factors, other conditions should be considered in the assessment of perinatal outcomes of immigrants.

It is noteworthy that the lack of data on marital status, mother's education and trimester of the beginning of prenatal care among immigrants indicates that the difficulty of communication can interfere with the quality of information recorded in SINASC, especially with regard to immigrant women, and, consequently, in the completeness of the information system and qualification of health surveillance analyses.

Conclusion

The main factors associated with the birth of immigrants' children were: higher education, lower ratio of cesarean delivery and low birth weight newborns, lower Apgar score at the 1st minute, late start of prenatal care and number of variables ignored when filling out the declaration, signaling specificities of immigrants to be considered in the planning of health actions, especially regarding early access to prenatal care services.

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Collaborations

Vieira VCL and Marcon SS contributed to conception and design, data analysis and interpretation, article writing, critical review, final approval of the version to be published. Arruda GO and Teston EF collaborated with data analysis and interpretation, article writing and critical review. Nass EMA, Reis P, Marqueti VF and Ferreira PC cooperated with the relevant critical review of the intellectual content.

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