ISSN 2282-0930 • Epidemiology Biostatistics and Public Health - 2025, Volume 20, Issue 1

The Obstetric Panorama in the Metropolitan Region of Baixada Santista – Brazil: Prevalence and Profile of Parturients

Eliana Souza dos Santos[(1)], Petterson Yuri Andrade dos Santos[(2)], Lígia Maria Gonçalves Rodrigues Xavier[(1)], Elaine Marcilio Santos[(1,2)], Gustavo Duarte Mendes[(1)], Juliana Maria Altavista Sagretti Gallo[(3)], Sandra Kalil Bussadori[(4)], Carolina Mayumi Iegami[(5)], Marcela Leticia Leal Gonçalves[(1,2)], Edgar Maquigussa[(1)], Ana Paula Taboada Sobral[(1,2)]

(1) Postgraduation Program in Health and Environment, Universidade Metropolitana de Santos, Santos, SP, Brazil
(2) Dentistry College, Universidade Metropolitana de Santos, Santos, SP, Brazil
(3) Postgraduation Program in Veterinary Medicine in The Coastal Environment, Universidade Metropolitana de Santos, Santos, SP, Brazil
(4) Postgraduation Program in Biophotonics Applied to Health Sciences, Universidade Nove de Julho, São Paulo, SP, Brazil
(5) Dentistry College, Universidade de São Paulo, São Paulo, SP, Brazil

CORRESPONDING AUTHOR: Ana Paula Taboada Sobral, Francisco Glicério Avenue, 8 - Encruzilhada, Santos - SP, ZIP code: 11045-002. Phone: +55 13 32283400. e-mail: anapaula@taboada.com.br

SUMMARY

Background: The birth of a child is a significant milestone for mothers and families. However, concerns regarding the type and safety of delivery persist. Evidence shows that vaginal delivery provides immunological and respiratory benefits for the baby and offers protective factors for the mother. Despite this, cesarean sections remain prevalent, particularly in developing regions. Objective: This study aimed to analyze delivery data from the Região Metropolitana da Baixada Santista (RMBS) between 2019 and 2022, identifying the predominant delivery method and examining the socioeconomic and cultural profiles of mothers. Methods: Data was obtained from the TABNET/DATASUS database in the Live Birth Information System (SISNAC). Results: Between 2019 and 2022, 86,198 deliveries were recorded, with 53% being cesarean sections and 47% vaginal deliveries, exceeding the 15% cesarean rate recommended by the WHO. Vaginal delivery was more common among mothers aged 10–24 years, while cesarean sections predominated among those aged 25–54 years. Women with 1–11 years of education favored vaginal delivery, while those with ≥12 years of education had cesarean rates more than double vaginal deliveries. Cesarean sections were more prevalent among white and yellow ethnicities. Single mothers predominantly chose vaginal delivery, whereas married, widowed, separated, or cohabiting women favored cesarean sections. Conclusion: The high prevalence of cesarean deliveries in RMBS appears to be associated with maternal age, education level, socioeconomic status, marital status, and prenatal care access. These findings highlight the need for targeted interventions to promote evidence-based delivery practices.

Keywords: cesarean delivery, vaginal delivery, natural delivery, live birth, prenatal, epidemiology.

INTRODUCTION

The birth of a child is a remarkable moment in the life of a woman in labor, defined as a pregnant woman experiencing active labor and delivery, and her family. However, it is worth noting that there are several questions related to both the type and safety of the delivery that the pregnant woman will undergo [1]. It has been scientifically proven that vaginal birth can bring immunological and respiratory benefits to the baby, in addition to providing a protective factor for the mother. Even with the positive scientific evidence regarding vaginal birth, the number of cesarean sections is still predominant, especially in developing countries [2].

DOI: 10.54103/2282-0930/28130
Accepted: 20th February 2025

© 2025 Santos et al.

Research indicates that vaginal birth is not associated with a higher risk of postpartum hemorrhage, nor with the need for the woman in labor to be admitted to an Intensive Care Unit (ICU). These are some of the benefits of vaginal birth compared to cesarean section. In addition, vaginal birth has a lower probability of uterine rupture and problems related to placental implantation. These benefits also extend to the newborn, as vaginal birth is less associated with the need for ventilatory support and complications for the baby's health [3].

During vaginal birth, there is a high production of oxytocin, which facilitates lactation and promotes uterine involution, reducing the chances of hemorrhages and hematomas, which contributes to a faster recovery for the woman. This process also facilitates initial contact with the baby after birth, strengthening the bond between mother and child. For the newborn, the benefits include better respiratory adaptation and cardiac stabilization, as well as a lower propensity for allergies, such as asthma, due to contact with the mother's vaginal bacterial flora, which favors colonization from birth. There is also a lower chance of infections for both. Therefore, it is essential that pregnant women are informed about the advantages of vaginal birth during prenatal care, as it continues to be the safest form of birth, offering significant benefits for both the mother and the baby [4].

Aiming to strengthen and improve women's health, the Brazilian Ministry of Health created a set of actions and guidelines, the Comprehensive Women's Health Care Program (PAISM), created in 1983 and implemented in 1984. This health policy was created to ensure women's right to safe childbirth and to meet their emotional, social, family and reproductive health needs. It trained health professionals and provided the necessary structures for care [5].

Considering the high rate of cesarean sections, the Ministry of Health has implemented initiatives to humanize care during labor and birth. These actions are based on guidelines from the World Health Organization (WHO) and on the disadvantages associated with cesarean sections when compared to vaginal birth, particularly in relation to perinatal and maternal mortality. In addition, recent studies in the field of humanization of medical care have highlighted the benefits of vaginal birth compared to cesarean sections, both for maternal and newborn health. These studies emphasize the importance of raising awareness and demystifying the widespread belief that a cesarean section is the best option for the baby [6].

Due to the great diversity of the Brazilian population, it does not fit into a single social and educational pattern, and since there are large differences in the standards of each region in relation to health care, it is not possible to generalize the type of obstetric care provided by the various institutions. Depending on the region, there are different characteristics linked to demographic, cultural, and socioeconomic aspects that determine specific patterns of behavior of the female population [7,8].

The Metropolitan Region of Baixada Santista (MRBS) was established by State Complementary Law No. 815 of 1996. In addition to the city of Santos, the MRBS is a region made up of the following municipalities: Bertioga, Cubatão, Guarujá, Itanhaém, Mongaguá, Peruíbe, Praia Grande, and São Vicente [9]. The city of Santos was considered in the last Census as the most feminine city in the country, with the highest proportion of women among its inhabitants. Out of the 418,908 residents of Santos, 228,800 are female. While the national average is of 51.5% women, in Santos, this percentage rises to 54.68%, which represents 82.9 men for every 100 women in the municipality. Data regarding the female population in the municipalities of the MRBS show that it has a predominance of the female population with the exception of the municipality of Mongaguá [10].

The term Women of Childbearing Age (WCA) in Brazil corresponds to the age group from 10 to 49 years old. It is a broad range that includes adolescent and adult women, who find themselves in different life situations and inserted in cultural, family and social contexts that are constantly evolving [11,12]. According to the last census, the total number of women in Brazil represents 51.5% of the population, which is equivalent to 104,548,325 women; WCA represent 60,945,468, which is equivalent to 58.3% of the total number of women. In MRBS, the total number of women of childbearing age is 55% [10].

Thus, the present study aims to analyze data on births performed in the Unified Health System (SUS) of Baixada Santista in the period from 2019 to 2022; identify the most common type of birth and analyze the socioeconomic and cultural profile of parturients.

METHODS

This study is a descriptive, cross-sectional, retrospective, and quantitative epidemiological analysis based on secondary data. The data were collected from the TABNET/DATASUS database in the Live Birth Information System (SISNAC). The study followed these steps: Access to information >> Health information (TABNET) >> Vital statistics >> Live births >> São Paulo. The study focused on the Baixada Santista Health Macroregion, which includes the municipalities of Bertioga, Guarujá, Santos, São Vicente, Cubatão, Praia Grande, Mongaguá, Itanhaém, and Peruíbe. The data analyzed covered births by the mother's place of residence for the period from 2019 to 2022, the most recent year with available data.

The variables considered in this study included type of delivery, maternal age, education level, race, and marital status. Since all data were obtained from a public database and did not include any personally identifiable information, the study was exempted from evaluation by the Research Ethics Committee, following Resolution No. 510/2016 of the National Health Council (CNS).

ISSN 2282-0930 • Epidemiology Biostatistics and Public Health - 2025, Volume 20, Issue 1

The data were described, subjected to a descriptive statistical analysis, and are presented through graphs that express the absolute and/or percentage distribution of the variables analyzed.

RESULTS

Number of Births

During the studied period (2019 to 2022), 86,198 births were performed by the SUS throughout the MRBS. In 2019, the municipality with the highest number of births was Santos, with 4,364 births; in 2020 to 2022, the city of Praia Grande had 4,371, 4,215, and 4,214 births, respectively. 2019 was also the year with the highest number of births in the period analyzed, with 22,499. The municipality of Praia Grande had the highest number of births in the period from 2019 to 2022, 17,045, even though it was the fifth municipality in terms of the percentage of Women of Childbearing Age (WCA).

Types of Births

In Figure 1, we can see the distribution of types of births by municipality, where we can see that out of the 86,198 births performed in the MRBS during the period evaluated, 53% were cesarean sections and 47% were vaginal births.

Prenatal Consultations

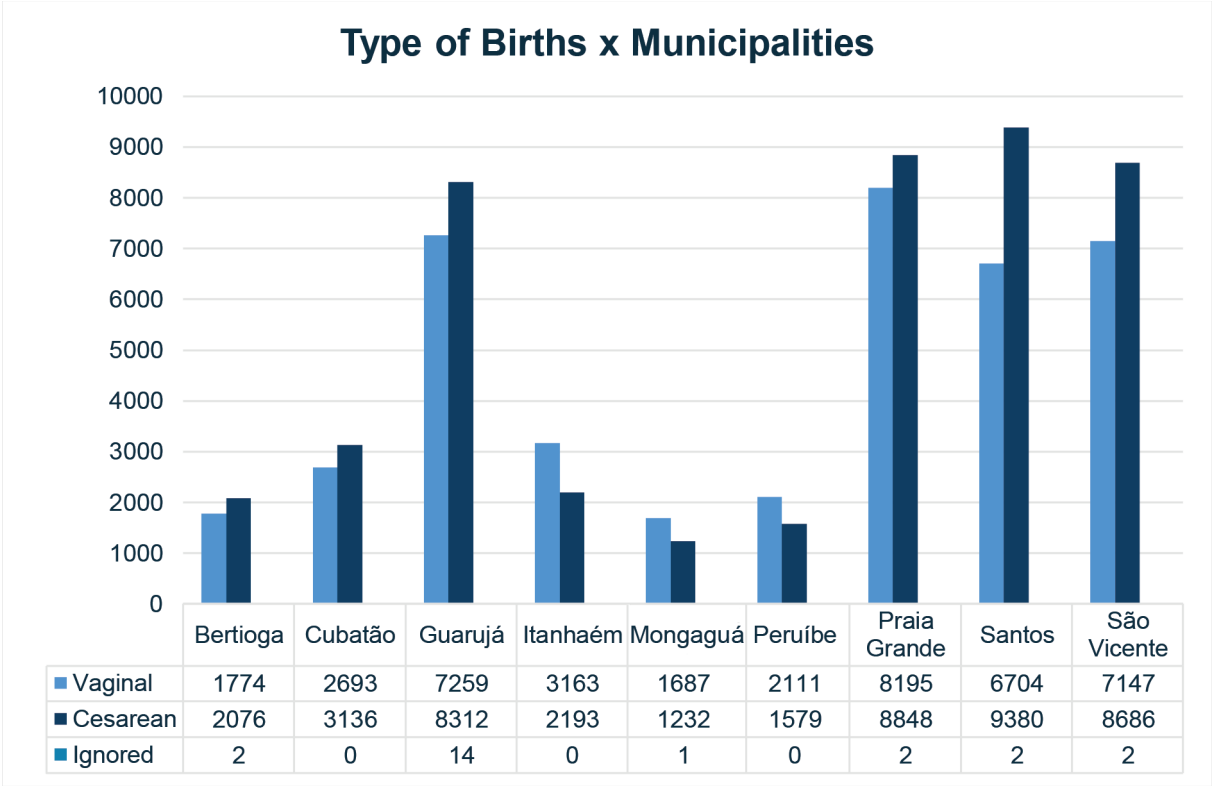
It was found that most women attended more than six prenatal consultations, as recommended by the Ministry of Health. Women who opted for a cesarean section received more adequate prenatal care compared to women who had a vaginal birth, with 54% of the former attending 7 or more consultations.

Age of the Parturient

In Figure 2, we can observe the type of delivery in relation to the mother's age and we can see that in the age group of 10 to 24 years, vaginal delivery is predominant and that from the age of 25 to 54 years, cesarean delivery is predominant. The highest percentage of vaginal births is in the age group of 10 to 19 years and of cesarean delivery in the age group of 50 to 54 years.

Analyzing the data, we found that the municipality of Guarujá has the highest number of births in the age group of 10 to 14 years (80); São Vicente in the age groups of 15-19 years (1,772) and 20 to 24 years (4,101); Praia Grande in the age group of 25 to 29 years (4,205) and the city of Santos has the highest number of births in the age group of 30 to 54 years. The highest number of births is concentrated in the age group of 20 to 34 years, which represents 69% of the births performed in the period.

Figure 1. Type of births performed during the period from 2019 to 2022 distributed by the Municipalities of the MRBS



	Bertioga	Cubatão	Guarujá	Itanhaém	Mongaguá	Peruíbe	Praia Grande	Santos	São Vicente
Vaginal	1774	2693	7259	3163	1687	2111	8195	6704	7147
Cesarean	2076	3136	8312	2193	1232	1579	8848	9380	8686
Ignored	2	0	14	0	1	0	2	2	2

Figure 2. Type of delivery performed in relation to the maternal age during the period from 2019 to 2022 in the MRBS

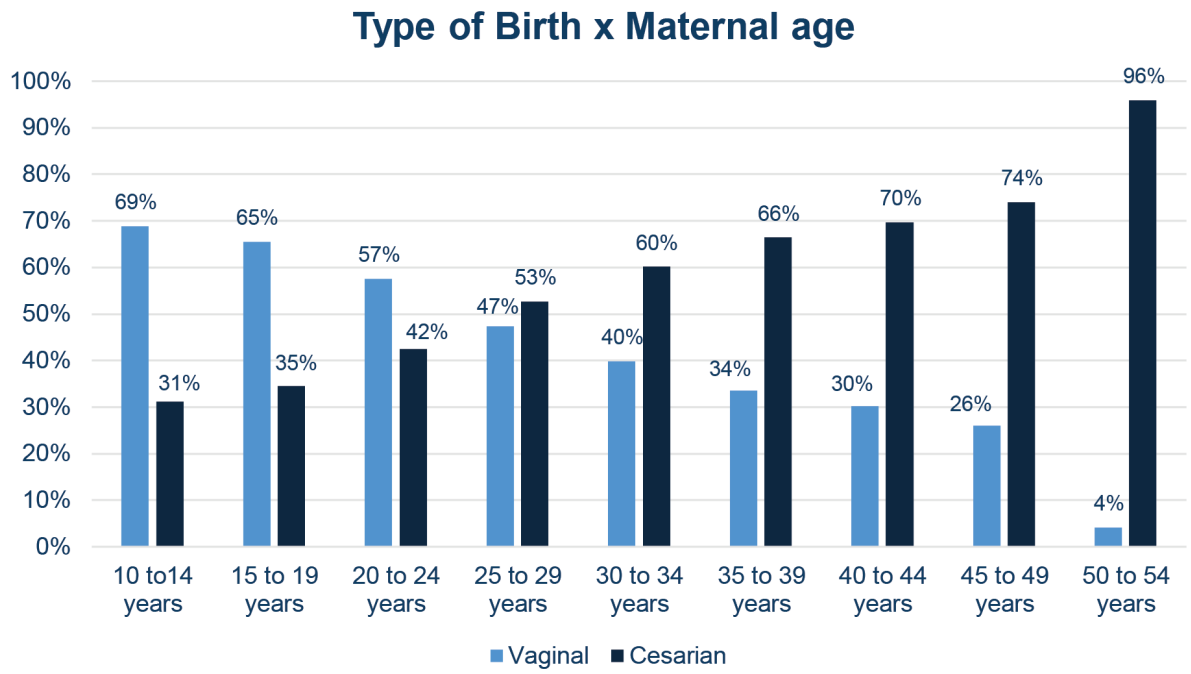
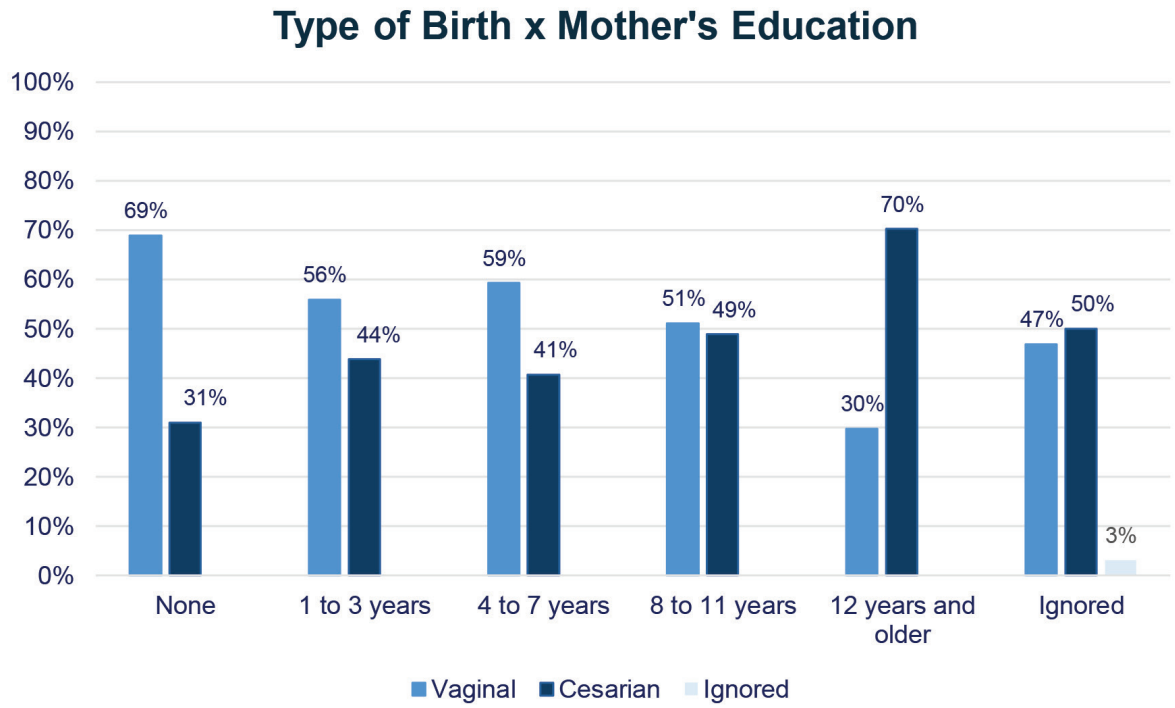


Figure 3. Type of births performed in relation to the mother's education in years during the period from 2019 to 2022 in the MRBS



Education of the Parturient

The study also assessed the mother's education (in years) regarding the type of delivery (Figure 3). We can see that from 1 to 11 years of education, there is a higher number of vaginal deliveries compared to cesarean sections, but when mothers have 12 years of education or more, there is more than twice as many cesarean deliveries compared to vaginal deliveries. This leads us to reflect that the higher the mother's education, the greater the choice for cesarean section.

Race of the Parturient

Based on the data in Figure 4, we found that among the Asian race (60%) and the White race (59%), cesarean section is more common than vaginal delivery compared to other races. In this study, it was found

ISSN 2282-0930 • Epidemiology Biostatistics and Public Health - 2025, Volume 20, Issue 1

Figure 4. Type of delivery performed in relation to the race of the parturient in the period from 2019 to 2022 in the MRBS

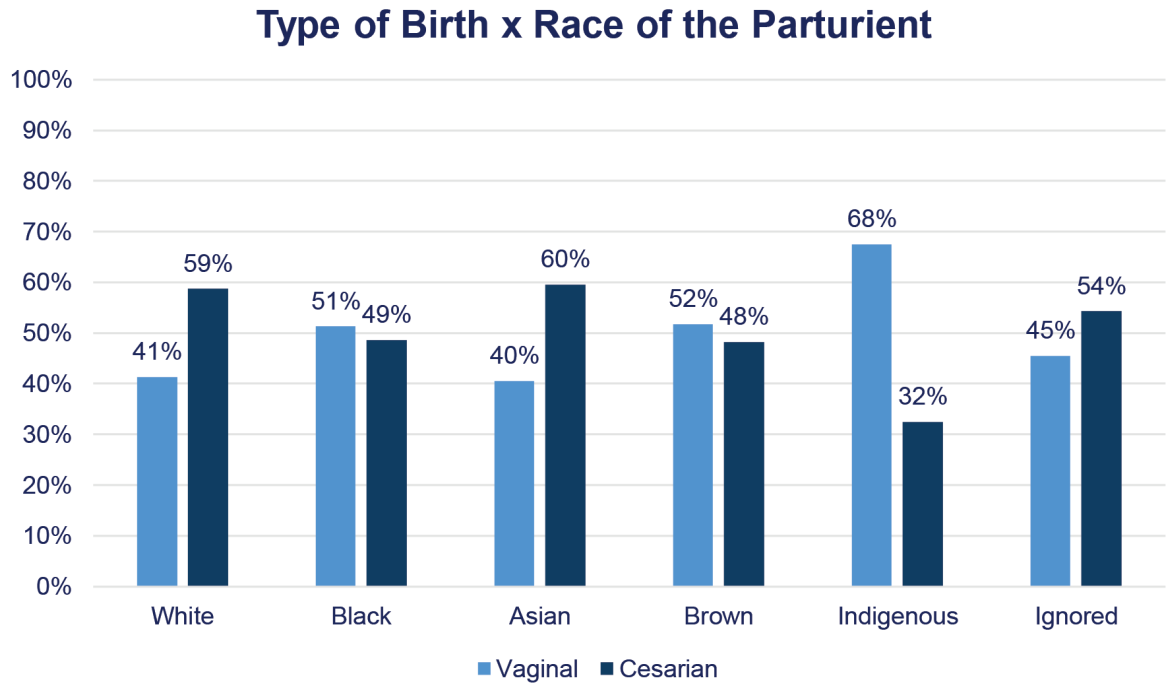
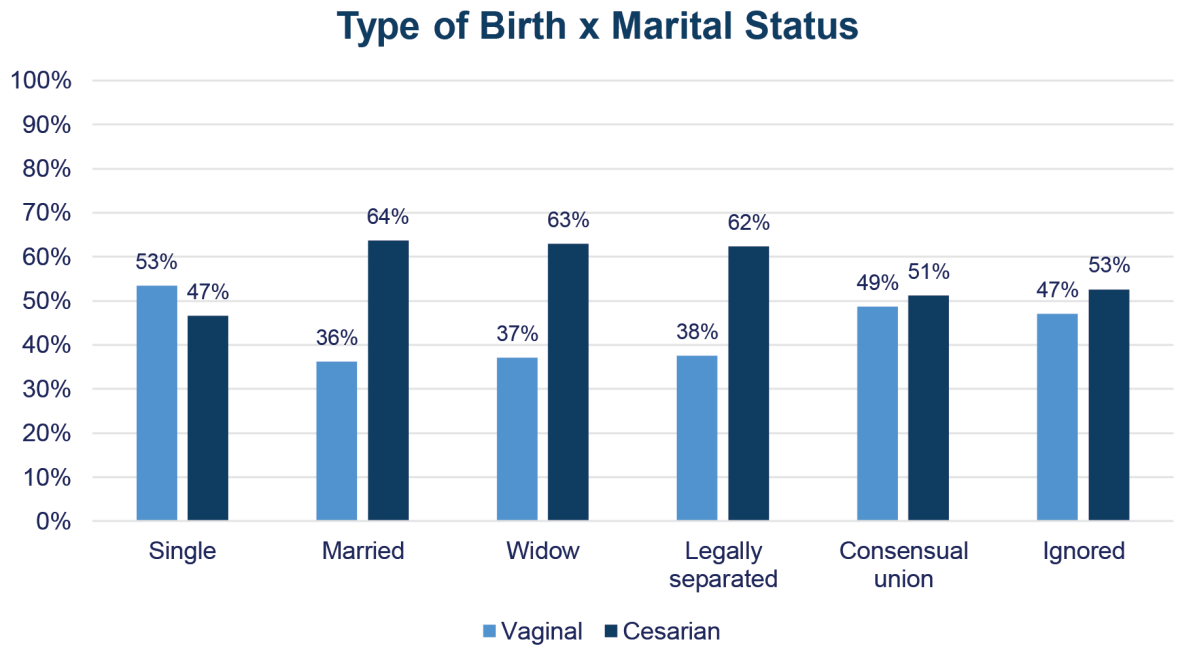


Figure 5. Type of delivery performed in relation to the Marital Status of the Parturient in the period from 2019 to 2022 in the MRBS



that black, brown and indigenous women performed most of their deliveries vaginally, which may suggest a lower propensity for interventionist practices.

Marital Status of the Parturient

We can see in Figure 5 that women with single marital status opt for vaginal birth, while married women, widows, legally separated women and women living in a consensual union choose cesarean section.

DISCUSSION

This study analyzed data from Tabnet/Datasus and found that, from 2019 to 2022, 86,198 births were performed in the MRBS. The municipality of Praia Grande had the highest number of births in this period, 17,045. Overall, the number of births decreased in all municipalities in the MRBS in the period analyzed, which is in line with data from the IBGE Civil Registry Statistics [13], where in 2022 Brazil recorded the lowest number of births since 1977, being the fourth

consecutive decline in the total number of births in the country.

Of the 86,198 births performed in the MRBS in the period evaluated, 53% were cesarean sections and 47% were vaginal births, which shows that the number of cesarean sections is well above the 15% recommended by the World Health Organization (WHO) [14]. When we analyze the distribution of births by municipality during this period, we found that in the municipality of Santos, 58% of births were cesarean sections, and in the municipality of Itanhaém, 59% were vaginal births.

According to the study by Betran *et al.* (2021), Brazil is among the five countries with the highest cesarean section rates in the world, ranking second with 56%. The country is followed by the Dominican Republic (58%), Cyprus (55%), Egypt (52%) and Turkey (51%) [15]. Due to the high incidence of cesarean sections in Brazil, several agencies responsible for maternal and neonatal health have implemented measures and prepared documents with the aim of promoting cesarean sections only when clinically necessary and discouraging those performed by choice. An example of these documents is the "Guidelines for Care for Pregnant Women: Cesarean Sections", approved by the Ministry of Health (MS) in 2016. The main purpose of these guidelines was to establish parameters for performing cesarean sections [16].

The impact of women's integration into the labor market, which imposes increasing demands, cannot be overlooked as a factor contributing to the increasing prevalence of cesarean sections. Although cesarean sections are a less time-consuming procedure, offering the mother and the doctor flexibility in choosing the date and time of the surgery, the benefits presented are predominantly non-clinical. The authors reveal that disadvantages such as prolonged postpartum recovery, delays in lactation, lack of active participation in the birth process, and the general risks associated with a surgical procedure are often overlooked [17].

As a result of the transition from vaginal births to cesarean sections, scientific research that addresses morbidity and mortality rates, both perinatal and maternal, associated with the method of delivery, as well as topics related to the humanization of health and the cultural demystification of cesarean birth, have been the subject of discussion on a global scale [18].

According to the recommendation of the World Health Organization (WHO) [14], the appropriate number of prenatal consultations would be equal to or greater than six; and this is what we observed in the data collected in the MRBS. 54% of women who opted for a cesarean section attended 7 or more consultations. However, this monitoring does not happen in the same way throughout the country. In 2019 in Brazil, there were 339,379 thousand births whose pregnant women had 4 to 6 prenatal consultations, 113,696 thousand in the entire Northeast region and 15,858 thousand in the state of Pernambuco. The number of births of pregnant women who did not have any monitoring was 25,064, 9,284 and 1,150, respectively [19].

Regarding the type of delivery and the mother's age, we found that in the age group of 10 to 24 years, vaginal delivery predominates and from 25 to 54 years, cesarean delivery predominates, which is in agreement with the results found in the literature. The study carried out by Santos *et al.* (2009) found that as maternal age increases, the number of vaginal deliveries decreases [20]. Ximenes and Oliveira (2004) also found a greater number of vaginal deliveries in adolescents between 10 and 19 years of age (70.2%) and in parturients over 35 years of age, a slightly higher percentage (51.4%) in surgical deliveries20. In the study by Nomura *et al.* (2004), it was also found that patients aged 35 years or older had a higher proportion of cesarean deliveries [21].

When we analyze the mother's level of education in relation to the type of delivery, we find that when mothers have 1 to 11 years of education, we have a higher number of vaginal deliveries compared to cesarean deliveries, but when they have 12 years of education or more, we have more than twice as many cesarean deliveries as vaginal deliveries. This data is in accordance with the literature, where in the study by Mauadié *et al.* (2024), the variable education, in the category greater than or equal to 12 years, corresponds to 77% of cesarean deliveries and only 23% of vaginal deliveries [22]. This leads us to reflect that the higher the mother's education, the greater the choice for cesarean delivery. This demonstrates that the level of education, insertion in the job market and the growing demands faced by women in contemporary society are factors that can intensify the preference for cesarean delivery. This is due to the ability to choose dates, locations and times, allowing greater control by the woman or doctor over the birth process [6].

Education is a relevant variable in the health area and impacts several aspects of human life. There is a direct relationship between educational level and type of birth: women with a higher level of education are less likely to have a vaginal birth [23] The level of education is strongly associated with the type of birth, as mothers with a higher level of education are up to six times more likely to opt for a cesarean section. This phenomenon can be explained by both maternal convenience and medical reasons, in addition to the higher economic cost associated with cesarean sections. Women with a higher level of education generally have better financial conditions to bear these costs in the private sector [24]. This reinforces that the choice of type of birth is linked not only to clinical factors, but also to access to the resources available to each woman.

When we analyze the data regarding the type of birth performed in relation to the race of the parturient, we find that in the Asian race (60%) and the White race (59%) cesarean section is superior to vaginal birth compared to other races. The studies by Santos et al. (2022) and Schiller (2015) observed, with

regard to the variable color/race, that women of light ethnicity, who self-declared as white or yellow, had a higher incidence of cesarean sections compared to vaginal births. This behavior differs from the group of women of dark ethnicities, such as brown, black and indigenous women, which is in agreement with the findings of the present study [23,25]. These results are highly significant, as they suggest that access to cesarean sections is not limited only to financial factors, but also involves racial issues, making the procedure less accessible to minorities.

Regarding the marital status of the parturient and the choice of delivery method, we found that single women opt for vaginal birth, while married women, widows, legally separated women and women living in consensual unions choose cesarean sections. Schiller (2015) analyzed the profile of parturients and the types of birth in Brazil and found that the highest percentages of cesarean sections are found among married and separated parturients in the five macro-regions. However, it is in the South, Central-West, and Southeast regions that the percentages of cesarean sections exceed the percentages of vaginal births in all marital statuses of the parturients [25]. Santos *et al.* (2022) investigated the relationship between marital status and type of birth, finding that single women had a higher prevalence of vaginal births. In contrast, among married women, the rate of cesarean sections was significantly higher, confirming the results of our study [23]. Marital status is a relevant factor, since the presence of a father figure can provide greater economic stability to the family, influencing the choice of cesarean section due to better financial conditions to afford the procedure. Single mothers, on the other hand, generally face economic limitations that make this option difficult [26].

The high number of cesarean sections in Brazil, also observed in the MRBS, appears to be related not only to biological factors, but mainly to social and cultural aspects. This context, although challenging because it is a complex sociocultural construction, can be changed through educational actions. It is essential to provide information to pregnant women about the different delivery methods, the procedures involved, and the consequences for the health of the mother and baby. This guidance can be offered during prenatal care, through lectures and informative materials, such as booklets and pamphlets. In addition, conducting more comprehensive studies on the subject is crucial, not only to increase society's knowledge, but also to raise awareness among public authorities, encouraging the adoption of measures that reduce the occurrence of unnecessary cesarean sections in the country.

This study found that the prevalence of cesarean deliveries in the MRBS appears to be associated with the mother's age, socioeconomic profile, number of prenatal consultations, education level and marital security. As in many regions of Brazil, in the MRBS there is an urgent need to expand and improve the information provided to women about the real risks associated with birth methods, broadening the understanding of the naturalness of birth, as well as promoting the humanization of this process so that the number of cesarean deliveries gradually decreases and can reach the ideal rate recommended by the WHO, which would be between 10% and 15% of all births performed.

FUNDING

No funding or grants were received.

DATA AVAILABILITY STATEMENT

The datasets used in this study are from public domain, available from DATASUS, a Brazilian government website. Available from https://datasus.saude.gov.br/.

REFERENCES

1. Brazil. Ministry of Health. Secretariat of Health Care. Home labor and birth assisted by traditional midwives [electronic resource]: the Working with Traditional Midwives Program and exemplary experiences / Ministry of Health, Secretariat of Health Care. Brasília: Ministry of Health Publishing House; 2010 [in Portuguese].
2. Viana LVM, Ferreira KM, Mesquita MASB. Humanization of normal childbirth: a literature review. Rev Saude Foco. 2014;1(2):134–148.
3. de Souza Pereira AC, Sakman R, Voltarelli A, da Silva Vasconcelos AM, Nunes S, Ferreira ICC. Benefits of normal childbirth. Glob Clin Res J. 2022;2(1):e18 [in Portuguese].
4. Araújo BCN, Filgueiras EV, Weber F, Carrijo MF, Doering AMLR, Monteiro ACF, Oliveira CL, Machado RR. Benefits of natural childbirth. Multidiscip Health J. 2022 Jun;12(2):36–36 [in Portuguese].
5. Andreucci CB, Cecatti JG. Performance of process indicators of the Prenatal and Birth Humanization Program in Brazil: a systematic review. Cad Saude Publica. 2011;27(6):1053–1064 [in Portuguese].
6. Guimarães NM, de Souza Freitas VC, de Senzi CG, Frias DFR, Gil GT, Lima LDDSC. Childbirth in the Brazilian Unified Health System (SUS): prevalence and profile of parturients. Braz J Dev. 2021;7(2):11942–11958 [in Portuguese].
7. de Andrade SG, de Vasconcelos YA, Carneiro ARS, Severiano ARG, Terceiro AJDM, da Silva TB, Oliveira MAS. Sociodemographic, epidemiological, and obstetric profile of parturients in a hospital and maternity ward in Sobral, Ceará. J Infect Prev Health. 2018;4 [in Portuguese].
8. Ribeiro Da Silva EA, Garcia Da Silva G, Carniel F. Profile of parturients and their newborns in a munic-

ipality in the Legal Amazon. Braz J Surg Clin Res. 2019;29(2) [in Portuguese].
9. São Paulo (State). State Complementary Law No. 815, of 1996. Available at: https://www.al.sp.gov.br/repositorio/legislacao/lei.complementar/1996/lei.complementar-815–30.07.1996.html [in Portuguese].
10. Brazilian Institute of Geography and Statistics (IBGE). 2022 Brazilian Census. Rio de Janeiro: IBGE; 2022 [in Portuguese].
11. Sociedade Beneficente Israelita Brasileira Albert Einstein. Technical Note for the organization of the Health Care Network with a focus on Primary Health Care and Specialized Outpatient Care – Women's Health during Pregnancy, Childbirth and the Postpartum Period [Internet]. São Paulo: Hospital Israelita Albert Einstein, Ministry of Health; 2019. Accessed on: April 18, 2024. Available at: https://atencaobasica.saude.rs.gov.br/upload/arquivo/202001/03091259-nt-gestante-planificasus.pdf [in Portuguese].
12. de Souza AMG, de Andrade FB. What is the mortality scenario for women of reproductive age in Brazil? World Health. 2020;44:421–432.
13. Brazilian Institute of Geography and Statistics (IBGE). Civil Registry Statistics for 2022. Rio de Janeiro: IBGE; 2022 [in Portuguese].
14. World Health Organization. WHO statement on Caesarean section rates. 2015. [accessed 11 Nov 2023]. Available at: https://iris.who.int/bitstream/handle/10665/161442/WHO_RHR_15.02_por.pdf?sequence=3 [in Portuguese].
15. Betran AP, Ye J, Moller AB, Souza JP, Zhang J. Trends and projections of caesarean section rates: global and regional estimates. BMJ Glob Health. 2021 Jun;6(6):e005671. doi: 10.1136/bmjgh-2021–005671. PMID: 34130991; PMCID: PMC8208001.
16. National Commission for the Incorporation of Technologies into the SUS (CONITEC). Guidelines for care for pregnant women: the cesarean section. Brasília: Ministry of Health; 2015 [in Portuguese].
17. Melo JKF, Davim RMB, Silva RRA. Advantages and disadvantages of transpelvic and cesarean delivery: the opinion of postpartum women. Care Fundam Res J. 2015;7(4):3197–3205 [in Portuguese].
18. Vicente AC, Lima AKBS, Lima CB. Cesarean delivery and normal delivery: an approach to risks and benefits. Health Top. 2017;17(4):24–35 [in Portuguese].
19. da Silva Nascimento D, da Silva Nascimento D, de Araujo Silva VF, Belarmino CMV. Nursing care during prenatal care in primary care: an integrative review. Rev Artigos Com. 2021;27:e7219-e7219 [in Portuguese].
20. Ximenes FMA, Oliveira MCR. The influence of maternal age on perinatal conditions. Braz J Health Promot. 2004;17(1). Available at: http://www.unifor.br/hp/revista_saude/v17-2/artigo2.pdf [in Portuguese].
21. Nomura RM, Alves EA, Zugaib M. Maternal complications associated with type of delivery in a university hospital. Rev Saude Publica. 2004;38(1):9–15 [in Portuguese].
22. Mauadié ACA, Bastos CLAT, Borges LA, de Almeida LPD, dos Santos Campos M, Ribeiro MGAS. Cesarean versus vaginal delivery: an epidemiological description between 2016 and 2021. Braz J Health Rev. 2024;7(4):e71504-e71504 [in Portuguese].
23. Santos JDS, et al. Epidemiological analysis of delivery routes in Brazil. 2022 [in Portuguese].
24. Haidar FH, Oliveira UF, Nascimento LFC. Maternal education: correlation with obstetric indicators. Cad Saude Publica. 2001;17(4):1025–1029 [in Portuguese].
25. Schiller EF. The relationship between parturient profiles and delivery routes in Brazil. 2015 [in Portuguese].
26. Souza EL, Carvalho ALC, Pereira BF, Souza BG, Souza GR, Ardisson GMC, et al. Factors that influence the delivery route in Brazil. Rev Med Sao Paulo. 2022;101(5):e-172947 [in Portuguese].