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## ORIGINAL ARTICLE

### CESAREAN: PREVALENCE, INDICATIONS, AND NEWBORN OUTCOMES

### CESÁREA: PREVALÊNCIA, INDICAÇÕES E DESFECHO DO RECÉM-NASCIDO

### CESAREA: PREVALENCIA, INDICACIONES Y DESFECHO DEL RECIÉN NACIDO

Ana Dorcas de Melo Inagaki<sup>1</sup>, Jamille Cardoso da Silva<sup>2</sup>, Michele Silva dos Santos<sup>3</sup>, Lincoln Vitor Santos<sup>4</sup>, Ana Cristina Freire Abud<sup>5</sup>, Verena Cardoso Cruz<sup>6</sup>

#### ABSTRACT

**Objective:** to describe the sociodemographic profile of puerperae assisted in maternity wards linked to the Unified Health System/SUS. **Method:** this was an epidemiological, descriptive, cross-sectional study with a quantitative approach including 395 puerperae and newborns. A structured form was used in the data collection, presented in tables, and with a descriptive analysis. The research project was approved by the Committee of Ethics in Research, CAAE: 06920212.60000.0058. **Results:** the puerpera's ages were in the range between 20 and 35 years old, in stable relationships, had 10 to 12 years of education, resided with up to four people, and had low income. The prevalence of cesarean section was 40.5%; preeclampsia and iterativity were the main reasons for this indication. A total of 10.5% of newborns needed special care. **Conclusion:** the puerperae had low income and low education, most had natural childbirth and about 10% of newborns needed special care due to prematurity. **Descriptors:** Cesarean Section; Newborn; Prevalence; Childbirth

#### RESUMO

**Objetivo:** descrever o perfil sociodemográfico das puérperas assistidas nas maternidades vinculadas ao Sistema Único de Saúde/SUS. **Método:** estudo epidemiológico, descritivo, transversal de abordagem quantitativa com 395 puérperas e recém-nascidos. Utilizou-se formulário estruturado na coleta de dados, apresentados em tabelas e a análise foi a descritiva. O projeto de pesquisa teve a aprovação no Comitê de Ética em Pesquisa, CAAE: 06920212.60000.0058. **Resultados:** as puérperas estavam na faixa dos 20 aos 35 anos, possuíam companheiro fixo, cursaram de 10 a 12 anos de estudo, residiam com até quatro pessoas e possuíam baixa renda. A prevalência de cesariana foi 40,5%, sendo as indicações a pré-eclâmpsia e iteratividade. Observou-se que 10,5% dos neonatos necessitaram de cuidados especiais. **Conclusão:** as puérperas tinham baixa renda e baixa escolaridade, a maioria teve parto normal e cerca de 10% dos recém-nascidos necessitaram de cuidados especiais decorrentes da prematuridade. **Descritores:** Cesárea; Recém-Nascido; Prevalência; Parto.

#### RESUMEN

**Objetivos:** describir el perfil sociodemográfico de las puérperas atendidas en las maternidades vinculadas al Sistema Único de Salud/SUS. **Metodología:** estudio epidemiológico, descriptivo, transversal de enfoque cuantitativo con 395 puérperas y recién nacidos. Se utilizó el formulario estructurado en la recopilación de datos, presentados en cuadros y el análisis fue descriptivo. El proyecto de investigación fue aprobado por el Comité de Ética en Investigación, CAAE: 06920212.60000.0058. **Resultados:** las puérperas se encontraban en la franja etaria entre 20 y 35 años, poseían compañeros fijos, habían cursado entre 10 y 12 años de estudio, vivían con hasta cuatro personas y tenían bajos ingresos. La prevalencia de cesáreas fue de un 40,5%, con indicaciones a pre eclampsia e iteratividad. Se observó que un 10,5% de los recién nacidos necesitaron cuidados especiales. **Conclusión:** las puérperas tenían bajos ingresos y bajo nivel educativo, la mayoría tuvo parto normal y alrededor de un 10% de los recién nacidos necesitaron cuidados especiales resultantes de la prematuridad. **Descriptores:** Cesarea; Recién Nacidos; Prevalencia; Parto.

<sup>1</sup>RN, PhD Professor, Nursing School, Federal University of Sergipe/UFS. Aracaju (SE), Brazil. E-mail: [ana-dorcas@hotmail.com](mailto:ana-dorcas@hotmail.com); <sup>2</sup>Nursing student, Federal University of Sergipe /UFS. Aracaju (SE), Brazil. E-mail: [jotamille@yahoo.com.br](mailto:jotamille@yahoo.com.br); <sup>3</sup>Nursing student, Federal University of Sergipe /UFS. Aracaju (SE), Brazil. E-mail: [mimi\\_ssantos@hotmail.com](mailto:mimi_ssantos@hotmail.com); <sup>4</sup>RN, Master degree in Parasitology Biology, Family Health Strategy /ESF. Aracaju (SE), Brazil. E-mail: [lincoln\\_vitor@hotmail.com](mailto:lincoln_vitor@hotmail.com); <sup>5</sup>RN, PhD Professor, Nursing School, Federal University of Sergipe /UFS. Aracaju (SE), Brazil. E-mail: [acfabud@uol.com.br](mailto:acfabud@uol.com.br); <sup>6</sup>RN, Professor Specialist in Obstetric Nursing, Nursing School, Federal University of Sergipe /UFS. Aracaju (SE), Brazil. E-mail: [verenacardosocruz@yahoo.com.br](mailto:verenacardosocruz@yahoo.com.br)

## INTRODUCTION

A cesarean section is a surgical procedure originally designed to reduce the risk of maternal and/or fetal complications during pregnancy and labor.<sup>1</sup> The World Health Organization (WHO) recommends that the total number of births by caesarean section in relation to the total number of vaginal deliveries in a health service be 15%, which should have precise indication.<sup>2-3</sup>

Brazil presents one of the highest cesarean section rates in the world and has been cited as a clear example of abuse of this procedure.<sup>4</sup> A study that examined the proportion of deliveries carried out in Brazil, identified that for each 2 vaginal births, there was one birth by cesarean section.<sup>5</sup> In the year 2011, more than half of childbirths in Brazil were c-sections (53.7%); this rate was even higher in the South, in the same year, reaching up to 60.1%.<sup>6</sup> In Picos-PI, a city located in the northeastern region of Brazil, this rate reached up to 67.5%.<sup>7</sup>

Similarly to the rest of the country, cesarean section rates in Aracaju are also increasing. In the year of 2005, 31.6% of births were through c-sections, with 34.6% of them in the capital, and 25.6% in other municipalities belonging to the Metropolitan Area.<sup>8</sup> In 2010, a new study identified that there was an increase in rates of cesarean section, rising to 47.8% in 2010.<sup>9</sup>

Factors such as the improvement in the surgical technique and anesthesia, greater availability of propaedeutic resources able to define risks to the fetus, increased incidence of pregnancies in patients with prior cesarean section, and sociocultural factors related to the practicality of a scheduled delivery are related to the increased use of cesarean sections.<sup>10</sup> The cesarean procedure brings benefits to pregnant women and newborns (NB) when his indication is well determined, however, there is a need to avoid unnecessary cesareans.<sup>5</sup>

The following questions were presented in this context << **Which will the prevalence of cesarean delivery in maternity wards of Aracaju be?** >> << **What is leading women assisted in two maternity hospitals in the city of Aracaju to opt for this type of childbirth?** >> << **What are the birth conditions of these children?** >> The following objectives were elaborated to respond these questions:

- To describe the sociodemographic profiles of puerperae assisted in maternity

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wards linked to the Unified Health System/SUS.

- To analyze the prevalence of cesarean deliveries.
- To Identify their main indications and describe NB outcomes.

## MÉTHOD

This was an epidemiological, descriptive, transversal and with a quantitative approach study. The data were collected in two maternities that are references in obstetrics in the municipality of Aracaju, one public and one philanthropic, which assist the SUS clientele. They assist all pregnant women from Aracaju and from the other 74 municipalities in Sergipe, Alagoas/AL, and Bahia/BA.

The target population of the study was puerperae in immediate postpartum and newborn babies, assisted in the maternity wards. The sample was non-probabilistic and intentional. The sample size calculation was based on the fact that approximately 13,000 children were born in 2011 in the maternity wards in the study<sup>6</sup>; the formula of Barbette<sup>7</sup> was used, reaching the minimum sample of 395 puerperae.

The inclusion criteria were: be a puerpera regardless of the birth of a dead or alive fetus; accept to participate voluntarily; be at the gestational age of 22 weeks and over, or fetus weighing more than 500 grams at childbirth; residing in one of the 75 municipalities of Sergipe, and sign a free informed consent (FIC). When the puerpera was 18 years old or younger, one of the legal guardians also signed the FIC. The exclusion criteria were: women who have undergone abortion for any reason and those from other states.

The data were collected from April to November of 2013 through interviews using a structured form; data from prenatal cards and medical charts of those interviewed and from newborns were additionally analyzed. Initially, a pilot test was conducted with 15 puerperae to verify the adequacy of the form used.

The data were analyzed through simple descriptive statistical analysis for the description of types of childbirth and their prevalence, socio-demographic profiles of these women, main indications for cesarean section, and the children's birth conditions.

The research project was approved by the Research Ethics Committee from the Federal University of Sergipe (CAAE nº: 06920212.60000.0058), and complied with the

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ethical precepts presented in the 466/2012 Resolution from the National Health Council.

RESULTS

A total of 395 puerperae participated in this study, being 131 assisted in the State maternity and 264 in the philanthropic maternity. Most of the puerperae were in the age group from 20 to 35 years old, claimed having a fixed partner, attended from 10 to 12

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years of school, and resided in Aracaju. Among the puerperae who reported family income, most lived with one minimum wage and resided with about four people in the same household. It should be noted that most of the women who were assisted in the maternity ward was not from the State of Aracaju, being from other municipalities in Sergipe (Table 1).

Table 1. Distribution of purperae, from two maternities that assist the SUS, according to their sociodemographic characteristics. Aracaju, IF, Brazil. April to November/2013.

Variable	Maternidade Estadual		Maternidade Filantrópica		Total	
	n	%	n	%	n	%
Age group (years)						
Up to 15	02	1,5	11	4,1	13	3,3
16-19	22	16,8	58	22,0	80	20,3
20-35	86	65,7	180	68,2	266	67,3
More than 35	21	16,0	15	5,7	36	9,1
Marital status						
With a partner	119	90,8	224	84,8	343	86,8
Without a partner	12	9,2	40	15,2	52	13,2
Years of education						
0-5	38	29,0	62	23,5	100	25,3
6-9	44	33,6	89	33,7	133	33,7
10-12	44	33,6	105	39,8	149	37,7
> 12	05	3,8	08	3,0	13	3,3
Origin						
Aracaju	39	29,8	129	48,9	168	42,5
Greater Aracaju	22	16,8	47	17,8	69	17,5
Other municipalities	70	53,4	88	33,3	158	40,0
Family income						
Up to 1	47	35,9	119	45,1	166	42,0
2-3	24	18,3	52	19,7	76	19,2
> 3	05	3,8	0	0	5	1,3
Not informed	55	42,0	93	35,2	148	37,5
Number of persons in the household						
0-4	82	62,6	167	63,3	249	63,0
5-10	47	35,9	92	34,8	139	35,2
> 10	02	1,5	05	1,9	07	1,8

Table 2 presents the proportion of vaginal births and c-sections occurred in the two maternities in the study.

Table 2. Distribution of puerperae, from two maternities which assisted the SUS, according to types of labor. Aracaju, IF, Brazil. April to November/2013.

Variable s	Maternidade Estadual		Maternidade Filantrópica		Total	
	n	%	n	%	n	%
	82	62,6	78	29,5	160	40,5
Cesarea n	49	37,4	186	70,5	235	59,5

The State maternity data showed that the diagnosis of pre-eclampsia prevailed as the indication for cesarean delivery while, in the philanthropic maternity, iterativity was the most frequent indication for cesarean delivery (Figure 1).

The high proportion of patient medical charts without records of the indication for cesarean section stands out as a fact observed in both institutions where the study was conducted (Table 3).

**Table 3.** Distribution of puerperae, from two maternities that assisted the SUS, according to indications for cesarean delivery. N = 160. Aracaju, SE, Brazil. April to November/2013.

Variables	Maternidade Estadual		Maternidade Filantrópica	
	n	%	n	%
Pre-eclampsia	28	34,1	04	5,1
Previous cesarean section	12	14,6	18	23,1
Fetal distress	12	14,6	10	12,8
Disturbances of fetal presentation	06	7,3	14	17,9
cephalopelvic disproportion	06	7,3	09	11,5
Macrosomia	09	11,0	01	1,3
Colon disorders	02	2,4	07	9,0
Placental alterations	06	7,3	01	1,3
Alterations of membranes and attachments	05	6,1	01	1,3
Post-term pregnancy	01	1,2	01	1,3
Prematurity	01	1,2	0	0
Twins	01	1,2	0	0
No records	17	20,7	12	15,4
Other	13	15,9	03	3,8

\*For some women, there has been more than one indication per delivery.

Table 4 shows that about 10% of newborns needed hospitalization in specialized service units such as the newborn intensive care unit (NICU), intermediate therapy unit (ITU), or

kangaroo unit; most were born by caesarean section and required special care due to prematurity.

**Table 4.** Distribution of NB from puerperae who required hospitalization, from two maternities that assisted the SUS, according to the type of hospitalization. Aracaju, IF, Brazil. April to November/2013.

Variables	Parto Normal (N=16)		Parto cesáreo (N=26)	
	n	%	N	%
Type of hospitalization *				
NICU	08	50,0	20	76,9
ITU	07	43,8	13	50,0
Kangaroo unit	03	18,3	03	11,5

\* One single NB may have gone through more than one type of hospitalization.

Respiratory clinical conditions stood out among the basic diagnostics with indication for hospitalization of the neonate such as respiratory discomfort, neonatal anoxia, and transient tachypnea, among the newborns placed in the NICU. Among those admitted to

the ITU, the following hematological clinical conditions stood out: jaundice, anemia, and polycythemia. Prematurity was the main indication for hospitalization in the kangaroo unit (Table 5).

**Table 5.** Diagnostic distribution of admitted NB according to the type of unit. Aracaju, IF, Brazil. April to November/2013.

Nosological condition	UTIN (N=28)		UI (N=20)		Canguru (N=06)	
	n	%	n	%	n	%
Hematological	12	42,9	14	70,0	03	50,0
Respiratory	14	50,0	09	45,0	03	50,0
Infectious	07	25,0	08	40,0	03	50,0
Prematurity	04	14,3	03	15,0	04	66,7
Cardiological alterations	02	7,1	01	5,0	0	0
Pre-eclampsia	04	14,3	03	15,0	0	0
Low weight	03	10,7	01	5,0	01	16,7
Gastrointestinal	01	3,6	01	5,0	0	0
Acute fetal distress	06	21,4	02	10,0	0	0
Meconium aspiration	02	7,1	01	5,0	0	0
Childbirth trauma	01	3,6	01	5,0	0	0
Malformations	02	7,1	0	0	0	0
Not informed	03	10,7	01	5,0	0	0

\* More than one diagnosis for the NB.



## DISCUSSION

Most of the puerperae were in the age group from 20 to 35 years old, therefore, regarded as belonging to the group with small obstetric risk and full reproductive period. A study conducted in the municipality of Maringá-PR showed results similar to this present study where 74.4% of the studied women corresponded to young adult mothers.<sup>12</sup> This result is expected considering the age of the greater probability for reproduction.

The proportion of teenage mothers is highlighted, accounting for one-quarter of the sample. Teenage pregnancy has been a public health problem demonstrating failure of reproductive planning services, which despite being an accepted pregnancy it is usually not planned, and can compromise the development of the teenager with interruption of studies, precarious work conditions, and perpetuation of poverty. Furthermore, it can bring possible complications associated with late prenatal start due to hiding the pregnancy from parents and associating biological problems arising from anatomical and physiological immaturity, higher risk of developing preeclampsia, problems during childbirth, urogenital infections, anemia, and delayed development.<sup>13-14</sup>

The prevalence of women reporting the presence of a partner was observed, which is a favorable factor, given that, women without partners present greater risk of developing complications during pregnancy. Similarly, a study from 2013 in Espírito Santo found that 83.6% of puerperae were married or living with partners.<sup>14-5</sup>

Most of the interviewees had from 10 to 12 years of education, demonstrating that these puerperae do not have college level education and justifying their low income. Another factor that may be contributing to the low educational level is the large number of adolescents in the sample. A study conducted in Aracaju in the year of 2010 identified that 45.8% attended nine or more years of education, corroborating the data in this study.<sup>8</sup>

In relation to the municipality of origin, most resided in Aracaju, however a high percentage lived in other municipalities of Sergipe, especially those assisted in the State maternity. This is justified by the fact that that maternity is the reference assistance for pregnant and parturient women at high risk for the whole State of Sergipe. Resembling

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the study carried out in 2010, in the same city, where 66.7% were also from the capital.<sup>8</sup>

With regard to family income, 42% of households received up to one minimum wage. This percentage was similar to the study conducted in the State of Espírito Santo, where this rate corresponded to 49.8%.<sup>15</sup> This data reveals the vulnerability of these women with low income.

In the present study, the prevalence of cesarean section was 40.5%, which demonstrates an increase in the number of surgical deliveries in the city of Aracaju, given that a study on the prevalence and factors associated with cesarean section in the city of Aracaju, SE, Brazil, in the year of 2005, showed the rate of 23.4% of births by c-section in maternity hospitals partnering with SUS at that time.<sup>8</sup>

These values contrast those advocated by the World Health Organization (WHO), which recommends 15% caesarean section.<sup>2</sup> The most frequent indications for cesarean delivery were preeclampsia, previous cesarean, and acute fetal distress. A study conducted in Ceará highlighted preeclampsia as the main indication for c-section, with 22.22%, stating the prevalence of this complication and its association with the higher incidence of abdominal delivery.<sup>16</sup>

Although the State maternity assists high-risk pregnant women from all over the State of Sergipe, the prevalence of cesarean section found (62.6%) is well above the recommended. There is a need for better conduct for these women to foster the achievement of vaginal birth in pregnant women with obstetric risk.

The philanthropic maternity performs the usual care of obstetric risk pregnant women as a priority despite that the prevalence of cesarean section in this maternity (29.5%) have been much lower than that in the State maternity; however, it is still at levels which reaches twice the recommended by the World Health Organization, which is 15%.<sup>2</sup>

The main indication for c-section identified in the philanthropic maternity was iterativity. According to the American College of Gynecology and Obstetrics and the Society of Maternal-fetal Medicine, there is a need to avoid the first c-section suggesting that it is necessary to review the definitions of labor dystocia, fetal distress, and time of labor.<sup>17</sup>

The cesarean section is associated with the sum of adverse effects on newborns, especially the late preterm (34 to 36 gestational weeks), taking into consideration that these effects are not confined to the

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time of delivery but extended to the future life of the child in which the limit pre-terms are 5 times more likely to die during the first year of life than children born at term, which will represent disadvantages in health standards compared to those born through vaginal birth.<sup>18</sup>

Prematurity and respiratory conditions stood out as diagnoses in newborns who required hospitalization in the NICU; hematological conditions in the ITU; and prematurity in the kangaroo unit. Similarly, the assessment of newborns in intensive care units from three maternity hospitals in Rio de Janeiro, showed that the main causes for hospitalization were prematurity and respiratory problems.<sup>19</sup>

## CONCLUSION

There was a predominance of puerperae aged between 20 and 35 years, with fixed partners, having attended from 10 to 12 years of education, residents in Aracaju, and with household incomes of up to one minimum wage; there was also a prevalence of vaginal births, however, the rates of cesarean births were much higher than the advocated rate. The State maternity, characterized as a service for high-risk puerperae, showed the highest frequency of cesarean births.

It was possible to identify the main indications for cesarean delivery in the two maternities assisting the SUS, highlighting the diagnosis of preeclampsia in the State maternity and iterativity in the philanthropic maternity.

This study also assessed the need for NB hospitalization and the type of unit used (NICU, ITU, or kangaroo). Most of the NBs who required hospitalization were born by caesarean section. New studies are recommended to assess whether there was harm to the newborn due to the high rates of cesarean sections because there was no participation of private institutions in the study sample, where there is a higher frequency of elective cesarean sections.

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Correspondência

Ana Dorcas de Melo Inagaki  
Rua Duque de Caxias, 167 / Ap. 1202  
Bairro São José  
CEP 49015-320 — Aracaju (SE), Brasil