Racial inequality in obstetric good practices and interventions in labor and birth care in Rede Cegonha

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Abstract *This study aimed to evaluate the racial inequality on childbirth care at the Rede Cegonha (Stork Network) using obstetric good practice and interventions indicators. Racial inequality, measured by the total effect of ethnicity/skin color in the crude model, was seen in many indicators. After adjusting for mediators, such as age, schooling, parity, high-risk hospital, and geographic macro-regions, the persistent direct effect suggests racial discrimination against black women with lower partograph completion (PR 0.88; 95% CI 0.80-0.95). Black women stayed less in lithotomy (PR 0.93; 95% CI 0.89-0.98), performed less episiotomy (PR 0.81; 95% CI 0.68 – 0.96), and had less episiotomy suturing pain (PR 0.66; 95% CI 0.51 – 0.87) when compared to white women, suggesting more good practice applied to black women. However, according to the interventionist care model still adopted by many professionals, these practices are routine, and lower achievement in black women would be better interpreted as evidence of racial discrimination against these women. For other outcomes, the ethnicity/skin color effect disappeared after adjusting for mediators, suggesting mitigation or disappearance of the skin color effect in some practices/interventions in childbirth.*

Key words *Racism, Delivery, Live birth*

Introduction

Racial inequalities in various physical and mental health outcomes and access to and use of health services have been well documented[1]. In Brazil, scientific evidence points to an association between skin color and prenatal/delivery care and maternal mortality indicators[2,3]. Several studies have observed that black or brown skin color was associated with inadequate prenatal care[2,4-7], lack of maternity[3] attachment, pilgrimage in search of medical care[2,3], worse assessment of waiting time for medical care, decreased privacy[8], lack of a companion during labor, and less local anesthesia for episiotomy[3].

In the nationwide study *Nascer no Brasil* (Born in Brazil) carried out in 2011/2012, brown women and above all black women showed less satisfactory prenatal and delivery care indicators than white women. Even after controlling for socioeconomic, demographic, and reproductive variables, racial inequality persisted for most of the indicators studied[3].

In 2017, obstetric good practices and interventions in childbirth care were evaluated in public maternity hospitals part of the Rede Cegonha (RC), a Ministry of Health (MS) strategy implemented in 2011. This study aimed to assess racial inequality in childbirth care through obstetric good practices and interventions indicators in the RC maternity hospitals building on this setting. It also verified whether these inequalities decline or disappear after adjusting for sociodemographic, reproductive, and health care variables, six years after the *Nascer no Brasil* study was carried out, a period in which governmental initiatives to strengthen and promote RC action plans were developed from the perspective of humanized care.

Methods

We used primary data from the research entitled "Evaluation of Childbirth Care in Maternity Hospitals of the Rede Cegonha" conducted by the Federal University of Maranhão (UFMA) and by the Sérgio Arouca National School of Public Health (ENSP), of the Oswaldo Cruz Foundation (FIOCRUZ), in 2017, under the coordination of the Ministry of Health.

In this study, we selected all public hospitals and members of the Brazilian Unified Health System where births took place in 2015, located in a health region with the Rede Cegonha action plan approved by the Ministry of Health. In this study, all childbirth care points will be called maternity hospitals, regardless of whether they are maternity hospitals or a specific sector of general hospitals, totaling 606 establishments[9].

The sample of puerperae was stratified by geographic regions, and its size was calculated based on a cesarean section rate of 50% to detect differences of 5%, with a significance level of 0.05 and power of 80%. For each region, a fixed number of data collection days was defined according to the volume of deliveries in the eligible hospitals, two days in the Southeast and Northeast regions, four days in the North region, five days in the South region, and seven days in the Midwest region.

A questionnaire was applied in a face-to-face interview with all women, and medical records were analyzed. In this paper, only data from women who had a single-fetus vaginal delivery on the data collection days and whose data was extracted from the medical records during hospitalization using electronic forms were analyzed. Data from 5,851 women who had a single pregnancy and vaginal delivery of the total of 10,665 puerperae interviewed were analyzed. This sample represented 55% of the total women interviewed.

Theoretical model

The theoretical model defined to measure the effect of ethnicity/skin color in obstetric good practices of childbirth care or interventions is shown in the directed acyclic graph (DAG) in Figure 1[10], used to identify confounders and mediators. The most significant variables for measuring the effect of skin color on childbirth care were identified from the literature. The ethnicity/skin color variable was considered more distal by the theoretical model used based on Blank et al.[11] and Pearl & Mackenzie[12], and any previous variable did not confound its effect. As confounding is a causal concept, schooling and income could not cause skin color. Racial inequality was considered the total effect of ethnicity/skin color on good practices/interventions and estimated by ethnicity/skin color coefficient in an unadjusted logistic regression model. The coefficient corresponding to the direct effect of the ethnicity/skin color variable on obstetric good practices/interventions was obtained after adjusting for the following mediators: schooling (higher education and over, high school, elementary school, and incomplete elementary school), age (< 20, 20-34, and ≥ 35 years) and parity (1, 2, 3, and
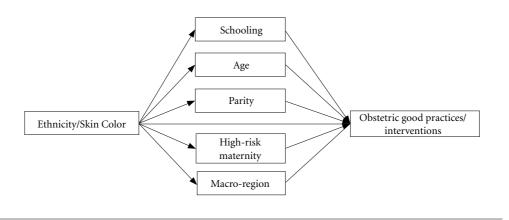
Figure 1. Theoretical model used to estimate racial inequality in obstetric good childbirth care practices and interventions.

4 and over), geographic macroregion (North, Northeast, Midwest, Southeast, and South) and having been seen at a hospital for high-risk pregnant women (yes, no). This direct effect measures the effect of racial discrimination and other mediators omitted from obstetric good practices/interventions. The persistent direct effect after adjustment for mediators was considered a discrimination/racism indicator[11,12].

The exposure variable was self-reported skin color, categorized as white, black, and brown. The outcomes were selected from the literature, considering the practices evaluated as promoting the best obstetric and effective results for reducing adverse outcomes[13] underlying the technological childbirth care model in Rede Cegonha's services[14]. These variables were categorized as "yes" or "no" and organized into three dimensions:

1. Good practices in vaginal labor care and other care events - offering liquids or food during labor ("Were you offered liquids, water, juices, soups, or any food during your labor?"), mobility during the first stage of labor ("Were you able to stay out of bed and walk during labor?"), non-pharmacological pain relief methods ("Were any of the measures offered?"), completing the partograph in the medical records (extraction of data from the medical records), companion during the entire hospitalization period ("Did maternity allow your companion to stay with you all the time?"), Moreover, feeling seldom/rarely treated well ("How often are you feeling welcomed, well-treated, and respected during your stay in this maternity hospital?").

2. Interventions in labor and vaginal delivery - use of a venous catheter ("Did you receive IV serum when were you in labor?"); amniotomy for women with an intact amniotic sac on admission ("Did they break your waters after you arrived at the hospital?"); spinal/epidural analgesia ("Did you receive pain relief medication/analgesia during labor?"); oxytocin use (data extraction from medical records), lithotomy ("What was your delivery position?"); episiotomy ("Did they cut your perineum (vagina) at delivery?"); and pain in episiotomy suturing ("Did you feel pain when suturing (sewing, repairing) the perineum?"); Kristeller's maneuver ("At the time of delivery, did someone squeeze/climb on your belly to help the baby out?"); and

3. Good practices in newborn care - skin-to-skin contact ("Was your baby placed in contact with your skin immediately after birth at the delivery site, without any clothes or sheets between you?"); breastfeeding at the birth site ("Did you breastfeed at the birth site after delivery?"); breastfeeding within the newborn's first 24 hours of life ("Did you breastfeed your baby within the first 24 hours after delivery?"); and offer of milk formula ("Did the baby drink any milk other than yours?").

Statistical analysis

The variables under study were described using absolute and relative frequencies. A simple Poisson regression model was used to assess the total effect of ethnicity/skin color exposure

variable for each outcome of interest. Racial inequality was detected by the total effect obtained in the unadjusted model. In the multiple Poisson regression model, the mediators described in the theoretical model were considered in the adjustment to estimate the direct effect of skin color for each of the good practices/interventions in childbirth care. The weighting weights determined by the inverse of each woman's selection probability were included in the analysis to offset the unequal probabilities of selecting each mother. The prevalence ratios (PR) and respective 95% confidence intervals (CI) were estimated in all analyses and performed on STATA 14.0, considering a prevalence greater than 10%[15] in the studied outcomes. Standard errors were estimated using the robust method.

The project followed the recommendations of Resolution CNS 466/2012 and was approved by the Research Ethics Committee of the Federal University of Maranhão and the Sérgio Arouca National School of Public Health. All women signed the Informed Consent Form.

Results

Around 58.7% self-identified as brown, 28.0% white, and 13.3% black. Most were between 20 and 34 years of age (68.3%), with two or more children (52.0%), incomplete high school (58.4%), and delivery in hospitals for attending usual-risk pregnancies (69.5%) (Table 1).

In the dimension of good practice in childbirth care and delivery care practices, in the bivariate analysis, brown women received less liquids or other foods during labor (PR 0.91 95% CI 0.84-0.98), fewer non-pharmacological pain relief measures (PR 0.88, 95% CI 0.84-0.93), had lower partograph completion (PR 0.85 95% CI 0.80-0.90), and were rarely treated well during hospitalization (PR 1.38 95% CI 1.10-1.74) compared to white women. Black women had a lower provision of non-pharmacological pain relief measures (PR 0.90 CI 95% 0.83-0.97) and lower partograph completion (PR 0.82 95% CI 0.75-0.90). The bivariate analysis showed no difference between skin color regarding permission to walk during labor and having a companion at all times (Table 2).

In the bivariate analysis, in labor and vaginal delivery interventions, brown women had less venoclysis (PR 0.93 95% CI 0.86-0.99), analgesia (PR 0.77 CI 95% 0.64-0.92), oxytocin use (PR 0.90 95% CI 0.81-0.99) and episiotomy (PR

0.86 95% CI 0.76-0.97). Black women had lower percentages of delivery in a position other than lithotomy (PR 0.94 95% CI 0.90-0.98) and of having had an episiotomy (PR 0.82 95% CI 0.69-0.97), referring pain during episiotomy suturing (PR 0.74 95% CI 0.57-0.96) than white women. The amniotomy maneuvers after hospitalization and Kristeller at delivery showed no statistically significant difference by skin color (Table 3).

Regarding good practices with the newborn, in the bivariate analysis, being black was associated with more significant skin-to-skin contact (PR 1.08 95% CI 1.01-1.16) and a lower percentage of breastfeeding within the first 24 hours (PR 0.94 95% CI 0.89-0.99) (Table 4).

After adjustment, in the dimension of good practices, only lower completion of the partograph (PR 0.88 95% CI 0.80-0.95) remained associated with black skin color (Table 2). In labor and delivery interventions, black women performed less lithotomy (PR 0.93 95% CI 0.89-0.98), episiotomy (PR 0.81 95% CI 0.68-0.96), and felt less pain in episiotomy suturing (PR 0.66 95% CI 0.51-0.87). Brown women reported more pain during episiotomy suturing than white women (PR 0.84 95% CI 0.71-0.99) (Table 3). More significant skin-to-skin contact with the newborn was observed in black (PR 1.09 95% CI 1.02-1.17) or brown women (PR 1.06 95% CI 1.01-1.12) compared to white women. Black women also breastfed their children more at the birth site (PR 1.14 95% CI 1.01-1.30) than white women (Table 4).

Discussion

Eighteen indicators selected for obstetric good practices and interventions in childbirth care in the Rede Cegonha maternity hospitals were analyzed, with racial inequality observed in 12 of them (feeding in the first labor stage, non-pharmacological pain relief, partograph completed, rarely well treated, venoclysis, analgesia, cytokine use, lithotomy, episiotomy, pain in episiotomy suturing, skin-to-skin contact at birth, and breastfeeding within the first 24 hours). However, after adjusting for mediators, the association persisted for six indicators (partograph completed, lithotomy, episiotomy, pain in episiotomy suturing, skin-to-skin contact, and breastfeeding at the birth site), suggesting attenuation of the skin color effect in childbirth care practices/interventions for some indicators. Some practices were universalized, such as a companion's presence,

Table 1. Characteristics of the puerperae with single vaginal delivery in maternity hospitals of the Rede Cegonha. Brazil, 2017.

Variables	n	% Weighted
Skin color		
White	1,785	28.0
Black	718	13.3
Brown	3,299	58.7
Age in years		
Up to 19	1,331	23.1
20-34	3,949	68.3
≥ 35	506	8.5
Schooling		
Higher education and over	295	4.9
High school	2,113	36.7
Elementary	1,753	29.7
Elementary incomplete	1,673	28.7
Parity		
1	2,651	48.0
2	1,577	25.9
3	832	13.2
4 and over	770	12.9
Hospital for high-risk pregnant women		
No	4,263	69.5
Yes	1,573	30.5
Geographic macro-region		
North	1,036	13.0
Northeast	1,170	30.7
Midwest	998	7.3
Southeast	1,460	37.7
South	1,187	11.3

* Totals do not add up to 5861 due to unreported values.

with no differences between white and black/brown.

The significant direct effect of skin color on the studied outcomes after adjustment for mediators suggests racial discrimination/racism in these care practices in childbirth care services. On the other hand, the disappearance of the ethnicity/skin color effect after adjusting for mediators in some of the analyzed outcomes suggests that these mediators explained the effect of racial inequality in these cases. These conclusions are applied in expectation, assuming that our theoretical model is correct and that all ethnicity/skin color mediators in the studied outcomes have been included in the adjustment. The great ad-vantage of DAG is to make the assumptions of the analysis explicit. However, it is never possible to know whether all critical variables have been included, whether the diagram is correct, or there is no confounding by an omitted variable.

Black or brown women had a lower supply of liquids or other foods during labor, a lower offer of non-pharmacological pain relief methods, were treated well very rarely, were less subjected to interventions such as venoclysis, analgesia, and oxytocin use than white women. The lower occurrence of these good practices or interventions in black or brown women was explained by the mediators used in the adjustment, which makes it unlikely that the racial inequality in childbirth care detected in these variables reflects racial discrimination within health services.

No differences were detected according to skin color in the crude model for six obstetric good practices and interventions indicators. Thus, there was no racial inequality in mobility during the first stage of labor, a companion's presence during the entire hospitalization period, amniotomy and Kristeller's maneuver, breastfeeding at the delivery site, and provision of milk formula to the baby. This finding points to a possible attenuation of the skin color effect in previously hegemonic practices in hospital delivery care. This evidence speaks in favor of a changing childbirth care model to reduce racial inequalities.

Studies indicate that a companion's presence during delivery care has promoted changes in professional conduct, making them more human and less routine-minded. The structural change in this and other specific practices may have adjusted possible inequalities[16].

For six indicators, ethnicity's direct effect on obstetric good practices and interventions in labor and delivery was significant even after adjustment for mediators. Black women had a lower proportion of partograph completion, were placed less often in the lithotomy position, were less submitted to episiotomy, and reported less pain during episiotomy suturing. They also made more skin-to-skin contact with their babies and breastfed more at the birth site than white women. Regarding brown women, two indicators were significant after adjusting for mediators. These women reported less pain in episiotomy suturing and had more skin-to-skin contact with newborns. As stated above, the persistent racial inequality in these six indicators, after adjusting for mediators, suggests that racial discrimination/racism is present in childbirth care.

Table 2. Good practices in labor and other care events by self-reported skin color in maternity hospitals in the Rede Cegonha. Brazil, 2017.

	n	%	Crude*			Adjusted**		
			PR	95%CI	P value	PR	95%CI	P value
Feeding								
White	1,706	49.6	1	-	-	1	-	-
Black	676	48.5	0.98	0.87-1.09	0.701	1.01	0.90-1.14	0.772
Brown	3,084	45.3	0.91	0.84-0.98	0.023	0.97	0.90-1.06	0.597
Moving								
White	1,650	92.4	1	-	-	1	-	-
Black	653	90.6	0.98	0.94-1.01	0.246	0.98	0.94-1.01	0.342
Brown	2,992	91.1	0.98	0.96-1.01	0.171	0.98	0.96-1.01	0.334
Non-pharmacological relief provision								
White	1,785	72.3	1	-	-	1	-	-
Black	718	65.4	0.90	0.83-0.97	0.009	0.94	0.87-1.02	0.171
Brown	3,299	64.3	0.88	0.84-0.93	< 0.001	0.95	0.90-1.01	0.121
Completing the partograph								
White	1,734	70.7	1	-		1	-	
Black	674	58.4	0.82	0.75-0.90	< 0.001	0.88	0.80-0.95	0.004
Brown	3,140	60.3	0.85	0.80-0.90	< 0.001	0.96	0.90-1.01	0.172
Companion allowed all the time								
White	1,592	88.5	1	-	-	1	-	-
Black	619	89.0	1.00	0.96-1.04	0.790	1.01	0.97-1.05	0.642
Brown	2,860	86.6	0.97	0.94-1.01	0.172	0.98	0.95-1.01	0.262
Was rarely treated well								
White	1,779	7.6	1	-	-	1	-	-
Black	716	8.6	1.13	0.81-1.58	0.453	0.93	0.66-1.31	0.694
Brown	3,285	10.6	1.38	1.10-1.74	0.005	1.04	0.82-1.32	0.725

* Prevalence ratios (PR) and 95% confidence intervals (CI) obtained in a simple Poisson regression model with a robust estimate of variance and weighted by the inverse selection probability of each puerperae. ** Estimates obtained in a multiple Poisson regression model adjusted for age, education, parity, high-risk hospital, and geographic macro-region with robust variance estimate and weighted by the inverse probability of selecting each puerperae.

As a result, brown and, especially, black women are treated differently in many health services because they have different skin colors and not because of socioeconomic, demographic, regional, or health service differences.

Delivery care for black women evidenced a lower partograph completion, pointing to racial discrimination against these women. However, other interventions, such as lithotomy and episiotomy, were performed to a lesser extent on black women. As good practices consider that these interventions should not be performed routinely, according to the MS norms[17], their lower level of accomplishment in black women could be indicating a benefit or privilege to these women, an "inside out" discrimination, where white women receive worse treatment. However, such practices are praised in the biomedical interventionist delivery care model, still prevalent in many pro-

fessional practices[18]. For example, in some professionals' opinion, the correct thing would be to perform an episiotomy. Thus, when some professionals deny this intervention to black women, it would be better interpreted as evidence of racial discrimination, although, in this case, it ends up being beneficial for these women.

Concerning newborn indicators, black women breastfed more at the birth site and had more skin-to-skin contact with their babies. In this case, the interpretation is that black and brown women are carrying out these newborn-related good practices more compared to white women, which may reflect the greater acceptance of these practices by black women.

In the *Nascer no Brasil* survey conducted in 2011/2012, racial inequality persisted for most of the indicators analyzed after adjusting for mediators[3]. In this study, carried out six years

Table 3. Interventions in Labor and Vaginal Delivery by self-reported skin color in maternity hospitals in the Rede Cegonha. Brazil, 2017.

	n	%	Crude*			Adjusted**		
			PR	CI	p-value	PR	CI	p-value
Venoclysis								
White	1,719	59.0	1	-	-	1	-	-
Black	690	57.1	0.96	0.87-1.06	0.495	0.99	0.90-1.09	0.881
Brown	3,134	55.0	0.93	0.86-0.99	0.042	0.99	0.92-1.06	0.811
Analgesia								
White	1,711	19.2	1	-	-	1	-	-
Black	685	18.0	0.93	0.73-1.19	0.596	1.02	0.79-1.31	0.845
Brown	3,127	14.9	0.77	0.64-0.92	0.006	0.91	0.75-1.10	0.343
Amniotomy								
White	1,690	44.3	1	-	-	1	-	-
Black	679	41.5	0.93	0.82-1.06	0.304	0.95	0.83-1.08	0.439
Brown	3,102	41.7	0.94	0.86-1.02	0.167	0.96	0.88-1.06	0.528
Oxytocin use								
White	1,768	39.6	1	-	-	1	-	-
Black	704	39.7	1.00	0.87-1.15	0.966	1.08	0.95-1.24	0.210
Brown	3,257	35.7	0.90	0.81-0.99	0.034	1.01	0.91-1.11	0.818
Lithotomy								
White	1,779	88.2	1	-	-	1	-	-
Black	716	83.3	0.94	0.90-0.98	0.017	0.93	0.89-0.98	0.008
Brown	3,288	87.4	0.99	0.96-1.01	0.511	0.97	0.94-1.01	0.120
Episiotomy								
White	1,706	31.5	1	-	-	1	-	-
Black	678	25.9	0.82	0.69-0.97	0.024	0.81	0.68-0.96	0.016
Brown	3,136	27.3	0.86	0.76-0.97	0.018	0.89	0.79-1.00	0.057
Episiotomy suturing pain								
White	497	42.7	1	-	-	1	-	-
Black	172	31.7	0.74	0.57-0.96	0.024	0.66	0.51-0.87	0.003
Brown	862	39.8	0.93	0.80-1.09	0.382	0.84	0.71-0.99	0.041
Kristeller maneuver								
White	1,738	15.7	1	-	-	1	-	-
Black	696	16.9	1.07	0.83-1.38	0.567	1.04	0.80-1.35	0.725
Brown	3,188	15.7	0.99	0.83-1.18	0.970	0.96	0.80-1.15	0.693

* Prevalence ratios (PR) and 95% confidence intervals (CI) obtained in a simple Poisson regression model with a robust estimate of variance and weighted by the inverse selection probability of each puerperae. ** Estimates obtained in a multiple Poisson regression adjusted model robust variance estimate and weighted by the inverse probability of selecting each puerperae.

later, in 2017, racial inequality disappeared for most of the variables studied after adjustment, which may indicate a tendency to reduce racial discrimination in health services. However, this possibility should be interpreted with caution due to differences in the two samples. The *Nascer no Brasil* sample consisted of vaginal and cesarean deliveries in public, private, and mixed institutions (private maternity hospitals under the SUS) with 500 or more deliveries in 2007, while in the RC, only vaginal deliveries performed in public and mixed institutions, with more than 500 deliveries in 2015, located in a health region with an RC action plan approved by the Ministry of Health were considered. In other words, the sample of this study included public hospitals where the humanized childbirth programs[19] had been probably implanted for a longer time, and there were greater motivation and desire for change in care practices.

The idea that human beings deserve respect for the ideal of humanity and dignity as a prin-

Table 4. Good practices in newborn care by self-reported skin color in maternity hospitals in the Rede Cegonha. Brazil, 2017.

	n	%	PR	95% CI	p-value	PR	95% CI	p-value
				Crude*			Adjusted**	
Skin-to-skin contact								
White	1,749	66.5	1	-	-	1	-	-
Black	695	72.0	1.08	1.01-1.16	0.023	1.09	1.02-1.17	0.010
Brown	3,196	69.6	1.04	0.99-1.10	0.088	1.06	1.01-1.12	0.027
Breastfeeding in the delivery place								
White	1,744	40.8	1	-	-	1	-	-
Black	695	44.5	1.09	0.96-1.23	0.173	1.14	1.01-1.30	0.029
Brown	3,201	40.3	0.98	0.89-1.08	0.800	1.04	0.94-1.14	0.413
Breastfeeding in the first 24h								
White	992	89.7	1	-	-	1	-	-
Black	388	84.7	0.94	0.89-0.99	0.044	0.95	0.89-1.01	0.097
Brown	1,875	89.8	1.00	0.96-1.03	0.942	1.00	0.96-1.03	0.836
Offering infant formula								
White	1,698	16.5	1	-	-	1	-	-
Black	669	16.4	0.99	0.78-1.26	0.979	1.02	0.79-1.30	0.876
Brown	3098	14.0	0.84	0.70-1.01	0.072	0.92	0.76-1.12	0.455

* Prevalence ratios (PR) and 95% confidence intervals (CI) obtained in a simple Poisson regression model with a robust estimate of variance and weighted by the inverse selection probability of each puerperae. ** Estimates obtained in a multiple Poisson regression model adjusted for age, education, parity, high-risk hospital, and geographic macro-region with robust variance estimate and weighted by the inverse probability of selecting each puerperae.

ciple of Human Rights can explain this advance, insofar as it guided the coping with all forms of discrimination and social injustice. At the political theory level, the principles of equality and tolerance underlie the Universal Declaration of Human Rights[20]. In this sense, it is assumed that society has become more tolerant, with better acceptance of the unequal, at the time of conducting the field of this study[21]. The Ministry of Health has made an effort to promote and qualify delivery care with the valorization of the National Humanization Policy guidelines[22,23] in recent years, which resulted in creating and implementing the RC strategy, disseminating technical manuals, and health professionals' qualification actions[14,22,24].

A limitation of this study is that the socioeconomic indicators used as mediators may not be adequate markers of social circumstances. We considered that socioeconomic mediation does not fully account for health differences between social groups. Racial divisions can have additional health effects that are not reliant on socioeconomic differences between people. We cannot state that racial discrimination can be fully explained by the variables of the proposed model.

However, they potentially affect the relationships of interest in this study as they largely reflect the differences in the Brazilian social and economic levels. Also, as discussed by Santos[25], the indirect effects on health, through socioeconomic position and exposure to discrimination and racism can directly affect health through the social environment and the accumulation of adversity in multiple domains and aspects, such as racial bias in the health service and stress arising from discriminatory experiences. Another limitation of the approach is that skin color/ethnicity can indirectly affect obstetric good practices and interventions in childbirth that were not calculated in this study.

We emphasize that the data discussed here refer to the RC maternity hospitals in the five Brazilian regions. These maternity hospitals are public or private with the SUS. They vary in size and together account for more than 50% of births[9] in Brazil. Data from hospitals/maternity hospitals that exclusively serve the private sector, not affiliated with the SUS, are omitted. The study assesses the RC strategy and possible mitigations of inequalities in childbirth care promoted by this strategy.

The findings presented in this study point to the need for investments in health professionals' qualification processes with the adoption of health policies to guide practices to reduce racial inequality. It is also essential to conduct systematic monitoring and evaluation of RC indicators in each maternity hospital to improve information management and care for women and children and reduce racial inequality and discrimination.

Collaborations

All authors contributed to the preparation of this manuscript. MTSSB Alves - Formal analysis, methodology, writing of the original draft, writing and final edition; DC Chagas - software management, writing the original draft, writing and final editing; AM Santos - analysis, methodology and writing of the original draft; VMF Simões and BVS Ayres - methodology and writing and final edition; GL Santos - Project management and writing original draft; and AAM Silva - Design, analysis, methodology and writing, and final edition.

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