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CESAREAN SECTION RATES FROM A REFERENCE HOSPITAL FOR HIGH-RISK PREGNANCIES

TAXAS DE CESÁREA DE UM HOSPITAL REFERÊNCIA EM GESTAÇÕES DE ALTO RISCO

TARIFAS DE CESÁREA DE UN HOSPITAL DE REFERENCIA PARA EMBARAZOS DE ALTO RIESGO

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ABSTRACT
To compare cesarean section rates of a hospital according to the Robson Classification System (RCS) between the years 2022 and 2023. This is an observational, cross-sectional, and retrospective study conducted through a standardized questionnaire based on the medical records data of the maternity ward of the Hospital Regional Norte, where 95% of the parturients are at high risk. All women undergoing cesarean section between January and September of 2022 and the same period in 2023 were included. There was no significant change in the pro-portion of cesarean deliveries between the 2 years. Groups 5, 2, and 4 of the RCS, in this order, had the highest cesarean rates in both years, as observed in the literature available on the subject. It is concluded that there were no significant changes in cesarean rates and the proportion among RCS groups in the 2 years analyzed.
Keywords: *Pregnancy High-Risk; Parturition; Cesarean Section.*

RESUMO
Comparar as taxas de cesáreas de um hospital segundo o Sistema de Classificação de Robson (SCR) entre os anos de 2022 e 2023. Trata-se de um estudo observacional, transversal e retrospectivo, realizado por meio de um questionário padronizado, a partir dos dados dos prontuários da maternidade do Hospital Regional Norte, onde 95% das parturientes são de alto risco. Foram incluídas todas as mulheres submetidas à cesariana no período de janeiro a setembro de 2022 e do mesmo intervalo de 2023. Não houve mudança significativa na proporção entre partos cesáreos entre os 2 anos. Os grupos 5, 2 e 4 do SCR, nesta ordem, foram os que apresentaram maiores taxas de cesáreas em ambos os anos, como observado na literatura disponível sobre o tema. Conclui-se que não houve mudanças significativas nas taxas de cesáreas e da proporção entre os grupos do SCR nos 2 anos analisados.
Descritores: *Gravidez de Alto Risco; Parto; Cesárea*.

RESUMEN
Comparar las tasas de cesáreas de un hospital según el Sistema de Clasificación de Robson (SCR) entre los años 2022 y 2023. Se trata de un estudio observacional, transversal y retrospectivo realizado mediante un cuestionario estandarizado basado en los datos de los expedientes médicos de la maternidad del Hospital Regional Norte, donde el 95% de las parturientas son de alto riesgo. Se incluyeron todas las mujeres sometidas a cesárea en el período de enero a septiembre de 2022 y del mismo intervalo de 2023. No hubo cambios significativos en la proporción entre partos por cesárea entre los 2 años. Los grupos 5, 2 y 4 del SCR, en ese orden, presentaron las mayores tasas de cesáreas en ambos años, como se observó en la literatura disponible sobre el tema. Se concluye que no hubo cambios significativos en las tasas de cesáreas y en la proporción entre los grupos del SCR en los 2 años analizados.
Descriptores: *Embarazo de Alto Riesgo; Parto; Cesárea.*

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INTRODUCTION

The Health System in Brazil is progressively transcending the assistentialist logic, migrating to a model that emphasizes actions that go beyond mere care, incorporating elements of prevention and rehabilitation. This evolution reflects the recognition of the importance not only of treating diseases, but of adopting a comprehensive approach that values prevention and the rehabilitation capacity of the health system[1].

However, cesarean section rates continue to show a significant increase both in the Brazilian and global contexts. According to the guidelines of the World Health Organization (WHO), the international health community recommends an ideal rate between 10% and 15% of all births[2]. However, in the Brazilian scenario, as found in a study by the Oswaldo Cruz Foundation (Fiocruz)[3], this rate reaches 52% in the public network and 88% in the private network, resulting in approximately one million annual cesarean sections without obstetric justification.

The choice of mode of delivery follows a path that reflects not only medical factors, but also sociocultural, institutional, financial, and legal considerations. However, the inappropriate indication for cesarean section increases the risk of adverse consequences for both mother and baby, including complications such as bleeding and infections. In addition, it can cause abnormalities in placental implantation in subsequent pregnancies, premature births, low birth weight, and respiratory distress syndrome in the newborn[4,5].

One strategy for assessing and monitoring cesarean section rates is the implementation of classification systems based on obstetric characteristics, such as the Robson Classification System (SCR). This approach is considered simple, robust and of great relevance, enabling the comparison of similar obstetric profiles and supporting clinical and institutional decisions[6,7].

The MMR categorizes pregnant women into 10 groups based on key obstetric characteristics such as parity, onset of labor, gestational age, fetal presentation/status, and number of fetuses. This approach allows an accurate assessment of obstetric risk and guides the clinical management of pregnant women during childbirth[8,9].

In addition to monitoring cesarean section rates, the Robson Classification makes it possible to assess the quality of data, considering the type of population served, and assists in the implementation of policies and strategies aimed at specific groups of women, aiming at reducing cesarean sections and promoting safer and more appropriate delivery practices[10].

Therefore, the present study aims to compare data on cesarean deliveries performed in a reference hospital in the northern region of the State of Ceará, in the period between 2022 and 2023, using the Robson Classification System. The aim is to analyse the differences between the two years and to investigate the groups and characteristics most associated with high caesarean section rates.

METHODS

This is an analytical, observational, cross-sectional study with a quantitative approach, carried out at the Women's Reproductive Health Care Center (CASRM) of the Northern Regional Hospital (HRN), located in the municipality of Sobral, in the northern

region of the state of Ceará. CASRM is a tertiary maternity hospital, a reference center for maternal and neonatal care in the Health Macro-region in which it is located. Its care is focused on High-Risk Pregnancy, which corresponds to almost 95% of the hospitalization profile.

The study included all women who underwent cesarean delivery at the study site during the period from January to September 2022 and the same interval in the year 2023. Data collection was performed through a semi-structured questionnaire created by the authors, through the data system of the institution where the research was conducted, which is based on the patients' medical records.

The arrangement and organization of the data was based on the SCR, which divides the women into 10 groups, and the higher the number between 1 and 10, the lower the chance of indication for vaginal delivery. It is based on six obstetric concepts, including parity, anterior cesarean section, onset of labor, gestational age, fetal presentation, and number of fetuses6. Chart 1 below depicts the SCR groups and their characteristics.

Table 1: Description of the groups of the Robson Classification System.

Group 1 (G1)	Nulliparous women with a single fetus, cephalic, ≥37 weeks, in spontaneous labor.
Group 2 (G2)	Nulliparous women with a single fetus, cephalic, ≥37 weeks, whose labor is induced or who undergo cesarean section before the onset of labor.
Group 3 (G3)	Multiparous women without previous cesarean section, with a single fetus, cephalic, ≥37 weeks, in spontaneous labor.
Group 4 (G4)	Multiparous women without a previous cesarean section, with a single fetus, cephalic, ≥37 weeks, whose labor is induced or who undergo cesarean section before the onset of labor.
Group 5 (G5)	All were multiparous with at least one previous cesarean section, with a single, cephalic fetus, ≥37 weeks.
Group 6 (G6)	All of them were nulliparous with a single fetus in breech presentation.
Group 7 (G7)	All were multiparous with a single fetus in breech presentation, including those with previous cesarean section(s).
Group 8 (G8)	All women with multiple pregnancies, including those with previous cesarean section(s).
Group 9 (G9)	All pregnant women with a transverse or oblique fetus, including those with previous cesarean section(s).
Grupo 10 (G10)	All pregnant women with a single fetus and cephalic, <37 weeks, including those with previous cesarean section(s).

Source: Robson [6]

After this definition, data analysis was performed by comparing the cesarean section rates of each SCR group between the years 2022 and 2023, stratified monthly. The analysis was based between the months of January and October, considering that the data collection for the year 2023 was completed in this period.

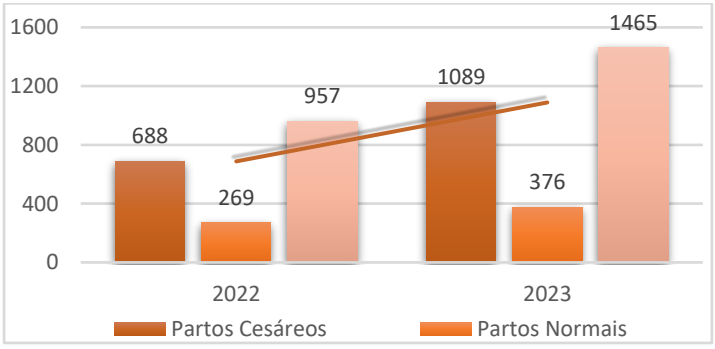
The statistical analysis of the institution's data covered the estimated period of this research. This determination was made by dividing the number of cesarean sections in each group by the total number of cesarean sections in the population studied. The data were consolidated using Excel software. C-section rates were calculated considering births in each of Robson's 10 groups, and the contribution of each group was assessed to propose changes in the overall caesarean section rate.

The research was approved by the Research Ethics Committee under opinion No. 6,627,486.

RESULTS

In total, there were 957 births between the months of January and September 2022, and 1465 births in the same period in 2023, an increase of 53.08%. As for the mode of delivery, in 2022, there were 688 cesarean sections (71.89%) and 269 normal deliveries (28.11%). In 2023, there were 1,089 cesarean sections (74.33%) and 376 normal (25.67%). Graph 1, below, illustrates the births according to the year and shows the progression line.

Graph 1: Comparison of deliveries performed at HRN between 2022 and 2023



Source: Prepared by the authors, 2023.

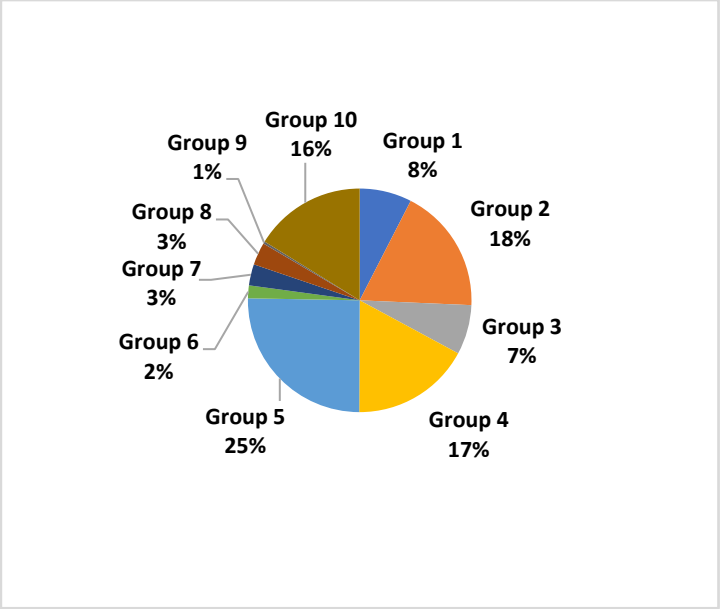
The average of each SCR group in cesarean deliveries between January and September was performed, both in 2022 and 2023. In both years, the groups with the highest rates of cesarean sections were groups 5 (multiparous, 1 or more previous cesarean sections, with a single fetus, cephalic, ≥37 weeks), 2 (nulliparous, single fetus, cephalic, ≥37 weeks, induced labor or cesarean section before the onset of labor) and 4 (multiparous, without previous cesarean section, single fetus, cephalic, ≥37 weeks, induced labor or cesarean section before the onset of labor), respectively, in this sequence in descending order.

However, even with the same distribution of groups, the year 2023 had a considerable increase in cesarean section rates in group 5, from 25.33% in 2022 to 33.77% in 2023. Another significant change between the 2 years was in group 10 (single fetus, cephalic, <37 weeks, 1 or more previous cesarean sections), which in 2022 had an aver-

age rate of 16.2% and in 2023 only 9.8%. Groups 2 and 4 accounted for 18.14% and 17.2%, respectively, in 2022, and 18.3% and 16.1% in 2023.

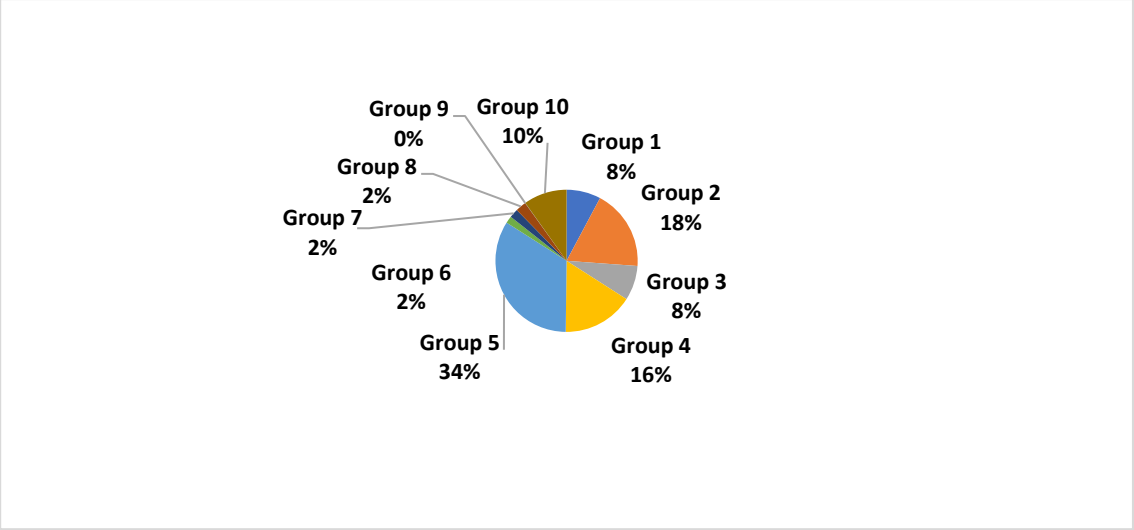
The groups with the lowest rates were, respectively, in descending order, groups 7, 8, 6 and 9, with a total sum percentage of less than 10%. Finally, the cesarean section rates in groups 1 and 3 were 8 and 7%, respectively. Graphs 2 and 3, below, depict the average rate of the months analyzed for each SCR group in the years 2022 and 2023, in this order.

Graph 2: Average rate of each RCS group in HRN cesarean sections in 2022



Source: Prepared by the authors, 2023.

Graph 3: Average rate of each RCS group in HRN cesarean sections in 2023



Fonte: Prepared by the authors, 2023.

Finally, regarding the distribution of cesarean deliveries by groups in 2022, it was possi-ble to verify that group 5 of the SCR was the one with the highest rate of cesarean sec-tion in 7 of the 9 months analyzed, except for the months of February and May, when the predominant groups were group 4 and group 2 of the SCR, respectively, with no

relation to any apparent cause. In 2023, SCR group 5 had the highest number of cases in all the months analyzed.

DISCUSSION

According to the results presented in this research, there was a significant increase in the number of deliveries at CASRM between 2022 and 2023, from 957 to 1465 deliveries, an increase of 53.08%. During this period, there was an increase of 12 more beds in high-risk obstetrics, from 33 to 45 beds, which may have had a direct impact on the higher number of admissions and deliveries. This adjustment was due to the new linkage of pregnant women followed up in the High Risk prenatal care of the Medical Specialties Center of Sobral.

As for the proportion of cesarean sections between 2 years of age, there was a slight increase from 2022 to 2023, from 71.89% (n= 688) to 74.33% (n= 1,089). This result can be explained by the increase in the number of beds and a greater number of high-risk pregnant women seeking care at the maternity hospital.

Despite the specificities of the HRN service format, we observed that the rates of cesarean sections in the service are considered high. For a long time, the WHO has been advocating a limit to abdominal delivery rates and, according to its parameters, rates higher than 10-15% are not justified10. In the Brazilian context, according to the study "Birth in Brazil", carried out by Fiocruz3, the rate of cesarean sections is estimated at 52%.

Compared worldwide, in studies that evaluated the cesarean section rate in tertiary hospitals, numbers were found to be much lower than those found in the study. In Portugal, in the study by Vargas11, the cesarean section rate was 25%; while in France it was 24.0%[12]; in Austria it was 32.2%[13]; and in Germany it was 40.7%[14]. In other studies, in Eastern countries, data were found that were closer to the Brazilian reality, although even lower, such as in Egypt (55%)[15], Lebanon (56.8%)[16] and Thailand (48.86%)[17]. It is worth noting that the methodological processes of each study differ greatly, mainly related to the profile of patients in the service, a fact that may have influenced the higher rate found in this study.

Analyzing the upward trend in cesarean section rates over the years, observed in this research, is corroborated by other studies. At the University Hospital in Cuiabá, the cesarean section rate increased from 51.5% in 2015 to 55.8% in 201718. In São Paulo, cesarean section rates rose from 38.8% in 2001 to 42.3% in 2003, reaching a peak of 58.5% in 2013 in the city[19].

Regarding the MMR groups, no significant differences were identified between the most prevalent in the two years analyzed, which were groups 5, 2 and 4, respectively. This suggests a significant increase in the risk of cesarean section among women with single, cephalic and full-term delivery, when associated with the use of induction or the presence of a previous cesarean section (groups 2, 4 and 5).

It is important to highlight that the MMR predicts an expected population composition in the first five groups of approximately 80 to 90% of parturients in obstetric services, considering that most women have adequate physiological conditions for vaginal delivery. Although this is not the reality of the present study, the findings indicate

an increasing number of cesarean sections in low-risk groups, such as pregnancies with a singleton fetus, full-term, cephalic and with spontaneous labor, without strict medical indication, compared to results from other countries[20, 21, 22, 23].

In other investigations that used the Robson Classification System (SCR) to analyze the rates of cesarean sections in their respective services, prevalences similar to those presented in this study were found. In the study by Freitas and Vieira[24], 67.4% of cesarean deliveries occurred among women in groups 2, 4 and 5, in that order. Although this rate is higher than the set of the three groups in the year 2022 of this study (60%), it is lower than that recorded in 2023 (68%), showing a significant growth between the two years.

It is noteworthy that groups 5 and 2 maintained consistent distributions in this research, with 25% and 18% in 2022 and 34% and 18% in 2023, respectively, being among the most prevalent groups in several studies. These groups share common characteristics, such as single fetuses, in cephalic presentation, and older than 37 weeks.

In the study by Moura and Feitosa[25], in the state of Ceará, the distribution was 25.2% for group 5 and 18.6% for group 2. Reis et al.8 reported 17.4% for group 5 and 9.1% for group 2. On the other hand, in Silva *et al.*[19], groups 5 and 2 contributed with 17.2% and 12.0%, respectively.

In other countries, the representation of cesarean sections by the CRS groups is also similar to that found in this study. In a study conducted in Portugal, groups 1, 2, 5 and 10 accounted for 74.2% of cesarean sections11. This fact was also highlighted in the Lebanon study16, which reported the highest relative contribution among the RCS groups to groups 5, 2 and 10, respectively.

Specifically regarding group 5, composed of multiparous women with a single, cephalic, full-term fetus and who had a previous cesarean section, this stands out in this research as the group with the highest prevalence of cesarean sections and the one that showed the highest growth in cases between 2022 and 2023, from 25% in 2022 to 34% in 2023. In the study by Freitas and Vieira[24], cesarean section rates among multiparous women with previous cesarean section (group 5) reached almost 100% in the private sector, evidencing the higher prevalence of this mode of delivery in women with higher socioeconomic conditions.

In addition, the so-called "domino effect" mentioned by the WHO is noteworthy, which corresponds to the progressive increase in cesarean section rates among primiparous women and the consequent accumulation of women with previous cesarean sections, potentially subject to a higher risk of a new cesarean section[25].

In group 2, the high rates of cesarean sections in both years were 18%. Such rates may be correlated with the significant number of elective cesarean sections, explained by the fact that CASRM is a referral center for high-risk pregnancies. This scenario may influence the overall rate of cesarean sections, which is higher than that of other hospitals. A study by Silva *et al.*[19] points out that the rate of cesarean sections in subgroup 2 varies around 23% among several institutions, reflecting the selection of pregnant women and the methods used for labor induction.

In addition, according to Vogel *et al.*[26], the high rates of cesarean sections in this group have an impact on the increase in the rates of group 5, since the increased use of

the first cesarean section may increase the need for repeat of the procedure in subsequent pregnancies, which could be avoided.

Finally, it is relevant to mention the reduction in the distribution of cesarean sections in group 10, decreasing from 16% in 2022 to 10% in 2023. These rates are closely correlated with prematurity[27]. This reduction can be considered a positive aspect for the institution and for the health system in the region, given that it is a regional reference service for high-risk obstetric and neonatal care.

Therefore, additional strategies are needed to reduce this high rate of cesarean section in the institution, in view of the great impact that can be caused in the collective health of both the institution itself and the region served. All this considering that high rates of cesarean sections are associated with higher health costs, as well as more complications for parturients[28].

Thus, adequate family planning together with the implementation of good practices in labor and birth care, such as effective communication, strengthening of bonds and encouragement of parturient women's autonomy, combined with the appropriate use of the partogram, are essential to present and preserve the importance of the vaginal delivery route from the perspective of reproductive desire. The management of non-pharmacological methods and strict fetal monitoring during labor are essential to favor vaginal delivery[29].

CONCLUSION

Therefore, it can be concluded that there was a large increase in the number of deliveries between the 2 years of age in the hospital analyzed, but the rates of cesarean sections did not suffer a great impact. As for SCR, the groups with the highest contributions remained the same (groups 5, 2 and 4), although group 5 showed significant growth from 2022 to 2023. The data of this study are limited to the characterization of the majority of patients treated at the study site, classified as high risk, representing a specific cesarean section rate for this population.

Thus, knowing the profile of the patients who are more prevalent in cesarean sections, it is possible to direct strategies to reduce this rate. It is hoped that the present study can contribute to the improvement of the service, such as, for example, improving labor induction techniques in patients with previous cesarean section, demystifying the understanding of some patients and health professionals about the contraindication to vaginal delivery, avoiding early hospitalization, away from the active phase of labor.

In addition, to stimulate scientific development based on the elaboration of new research on the subject, including an investigation in a longer timeline and with the association of sociodemographic characteristics.

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