

# Racial, sociodemographic, and prenatal and childbirth care inequalities in Brazil, 1999-2001

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## Keywords

Prenatal care. Postnatal care. Social inequity. Health services accessibility. Equity in access.

## Abstract

### Objective

To analyze social inequalities and inequalities in access to and utilization of health care services according to skin color in a representative sample of postpartum women receiving hospital childbirth care.

### Methods

A cross-sectional study was carried out in a sample of 9,633 postpartum women, of whom 5,002 were white (51.9%), 2,796 mulatto (29.0%), and 1,835 black skin color (19.0%), seen in public maternity hospitals, hospitals contracted out by the Unified National Health System, and private hospitals in the period 1999-2001. Data were collected from medical records and through interviews with the mothers in the immediate postpartum period using standardized questionnaires. Statistical analyses were performed using  $\chi^2$  tests to assess homogeneity of proportions and Student's t-test for comparison of measures. The analysis was stratified by maternal schooling.

### Results

A persistent unfavorable situation was seen for mulatto and black women as compared to white women. Mulatto and black women had the highest rates of adolescent mothers, low schooling, unpaid occupation, and not having a partner. History of physical violence, smoking, attempts to interrupt pregnancy, and visits to several hospitals before being admitted were more frequent among black women, followed by mulatto and then white women of low schooling. High schooling group of women showed better indicators but the same pattern was seen. This variability is also seen in the opposite direction in terms of the level of satisfaction with prenatal and childbirth care.

### Conclusions

It was distinguished two forms of discrimination, by educational level and skin color, in care delivered by health services to postpartum women in Rio de Janeiro.

## INTRODUCTION

Racial inequities in population health conditions remains an important public health concern in many countries and it is an expression of biological differences, social disparities, and ethnic discrimination.

There are methodological challenges in measuring inequalities. Inherent elements of the racial issue must be distinguished from other aspects such as access to

information, occupation, assets, health services and even from people's perception of racism. All these factors act synergistically, intensifying negative health outcomes as well as reinforcing inequalities in living conditions.<sup>3,7</sup>

Krieger<sup>10</sup> (2003) makes a distinction between the concept of racism and race or ethnicity. The former refers to organizational and individual practices that generate and reinforce discrimination against the dis-

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Funding by the *Ministério da Saúde* (Grant n. 3067) and Fundação Carlos Chagas Filho de Amparo à Pesquisa do Estado do Rio de Janeiro (FAPERJ - Process n. 150892/99)

Received on 19/1/2004. Reviewed on 1/6/2004. Approved on 2/8/2004.

criminated ones. The terms race and ethnicity rather than biological refer are social categories and refer to groups of people who share a common cultural heritage. According to Krieger,<sup>10</sup> skin color could be seen as a biological expression of race but also as a racialized expression of people's biology when exposed to racism. She points out that the impact of racism on health has been approached in studies either directly, by identifying self-reported experiences, or indirectly, by describing racial disparities revealing underlying racism.

In Brazil, racial inequalities and its consequences on health have recently been introduced to the political agenda and therefore specific literature on the subject is scarce. This is in part due to lack of information. Not even official health information systems could provide enough data for assessment. It was only by the end of the 1990's that data on skin color began to be collected in death and live newborn certificates.

The purpose of the present study is to compare sociodemographic characteristics of white, mulatto, and black women and assess differences of access to health services and in their perception of care provided.

## METHODS

The study data are from the research project "Study of morbidity and mortality and perinatal and neonatal care in the municipality of Rio de Janeiro, 1999-2001", partly published in 2004.<sup>11</sup> In a proportional stratified sample, health facilities were categorized as: 1) municipal and federal facilities; 2) National Unified Health System (SUS)-contracted private facilities; and military, state, and charitable facilities; and 3) private facilities.

From all hospitals of each category, a sample of approximately 10% pregnant women in labor of the expected number of deliveries was selected. Hospitals with less than 200 deliveries a year were excluded because they were equivalent to 3.7% of total deliveries. The sample size of 3,282 women in each category was set aiming at comparing proportions in similar samples at a 5% significance level. There were interviewed a total of 10,072 women selected at 47 facilities, of which 12 were in the first category and equivalent to 34.8% deliveries, 10 in the second category and equivalent to 34.4%; and 25 in the third category and equivalent to 30.8% deliveries.

Losses were 4.5%, of which 2.6% in the first category, 1.9% in the second one and 9.3% in the third one. The main reasons for losses were early mother discharge in the first and second categories and re-

fusal to participate in the study in the third category.

The analysis included 9,633 women, i.e., 5,002 white (51.9%), 2,796 mulatto (29.0%), and 1,835 black women (19.0%). There were excluded 225 women who referred themselves as Asian – 2.2% of the initial sample –, and 214 mothers pregnant of twins (2.1%).

Data collection was carried out through three standardized questionnaires. The first one was administered to immediate postpartum women, the second one was filled out with data collected from medical records and the third one consisted of questions on the mother's and baby's conditions at discharge. Both the interviews of postpartum women and data collection from medical records were conducted by nursing and medicine grant students. The students received specific training and were aided by three field supervisors. Interviews were carried out daily, including weekends and holidays. The field team was in the facilities for the length of time needed to complete interviewing the required number of sampled postpartum women.

In bivariate analysis, maternal schooling was categorized in "up to incomplete middle school" and "complete middle school and beyond".

Skin color was defined by postpartum women when answering the question: "What is your skin color?" The following choices were offered: white, black, mulatto, and Asian.

The Kotelchuck index assesses adequacy of utilization of prenatal care services taking into account the number of visits and starting month pondered by gestational age. Leal et al<sup>12</sup> (2004) applied this score adjusted by the individual characteristics of postpartum women in Rio de Janeiro.

In the interview, postpartum women informed on any diseases they had during pregnancy. Those women diagnosed a having high blood pressure before pregnancy or who developed the disease during the current pregnancy or mentioned eclampsia were considered as having arterial hypertension. Similarly, pre-pregnancy and pregnancy diabetes cases were included as diabetes.

Statistical analysis was performed using the Chi-square test ( $\chi^2$ ) to test proportion homogeneity and  $\chi^2$  of linear trend to compare groups of mothers according to skin color and stratified by schooling. Student t-test was used to compare means.

The study was submitted to the Research Ethics Committee of *Escola Nacional de Saúde Pública* of

the *Instituto Oswaldo Cruz*. All postpartum women – or their tutors for those under legal age – sampled and selected to participate in the study were asked to sign an unconstrained informed consent form after being informed on study objectives.

## RESULTS

Table 1 shows that black and mulatto women face continuing adverse conditions when compared to white women. Teenage pregnancy was more frequently seen among black (24.5%), followed by mulatto women (22.3%). Black and mulatto women had lower schooling; only 1.3% black and 2.8% mulatto had completed university compared to 13.1% white women. Taken from the perspective of lack of schooling, the opposite is evidenced, i.e., black women were twice as likely to have less than four of schooling than mulatto and white women. Similar disparities are recurrently seen regarding occupation; 44.3% white women had paid occupations compared to 32.0% found for both mulatto and black women.

In regard to marital status, a higher percentage of white and mulatto women were living with their baby's father, 86.6% and 83.1%, respectively, compared to black women, 75.6%. Despite the fact that abortion

attempts and physical abuse during pregnancy were not high in the study population, the proportions among black women were more than twice as high as those found among white women, 9.1% and 5.1%, respectively. The variable number of children evidenced increasing differences from white to mulatto to black women. Smoking during pregnancy showed a comparable pattern and it was higher among mulatto (14.9%) and black (18.5%) than white women (10.3%).

Among diseases reported during pregnancy, hypertension and syphilis were less common among white women but there was no statistically significant difference for diabetes.

The modified Kotelchuck index, which provides a quantitative assessment of prenatal care, showed higher "adequate" and "more than adequate" scores among white than mulatto and black women.

Even though fewer women reported coming unaccompanied to the maternity hospital, those who did it were mostly mulatto and black. A high percentage of women were not able to get labor care in the first maternity hospital they turned to. Of all, 31.8% black, 28.8% mulatto, and 18.5% white women had to go from hospital to hospital to get care.

**Table 1** - Sociobehavioral and gestational characteristics, and access aspects among postpartum women according to skin color. Rio de Janeiro, Brazil, 1999-2001.

Variables	White %	Mulatto %	Black %	%	Total N	p-value
Age group						
<20 years	16.3	22.3	24.5	19.6	1,891	0.000
20-34 years	70.6	67.5	65.3	68.7	6,612	
35 years and over	13.1	10.2	10.1	11.7	1,126	
Maternal schooling						
Less than 4 <sup>th</sup> grade	5.8	10.6	13.9	8.7	839	0.000
4 <sup>th</sup> grade	22.9	39.4	42.4	31.4	3,019	
8 <sup>th</sup> grade	20.6	25.4	25.4	22.9	2,202	
High school	37.4	21.8	17.1	29.0	2,787	
University	13.1	2.8	1.3	7.9	756	
Paid occupation	44.3	31.9	32.5	38.5	3,706	0.000
Living with baby's father	86.6	83.1	75.6	83.5	8,033	0.000
Abortion attempt	3.5	5.9	9.1	5.3	506	0.000
Physically abused during pregnancy	2.0	3.1	5.1	2.9	277	0.000
Parity						
No previous child	45.1	37.5	33.6	40.7	3,918	0.000
1 to 2 children	43.6	45.5	44.1	44.2	4,260	
3 and more children	11.3	17.0	22.3	15.1	1,450	
Smoking during pregnancy	10.3	14.9	18.5	13.2	1,271	0.000
Arterial hypertension during pregnancy	8.3	10.7	14.1	10.1	960	0.000
Diabetes during pregnancy	1.6	1.8	2.2	1.7	165	0.100
Syphilis during pregnancy	0.8	1.9	3.0	1.5	143	0.000
Modified Kotelchuck index						
No prenatal care	2.5	4.7	6.7	3.9	356	0.000
Inadequate	19.7	29.5	36.3	25.6	2,331	
Intermediate	28.1	36.1	34.8	31.6	2,883	
Adequate	38.5	23.5	18.8	30.5	2,782	
More than adequate	11.3	6.2	3.4	8.4	762	
Came unaccompanied to the maternity hospital	3.1	3.7	4.9	3.6	346	0.000
Sought care in more than one maternity hospital	18.5	28.8	31.8	24.1	2,313	0.000
No anesthesia during delivery*	13.5	16.4	21.8	16.4	784	0.000
Type of provider						
Public	35.9	46.9	58.9	43.5	4,189	0.000
SUS-contracted	20.3	32.0	29.6	25.5	2,455	
Private	43.7	21.1	11.6	31.0	2,989	

\*C-sections were excluded

Anesthesia was widely administered in vaginal deliveries but a higher proportion of mulatto (16.4%) and black women (21.8%) did not have access to this medical practice.

A similar proportion of mulatto and white women came to the maternity hospital accompanied by their partners or family members but, unfavorably, 4.9% black women came unaccompanied. The variable "type of provider" underlines inequality in access to health services. Black and mulatto women were mostly attended at public facilities, 58.9% and 46.9%, respectively, and in SUS-contracted maternity hospitals, 29.6 and 32.0%. On the other hand, almost half of white women (43.7%) received care in private maternity hospitals.

Table 2 shows maternal characteristics according to skin color and stratified by schooling. The differences seen in Table 1 remain almost the same to all variables.

A low percentage of postpartum women with paid occupations were seen among those with basic schooling and no difference was found among black, mulatto and white women. However, among those who completed middle school and beyond, black and mulatto were those who had lower earnings. Living with the baby's father was less frequently seen among black

women, even after stratifying by maternal schooling. The same was true for physical abuse and any abortion attempts during pregnancy. Smoking during pregnancy was homogenous in the group with complete middle school and beyond but skin color differences persisted among lower schooling women. No matter what the level of schooling was, black and mulatto women also used less prenatal services, had more often to go from hospital to hospital to get labor care and more received no anesthesia. The mean weight at birth was significantly different among those with schooling below complete middle school. However, this difference ceases to exist when women with complete middle school and beyond are compared.

Table 3 shows maternal satisfaction with care provided by health services, according to skin color and stratified by schooling. Black and mulatto women reported been less satisfied than white women regarding prenatal, labor and newborn care. Taking into account schooling, satisfaction grows as schooling increases. Both low and high schooling white women reported to be more satisfied than black and mulatto women.

## DISCUSSION

The disadvantages evidenced among black and

**Table 2** - Sociobehavioral and gestational characteristics and access aspects among postpartum women according to skin color and stratified by schooling. Rio de Janeiro, Brazil, 1999-2001.

Variables	White %	Mulatto %	Black %	%	Total N	p-value
Maternal age						
<20 years old						
Incomplete middle school	14.6	20.9	23.5	18.1	1,741	0.000
Complete middle school and beyond	1.7	1.4	1.1	1.5	146	
35 years old and over						
Incomplete middle school	3.8	6.3	7.3	5.2	503	0.000
Complete middle school and beyond	9.2	3.8	2.8	6.4	615	
Paid occupation						
Incomplete middle school	25.9	24.0	27.1	25.5	1,548	0.582
Complete middle school and beyond	62.3	56.1	56.7	60.6	2,145	0.003
Living with baby's father						
Incomplete middle school	81.5	80.7	73.3	79.2	4,798	0.000
Complete middle school and beyond	91.5	90.1	85.7	90.7	3,207	0.001
Abortion attempt						
Incomplete middle school	6.0	7.1	10.4	7.5	451	0.000
Complete middle school and beyond	1.0	2.3	3.0	1.5	52	0.001
Physically abused during pregnancy						
Incomplete middle school	3.2	3.8	5.7	4.0	242	0.014
Complete middle school and beyond	0.8	0.7	2.1	0.9	33	0.143
Smoking during pregnancy						
Incomplete middle school	14.5	17.3	21.3	17.2	1,039	0.000
Complete middle school and beyond	6.1	6.9	6.3	6.3	221	0.643
Kotelchuck index (adequate and more than adequate)						
Incomplete middle school	24.4	20.6	16.5	21.2	1,188	0.000
Complete middle school and beyond	73.4	55.8	46.0	67.4	2,348	0.000
Sought care in more than one maternity hospital						
Incomplete middle school	27.8	33.8	33.9	31.4	1,901	0.000
Complete middle school and beyond	9.4	13.6	22.7	11.5	404	0.000
No anesthesia during delivery*						
Incomplete middle school	16.0	17.4	23.0	18.3	699	0.000
Complete middle school and beyond	6.7	9.0	12.9	8.2	78	0.012
Mean weight at birth (g)						
Incomplete middle school	3,184	3,155	3,121	3,158	5,856	0.007
Complete middle school and beyond	3,220	3,218	3,185	3,216	3,439	0.564

\*C-section were excluded

mulatto women went much beyond socioeconomic indicators and spread to maternal and fetal care. Given that hospital delivery care in Rio de Janeiro is universal – it is estimated that 99% are hospital deliveries –, the study findings can be applied to all postpartum women in the city.

It was evidenced that socioeconomic indicators deteriorated as skin color darkened, which corroborates Olinto & Olinto<sup>15</sup> (2000) findings while studying women in reproductive age in southern Brazil.

To start with current maternal age, the present study showed a higher proportion of pregnancies at more advanced ages among white women while a higher proportion of teenage pregnancies were found among black women. The negative aspects of early pregnancy are not limited to unfavorable effects to the newborn but affect other spheres of the mother's social life and results in school dropout, low professional qualification, and lower status in the job market, as verified by Gama et al<sup>6</sup> (2002). Having more children, to greater extent determined by an early start of reproductive life, is another element of the same phenomenon, which reinforces these women's social exclusion.

Low schooling among black women reflects greater inequalities in access to and stay in the educational system. In addition, it contributes to poor performance

in the job market. Among high schooling women, there were less mulatto and black women with formal jobs compared to white women, which is likely suggestive of discrimination in the job market. The same proportion of black and white women was found in the “up to complete basic schooling” group, indicating that there are fewer women with paid occupations in this group. Sansone<sup>16</sup> (1998) described the difficulty of getting into the job market in Salvador, state of Bahia, as one of the cruelest forms of racism seen in Brazil.

Not living with the baby's father was higher among black women, indicating that these women lack emotional and economic support, which is sometimes coupled to physical abuse they experience during pregnancy. All that, associated to higher parity seen among black and mulatto women, could potentially contribute to higher abortion attempts. Abortion attempts were three times more common among those reporting physical abuse (data available elsewhere). Hedin & Janson<sup>8</sup> (2000), while studying the prevalence of physical abuse among Swedish pregnant women, found that younger women of low socioeconomic status who were not living with a partner and had past history of abortion were more likely to be abused than those who did not have a past history of domestic violence.

In regard to health services, inequalities were verified in both access to adequate prenatal care and de-

**Table 3** - Maternal assessment regarding quality of prenatal, delivery and newborn care, according to skin color and stratified by schooling. Rio de Janeiro, Brazil, 1999-2001.

Variables	White	Mulatto	Black	p-value
<b>Prenatal care*</b>				
Average or poor				0,000
Incomplete middle school	13.8	15.7	17.1	
Complete middle school and beyond	3.5	7.1	7.9	
Good				0.000
Incomplete middle school	47.8	49.2	49.7	
Complete middle school and beyond	19.6	30.5	36.2	
Excellent				0.000
Incomplete middle school	38.4	35.0	33.2	
Complete middle school and beyond	76.9	62.4	55.9	
<b>Delivery care</b>				
Average or poor				0.003
Incomplete middle school	7.8	10.1	8.5	
Complete middle school and beyond	2.7	5.5	7.9	
Good				0.000
Incomplete middle school	47.8	49.8	54.7	
Complete middle school and beyond	18.8	29.3	32.9	
Excellent				0.000
Incomplete middle school	44.5	40.1	36.8	
Complete middle school and beyond	78.5	65.2	55.9	
<b>Newborn care**</b>				
Average or poor				0.005
Incomplete middle school	2.3	2.7	2.7	
Complete middle school and beyond	1.3	1.5	2.8	
Good				0.000
Incomplete middle school	53.5	55.0	59.5	
Complete middle school and beyond	20.9	33.7	42.0	
Excellent				0.000
Incomplete middle school	44.2	42.2	37.8	
Complete middle school and beyond	77.8	64.8	55.2	

\*Those who did not attend prenatal care were excluded in the analysis (N=320)

\*\*Stillborn mothers were excluded in the analysis (N=80)

livery care. Less than a fifth of low schooling black women attended adequate prenatal care and, even among those with high schooling, not even half of them benefited from prenatal care. A similar but slightly less marked pattern was seen among mulatto women. In a 1999 California study, Rittenhouse et al<sup>17</sup> (2003) found that, even though fewer black women attended prenatal care compared to white women, more than 80% of these women considered it adequate and more than adequate according to Kotelchuck index. These data indicate that, despite persisting discrepancies in prenatal care, black women in California who received poorer care, showed higher adequacy index than high schooling white women in Rio de Janeiro.

Almost a third of mulatto and black women did not get care in the first hospital they turn to and fewer received anesthesia during vaginal deliveries. Going from hospital to hospital illustrates the lack of acceptance by health facilities and lack of systematic delivery care planning in Rio de Janeiro, which has detrimental consequences for mother and fetus.

Despite the World Health Organization<sup>18</sup> (1996) does not recommend anesthesia as part of routine care in vaginal deliveries, the Ministério da Saúde<sup>14</sup> (1991), according to Decree 2.815 of 1998, supports this practice as part of a strategy to reduce anxiety about vaginal delivery and, therefore, reduce C-section rates. Similar to other studies, the present study has evidenced an association of this medical practice to women's socioeconomic status.<sup>13</sup> In the US, Hueston et al<sup>9</sup> (1994) also found higher administration of peridural anesthesia in white women who at the same time received more specialist care.

Smoking was higher among low schooling mulatto and black women. While investigating cigarette smoking during pregnancy between white and black women in Detroit, US, Andreski & Breslau<sup>2</sup> (1995) identified higher prevalence rates among black women, also associated to the level of schooling but differences between levels of schooling were less accentuated than among white women. The present study showed that existing differences in smoking during pregnancy ceased to exist among those of high schooling, showing how important education could be in the Brazilian reality to reduce skin color discrepancies of adverse pregnancy outcomes. Smoking is a well-known risk factor for low birth weight and respiratory conditions.<sup>4,19</sup>

Some North American authors have been calling attention to the fact that higher prevalence of risk behaviors such as smoking, alcohol, and illicit drug use among black pregnant women could be indica-

tive of stress resultant from racism, which could have harmful effects on their newborns.<sup>5</sup>

Anemia, arterial hypertension, and diabetes were the most common conditions seen in pregnancy.<sup>1</sup> In this study, arterial hypertension was almost 50% higher in black than white women. This inequality was thus reflected in the pregnancy outcome. Lower mean birth weights were found among low schooling mothers, and race was considered, birth weights were similar in high schooling women and low in low schooling dark skinned women when compared to white women.

Most postpartum women considered care provided by health services satisfactory, especially their newborn care. However, differentiated care was provided depending on women's schooling and skin color. Even though this kind of assessment does not examine the adequacy of care provided since these clients lack proper technical knowledge to determine what should be offered, it is yet an important element to assess health services from users' perspective. The distinct perception of quality of care provided among those of low schooling, showing an increasing tendency for mulatto and black women, could be understood as an expression of inequality of care provided by health services to less socially privileged groups, allied to a negative distinction of dark skinned women.

As a conclusion, it is evidenced that on one extreme are high schooling white women who have paid occupations and live with their baby's father while on the other extreme are low schooling black women. The opposite is seen in regard to negative variables. Physical abuse, smoking and abortion attempts were more frequently seen among low schooling black women, followed by mulatto and white women, then by high schooling black and mulatto women and, lastly, high schooling white women.

Women were also discriminated according to their skin color and schooling in health services. They had less access to adequate prenatal care as recommended by the Ministério da Saúde (Brazil). At delivery time, they suffered more tribulations because they were not admitted in the first maternity hospital they turned to and less anesthesia during delivery. These differences in care provided were captured by women when they evaluated the quality of services delivered. The same pattern by skin color and schooling was again observed concerning health services.

It has to be stressed that discrimination occurs at two levels in the Brazilian society, educational and racial, reaching out care provided by health services to postpartum women in Rio de Janeiro. These find-

ings should be conveyed to policymakers to be incorporated in training activities of health providers about rendering care more human to pregnant women.

Self-reporting of skin color was one of the study limitations since it implies in subjective perception and varies according to social inclusion.

## REFERÊNCIAS

1. Anderson AD, Lichorad A. Hypertensive disorders, diabetes mellitus and anemia: three common medical complication of pregnancy. *Prim Care* 2000;27:185-201.
2. Andreski P, Breslau N. Maternal smoking among Blacks and Whites. *Soc Sci Med* 1995;41:227-33.
3. Bhopal R. Is research into ethnicity and health racist, unsound, or important science? *BMJ* 1997;314:1751-6.
4. Brown MA, Halonen M. Perinatal events in the development of asthma. *Curr Opin Pulm Med* 1999;5:4-9.
5. Collins JW Jr, David RJ, Symons R, Handler A, Wall SN, Dwyer L. Low-income African-American mother's perception of exposure to racial discrimination and infant birth weight. *Epidemiol* 2000;11:337-9.
6. Gama SGN, Szwarcwald CL, Leal MC. Experiência de gravidez na adolescência, fatores associados e resultados perinatais entre puérperas de baixa renda. *Cad Saúde Pública* 2002;18:153-61.
7. Guest AM, Almgren G, Hussey JM. The ecology of race and socioeconomic distress: infant and working-age mortality in Chicago. *Demography* 1998;35:23-34.
8. Hedin LW, Janson PO. Domestic violence during pregnancy. The prevalence of physical injuries, substance use, abortions and miscarriages. *Acta Obstet Gynecol Scand* 2000;79:623-4.
9. Hueston WJ, McClafflin RR, Mansfield CJ, Rudy M. Factors associated with the use of intrapartum epidural analgesia. *Obstet Gynecol* 1994;84:579-82.
10. Krieger N. Does racism harm health? Did child abuse exist before 1962? On explicit questions, critical science, and current controversies: an ecosocial perspective. *Am J Public Health* 2003;93:194-9.
11. Leal MC, Gama SGN, Campos MR, Cavalini LT, Garbayo LS, Brasil CLP et al. Fatores associados à morbi-mortalidade perinatal em uma amostra de maternidades públicas e privadas do Município do Rio de Janeiro, 1999-2001. *Cad Saúde Pública* 2004;20(Supl 1):20-33.
12. Leal MC, Gama SGN, Ratto KMN, Cunha CB. Uso do índice de Kotelchuck modificado na avaliação da assistência pré-natal e sua relação com as características maternas e o peso do recém-nascido no município do Rio de Janeiro. *Cad Saúde Pública* 2004;20(Supl 1):63-72.
13. Morgan B, Bulpitt CJ, Clifton P, Lewis PJ. Effectiveness of pain relief in labor: survey of 1000 mothers. *BMJ* 1982;285:689-90.
14. Ministério da Saúde. Assistência Institucional ao parto, ao puerpério e ao recém-nascido. Brasília (DF); 1991.
15. Olinto MTA, Olinto BA. Raça e desigualdade entre as mulheres: em exemplo no sul do Brasil. *Cad Saúde Pública* 2000;16:1137-42.
16. Sansone L. As relações raciais em Casa-Grande & Senzala revisitadas à luz do processo de internacionalização e globalização. In: Maio MC, Santos RV, organizadores. Raça, ciência e sociedade. Rio de Janeiro: Fiocruz; 1998. p. 207-18.
17. Rittenhouse DR, Braveman P, Marchi K. Improvements in prenatal insurance coverage and utilization of care in California: an unsung public health victory. *Matern Child Health J* 2003;7:75-86.
18. [WHO] World Health Organization. Maternal and newborn health, safe motherhood unit, family and reproductive health. Care in normal birth: a practical guide. Genebra: WHO; 1996.
19. Windham GC, Eaton A, Hopkins B. Evidence for an association between environmental tobacco smoke exposure and birthweight: a meta-analysis and new data. *Paediatr Perint Epidemiol* 1999;13:35-57.