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Cesarean sections in immigrant women, by Robson's classification, the mother's characteristics, and adequacy of antenatal care

Cesarianas em mulheres imigrantes segundo classificação de Robson, características maternas e adequação da assistência pré-natal

Cesáreas en mujeres inmigrantes según la clasificación de Robson, características maternas y adecuación de la atención prenatal

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ABSTRACT
Objective: to examine rates of Cesarean section in immigrant women, by Robson's classification, the mother's characteristics, and adequacy of prenatal care. **Methods**: this retrospective, cross-sectional study used data from the Live Births Information System on births by immigrant women in Paraná State from 2014 to 2021. The database was accessed in 2019, with an update in 2022. Data analysis was assisted by descriptive and inferential statistics. The research protocol was approved by the research ethics committee. **Results**: of the 18,652 births examined, 58.2% were by cesarean section, which was more likely to occur in immigrants with up to eight years of schooling, a partner, inadequate or intermediate prenatal care, and Robson group classification 1, 3, or 4. Classification in groups 2, 5, 6, 7, 8, and 9 was protective for cesarean delivery. **Conclusion**: cesarean delivery in immigrants was associated with schooling and marital status, adequacy of prenatal care, and classification in Robson groups.
Descriptors: Women's Health; Prenatal Care; Cesarean Section; Emigrants and Immigrants; Helath Information System.

RESUMO
Objetivo: analisar a distribuição de cesáreas em imigrantes segundo classificação de Robson, características maternas e adequação da assistência pré-natal. **Métodos**: estudo transversal, retrospectivo com dados do Sistema de Informação sobre Nascidos Vivos referentes aos partos de mulheres imigrantes ocorridos no Paraná, no período de 2014 à 2021. Banco dados acessado em 2019 com atualização em 2022. Dados analisados com auxílio da estatística descritiva e inferencial. Protocolo da pesquisa aprovado por Comitê de Ética. **Resultados**: dos 18.652 nascimentos analisados, 58,2% foram cesáreas, com maior chance de ocorrerem em imigrantes com até oito anos de estudo, com companheiro, pré-natal inadequado ou intermediário e classificadas nos grupos 1,3, e 4 de Robson. Os grupos 2,5,6,7,8 e 9 apresentaram-se como fator de proteção para essa via de parto. **Conclusão**: a cesariana foi mais frequente em imigrantes com baixa escolaridade, pré-natal inadequado ou intermediário e classificadas nos grupos 1, 3 e 4 de Robson.
Descritores: Saúde da Mulher; Cuidado Pré-natal; Cesárea; Emigrantes e Imigrantes; Sistemas de Informação em Saúde.

RESUMEN
Objetivo: analizar las tasas de cesáreas en inmigrantes según la clasificación de Robson, las características maternas y la adecuación de la atención prenatal. **Métodos**: estudio retrospectivo transversal que utilizó datos del Sistema de Información de Nacidos Vivos referentes a los partos en mujeres inmigrantes en el estado de Paraná de 2014 a 2021. Base de datos consultada en 2019 con actualización en 2022. Los datos se analizaron con ayuda de las estadísticas descriptiva e inferencial. El protocolo de investigación fue aprobado por el Comité de Ética en Investigación. **Resultados**: de los 18.652 nacimientos analizados, el 58,2% fue por cesárea, con mayor probabilidad de frecuencia en inmigrantes con hasta ocho años de escolaridad, con pareja, control prenatal inadecuado o intermedio y clasificadas en los grupos 1, 3 y 4 de Robson. Los grupos 2, 5, 6, 7, 8 y 9 se presentaron como factor de protección para el parto por cesárea. **Conclusión**: el parto por cesárea fue más frecuente en inmigrantes con baja escolaridad, control prenatal inadecuado o intermedio y con clasificación en los grupos 1, 3 y 4 de Robson.
Descriptores: Salud de la Mujer; Atención Prenatal; Cesárea; Emigrantes e Inmigrantes; Sistemas de información en Salud.

INTRODUCTION

Immigration is an increasing phenomenon at the global level, mainly resulting from wars, armed conflicts, political persecution and economic hardships[1]. In Brazil, immigrants in general find difficulties accessing health services, in addition to those faced by Brazilians themselves[2], as they also encounter linguistic barriers, as well as those arising from their stereotyped social image, which can influence the professionals' behavior[3], affect care quality and impact on health indicators[4].

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Considering that the arrival of immigrants generates specific demands to the health sector in the host country, that almost 40% of the immigrants entering Brazilian territory are women of childbearing age, and that the assistance provided to women in our country is marked by the persistence of inadequacies in prenatal care, labor and birth despite the public health policies instituted[5], it is questioned whether the delivery method for immigrants in Brazil is similar to that of Brazilian women.

Although the World Health Organization (WHO) recommends that 10% to 15% of the births be surgical[3] and that, among other actions, the *Rede Cegonha* strategy recommends encouraging normal delivery with a reduction in the excess of C-sections[6,7], data from the Information System on Live Births show that 57.2% of the births in Brazil in 2020 happened according to this delivery method[8].

The relationship between delivery method and the immigration phenomenon is still little explored[9,10], although differences have been observed in the international scope. In Finland, immigrants of Russian origin had a lower risk of C-sections, those from sub-Saharan Africa and South and East Asia were more exposed to emergency C-sections, and Latin American/Caribbean immigrants were at an excessive risk of elective and emergency C-sections[9]. On the other hand, in Greece, immigrant women had more vaginal deliveries, with adequate gestational ages and heavier newborns when compared to the natives[10].

Considering that Paraná is among the states with the highest number of immigrants in the country[11], that the surgical delivery rates are indicative of care adequacy, and that the scarcity of studies exploring the relationship between C-sections, so expressive in the Brazilian context, and the immigration phenomenon, it is mandatory to know the characteristics of obstetric care for immigrant women, especially in relation to childbirth.

Thus, the following study objective was defined: to analyze the distribution of C-sections in immigrants according to Robson's classification, maternal characteristics and prenatal care adequacy.

METHOD

A cross-sectional study conducted from 2004 to 2021 with data from the state of Paraná Information System on Live Births (*Sistema de Informação de Nascidos Vivos*, SINASC). The report followed the recommendations set forth in the *Strengthening the Reporting of Observational Studies in Epidemiology* (STROBE) guideline.

Paraná is a state from the Brazilian South region, with 399 municipalities and an estimated population of more than 11 million inhabitants. The time clipping considered 2014, due to the increase in the immigration inflow to the country[12], and 2021 as the most recent year. It is noted that the 2021 data made available by DATASUS are preliminary.

The data were collected at two moments: 2019, with an update in 2022. At the first moment, the open database did not contain the mothers' ethnic origin variable, thus resorting to the database made available by the State Health Department. In 2022, the public domain database was used, available in https://datasus.saude.gov.br/transferencia-de-arquivos/.

From 2014 to 2021, there were 1,233,552 live births (LBs) in the state, of which 19,171 were children born to immigrant women (1.5%). Births to immigrants younger than 15 (62) and older than 45 (16) years old were excluded; as well as those with non-hospital deliveries (280); newborns with congenital anomalies (140) and miscarriages of fetuses weighing < 500 g and/or with Gestational Age < 22 weeks (21), resulting in a sample of 18,652 live births, of which 7,794 were vaginal and 10,858 were C-sections.

The dependent variable was the delivery method. The independent variables included in the model were the following: maternal age, marital status, parity, gestational age at delivery, mother's occupation, and birth weight.

In order to assess prenatal care adequacy, the criteria established by *Rede Cegonha* were considered, namely: gestational age <12 weeks at the beginning of the prenatal program and number of consultations $\geq$6. Thus, prenatal care was categorized into Adequate: beginning up to 12 weeks and with at least six consultations; Intermediate: from the 13th to the 26th gestational week and/or with three to five prenatal consultations; and Inadequate: beginning after the 26th GW and/or with two or fewer prenatal consultations)[6,7].

The delivery method outcome was categorized according to Robson's classification, as it allows categorizing by groups according to the type of delivery and the parturients' obstetric profile, enabling the identification of an excessive number of C-sections[13]. The analysis considered the number of deliveries observed and expected in each group of this classification. Calculation of the deliveries in each of the ten groups from Robson's classification was according to the corresponding number of deliveries, multiplied by 100 and divided by the total number of live births in the sample studied. The same calculation was performed according to the number of C-sections observed and expected. Finally, the contribution made by each group to the total C-sections was observed.

Robson's classification is totally inclusive, as it classifies all women, and mutually exclusive, as women are classified in only one of the groups. In turn, these are categorized according to six birth characteristics: parity (nulliparous,

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multiparous), previous C-section (yes, no), onset of labor (spontaneous, induced, C-section before labor), gestational age (term, preterm), fetal presentation (cephalic, breech, transverse) and number of fetuses (single or multiple).

The data were compiled using the SPSS® software, version 25, and the independent variables were categorized for a subsequent descriptive statistical analysis and adjustment of the binary logistic regression model for the delivery method (vaginal or C-section). The independent variable for the final model was selected by using the Identification method for main effects, adopting a 5% significance level. For the significant variables in the final model, ***Odds Ratio*** (OR) was adopted as association measure, along with its respective 95% confidence interval (95% CI).

The research protocol was approved by the Permanent Committee on Ethics in Research involving Human Beings of the signatory institution, and all national and international recommendations for research with human beings were respected.

RESULTS

Among the 18,652 live births to immigrants analyzed, the proportion of women aged between 35 and 45 years old (13.0%) was higher than among adolescents (9.6%); more than half (56.0%) had no partner; 4.6% had up to seven years of study; and 42.8% had some paid work, of which 55.5% worked as assistants in general, domestic and commercial services. Regarding their obstetric history, 38.4% were nulliparous; 88.9% had full-term deliveries (from 37 to 41 weeks), more than half had cesarean deliveries (57.2%) and the prenatal care of 21.0% and 5.1% of the women was classified as intermediate and as inadequate, respectively (data not included in the table).

Table 1 presents the contribution of each Robson group to the total number of cesarean deliveries that occurred, as well as the expected and observed percentages in relation to the total number of deliveries, from which it can be seen that the percentage of births in groups 1, 2, 6, 7 and 9 is in agreement with the expected values.

TABLE 1: Expected and observed distributions of the births (n=18,652) and C-sections (n=10,858) in immigrants, according to Robson groups. Maringá, PR, Brazil, 2021.

	Total births		C-sections by group		Contribution made by each group to the total C-sections
Robson groups	Observed n (%)	Expected %	Observed %	Expected %	Observed %
1	2,742 (14.7)	35.0 - 42.0	40.6	10.0	10.3
2	3,824 (20.5)		65.1	25.0 - 30.0	23.0
3	2,966 (15.9)	30.0 - 40.0	22.1	3.0	6.0
4	2,313 (12.4)		43.5	20.0	9.2
5	4,141 (22.2)	10	88.0	50.0 - 60.0	33.6
6	261 (1.4)	<5.0	91.8	-	2.2
7	298 (1.6)		87.5	-	2.4
8	504 (2.7)	1.5 - 2.0	89.5	60.0	4.1
9	37 (0.2)	0.2 - 0.6	97.6	100.0	0.4
10	1,567 (8.4)	4.0 - 5.0	61.3	15.0 - 20.0	8.8

Source: World Health Organization, 2017 (Expected cases); Information System on Live Births, 2014-1021 (Observed cases)

Groups 3 [multiparous women without previous C-section, with single fetus, cephalic, ≥37 weeks in spontaneous labor] and 4 [multiparous women without previous C-section, with single fetus, cephalic, ≥37 weeks, whose labor was induced or who underwent a C-section before onset of labor] presented a lower percentage of cases than expected, although with a higher proportion of C-sections.

Groups 5 [multiparous women with at least one previous C-section, single fetus, cephalic, ≥37 weeks], 8 [women with multiple pregnancies, including those with previous C-section(s)] and 10 [single, cephalic fetus, <37 weeks, including those with previous C-section(s)] exceeded the expected limits. Regarding the percentage of C-sections per group, values above the expected were observed practically in all groups, with the exception of group 9 [pregnant women with fetus in transverse or oblique position].

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Table 2 presents the distribution of the births according to the characteristics of the pregnant women and of the pregnancies, by Robson group and delivery method.

TABLE 2: Percentage distribution of the C-sections in immigrants according to maternal characteristics and by Robson groups (n=10,858). Maringá, PR, Brazil, 2021.

Characteristics	n (%)	1	2	3	4	5	6	7	8	9	10
Mother's age (years old)											
15-19	828 (7.6)	16.2	11.8	4.7	4.9	3.7	12.3	3.5	2.9	9.8	8.5
20-34	8,470 (78.0)	78.4	81.5	77.0	75.7	77.8	77.1	68.1	80.6	78.0	74.0
35-45	1,560 (14.4)	5.46	6.7	18.3	19.4	18.4	10.6	28.5	16.5	12.2	17.5
With a partner											
Yes	6,542 (60.3)	57.5	59.4	60.8	63.4	56.8	56.2	56.0	50.5	58.5	58.9
No	4,316 (39.3)	42.5	40.6	39.2	36.6	43.2	43.8	44.0	49.5	41.5	41.1
Schooling (years)											
0-8	406 (3.7)	3.2	2.3	6.4	6.4	3.9	2.1	3.8	2.7	12.2	3.6
≥9	10,452 (96.8)	96.8	97.7	93.6	93.6	96.1	97.9	96.2	97.3	87.8	96.4
Parity											
Primiparous	4,219 (38.9)	91.5	89.5	16.4	11.6	2.0	86.4	0.8	26.9	24.4	34.8
Multiparous	6,639 (61.1)	8.5	10.5	83.6	88.4	98.0	13.6	99.2	73.1	75.6	65.2
Newborn's weight (g)											
500-2,499	1,016 (9.4)	4.4	4.1	3.7	4.8	2.2	14.8	18.5	52.6	17.1	41.1
>2,500	9,842 (90.6)	95.6	95.9	96.3	95.2	97.8	85.2	81.5	47.4	82.9	58.9
Gestational weeks											
Pre-term	1,165 (10.7)	0	0.1	0.9	1.6	0.1	19.5	17.7	52.8	17.1	84.2
Term	9,523 (87.7)	97.7	98.1	97.1	96.0	98.4	79.7	80.8	46.7	82.9	15.8
Post-term	170 (1.6)	2.3	1.8	2.0	2.4	1.5	0.8	1.5	0.5	-	-
Prenatal care adequacy index											
Adequate	8,400 (77.4)	81.3	83.0	79.0	72.1	77.8	75.0	69.2	70.4	56.1	67.5
Intermediate	2,052 (18.9)	15.4	14.8	16.9	22.5	19.2	19.9	24.6	23.5	29.3	26.0
Inadequate	406 (3.7)	3.3	2.2	4.1	5.4	3.0	5.1	6.2	6.1	14.6	6.5

Source: Ministry of Health. Health Surveillance Department. Information System on Live Births.

It is observed that the proportion of C-sections, in all groups, was higher in women with higher schooling levels, especially in groups 2 [nulliparous women with single fetus, cephalic, > 37 weeks, whose labor was induced or who underwent a C-section before onset of labor] and 6 [nulliparous women with single fetus in breech presentation].

Regarding age, the highest proportion of adolescents was found in Group 1 [nulliparous with single fetus, cephalic, > 37 weeks, in spontaneous labor] and that of women over 35 was identified in group 7 [multiparous women with single fetus in breech presentation, including those with previous C-section(s)].

The highest discrepancy between women with and without a partner was found in group 3. As for the obstetric and care characteristics, it is verified that 38.9% of the immigrants who underwent C-sections were primiparous and that the majority of women with inadequate or intermediate prenatal care were in group 9.

Table 3 presents the data after adjusting the model.

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TABLE 3: Adjustment of the binary logistic regression model (maternal characteristics and Robson's classification) for predicting the delivery method in immigrant women. Maringá, PR, Brazil, 2021.

Categories	% of C-sections	p	OR (95% CI)
Schooling (years)		<0.001	
9-11	56		1
0-8	2.2		1.58 (1.38 - 1.81)
Marital status		<0.001	
Without a partner	23.1		1
With a partner	35.1		1.51 (1.43 - 1.60)
Mother's age (years)			
20-34	45.4		1
15-19	4.4	<0.001	1.28 (1.17 - 1.40)
35-45	8.4	<0.001	2.13 (1.87 - 2.40)
Prenatal care adequacy index (*Rede Cegonha*)			
Adequate	45		1
Inadequate	2.2	<0.001	2.10 (1.85 - 2.41)
Intermediate	11	<0.001	1.50 (1.40 - 1.65)
Robson's classification			
10	5.1		1
1	6	<0.001	2.32 (2.04 - 2.63)
2	13.4	0.011	0.85 (0.76 - 0.96)
3	3.5	<0.001	5.59 (4.88 - 6.39)
4	5.4	<0.001	2.10 (1.81 - 2.35)
5	19.6	<0.001	0.22 (0.19 - 0.25)
6	1.3	<0.001	0.14 (0.09 - 0.22)
7	1.4	<0.001	0.23 (0.16 - 0.32)
8	1.4	<0.001	0.18 (0.13 - 0.25)
9	2.4	0.004	0.04 (0.03 - 0.28)

*OR – Odds Ratio; 95% IC – 95% Confidence Interval for OR.
Source: Ministry of Health. Health Surveillance Department. Information System on Live Births (SINASC)

After adjusting the model, it is observed that, in the immigrants belonging to the same Robson group, the chance of cesarean deliveries was higher among those with up to eight years of study (OR: 1.58 [1.38-1.81]), with a partner (OR:1.51 [1.43-1.60]), with inadequate (OR: 2.10 [1.85-2.41]) or intermediate (OR: 1.50 [1.40-1.65]) prenatal care, and classified in groups 1, 3 and 4 with higher chances in Group 3 (multiparous women with no previous C-sections, term newborn and in spontaneous labor).

The women classified in Robson groups 2, 5, 6, 7, 8 and 9 are indicated as a protective factor for C-sections.

DISCUSSION

In the current study, the greater chance of C-sections was verified in immigrant women with lower schooling levels (OR: 1.58 [1.38-1.81]), which corroborates the result found in the largest maternity hospital from Angola[13]. It should be noted that in this country, women with low schooling levels, regardless of whether they are native or immigrants, live far from health units, receive limited prenatal care and often arrive at these services already with some complication, which would justify surgical delivery[13]. This fact could also explain this delivery method among immigrants in Brazil, as the highest chance of C-sections was found among those who had prenatal care considered intermediate or inadequate.

Good schooling levels in general are related to better jobs. However, it should be noted that most of the immigrants living in Brazil are usually involved in low-paid work activities that are not consistent with their training[14]. Superimposed on immigration status, a study carried out in Austria identified the existing gender difference in relation to immigrants' inclusion in the labor market of the host country, highlighting that men tend to benefit from ethnic segregation, as they find jobs in professions/places with a higher percentage of immigrant workers and with better salaries, while women are hired in services with little inclusion of immigrants and with lower wages[15]. A similar situation is observed in Brazil[16].

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It is worth considering that, during pregnancy, performing strenuous activities, usually related to low-paid jobs, has been associated with worse obstetric outcomes[15]. Thus, occupation constitutes a vulnerability inherent to immigrant women, which can also exert an impact on the delivery method, turning C-sections into a more common alternative.

The highest chance of C-sections was found in immigrants who have a partner. The presence of a partner contributes as an aid in the pregnancy-puerperal period, as they tend to assume their role as providers of support in the emotional, physical, informational and intermediation dimensions[17], being able to influence access to the health services and, consequently, early initiation of assistance and an adequate number of consultations. In turn, these factors can make the couple more “susceptible” to the care model that values surgical delivery in Brazil.

Specifically in the case of the immigrant population, it is observed that, as they are generally active in the labor market, the partners are more likely to communicate in Portuguese, acting as intermediaries and interpreters in medical consultations. In this sense, it is inferred that their presence can also influence the woman's satisfaction in prenatal care, due to the fact that she feels more welcomed in the health service, having her needs better understood by the professionals, longitudinally linking the woman to prenatal care.

The fact of having identified that the C-section rates were higher than expected in all groups, including those with a less clear clinical indication for C-section, allows inferring that this delivery method is also being electively adopted among immigrants, as is the case in the native population[18-20], i.e., without strict indications. This fact points to the need to reflect on the extent to which the cesarean culture in Brazil may have influenced the birth method among immigrant women. It should be noted that in Haiti, for example, country of origin of a large proportion of immigrants living in the state of Paraná, the cesarean rate is 5.5% below the recommended level, which is justified by lack of access to the health services.

In addition, the high percentages of inadequate or intermediate prenatal care found in Robson Group 9 draw the attention. This is because in women with greater obstetric complexity, such as those included in this group, inadequacy can be an indication of immigrant women's difficulty accessing the health services, even prenatal care.

A study that evaluated the health care experience for immigrants among Primary Health Care workers in Paraná identified weaknesses in the assistance provided. This is because the professionals did not consider the immigrants' specific needs. In turn, the managers were silent in relation to carrying out some strategic actions[21], such as offering training to workers on the immigrant population health towards culturally sensitive care. This situation shows the extent to which the host country must also be responsible for developing policies and concrete conditions to access the health services, with a view to valuing and respecting human rights.

Thus, incorporating this population group into the routine of the services has been a challenge for many countries. In the United States, a study that evaluated the barriers found by African immigrants in accessing health services observed that they face several obstacles, ranging from individual to political levels and resulting in substantial unmet needs for disease prevention and treatment[22].

In this direction, a national study found that communicational, cultural, professional, socioeconomic and prejudice-related barriers influence the care provided to the immigrant population[23]. Thus, it becomes necessary to invest in training strategies for health workers, so that they are able to deal with groups that have a different culture and language, in order to properly identify and meet their main needs[21].

Thus, a vulnerability situation of the immigrant population mainly related to living and employment conditions has been identified[2-3], and can exert impacts on maternal and child health. However, data from the national and international literature show that higher cesarean rates occur mainly in the private health network[24] and among women with more favorable socioeconomic conditions[25]. This differs from what was found in this study, and may point out particularities of immigrant women in the immigration context in Paraná, with predominance of Venezuelans and Haitians, and often in a refugee situation[14,16].

A study covering all Brazilian regions identified that women at a high gestational risk had significantly higher cesarean rates when compared to low-risk women in almost all Robson groups[20], similarly to the data found in this study. It is noted that, due to their condition of vulnerability, associated with the significant proportion of communicable diseases[26], immigrant women could theoretically be classified as high-risk pregnant women, which may have contributed to the high proportions of C-sections identified in most of Robson groups.

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In Rio de Janeiro, a study that analyzed Robson's Classification in Brazilian women identified that 45.6% of the cesarean deliveries were in nulliparous women (Robson groups 1 and 2)[19]. This fact led the authors to point out the need to reduce elective cesarean deliveries in nulliparous women, as a strategy to reduce their recurrence in multiparous women. In the current study, 40.6% of the women classified in Group 1 (nulliparous women in spontaneous labor) and 65.1% of those in Group 2 (nulliparous women with induced labor) underwent a C-section. These data are worrying considering the cycle in which a nulliparous woman, under viable conditions, undergoes a C-section, especially immigrants who have more difficulty accessing health services, thus becoming more susceptible to repeating this delivery method in a future pregnancy.

It is worth noting the fact that 97.6% of the C-sections were found in women from Group 9, where it is expected to be 100%. This can indicate failures in delivery care for these women or even a recording error.

The groups that most contributed to the high percentage of cesarean deliveries among immigrant women were number 5 (all multiparous women with at least one previous C-section, with single fetus, cephalic, at term) with 33% and number 2, with 23.9%. Potential paths leading to a C-section are likely to be multifactorial and interrelated. In this direction, a review pointed out that the factors that most influence the decision for this delivery method are fear of pain and postpartum recovery. It also pointed out that, in a new pregnancy, a woman with a previous C-section sometimes ends up choosing to repeat the same delivery method due to the confidence of having already undergone this experience[27].

Ethnic disparities in terms of C-sections can be an unequal health care marker, related to the quality of care provided by the services[28]. In the current study, the greater chance of C-sections was found in immigrants with prenatal care considered inadequate and intermediate. It is worth considering that the definition of adequacy was focused on quantitative aspects such as the number of consultations and gestational age at the beginning of prenatal care. However, for comprehensive and good quality care, other aspects must be considered, including gestational risk assessment, access to high-risk referrals and guidelines on the puerperal-pregnancy cycle[29].

The data found show that the number of cesarean deliveries was excessive, as is the case with Brazilian women, since many pregnant women had favorable clinical conditions for vaginal delivery. It is important to emphasize that Robson's Classification contributes to monitoring and analyzing the delivery modalities, with the objective of reducing cesarean rates[11,13]. The World Health Organization even proposes using this classification as a standard instrument worldwide to assess, monitor and compare cesarean rates over time in the same hospital and across different hospitals.

The factors involved in the high C-sections rates among immigrants need to be better explored, considering the delivery care model adopted in Brazil. Superimposed on this factor, it is worth reflecting that it is during the migration process that the acculturation phenomenon takes place, according to which immigrants not only adopt the language but also other characteristics of the host society, such as behaviors observed in the target society[30], which in the context of this study may have contributed to the high cesarean rates.

Study limitations

Possible study limitations are due to the use of secondary data from the Information System on Live Births, which is subjected to filling-in failures, especially in terms of incompleteness of the information, in addition to the impossibility of exploring important variables in the immigration context, such as socioeconomic status and time living in Brazil. In addition, the diversity of immigrant populations in Paraná precluded data analysis by ethnic groups.

CONCLUSION

In immigrant women, cesarean deliveries were more frequent in those with low schooling levels, inadequate or intermediate prenatal care and classified in Robson groups 1, 3 and 4.

Having identified that, in the state of Paraná (Brazil), the percentage of C-sections in immigrants from most of Robson groups was high, especially in women with inadequate or intermediate prenatal care, as well as the greater chance of this delivery method having occurred in immigrants with low schooling and with a partner, points to the influence of the cesarean culture, inherent to the care of pregnant women in this country, also reflected in the assistance provided to them.

Thus, the risks of C-sections without strict clinical indications in a group of women that is increasingly present in Brazil and who usually live in a situation of greater social vulnerability is an alert to the need to review the delivery care model, as well as to the importance of culturally sensitive training for health professionals, so that they can consider the specificities of this population segment.

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