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ORIGINAL ARTICLE

FACTORS ASSOCIATED WITH CAESAREAN BIRTHS WITHOUT CLINICAL INDICATION: ACCORDING TO ROBSON CLASSIFICATION[1]

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ABSTRACT

Objective: To analyze maternal, gestational, delivery, and neonatal factors associated with cesarean births without clinical indication, according to the Robson Classification System, in the state of Paraná. **Methods:** This was a cross-sectional, quantitative study involving live births in Paraná in 2019. Data analysis was conducted to determine absolute and relative frequencies. Associated factors were initially identified through univariate analysis, selecting independent variables with a p-value <0.20. These variables were then included in multiple logistic regression analyses using the stepwise forward method, retaining those with a final p-value <0.05. **Results:** Among the 153,469 births, 62.2% were cesarean deliveries, with 74.6% occurring without any clinical indication. The Robson cluster with the highest number of births was Group 5 (27.75%), followed by Group 2 (17.40%). Logistic regression identified independent factors associated with cesarean births without indication, including maternal age ≥35 years, having a partner, previous miscarriage, hospital delivery, absence of previous normal delivery, and paternal age ≥30 years. **Conclusion:** There was a significant prevalence of cesarean births without clinical indication in Paraná, particularly in Robson Groups 1 to 5. Nursing practice should promote awareness among healthcare professionals regarding the importance of respecting the physiology of childbirth, minimizing unnecessary interventions, and fostering woman-centered care.

Keywords: Cesarean Section. Parturition. Pregnancy. Classification. Maternal and Child Health.

INTRODUCTION

Cesarean section, commonly referred to as C-section, involves the delivery of the newborn through a laparotomy (surgical incision in the abdominal wall) along with a hysterotomy (incision in the uterine wall)[1]. Over time, the obstetric model has increasingly framed pregnancy as a medical condition, leading to high rates of interventions[1].

In recent decades, it has become evident that cesarean delivery has become the most common mode of birth in Brazil. Cesarean births without clinical justification result from a combination of factors, including cultural and social pressures, fear of vaginal delivery, logistical convenience, institutional practices, and lack of effective communication[2]. These influences can lead to decisions that prioritize personal or organizational preferences over the clinical needs of the birthing individual, highlighting the importance of evidence-based choices and comprehensive information to ensure the safety of both mother and baby[2].

Globally, as well as in Brazil, the main causes and characteristics that can lead to cesarean deliveries involve cultural, economic, demographic, and social factors, the quality of healthcare services, maternal will for the type of delivery, and the assistance and organization of

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childbirth, which in most cases is centered around the healthcare professionals involved[3].

Studies indicate that the risk of mortality from vaginal delivery is four times lower than that of an emergency cesarean section. However, the high rates of this procedure are often performed unnecessarily, which can lead to many cases of severe complications[4]. In this sense, the immediate and long-term risks associated with cesarean delivery may include hemorrhage, complications from anesthesia, hysterectomy, postpartum thromboembolism, risk of infection, surgical wound dehiscence, hematomas, chronic pelvic pain, infertility, among others[5].

In addition to the risks faced by pregnant and postpartum women, cesarean delivery can also lead to immediate and long-term complications for children, such as reduced diversity of intestinal microbiota, impaired immune development, allergies, atopy, and asthma[6]. Several studies have explored associations between cesarean birth and metabolic syndromes, including type 1 diabetes, hypertension, obesity, and increased body mass, as well as neurological disorders[6].

According to new research from the World Health Organization (WHO), cesarean sections continue to increase worldwide, now accounting for over one in five (21%) births[7]. This number shall continue to increase over the next decade, with almost a third (29%) of all births likely to occur by cesarean section by 2030[7]. This situation becomes alarming, since this procedure, when not indicated, is considered a significant public health challenge in the country, requiring strategies to balance benefits and risks, to improve obstetric practices.

Given this scenario, in 2001, Michael Robson expressed concern regarding the high rates of cesarean sections, emphasizing the necessity of gathering more accurate information about delivery methods and implementing a classification system to enhance care and support across all healthcare services for pregnant women[8]. For Robson, rates should not be seen as high or low, but rather whether the procedure would be necessary or not, evaluating each case individually. Given this, through a standardized collection of information, Robson's Classification of 10 Groups was developed[9].

This classification was considered, according to the World Health Organization (WHO), as the most appropriate for monitoring cesarean section rates[9]. Therefore, Robson's ten groups provide monitoring and analysis of trends and determinants of cesarean sections worldwide, considering five obstetric characteristics: parity, onset of labor, gestational age, fetal presentation, and number of fetuses[10].

Therefore, this study is justified by the need to demonstrate that surgical deliveries are being performed in groups of pregnant women with obstetric characteristics indicative of progressing to a natural birth. And that births by cesarean section without indication include the lack of clinical context that explains the decision for cesarean section, evidenced by poorly defined inclusion and exclusion criteria. According to the Robson Classification, this practice is associated with specific maternal characteristics and unfavorable neonatal outcomes[9].

Therefore, the present study sought to answer the following research question: "What maternal, pregnancy, delivery, and neonatal characteristics are associated with unindicated cesarean births?". Therefore, the study aimed to analyze the maternal, pregnancy, delivery and neonatal factors associated with unindicated cesarean births, according to the Robson Classification System, in the State of Paraná.

METHOD

This is an analytical cross-sectional study with a quantitative approach guided by the STROBE (*STrengthening the Reporting of OBservational studies in Epidemiology*) tool. The study was conducted with residents of the State of Paraná in 2019. The State of Paraná is located in the Southern Region of Brazil, with a geographic area of 199,315 km^2. Composed of 399 municipalities, it has an estimated population of 11,516,840 inhabitants in 2020 and a population density of 52.40 inhab./km^2[11].

The inclusion of live births in the study followed specific criteria established to ensure the representativeness and quality of the data. All births that occurred between January and December 2019, registered in the Live Birth Information System (Sinasc), which is fed by the Live Birth Declaration (DNV), were considered. The concept of comprehensive care, which covers all aspects of the newborn's and mother's health,

was included in the theoretical framework of data analysis, supporting the study approach.

Throughout data analysis, some weaknesses were identified in the Live Birth Information System (Sinasc), namely: lack of standardization in some data fields, lack of information, and difficulties in accessing and updating records. Sinasc is available on the website of the Department of Information Technology of the Unified Health System (DATASUS), through "services", followed by "file transfer/download". The database was extracted in spreadsheet format and later converted from the dbc to dbf extension, using the TabWin software, version 32.

Robson's classification divides births into ten groups to categorize and analyze births, allowing the evaluation and comparison of cesarean rates in different contexts: 1) Spontaneous labor with the cephalic fetus and no previous uterine scar; 2) Induced or accelerated labor with cephalic fetus and no previous scar; 3) Spontaneous or induced labor with previous uterine scar and cephalic fetus; 4) Non-cephalic fetus; 5) Multiple gestation; 6) Pathological obstetric conditions; 7) Previous cesarean section for fetal reasons; 8) Previous cesarean section for maternal reasons; 9) Elective cesarean section without labor; 10) Emergency cesarean section after attempted vaginal delivery[9].

To achieve the objective of the study, the dependent variable was cesarean section without indication, according to the Robson Classification System. Considering that births classified in Groups 1 to 5 are characterized by pregnant women with obstetric characteristics indicating normal delivery, births that occurred by cesarean section in these groups were considered as "without indication"; and births by normal delivery in Groups 1 to 5, and cesarean and normal delivery in Groups 6 to 10 were considered as "indicated".

The independent variables were subdivided into: "maternal variables" – maternal age (≤ 19 years, 20 to 34 and ≥ 35 years of age); marital status (with or without a partner); schooling (< 8 years; ≥ 8 years); race/color (white and non-white); previous miscarriage (yes or no); father's age (≤ 29 years, ≥ 30 years and ignored); "gestation and delivery variables" – place of delivery (hospital and others); previous normal delivery (previous normal delivery or not and ignored); prenatal consultations (< 7 consultations, ≥ 7 consultations and ignored); Kotelchuck (did not attend prenatal consultation, inadequate, intermediate, adequate, more than adequate and ignored); and "neonatal outcome variables" – sex (female or male); Apgar at 1 minute (< 7 or ≥ 7); Apgar at 5 minutes (< 7 or ≥ 7); birth weight (< 2500 or ≥ 2500 grams); congenital anomalies (yes or no).

The analysis stage involved the participation of two researchers and a statistician, who were accountable for data collection, statistical analysis, and interpretation of results. In the first stage of the analysis, an exploratory analysis of the data was performed using absolute and relative frequencies. Subsequently, univariate analysis of the data was used, selecting all independent variables with p-value <0.20. These variables were then included in the multiple logistic regression analysis, using the stepwise forward variable insertion method, with those with p-value <0.05 remaining in the final model. The analyses made it possible to obtain the odds ratio (OR) and adjusted OR (ORaj) values, considering 95% confidence intervals. The Hosmer-Lemeshow test was used to assess the consistency of the adjustment of the final model. All analyses were performed using SPSS software, version 20.1.

This research was developed in accordance with the ethical standards and guidelines of Resolution No. 466/2012 of the National Health Council and was submitted to and approved by the Ethics Committee for Research Involving Human Beings of the State University of Maringá, under opinion number 412,422.

RESULTS

A total of 153,469 births were analyzed in the State of Paraná in 2019. Of these, 95,588 (62.3%) births were cesarean section, with 78,208 (51%) cesarean sections classified in Robson Groups 1 to 5, that is, without indication for surgical delivery.

Robson's group with the highest number of births was group 5 (27.75%), followed by group 2 (17.40%). Regarding age group, the highest prevalence of normal birth was concentrated among adolescents (55.59%) and cesarean section among women aged 35 and over (74.49%) (Table 1).

Furthermore, in Robson Groups 1 to 5, those indicating a greater tendency for normal birth, group 2 stands out among adolescents (≤ 19) with 40.62% of births by cesarean section, and Group 5

for women aged 20 to 34 and 35 years and over, with 38.28% and 50.05% of cesarean sections, respectively (Table 1).

Table 1. Distribution of births in Robson Groups by maternal age and type of delivery at birth. Paraná, Brazil, 2019

Robson Groups	Maternal age												Total	
	≤ 19				20-34				≥ 35					
	Normal		Cesarean section		Normal		Cesarean section		Normal		Cesarean section			
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
1	4401	41.9	1965	23.5	6953	17	7203	10.5	320	4.97	905	4.81	21747	14.2
2	2538	24.2	3403	40.6	3995	9.78	14802	21.6	177	2.75	1775	9.43	26690	17.4
3	1384	13.2	223	2.66	14473	35.4	2816	4.12	2798	43.4	900	4.78	22594	14.7
4	552	5.26	380	4.54	6239	15.3	5421	7.93	1289	20	1893	10.1	15774	10.3
5	291	2.78	922	11	4792	11.7	26180	38.3	957	14.9	9420	50.1	42562	27.8
6	49	0.47	352	4.2	92	0.23	1665	2.43	8	0.12	245	1.3	2411	1.57
7	10	0.1	84	1	221	0.54	2015	2.95	76	1.18	922	4.9	3328	2.17
8	52	0.5	178	2.12	329	0.81	2204	3.22	80	1.24	769	4.09	3612	2.35
9	2	0.02	40	0.48	4	0.01	304	0.44	3	0.05	111	0.59	464	0.3
10	1086	10.3	721	8.61	3279	8.02	5055	7.39	660	10.2	1747	9.28	12548	8.18
Ignored*	121	1.15	109	1.3	491	1.2	724	1.06	77	1.19	135	0.72	1657	1.08
Total**	10486	100	8377	100	40868	100	68389	100	6445	100	18822	100	153387	100

* Could not be classified.

** No information was available regarding the type of delivery: ≤ 19 years (18); 20-34 years (55); ≥ 35 years (9); Total births - 153469

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In the univariate analysis of maternal characteristics, the following were associated with cesarean section without indication, according to the Robson classification system: the mother's age less than or equal to 19 years (OR = 0.54; CI = 0.52-0.55), mother's age greater than or equal to 35 years (OR = 1.34; CI = 1.30-1.37), having a partner present (OR = 1.79; CI = 1.75-1.82), having less than 8 years of education (OR = 0.54; CI = 0.52-0.55), non-white race/color (OR = 0.80; CI = 0.77-0.81), previous miscarriage (OR = 1.05; CI = 1.02-1.08), and the father's age greater than or equal to 30 years (OR = 1.50; CI = 1.46-1.53) (Table 2).

Table 2. Maternal factors associated with cesarean section without indication, according to the Robson Classification System. Paraná, Brazil, 2019

Variable	Cesarean section without indication		Normal/cesarean section with indication				
	n	%	n	%	OR	CI	*p*
Age							
< 20	6893	8.81	11746	15.97	0.54	0.520-0.555	<0.001
20-34	56422	72.14	51644	70.21		-	
≥ 35	14893	19.04	10166	13.82	1.34	1.304-1.379	<0.001
Partner							
Yes	49962	63.88	36656	49.83	1.79	1.750-1.823	<0.001
No	27897	35.67	36558	49.7		-	
Ignored	349	0.45	342	0.46			
Education							
< 8	7890	10.09	12647	17.19	0.54	0.524-0.557	<0.001
≥ 8	70044	89.56	60642	82.44		-	
Ignored	274	0.35	267	0.36			
Race/color							
White	58817	75.21	52188	70.95			
Non-white	18808	24.05	20927	28.45	0.80	0.779-0.816	<0.001
Ignored	583	0.75	441	0.6			
Previous miscarriage							
Yes	13958	17.85	12592	17.12	1.05	1.024-1.080	<0.001
No	64250	82.15	60964	82.88		-	
Father's age							
≤ 29	24794	31.7	24683	33.56			
≥ 30	36381	46.52	24180	32.87	1.50	1.462-1.534	<0.001
Ignored	17033	21.78	24693	33.57			

The analysis of pregnancy and delivery characteristics associated with cesarean sections without indication resulted in the following findings: the hospital as the place of delivery (OR = 1.89; CI = 1.71-2.08), not having had a previous normal delivery (OR = 4.58; CI = 4.47-4.68), and

having fewer than seven prenatal consultations (OR = 0.43; CI = 0.41-0.44), as well as the Kotelchuck index highlighting not having had prenatal care (OR = 0.18; CI = 0.14-0.23), inadequate prenatal care (OR = 0.52; CI = 0.50-0.53), intermediate prenatal care (OR = 0.37; CI = 0.34-0.39), and adequate prenatal care (OR = 0.53; CI = 0.50-0.55) (Table 3).

Table 3 - Factors related to gestation and delivery associated with cesarean section without indication, according to the Robson Classification System. Paraná, Brazil, 2019

Variable	Cesarean section without indication		Normal/cesarean section with indication		OR	CI	*p*
	n	%	n	%			
Place of delivery							
Hospital	77567	99.18	72426	98.46	1.89	1.713-2.081	<0.001
Other	641	0.82	1130	1.54		-	
Previous normal delivery							
Yes	12573	16.08	34379	46.74		-	
No	65425	83.66	39075	53.12	4.58	4.470-4.689	<0.001
Ignored	210	0.27	102	0.14			
Prenatal consultations							
< 7	7156	9.15	13951	18.97	0.43	0.416-0.443	<0.001
≥ 7	70816	90.55	59269	80.58		-	
Ignored	236	0.3	336	0.46			
Kotelchuck							
Did not attend prenatal consultations	82	0.1	362	0.49	0.18	0.145-0.234	<0.001
Inadequate	7089	9.06	11011	14.97	0.52	0.506-0.539	<0.001
Intermediate	1660	2.12	3639	4.95	0.37	0.349-0.393	<0.001
Adequate	2399	3.07	3698	5.03	0.53	0.500-0.555	<0.001
More than adequate	66248	84.71	53766	73.1		-	
Ignored	730	0.93	1080	1.47			

*The categorization of "Quantitative Adequacy of Prenatal Care," shown in the variable "Adeq quant pre-natal," considers the initiation of prenatal care in the first trimester and a minimum of six prenatal visits. This information is recorded in a field called Kotelchuck in the downloadable file, calculated from the fields "33 - Number of Prenatal Visits" (Mesprenat) and "34 - Month of Gestation When Prenatal Care Began" (Consprenat).

Regarding the characteristics of perinatal outcomes (Table 4), the results show male babies as having a higher chance of being born by cesarean section without indication (OR = 0.96; CI = 0.93-0.97), Apgar in the first minute less than 7 (OR = 0.45; CI = 0.43-0.47), Apgar in the fifth minute less than 7 (OR = 0.27; CI = 0.24-0.30), low birth weight (OR = 0.16; CI = 0.15-0.17), and presenting some congenital anomaly (OR = 0.70; CI = 0.61-0.78).

Table 4. Characteristics of perinatal outcomes associated with cesarean section without indication, according to the Robson Classification System. Paraná, Brazil, 2019

Variable	Cesarean section without indication		Normal/cesarean section with indication		OR	CI	*p*
	n	%	n	%			
Sex							
Female	40532	51.83	37316	50.73		-	
Male	37672	48.17	36233	49.26	0.96	0.938-0.977	<0.001
Ignored	4	0.01	7	0.01			
Apgar 1							
< 7	3048	3.9	6033	8.2	0.45	0.432-0.472	<0.001
≥ 7	75109	96.04	67168	91.32		-	
Ignored	51	0.07	355	0.48			
Apgar 5							
< 7	371	0.47	1260	1.71	0.27	0.243-0.306	<0.001
≥ 7	77785	99.46	71981	97.86		-	
Ignored	52	0.07	315	0.43			
Birth weight							
< 2500	2231	2.85	11117	15.11	0.16	0.157-0.173	<0.001
≥ 2500	75977	97.15	62437	84.88		-	
Ignored	-	-	2	-			
Congenital anomaly							
Yes	470	0.6	633	0.86	07	0.618-0.785	<0.001
No	77738	99.4	72923	99.14			

In the multiple logistic regression analysis, the independent factors associated with increasing the odds of cesarean section without indication were: having a previous normal birth (ORaj = 5.50; CI = 5.34-5.67), birth in the hospital (ORaj = 1.50; CI = 1.33-1.68), having a partner (ORaj = 1.31; CI = 1.28-1.35), the father's age being over 30 years (ORaj = 1.32; CI = 1.28-1.36), mother's age over 35 years (ORaj = 1.38; CI = 1.33-1.43), and having previous miscarriage (ORaj = 1.22; CI = 1.18-1.27). On the other hand, the following were shown to be associated as protective factors against cesarean section without indication: the mother's age being less than or equal to 19 years (ORaj = 0.46; CI = 0.44-0.48) and the baby having congenital anomalies (ORaj = 0.64; CI = 0.54-0.75) (Table 5).

Table 5. Multiple logistic regression of factors associated with cesarean section without indication, according to the Robson Classification System. Paraná, Brazil, 2019

Variable	ORaj	CI (95%)	*p*-value
Previous Normal Delivery			
Yes	-	-	-
No	5.50	5.34-5.67	<0.001
Place of Birth			
Hospital	1.50	1.33-1.68	<0.001
Other	-	-	-
Presence of Partner			
Yes	1.31	1.28-1.35	<0.001
No	-	-	-
Father'sAge			
Age < 30 years	-	-	-
Fater's age ≥ 30 years	1.32	1.28-1.36	<0.001
Mother's Age			
Mother's age ≤ 19 years	0.46	0.44-0.48	<0.001
20-34 years	-	-	-
Mother's age ≥ 35 years	1.38	1.33-1.43	<0.001
Previous Miscarriage			
Yes	1.22	1.18-1.27	<0.001
No	-	-	-
Congenital Anomalies			
Yes	0.64	0.54-0.75	<0.001
No	-	-	-

DISCUSSION

The study findings indicate that factors associated with cesarean sections without indication vary according to the Robson Classification, influenced significantly by socioeconomic conditions, and these differences should be considered when developing strategies to prevent unnecessary cesarean section.

This study identified high rates of unindicated cesarean sections in the state of Paraná in 2019, according to obstetric characteristics. It is worth noting that cesarean section rates in Brazil remain high. According to previous data, these rates correspond to 55%, reaching 62.66% in the South of Brazil, which corroborates the rates found in this study[12].

Among the reasons for cesarean sections performed without medical indication, an integrative literature review revealed that six studies identified maternal choice as the primary reason for the procedure, followed by the recommendation of healthcare professionals[13].

The highest prevalence of cesarean sections was observed in Robson Group 5, accounting for 27.75%. This group comprises parturients with the obstetric characteristic of "previous cesarean section". This finding aligns with other studies that report elevated cesarean rates in this group, with rates reaching 73% in a Brazilian city and 75.1% in Canada[14].

In Brazil, a study to assess the trend in cesarean section rates, according to the Robson Classification System, found that 31.3% of births were in Group 5. Another study conducted in Rio de Janeiro supports that a previous cesarean section increases the likelihood of cesarean delivery in future pregnancies, justified by the fact that Group 5 is composed of multiparous women with at least one cesarean scar. However, when this Group is compared with Groups 3 and 4, which also include multiparous women but without a cesarean scar, it

is concluded that having had a previous vaginal delivery reduces the chances of cesarean section in future pregnancies[15].

The strong correlation between undergoing a cesarean section in the current pregnancy and having a previous cesarean emphasizes the importance of preventing cesarean deliveries in nulliparous women. This factor significantly impacts future pregnancies, often leading to indications for repeating a cesarean section[16].

The experience of having a natural birth as a woman's first delivery significantly influences her choice for subsequent births. This impact is evident not only among multiparous women but also among primiparous women, who consider various factors before making their decision. Psychocultural elements, such as preconceived notions about different types of childbirth and accounts of previous experiences, play a crucial role in shaping these choices. When women recount their childbirth experiences, they often emphasize feelings of fear, pain, and insecurity, contributing to a sense of dependence and vulnerability[17].

There is an interventionist care model that demonstrates influence on the experience of giving birth and on the capacity of pregnant women to cope autonomously. Culturally, cesarean section is perceived as a more practical and reliable procedure and the lack of information, added to unnecessary interventions during labor and obstetric violence have changed what should be a natural process, transforming normal birth into a dehumanized procedure, influencing women to choose for cesarean section[18].

Among the factors associated with unindicated cesarean sections, this study highlighted the prevalence of hospital births. Historically, childbirth often occurred at home, relying on practices and techniques passed down by midwives. However, with advancements in technology and medicine, Given the advances in technology and medicine, hospitals have expanded, taking on a large proportion when it comes to practices for performing births[19].

It's important to recognize that technological advances can significantly impact the natural processes of human life, often through the use of medication. This perspective can lead to viewing pregnancy as a medical condition rather than a physiological process, which is perceived to require ongoing medication and interventions—often unnecessarily. While these advancements are not inherently negative, such interventionist approaches can undermine the subjectivity and naturalness of experiences like childbirth[19]).

Another important factor is the presence of a partner in the lives of pregnant women. Research suggests that having a partner can raise the likelihood of cesarean sections[20]. However, in agreement with the results of the present study, most studies show a higher number of cesarean sections in women who have a partner or who are married. This association may stem from better socioeconomic conditions, including access to private health insurance, where cesarean sections are more common, preference for convenience or perceptions of safety during childbirth[20].

It is important to highlight that the presence of a partner throughout the pregnancy and childbirth process is a right of the parturient, as established by Law No. 11,108 of April 7th, 2005. This presence offers emotional benefits and provides security, tranquility and calm for the parturient[21]. It is suggested that the link between having a partner and the likelihood of cesarean sections may be more closely related to socioeconomic factors.

Furthermore, the study indicated that births from adolescent women and those aged 35 and older were linked to unindicated cesarean sections. Specifically, being under 19 years of age appeared to be a protective factor against cesarean sections, while older age increased the likelihood of such procedures. Other research has similarly noted a correlation over time, showing that the number of cesarean sections rises with the average age of women. Older age is often associated with complications that can impact the choice of delivery method[22].

Other studies indicate that the average age of women undergoing cesarean sections is typically over 30 years[23]. Many studies suggest that this association may be related to changes in the social environment, as women in this age group are more likely to have pre-existing comorbidities[24].

Regarding paternal age, having a father aged 30 or older increases the likelihood of an unindicated cesarean section. This association may relate to the mother's advanced age and potentially more favorable socioeconomic conditions; however, this study did not find sufficient evidence to support this factor.

The presence of a fetus with a congenital anomaly was identified as a protective factor against unindicated cesarean sections. Various anomalies are associated with cesarean delivery, and the indication regarding the type of delivery is based on assessing the worst prognosis. Cesarean section is indicated when a condition, such as severe hydrocephalus, is present[25].

Therefore, when these comorbidities are present, the choice of delivery method must be made collaboratively by the medical team and the mother, taking into account factors such as the mother's desire for future pregnancies and the characteristics of the healthcare facility where the birth will take place. Thus, each case should be evaluated individually[26].

It's important to acknowledge the limitations associated with using secondary data. First, there can be variability in the reliability of the information collected. Consequently, some cesarean sections performed without indication may be obscured by inaccuracies in the recording of obstetric characteristics, which are used to classify pregnant women into one of Robson's Ten Groups.

Another limitation of this study is inherent to cross-sectional research, which cannot establish causality due to its design of capturing data at a single point in time, and the approach is vulnerable to recall and selection biases. This enables the identification of associations but does not the establishes cause-and-effect relationships. And are often influenced by uncontrolled confounding factors.

CONCLUSION

The analysis revealed that age significantly influenced the modes of delivery, with adolescents exhibiting a higher prevalence of natural births (55.59%) and women aged 35 or older showing a higher prevalence of cesarean sections (74.49%). Additionally, the presence of a partner and the father's advanced age were associated with increased rates of unindicated cesarean sections, while lower educational and non-white race/color emerged as protective factors. These findings underscore the need for health policies that take into account the socioeconomic and demographic diversity of parturients to reduce the incidence of cesarean sections without clinical justification.

Pregnancy and delivery characteristics, such as a lack of prior vaginal births and having fewer than seven prenatal visits, were linked to a higher likelihood of unindicated cesarean sections. The inadequacy of prenatal care, as indicated by the Kotelchuck index, underscores the importance of quality prenatal services in mitigating unnecessary cesarean deliveries. Additionally, the predominance of births occurring in hospital settings raises important questions about obstetric practices and the potential overmedicalization of childbirth.

For nursing professionals, these findings are vital for enhancing prenatal education, particularly in highlighting the benefits of natural childbirth and preparing expectant mothers for safe, low-intervention births. Promoting adequate prenatal care and providing continuous support during labor can significantly reduce the rates of unindicated cesarean sections. Furthermore, it is essential to raise awareness among healthcare professionals about the importance of respecting the natural physiology of childbirth, minimizing unnecessary interventions, and prioritizing woman-centered care.

FACTORS ASSOCIATED WITH CAESAREAN BIRTHS WITHOUT CLINICAL INDICATION: ACCORDING TO ROBSON CLASSIFICATION

ABSTRACT

Objective: To analyze maternal, gestational, delivery, and neonatal factors associated with cesarean births without clinical indication, according to the Robson Classification System, in the state of Paraná. **Methods:** This was a cross-sectional, quantitative study involving live births in Paraná in 2019. Data analysis was conducted to determine absolute and relative frequencies. Associated factors were initially identified through univariate analysis, selecting independent variables with a p-value <0.20. These variables were then included in multiple logistic regression analyses using the stepwise forward method, retaining those with a final p-value <0.05. **Results:** Among the 153,469 births, 62.2% were cesarean deliveries, with 74.6% occurring without any clinical indication. The Robson cluster with the highest number of births was Group 5 (27.75%), followed by Group 2 (17.40%). Logistic regression identified independent factors associated with cesarean births without indication, including maternal age ≥35 years, having a partner, previous miscarriage, hospital delivery, absence of previous normal delivery, and paternal age ≥30 years. **Conclusion:** There was a significant prevalence of cesarean births

without clinical indication in Paraná, particularly in Robson Groups 1 to 5. Nursing practice should promote awareness among healthcare professionals regarding the importance of respecting the physiology of childbirth, minimizing unnecessary interventions, and fostering woman-centered care.

Keywords: Cesarean Section. Parturition. Pregnancy. Classification. Maternal and Child Health.

FACTORES ASOCIADOS A LOS NACIMIENTOS POR CESÁREA SIN JUSTIFICACIÓN DE INDICACIÓN CLÍNICA: SEGÚN CLASIFICACIÓN DE ROBSON

RESUMEN

Objetivo: analizar los factores maternos, de la gestación, del parto y neonatales asociados a los nacimientos por cesárea sin indicación, según el Sistema de Clasificación de Robson, en el Estado de Paraná/Brasil. **Métodos**: estudio transversal, cuantitativo, con nacidos vivos en Paraná en 2019. Los datos fueron analizados para obtener frecuencias absolutas y relativas. Los factores asociados fueron identificados inicialmente por análisis univariado, seleccionando variables independientes con p-valor <0,20. Estas variables fueron posteriormente incluidas en análisis múltiple de regresión logística utilizando el método *stepwise forward*, permaneciendo en el modelo final aquellas con p-valor <0,05. **Resultados**: de los 153.469 nacimientos, el 62,2% se dio mediante cesárea, con el 74,6% sin indicación. El grupo de Robson con más nacimientos fue el 5 (27,75%), seguido por el grupo 2 (17,40%). En la regresión logística, los factores independientes asociados a cesárea sin indicación incluyeron edad materna ≥35 años, tener pareja, pérdida de hijos anteriores, parto hospitalario, ausencia de parto normal anterior y edad paterna ≥30 años. **Conclusión**: hubo una prevalencia significativa de cesáreas sin indicación clínica en Paraná, especialmente en los Grupos de Robson de 1 a 5. La práctica de Enfermería debe concientizar a los profesionales de salud sobre la importancia de respetar la fisiología del parto, evitando intervenciones innecesarias y promoviendo asistencia centrada en la mujer.

Palabras clave: Cesárea. Parto. Embarazo. Clasificación. Salud Materno-Infantil.

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