

INTERVENTIONS IN CHILDBIRTH CARE BY NURSING RESIDENTS OF A NORTHEASTERN MATERNITY HOSPITAL: A CROSS-SECTIONAL STUDY

INTERVENÇÕES NA ASSISTÊNCIA AO PARTO POR RESIDENTES DE ENFERMAGEM DE UMA MATERNIDADE NORDESTINA: ESTUDO TRANSVERSAL

INTERVENCIONES EN LA ATENCIÓN AL PARTO POR RESIDENTES DE ENFERMERÍA DE UNA MATERNIDAD DEL NORESTE: UN ESTUDIO TRANSVERSAL

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ABSTRACT

Introduction: Childbirth care has undergone significant changes in recent times, although unnecessary interventions continue to be applied. It is essential to study the characteristics associated with these interventions to seek improvements in practice. **Objective:** To analyze the factors associated with childbirth care interventions in a public maternity hospital in northeastern Brazil. **Method:** A cross-sectional study conducted with pregnant women assisted by obstetric nursing residents during labor in a public maternity hospital in northeastern Brazil, between November 2022 and March 2023. Data were obtained from delivery records, newborn books, and medical charts. Relative and absolute frequencies were calculated for categorical variables. Interventions during childbirth were associated with independent variables using Fisher's exact test and the Prevalence Ratio (PR). **Results:** The study included 132 pregnant women, with interventions occurring in 90.9% of births. Most of the parturients were between 20 and 30 years old (52.3%), single (85.6%), of mixed race (53.4%), and without formal employment (75.0%). The variable education level showed a significant association with interventions (p-value=0.022). The presence of peripheral venous access had a strong association with the outcome (p-value<0.001; PR=2.5). **Conclusion:** Most pregnant women underwent obstetric interventions, which were mainly associated with lower education levels and the presence of venous catheters, highlighting the need for continuous improvements in obstetric practices.

Keywords: Humanized Childbirth; Labor; Unnecessary Procedures; Obstetric Nurse.

RESUMEN

Introducción: La atención al parto ha experimentado cambios significativos en la actualidad, aunque se siguen aplicando intervenciones innecesarias. Es esencial estudiar las características asociadas a estas intervenciones para buscar mejoras en la práctica. **Objetivo:** Analizar los factores asociados a las intervenciones en la atención al parto en una maternidad pública del noreste de Brasil. **Método:** Estudio transversal realizado con gestantes atendidas por residentes de enfermería obstétrica durante el trabajo de parto en una maternidad pública del noreste de Brasil, entre noviembre de 2022 y marzo de 2023. Los datos se obtuvieron de registros de parto, libros del recién nacido e historias clínicas. Se calcularon frecuencias relativas y absolutas para variables categóricas. Las intervenciones en el parto se asociaron con las variables independientes mediante la prueba exacta de Fisher y la Razón de Prevalencia (RP). **Resultados:** El estudio incluyó a 132 gestantes, con intervenciones en el 90,9% de los partos. La mayoría de las parturientas tenían entre 20 y 30 años (52,3%), eran solteras (85,6%), mestizas (53,4%) y sin empleo formal (75,0%). La variable nivel educativo mostró una asociación significativa con las intervenciones (p-valor=0,022). La presencia de acceso venoso periférico tuvo una fuerte asociación con el desenlace (p-valor<0,001; RP=2,5). **Conclusión:** La mayoría de las gestantes fueron sometidas a intervenciones obstétricas, las cuales estuvieron asociadas principalmente con un menor nivel educativo y la presencia de catéter venoso, destacando la necesidad de mejoras continuas en las prácticas obstétricas.

Palabras clave: Parto Humanizado; Trabajo de Parto; Procedimientos Innecesarios; Enfermera Obstétrica.

RESUMO

Introdução: A assistência ao parto passou por grandes modificações na atualidade, embora as intervenções desnecessárias continuem sendo aplicadas. É essencial estudar as características que estão associadas às intervenções, a fim de buscar melhorias na prática. **Objetivo:** Analisar os fatores associados às intervenções na assistência ao parto em uma maternidade pública do nordeste brasileiro. **Método:** Estudo transversal realizado com gestantes assistidas por residentes de enfermagem obstétrica durante o trabalho de parto em uma maternidade pública do nordeste brasileiro, entre novembro de 2022 e março de 2023. Os dados foram obtidos de fichas de parto, livros do recém-nascido e prontuários. Calcularam-se frequências relativas e absolutas para variáveis categóricas. As intervenções no parto foram associadas às variáveis independentes mediante o teste exato de Fisher e a Razão de Prevalência (RP). **Resultados:** O estudo incluiu 132 gestantes, com intervenções ocorrendo em 90,9% dos partos, a maior parte das parturientes tinha entre 20 e 30 anos (52,3%), era solteira (85,6%), parda (53,4%) e sem vínculo empregatício (75,0%). A variável escolaridade apresentou associação significativa com intervenções (p-valor=0,022). A presença do acesso venoso periférico teve forte associação com o desfecho (p-valor<0,001; RP=2,5). **Conclusão:** A maioria das gestantes sofreram intervenção obstétrica, que estiveram associadas principalmente à menor escolaridade e à presença de cateter venoso, ressaltando a necessidade de melhorias contínuas nas práticas obstétricas. **Palavras-chave:** Parto Humanizado; Trabalho de Parto; Procedimentos Desnecessários; Enfermeiro Obstetra.



INTRODUCTION

In the international context, there is wide variation in the use of obstetric interventions. Many countries face excess use, even after adjusting for specific population characteristics, such as Finland, the United States of America, and Belgium⁽¹⁾.

The inclusion of Nurse-Midwives in maternity wards has proven effective in changing care practices. A study evaluated more than 9,000 births and found that the presence of these professionals is associated with an increase in partograph use and a significant reduction in oxytocin use, episiotomy, cesarean section rates, and lithotomy positioning⁽²⁾.

In the United States, a study indicated that midwife-assisted birth care could generate savings of US\$627 million by reducing the number of preterm births (167,259 vs. 219,427) and episiotomy rates (170,504 vs. 415,686)⁽³⁾. In Spain, midwife-assisted births resulted in lower rates of cesarean sections (10.4% vs. 32.2%) and severe perineal lacerations (1.7% vs. 23.5%), without increasing maternal-fetal risks⁽⁴⁾.

In Brazil, since the mid-20th century, childbirth care has shifted from a home-based to a hospital-based model, with an increase in the number of interventions⁽⁵⁾. Although the care landscape has evolved over the years, challenges persist, such as low adherence to non-pharmacological methods of pain relief, limited freedom of choice of birth position, and the continued use of peripheral venous catheters,

which remain prevalent in both the public and private sectors⁽⁶⁾.

The Ministry of Health recommends the inclusion of nurses in childbirth care teams as a strategy to transform the care model⁽⁷⁾. This recommendation aligns with the global Nursing Now initiatives and the Positive Childbirth Recommendations, which promote the role of nurses and a woman-centered approach, with minimal interventions and a humanized environment⁽⁸⁻⁹⁾.

Obstetric nurse residency can contribute to better childbirth care practices. In a maternity hospital in northeastern Brazil, the presence of residents, along with their preceptors, facilitated the use of non-pharmacological methods (100.0%), immediate skin-to-skin contact after delivery (96.7%), and the presence of companions (88.3%). This resulted in an increase in vaginal deliveries and improved neonatal outcomes. Interventions such as oxytocin administration (10.6%) and pharmacological analgesia (5.6%) occurred infrequently⁽¹⁰⁾.

Despite the proven benefits of obstetric nurses, their presence in healthcare settings remains limited, especially in the private sector. This reality is exacerbated by issues related to adequate training and professional development, restricting women's access to this model of care⁽⁶⁾. Therefore, guidelines have been incipient, as in some contexts the traditional biomedical model still prevails, with unnecessary interventions and low adherence to evidence⁽¹¹⁾.

Given this scenario, it is essential to conduct further research to identify specific obstetric scenarios and their training processes, aiming to contribute to more humanized practices and the promotion of intervention health policies. The objective here is to analyze the factors associated with interventions in childbirth care assisted by obstetric nurse residents in a public maternity hospital in northeastern Brazil.

METHODS

Study design

This cross-sectional study investigated interventions adopted during labor and their associations with sociodemographic, obstetric, and care aspects of parturients cared for by obstetric nursing residents. The STROBE instrument was used for observational research⁽¹²⁾.

Interventions during labor are defined as obstetric procedures used to aid the progress of labor, which should be applied with caution and limited to situations in which they are truly necessary⁽⁷⁾.

Context

The study was conducted at a public maternity hospital in eastern Maranhão, the only obstetric unit in the municipality. It also serves neighboring cities, as per local agreement. Its facilities include beds for hospitalization of low-risk and high-risk pregnancies, as well as prenatal and rooming-in beds. The study area includes the prenatal unit, which is staffed by

obstetric nurses, nursing residents, and a multidisciplinary team.

The target audience for the study was pregnant women treated in the maternity ward by nursing residents during the prenatal period, from November 2022 to March 2023. Data collection was conducted between December 2022 and March 2023.

Participants

Study participants consisted of parturients monitored by residents during the study period, whose information was fully recorded. Patients with incomplete or erased data in their medical records, births that occurred outside the institution, outside the designated period, or were attended by other health professionals were excluded.

Data source/measurement

Data were obtained from residents' completed birth records available at the unit, which include the care record of each birth, as well as the newborn book and medical records.

The dependent variable was the presence of interventions during delivery (yes/no), including peripheral venous access, oxytocin infusion, amniotomy, Kristeller maneuver, episiotomy, and early umbilical cord clamping.

Sociodemographic variables included age group (14-19 years, 20-30 years, 31 or older), marital status (married, single, common-law), race/skin color (white, mixed-race, and black), education (elementary school, high school, college), and occupation (not working, formal job, informal job).

Regarding obstetric data, parity (G1, G2, G3 or more), gestational age (<37 weeks, 37-39 weeks and 6 days, 40-41 weeks and 6 days), prenatal risk classification (usual risk, high risk, not classified) and number of prenatal consultations (6 or more, less than 6, did not attend) were collected. The healthcare data were: perineal lacerations (yes/no), previous maternal diseases (yes/no), previous cesarean section (yes/no) and need for neonatal resuscitation (yes/no).

Bias

An additional dependent variable was created for labor interventions (yes/no), which excluded patients with intravenous access for induction/conduction with oxytocin, to allow for a direct association between catheterization and interventions.

To avoid conflicts of interest, data collection was conducted outside of the researcher's shifts, and the researcher maintained a neutral stance during interactions with the data and other residents.

Study size

A non-probability sample was adopted, in which the sample size calculation was based on an estimated 200 normal births per month, as recorded in the institution's birth registry. Therefore, an 'n' of 132 was considered for a

95% confidence interval and a sampling error of 5%.

Statistical methods

The information was transferred to a Microsoft Excel database (version 365) and analyzed using Jamovi software, version 2.3.28, and BioEstat 5.0.

Absolute and relative frequencies of categorical variables were calculated. To verify the association between interventions during childbirth and dependent variables, Fisher's exact test and prevalence ratio (PR) were applied, considering a significance level of 5% (p-value <0.05).

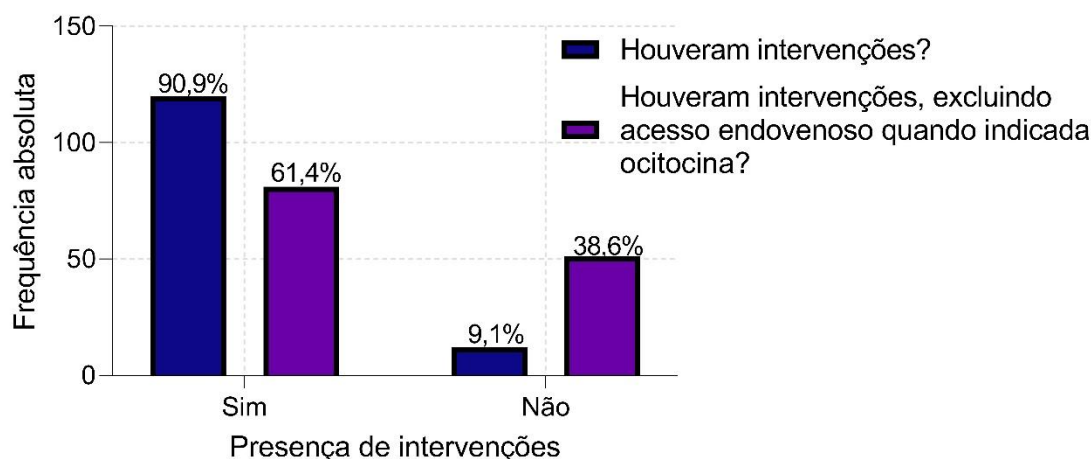
Ethical aspects

This study was carried out in compliance with the National Health Council (CNS) Resolution No. 466/2012 and approved by the Research Ethics Committee, under number 5,830,352.

RESULTS

The study included 132 participants, with the majority having undergone interventions during their delivery (90.9% n=120). When cases of patients with intravenous access for induction/conduction with oxytocin were excluded, interventions continued to occur (61.4% n=81), as shown in Figure 1.

Figure 1 - Analysis of interventions performed in childbirth care by obstetric nursing residents (n=132), Maranhão, Brazil, 2022-2023



Note: a) intravenous access, oxytocin infusion, amniotomy, Kristeller maneuver, episiotomy and early clamping of the umbilical cord.

Source: Authors (2025).

Regarding specifically the procedures adopted during childbirth care by residents, it was observed that amniotomy was performed in 48 patients (36.4%), and episiotomy in 2 (1.5%). The Kristeller maneuver was not performed during care. Umbilical cord ligation was performed extremely late (98.5% n=130), and

the presence of a venous catheter occurred in 91.7% (n=121) of the parturients, of which 34.1% (n=45) used intravenous oxytocin. Induced labors represented 45.5% (n=60) of the sample, therefore, the majority had spontaneous onset (54.6% n=72), as shown below (Table 1).

Table 1 - Frequency of interventions in childbirth care by obstetric nursing residents (n=132), Maranhão, Brazil, 2022-2023

VARIABLE	n	%
Amniotomy performance		
Yes	48	36,4
No	84	63,6
Performing an episiotomy		
Yes	2	1,5
No	130	98,5
Kristeller maneuver		
Yes	0	0,0
No	132	100,0
Umbilical cord clamping time		
Timely/Late	130	98,5
Immediate	2	1,5
Venous access during labor		
Yes	121	91,7
No	11	8,3
Induced labor		
Yes	60	45,5

No	72	54,6
Use of medications		
Oxytocin for conduction	45	34,1
Misoprostol	24	18,2
Without the use of medication	63	47,7
TOTAL	132	100,0

Source: Authors (2025).

Regarding sociodemographic variables and their relationship with childbirth interventions, 52.3% of pregnant women were between 20 and 30 years old ($n=69$; $PR=0.91$; $p\text{-value}=0.479$) and 34.8% were between 14 and 19 years old ($n=46$; $PR=0.87$). Regarding marital status, 85.6% ($n=113$; $p\text{-value}=0.783$) were single and 9.8% were married ($n=13$; $PR=1.13$), while 4.5% were in a stable union ($n=6$; $PR=1.12$).

The distribution by race/skin color identified 53.4% as brown ($n=71$; $PR=1.20$), 39.4% ($n=52$; $PR=1.16$) as black, and 6.8% ($n=9$) as white ($p\text{-value}=0.280$). Regarding

occupation, 75.0% ($n=99$; $PR=1.02$) of the participants were not working ($p\text{-value}=1.000$), as shown in Table 2.

Regarding education, 58.3% ($n=77$) of the women had completed high school and 31.1% ($n=41$) completed elementary school. Women with less education were more likely to undergo interventions during childbirth compared to those with more years of education ($p\text{-value}=0.022$), with a PR of 1.18 ($p\text{-value}=0.167$) for elementary education and 1.17 ($p\text{-value}=0.138$) for secondary education, taking higher education as the reference group (Table 2).

Table 2 - Prevalence ratios (PR) and association of sociodemographic variables with obstetric interventions ($n=132$), Maranhão, Brazil, 2022-2023

Variable	Did you undergo intervention during childbirth?						p-value ^a	RP e p-value ^b
	n	%	Yes		No			
			n	%	n	%		
Age (years old)							0,479	
14-19	46	34,8	40	30,3	6	4,5		0,87(0,139)
20-30	69	52,3	63	47,7	6	4,5		0,91(0,239)
31 and on	17	12,9	17	12,1	0	0,0		1,00
Marital status							0,783	
Married	13	9,8	13	9,8	0	0,0		1,12(0,230)
Sngle	113	85,6	101	76,5	12	9,1		1,00
Stable Union	6	4,5	6	4,5	0	0,0		1,12(0,441)
Race/ skin color							0,280	
White	9	6,8	7	5,3	2	1,5		1,00
Brown	71	53,8	66	50,0	5	3,8		1,20(0,186)
Black	52	39,4	47	35,6	5	3,8		1,16(0,298)



Variable	Did you undergo intervention during childbirth?						p-value ^a	RP e p-value ^b
	n	%	Yes		No			
Education							0,022	
Elementary or less	41	31,1	38	28,8	3	2,3		1,18(0,167)
High school	77	58,3	71	53,8	6	4,5		1,17(0,138)
Graduation	14	10,6	11	8,3	3	2,3		1,00
Occupation							1,000	
Don't work	99	75,0	90	68,2	9	6,8		1,02(0,344)
Informal job	24	17,9	22	16,7	2	1,5		1,03(0,332)
Formal job	9	6,9	8	6,1	1	0,8		1,00

Source: Authors (2025).

Obstetric variables revealed that 47.7% (n=63; PR=1.01) of participants were primiparous (G1) and 34.8% (n=46) multiparous (G3 or more), with a similar distribution between those who underwent interventions during childbirth and those who did not (p-value=0.788). Regarding gestational age, 65.9% (n=87; PR=0.89) of deliveries occurred between 37-39 weeks and 6 days, and 32.6% (n=43;

PR=0.95) between 40-41 weeks and 6 days (p-value=0.451). The predominant prenatal risk classification was usual risk (97.0% n=128; p-value=1.000). Regarding the number of prenatal consultations, 78.0% (n=103) of the participants had 6 or more consultations, while 21.2% (n=28; PR=0.93) had less than 6 (p-value=0.349), as shown in Table 3.

Table 3 - Prevalence ratios (PR) and association of obstetric variables with interventions during childbirth (n=132), Maranhão, Brazil, 2022-2023

Variable	Did you undergo intervention during childbirth?						p-value ^a	RP e p-value ^b
	n	%	Yes		No			
			n	%	n	%		
Parity							0,788	
G1	63	47,7	56	42,4	7	5,3		1,01(0,455)
G2	23	17,4	21	15,9	2	1,5		1,04(0,482)
G3 or more	46	34,9	43	32,6	3	2,3		1,00
Gestational age							0,451	
<37 weeks	2	1,5	2	1,5	0	0,0		1,00
37-39 weeks and 6 days	87	65,9	77	58,3	10	7,6		0,89(0,266)
40- 41 weeks and 6 days	43	32,6	41	31,1	2	1,5		0,95(0,074)
Prenatal risk classification							1,000	



Variable	Did you undergo intervention during childbirth?						RP e p-value ^b	
	n	%	Yes		No			p-value ^a
			n	%	n	%		
Not classified	1	0,8	1	0,8	0	0,0	1,10(0,079)	
Usual risk	128	97,0	116	87,9	12	9,1	1,00	
High Risk	3	2,3	3	2,3	0	0,0	1,10(0,324)	
Number of consultations:							0,349	
Did not perform	1	0,8	1	0,8	0	0,0	1,08(0,055)	
Less than 6	28	21,2	24	18,2	4	3,0	0,93(0,244)	
6 or more	103	78,0	95	72,0	8	6,1	1,00	

Labor care did not show a significant association with obstetric interventions in the following variables: perineal lacerations (p-value=0.228), previous maternal illnesses (p-value=0.544), previous cesarean section (p-value=1.000) and need for neonatal resuscitation (p-value=1.000). When evaluating interventions excluding patients with intravenous access for

induction/conduction with oxytocin, it was observed that women who did not have a venous catheter during labor did not undergo interventions (100% n=11), to the detriment of the 67.8% (n=82) who had this device (p-value<0.001), having a PR of 2.5 (p-value<0.001), as shown in Table 4.

Table 4 - Prevalence ratios (PR) and association of the presence of venous access with interventions during labor, excluding cases of induction/conduction with oxytocin (n = 132), Maranhão, Brazil, 2022-2023

Variable	Did you undergo intervention during childbirth?						RP e p-value ^a
	n	%	Yes		No		
Venous access during labor	n	%	n	%	n	%	
Yes	121	91,7	82	67,8	39	32,2	2,5 (<0,001)
No	11	8,3	0	0	11	100,0	1,00
Total	132	100,0	82	62,1	50	37,9	-
						p-value	<0,001 ^b

Note: a) RP and its respective significance; b) Fisher's exact test

Source: Authors (2025).



DISCUSSION

The results revealed a high frequency of interventions during childbirth care provided by obstetric nursing residents, even when excluding cases of conduction/induction with intravenous oxytocin. Previous studies⁽¹³⁻¹⁴⁾ demonstrate that procedures such as venoclysis, amniotomy, the Kristeller maneuver, and the use of oxytocin to accelerate labor can make this experience more painful and traumatic for women, increasing complications and reducing the chances of a successful vaginal delivery.

The high frequency of interventions is concerning considering that Brazil has one of the highest rates of cesarean sections in the world, with low adherence to recommended best practices and an excess of interventional procedures in childbirth care. Few women in the country are able to give birth without at least one intervention, although each practice should be carefully considered regarding the risk-benefit for the woman and the baby. This scenario reinforces the need to reevaluate current practices and strengthen humanized care, promoting care more focused on evidence and the role of women⁽¹⁵⁾.

Among the most frequently performed interventions in this study, amniotomy, the use of oxytocin for labor induction/management, and the placement of venipuncture stood out. A low episiotomy rate and the absence of the Kristeller maneuver were observed.

When comparing the indicators obtained in this sample with other residency programs,

considerable variations are observed. In a study of residents at a public maternity hospital in Salvador, Bahia ⁽¹⁶⁾, the amniotomy rate was 5.1%, while in a state hospital in Goiás, Goiás ⁽¹⁷⁾, it was 28.9%, compared to 36.4% in this study. Regarding venipuncture, the results were also higher (91.7%), compared to 20.4% ⁽¹⁶⁾ and 68.8% ⁽¹⁷⁾. Regarding the use of intravenous oxytocin, the rates obtained (34.1%) are between the reported values of 18.4%⁽¹⁶⁾ and 65.2%⁽¹⁷⁾. Episiotomy, on the other hand, had a lower frequency (1.5%), falling between the values of 0%⁽¹⁶⁾ and 4.8%⁽¹⁷⁾. The Kristeller maneuver was not reported⁽¹⁶⁻¹⁷⁾, which corroborates the findings and the current trend toward avoiding this practice.

Women cared for by other professional categories and settings also face heterogeneity in obstetric practices. A scoping review found significant variations in the rates of amniotomy, oxytocin, and episiotomy among different Brazilian birth centers⁽²⁾.

Amniotomy is a commonly performed intervention in women admitted in the active phase of labor, compared to those admitted in the latent phase. When administered during the active phase, it can accelerate labor progress, reducing cesarean section rates and labor duration. Caution is required when using this intervention, which should be applied selectively and in appropriate cases to avoid unnecessary risks and promote a more physiological birth experience⁽¹⁸⁾.



Oxytocin, in turn, is a natural hormone synthesized in the hypothalamus and released by the posterior pituitary gland that plays an essential role in uterine contractions. Clinically, it is indicated for inducing labor or in cases of slow contraction progression. Its use must be judicious, as it can cause serious complications, including uterine tachysystole, changes in fetal heart rate, postpartum hemorrhage, and water intoxication. Therefore, it requires strict monitoring of both mother and fetus, and doses adjusted according to clinical response, to ensure safe use⁽¹⁹⁾.

The practice of episiotomy has significant consequences for the daily activities of postpartum women, such as walking, sitting, and resting. It also affects sleep quality, intimate hygiene, and physiological functions, including the resumption of sexual activity⁽²⁰⁾.

A study of 216 parturients found a high frequency of episiotomy in primiparous women. The reasons for the intervention included a short perineum, poor distensibility, interruption of the expulsive stage, and prevention of lacerations. These indications seem questionable, as more than half of the patients did not experience perineal lacerations, and among those who underwent episiotomy, only 16.9% developed lacerations. These data suggest that avoiding the routine use of episiotomy may actually reduce the occurrence of perineal trauma⁽²¹⁾.

A literature review highlighted that many women are unable to even explain the purpose of the procedure, reinforcing its performance

without informed consent⁽²²⁾. Current guidelines recommend selective application of interventions such as amniotomy, episiotomy, and oxytocin, limiting them to clinically indicated cases, while the Kristeller maneuver is explicitly prohibited. The recommended care model should focus on reducing unnecessary interventions, promoting more humanized care that respects the physiological course of labor and the individual characteristics of the pregnant woman⁽⁷⁾.

Regarding sociodemographic data, the participants in this study were predominantly single, between 20 and 30 years old, of mixed race/skin color, and without formal employment. These characteristics were not statistically significant in relation to the outcome.

A study conducted at a university hospital in southern Brazil included 140 postpartum women with a mean age of 24.9 years, who were White (66.4%), in a stable union (89.3%), with more than 8 years of schooling (68.6%), and employed (65.7%)⁽²³⁾. Another study of parturients assisted by nursing residents in Amazonas found that the parturients were between 20 and 29 years old (59%), married (37%), and had completed high school (55%), with an unspecified employment relationship⁽²⁴⁾. The main difference in the sample found in this study was marital status and race/skin color, while education level, age group, and lack of paid employment were similar.

This study highlighted that women with less education underwent more obstetric interventions than those with higher education.



Women with elementary and high school education had higher Prevalence Ratios (PR) than those with higher education.

In a similar study, education level (p-value = 0.008) and marital status (p-value = 0.043) showed significant associations with obstetric interventions. In the multivariate model, these relationships did not persist, indicating a possible lack of effect when analyzed together, to the detriment of previous maternal illness (p-value = 0.005) and intrapartum meconium (p-value = 0.022). It is worth noting that only oxytocin, amniotomy, episiotomy, and instrumental delivery were considered in the outcome⁽¹¹⁾, while this study included additional variables.

The association between lower education level and interventions during childbirth can be explained by limited access to information and understanding of reproductive rights. In Sergipe, a study of 373 postpartum women at a public maternity hospital revealed that lower education level was associated with a lower level of information about labor progress. This fact hindered women's active and autonomous participation during childbirth, affecting the exercise of their rights and the quality of the birthing experience⁽²⁵⁾. In Montes Claros, Minas Gerais, this relationship was reinforced by demonstrating that pregnant women with higher levels of education were more likely to adhere to health education programs, better understanding and applying the guidelines⁽²⁶⁾.

From another perspective, practices that disrespect women's autonomy and promote unnecessary interventions are classified as obstetric violence, which includes actions or omissions that dehumanize or cause physical and emotional suffering during the pregnancy-postpartum period. Women with low levels of education, living in poverty, or belonging to socioeconomically disadvantaged groups are more vulnerable⁽²⁷⁾.

Lack of knowledge about their rights and limited autonomy in childbirth decisions increase the vulnerability of these women, exposing them to more interventionist practices. These findings reinforce the need to strengthen health education policies and ensure greater autonomy for pregnant women, especially those in vulnerable contexts⁽⁶⁾.

No statistical significance was found between interventions and race/skin color. However, one study found that Black women were less likely to have a partograph completed compared to White women. It was highlighted that, despite progress in reducing racial inequalities in childbirth care in Brazil, racial discrimination still persists in various aspects of care⁽²⁸⁾.

Regarding the gestational data found, primigravidae predominated, with gestational ages between 37 and 39 weeks and 6 days, classified as low-risk, and with six or more consultations. These groups had a higher frequency of interventions, although without statistical significance.

The profile of patients cared for by residents of Salvador revealed a predominance of multiparous women (55.1%), with a mean gestational age of 38 weeks and 4 days, and prenatal care (99.0%). The study also identified non-recommended interventions, such as intravenous catheter placement (20.4%), oxytocin administration (18.4%), mainly in nulliparous women, and amniotomy (5.1%) in multiparous women⁽¹⁶⁾.

In a Birthing Center in Mato Grosso, 1,442 birth attendances were evaluated, revealing distinct characteristics of the parturients, with a mean age of 24.2 years and a prevalence of multiparous women (36.23%). Although all patients received some good care practices, the routine use of non-recommended practices was still observed, such as venoclysis (36.0%), oxytocin (19.5%), and amniotomy (10.1%)⁽²⁹⁾. The reported data complement the results of this study, raising concerns about adherence to best practices in obstetric care, even in settings that should prioritize natural and humanized childbirth.

Furthermore, a significant association was observed between the presence of intravenous access and a higher incidence of interventions during childbirth. Women with this device underwent more unnecessary procedures than women without it.

Intravenous access is one of the most common interventions during labor, even in women at low obstetric risk. In Brazil, when analyzing 23,894 women in a representative

sample of hospitals with 500 or more births per year, they found that more than 70% of participants received intravenous infusions. This high rate suggests a potentially routine practice, even in the absence of an evident clinical need, facilitating other interventions⁽⁶⁾.

It should be noted that this study has some limitations, as its cross-sectional design prevents the determination of causality between the factors assessed and interventions during childbirth. Because it is documentary, there may be inaccuracies in records and underreporting of interventions, although it provides data not available in official health information systems. The sample, composed only of women treated at a specific maternity hospital and residents, may not reflect the reality of other institutions, limiting the generalizability of the findings.

CONCLUSIONS

The results indicated a high rate of interventions, and that most sociodemographic variables, such as age, marital status, race/color, and occupation, did not show statistically significant associations with the presence of interventions during childbirth. However, education level proved to be an important factor, with women with secondary and elementary education having a higher frequency of unnecessary procedures.

The presence of PVA was strongly associated with the presence of interventions, even when not used for oxytocin induction. In contrast, other variables such as perineal

lacerations, previous maternal illnesses, previous cesarean section, and the need for neonatal resuscitation were not significant. This highlights the need for continuous improvements in the obstetric practices offered to women.

It is important to emphasize that the interventions observed reflect not only the practices of residents, but also the guidance of preceptors and the care team that accompany them during training. Thus, clinical decisions are shaped by an educational context that can impact childbirth care. These findings have significant implications for clinical practice, public health policymaking, and professional training. It is crucial to consider the education of pregnant women and their individual needs, promoting practices that respect the physiological process of birth.

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Cruz PNC, Filho RL: 1. contributed substantially to the conception and/or planning of the study; 2. to obtaining, analyzing, and/or interpreting the data; 3. to writing and/or critically reviewing and final approval of the published version. Lima KFFL, Lindoso RF, Soeiro TC, Araújo TP, Torres JB: 1. contributed substantially to the analysis and/or interpretation of the data. Oliveira BLCA, Neto MS, Rabelo PPC: 1. contributed substantially to the writing and/or critically reviewing and final approval of the published version.

Declaration of Conflict of Interest

Nothing to declare.

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