







Perinatal results and first-year of life according to maternal skin color: a cohort study

Resultados perinatais e do primeiro ano de vida segundo cor da pele materna: estudo de coorte
Resultados perinatales y del primer año de vida según el color de la piel materna: estudio de cohorte

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ABSTRACT

Objective: To analyze the maternal characteristics and perinatal and the first year outcomes of life according to the self-reported color of the mothers. **Method:** Cohort study with mothers and their babies developed in a city in the interior of São Paulo. Follow-up occurred from June 2015 to February 2017. Data were collected at five moments: in the first month and at three, six, nine and 12 months of the child's life. Sociodemographic variables related to prenatal and delivery were included in the study. Among the perinatal outcomes, we analyzed the birth weight and the need for hospitalization in neonatal units; for the outcomes of the first year of life, the occurrence of respiratory infection and the breastfeeding duration were measured. **Results:** A total of 507 mothers participated in the study. Black/brown women presented an unfavorable socio-demographic situation when compared to white women. The only more favorable outcome among black/brown women was the breastfeeding duration. **Conclusion:** Despite the unfavorable socio-demographic situation considering the selected outcomes, black/brown women did not have worse results. The hypothesis that the quality of care may negate the negative effects of their sociodemographic conditions needs to be tested in future studies.

DESCRIPTORS

African Continental Ancestry Group; Maternal-Child Nursing; Perinatal Care; Breast Feeding.

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INTRODUCTION

One of the principles of the Unified Health System (*SUS – Sistema Único de Saúde*) is that of equity, which deals with adapting rules to special situations in order to make such rules more just and egalitarian. Thus, individuals and populations with socio-cultural vulnerabilities can obtain due and differentiated attention according to their needs and demands⁽¹⁾.

The principle of equity is not always practiced in Brazilian health institutions and this does not happen by chance. The social history of the country was built on the basis of inequality, with prejudice against the black population, which has always been less economically favored and often subjected to precarious living conditions. This situation has remained for more than three centuries and is perceived by an often silent racism identified in the country. Despite all the progress in Brazil's political, economic and social process since abolitionism, which has had the premise to extinguish the most perverse form of exploitation of a population, the mobilization and struggle of the black population is still necessary in order to reduce inequalities and claim the right to equity⁽²⁾.

In spite recent advance in Brazilian public policies, in the sense of incorporating affirmative action proposals that promote racial equality and for women in different social contexts, inequalities are still present⁽³⁾.

The historical persistence of unfavorable conditions can be easily evidenced when considering several negative indicators among the black population: high rates of early death, maternal and infant mortality, chronic and infectious diseases, and urban violence⁽²⁾. A 2003 survey by the Brazilian Ministry of Health on the profile of the Brazilian population using race/color as an indicator showed a higher frequency of hypertensive black women in comparison to the others studied, as well as a higher risk of infant mortality due to infectious and parasitic diseases of black children compared to white children⁽⁴⁾.

A Brazilian study published in 2016, with population data on infant mortality and considering color/race, also resulted in a higher prevalence of mortality among black children. Among the deaths of children under one year, 61.8% were black and brown⁽⁵⁾.

In the context of equity and as a consequence of the historical struggle for the democratization of health conducted by social movements, especially the black movement, the National Black People's Health Policy (*PNSPN – Política Nacional de Saúde da População Negra*) was proposed in 2006, as a result of the pact and commitment assumed by the Ministry and the Special Secretariat for Policies to Promote Racial Equality. The objective of this Policy is to overcome situations of vulnerability linked to health that reach a significant part of the Brazilian population, the black population, and for this purpose proposes to routinely approach color or race in health services⁽²⁾.

However, the identification of color and race is not only relevant in the health area. There is a growing interest in various sectors of society to obtain this data in order to

clarify the racial disparity that may exist so that the means to overcome it can be sought⁽⁶⁾. The present study focuses on women who self-refer to themselves and their children as black or brown, specifically the birth conditions and events occurring in the first year of life of the children. Thus, it aims to contribute to understanding the health conditions of the child in the first year of life according to maternal skin color, since the outcomes to be analyzed make up relevant epidemiological indicators⁽⁷⁾.

It is known that socio-demographic, economic, cultural, biological and welfare conditions not only directly influence the conditions of birth, but throughout life, and that variations at birth may be related to ethnic, social class and region of residence conditions⁽⁸⁾. Moreover, it is possible to relate the quality of prenatal care and women's access to perinatal services – those which attend the mother-baby binomial from the 22nd week of gestation until the seventh day after birth⁽⁹⁾ – to the birth conditions of the newborn⁽¹⁰⁾.

Therefore, the objectives of this study are: to analyze the perinatal outcomes and the first year of life according to the skin color self-reported by the mothers. Among the perinatal outcomes, we assessed the birth weight and the need for hospitalization in the Intermediate Care Unit (ICU) or Neonatal Intensive Care Unit (NICU); and regarding the first year of life, the presence of infection was included during this period and the practice of breastfeeding at 12 months. The hypothesis being tested is: maternal-infant binomials with black or brown skin color have worse outcomes considering the perinatal period and the first year of life.

METHOD

STUDY DESIGN

This is a prospective cohort study and integrates a broad study entitled "Child Health in the first year of life: a prospective cohort study in the interior of São Paulo", which composes the Botucatu infant cohort (CLaB study).

SCENARIO

The research scenario is the municipality of Botucatu, located in the center-west of the state of São Paulo, with an estimated population of 141,032 thousand inhabitants in 2016⁽¹¹⁾. The invitation to participate in the study was performed during a neonatal screening public service offered by the Municipal Health Secretariat which was extended to all newborns whose births occurred in the two maternity hospitals of the municipality, one public and the other private.

SAMPLE

Intentional sampling was performed for all mothers residing in Botucatu who had babies born alive in the period from June 29, 2015 to January 11, 2016.

SELECTION CRITERIA

In total, 923 mothers were approached in the neonatal screening service, of which 138 (15%) were not eligible

because they lived in remote locations such as rural areas and districts, which made it difficult for the interviewers to reach the household; 129 (14%) refused to participate, resulting in 656 children included in the cohort and followed-up during the first year of life. However, only 507 mothers/infants were included for this article, because they had all the information collected, which guarantees greater dependability in the findings. Of these, 331 mothers self-referred as white, and 176 as black or brown.

DATA COLLECTION

At the moment of inclusion in the cohort (M1), data sources were the data sheet of the children in the neonatal screening service, the pregnant woman's health card, the baby's carnet and the interview with the mothers. Data were collected identifying the binomial, referring to previous gestational history, the current gestational history, the birth, the birth conditions and the care provided to the baby. Data collection included four other moments in order to obtain information on breastfeeding and morbidity: M2 to M5, at home, and in the third, sixth, ninth and 12th months of the child's life.

All the instruments used in the data collection were specifically constructed for this study and tested in a pilot study in order to adjust any issues which could present difficulties. Data collection was performed by a suitably trained team, remunerated and supervised by a nurse who was a doctorate student at the Botucatu Medical School, in partnership with the Public Health Research Unit (*UPESC – Unidade de Pesquisa em Saúde Coletiva*) of the same Faculty.

The integrity of the interviews was verified by phone in a random sample of 5% of the participants through re-interviews performed by the field supervisor, who was also responsible for verifying inconsistencies and correcting the database.

The characterization variables of the mother were: age in years (up to 19, 20 or more); years of school finished (up to 7, 8 or more); marital status (with partner, without partner); maternal work (yes, no); family income per capita in minimum salaries (up to one, more than one); number of previous pregnancies (zero, one or more); number of prenatal visits (up to five, six or more); prenatal referral (yes, no); prenatal care in the public service (yes, no); type

of delivery (normal, cesarean section); delivery in a public health service (yes, no); gestational age at delivery, in weeks (up to 36, 37 or more).

The following outcomes were observed: birth weight (continuous variable); hospitalization in a Progressive Care Unit (PCU) or Intensive Care Unit (ICU) (yes, no); respiratory infection in the first year of life (yes, no), and breastfeeding during 12 months of life (yes, no).

DATA ANALYSIS AND PROCESSING

A chi-squared test was performed in the data analysis in order to compare the sociodemographic, prenatal and delivery characteristics of the mothers considering skin color, which was corrected for each variable of interest when necessary.

For the analysis of the relationship between birth weight, ICU or PCU hospitalization, respiratory infection in the first year and maternal breastfeeding during 12 months of life according to self-reported skin color, an adjustment of normal or multiple logistic regression models was performed for the outcomes according to the most strongly associated explanatory variables ($p < 0.20$) when analyzed independently. In this case, the variables age and years of school completed of the mother, per capita family income, number of previous pregnancies, prenatal consultations and gestational age at birth were considered continuously, while the others were dichotomously inserted in the model. Associations were considered statistically significant if $p < 0.05$. The analyzes were performed using the Statistical Package for the Social Sciences (SPSS v21.0) software.

ETHICAL ASPECTS

In accordance with the national and international human research guidelines of the Council for the International Organization of Medical Sciences and Resolution no. 466/12 of the National Health Council, the present study was submitted to the Research Ethics Committee of the Faculty of Medicine of Botucatu, with approval on May 05, 2017 (Opinion no. 2.312.323 and CAAE: 67214217.5.0000.5411).

RESULTS

The maternal characteristics are shown in Table 1.

Table 1 – Maternal sociodemographic, prenatal and childbirth characteristics according to the skin color self-reported by the mother – Botucatu, SP, Brazil, 2015-2017.

Variables	Skin color				P	OR(CI95%)
	Black/Brown (n=176)		White(n=331)			
	N	%	N	%		
Age (years)						
Up to 19	23	13.1	52	15.7	0.425	0.80(0.47-1.36)
20 or older	153	86.9	279	84.3		
Years of school completed						
Up to 7	21	11.9	23	6.9	0.058	1.81(0.97-3.38)

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8 or more	155	88.1	308	93.1		
Conjugal situation						
With partner	148	84.1	291	87.9	0.191	0.70(0.41-1.19)
Without partner	28	15.9	40	12.1		
Work						
Yes	94	53.4	191	57.7	0.289	0.82(0.56-1.18)
No	82	46.6	140	42.3		
Per capita Family income						
Up to one minimum salary	160	90.9	244	73.7	<0.001	3.56(2.01-6.30)
> one minimum salary	16	9.1	87	26.3		
Number of previous gestations						
Zero	71	40.3	150	45.3	0.204	0.78(0.54-1.14)
One or more	105	59.7	181	54.7		
Prenatal consultations						
Up to 5	18	10.2	26	7.8	0.588	1.18(0.64-2.20)
6 or more	158	89.8	305	92.2		
Prenatal referral						
Yes	23	13.1	36	10.9	0.401	1.27(0.72-2.23)
No	153	86.9	295	89.1		
Prenatal care in the public service						
Yes	140	79.5	204	61.6	<0.001	2.51(1.64-3.85)
No	36	20.5	127	38.4		
Birth type						
Normal	93	52.8	149	45.0	0.138	0.76(0.52-1.09)
Cesarean	83	47.2	182	55.0		
Childbirth in the public service						
Yes	141	80.1	210	63.4	<0.001	0.41(0.27-0.64)
No	35	19.9	121	36.6		
Gestational age at childbirth						
Up to 36 weeks	12	6.8	10	3.0	0.837	1.08(0.52-2.25)
≥ 37 weeks	164	93.2	321	97.0		

The variables most strongly associated with skin color were: completed schooling years, marital status, income, prenatal location, type and place of birth. Black and brown women have lower education ($p = 0.058$, $OR = 1.81$, $95\% CI = 0.97-3.38$); less frequently have a partner ($p = 0.191$, $OR = 0.70$, $95\% CI = 0.41-1.19$); have more frequently a per capita income lower than a minimum wage ($p = <0.001$, $OR = 3.56$, $95\% CI = 2.01-6.30$); do more prenatal care in the public service ($p = <0.001$, $OR = 2.51$, $95\% CI = 1.64-3.85$); and more frequently have a normal delivery ($p = 0.138$, $OR = 0.76$, $95\% CI = 0.52-1.09$) performed in the public health service ($p = 0.001$, $OR = 0.41$, $95\% CI = 0.27-0.64$) when compared to white women (Table 1).

Table 2 relates to the birth weight of the newborn considering maternal skin color.

Table 2 – Birth weight of the newborn considering the skin color self-reported by the mother – Botucatu, SP, Brazil, 2015-2017.

Variable	β	CI 95%	P
Maternal education	0.13	5.8 to 42.9	0.010
Presence of a companion	0.06	-34.7 to 213.2	0.158
Per capita family income	-0.05	-0.1 to 0.2	0.284
Prenatal care in the public health service	0.06	-156.4 to 279.8	0.579
Normal birth	0.08	-10.9 to 179.8	0.083
Birth in a private health service	-0.20	-431.0 to 19.0	0.073
Black skin color	0.01	-79.1 to 97.9	0.835

The weight of the newborn did not change when the mother's skin color was considered: $p = 0.835$ (Table 2).

Table 3 refers to the need for ICU/PCU admission at birth, considering maternal skin color.

Table 3 – ICU/PCU admission at birth, considering the skin color self-reported by the mother – Botucatu, SP, Brazil, 2015-2017.

Variable	OR	CI 95%	P
Maternal education	0.94	0.82-1.08	0.402
Presence of a companion	0.48	0.21-1.08	0.078
Per capita family income	1.00	1.00-1.01	0.183
Prenatal care in the public health service	8.17	1.05-63.18	0.044
Normal birth	2.21	1.08-4.53	0.030
Birth in a private health service	1.75	0.25-12.07	0.568
Black skin color	1.11	0.55-2.23	0.759

The need for ICU/PCU admission did not vary when considering the mother's skin color: $p = 0.759$ (Table 3).

Table 4 refers to the occurrence of respiratory infection in the first year of life, considering maternal skin color.

Table 4 – Respiratory infection in the first year of the child's life considering the skin color self-reported by the mother – Botucatu, SP, Brazil, 2015-2017.

Variable	OR	CI 95%	P
Maternal education	0.91	0.82-0.99	0.043
Presence of a companion	0.61	0.35-1.07	0.089
Per capita family income	1.00	0.99-1.00	0.150
Prenatal care in the public health service	0.52	0.18-1.46	0.218
Normal birth	0.92	0.58-1.47	0.755
Birth in a private health service	1.02	0.35-2.95	0.970
Black skin color	1.30	0.86-1.98	0.209

The occurrence of respiratory infection in the first year of life did not vary when the mother's skin color was considered: $p = 0.209$ (Table 4).

Table 5 refers to breastfeeding at the end of the first year of life.

Table 5 – Breastfeeding at the end of the first year of life, considering the skin color self-reported by the mother – Botucatu, SP, Brazil, 2015-2017.

Variable	OR	CI 95%	P
Maternal education	1.03	0.92-1.16	0.594
Presence of a companion	1.29	0.58-2.85	0.521
Per capita family income	1.00	0.99-1.00	0.291
Prenatal care in the public health service	1.05	0.26-4.26	0.947
Normal birth	1.02	0.53-1.94	0.957
Birth in a private health service	0.98	0.23-4.21	0.987
Black skin color	2.26	1.15-4.44	0.018

With regard to breastfeeding, black and brown women are more likely to breastfeed their babies until the 12th month of life when compared to those who referred to themselves as white: OR = 2.26; 95% CI = 1.15-4.44; $p = 0.018$ (Table 5).

DISCUSSION

Black and brown mothers have worse sociodemographic conditions (less education, less frequently have a partner and are more often attended in the public health service), confirming one of the presented hypotheses. However, the other hypotheses were refuted, since there was no difference when considering birth weight, the need for ICU/PCU hospitalization, and the occurrence of respiratory disease in the first year of life among children of black and brown mothers compared to white. Regarding breastfeeding at 12 months, a better result was found among black and brown mothers.

The fact that data were collected at five times during the first year after the birth of the child is positive, since it reduces the chance of misinformation from the mothers in relation to the late outcomes. Another positive fact is the small rate of refusals and losses, which can be frequent in cohort studies. These aspects speak in favor of the validity of the obtained results.

Despite worse sociodemographic conditions when considering the studied outcomes, black and brown mothers had equal or better results than white mothers. The lack of consensus between this data and the literature is important, as it often highlights the unfavorable health conditions of the black population⁽²⁾. An explanatory hypothesis for these findings may be related to the place of care of the great majority of black women, both in prenatal care and delivery: the public health service. Thus, it is suggested that future studies related to race/color address the quality of health services available to this population group, and possibly if quality care can cancel out possible negative effects of worse social conditions.

Regarding breastfeeding, a national based study aimed at evaluating the prevalence of breast milk consumption up to 2 years and associated factors found a significant association and higher prevalence of breastfeeding among children of black mothers aged six months to 11 months and 29 days. This fact was explained by the social inequalities: less access to food makes breast milk the only nutritional source for the children of black mothers as a consequence of the lower socioeconomic level of these women⁽¹²⁾. A better situation among black women was also found in a study about the duration of this practice between the years 1960 and 2000 in Brazil: those who declared themselves to be black presented better results regarding breastfeeding, both when compared to white women, and compared to women of brown color⁽¹³⁾.

Despite this better result among black women, the situation of breastfeeding at 12 months falls short of international recommendations⁽¹⁴⁾. Thus, it is pertinent to plan nursing care to be mainly focused on the actions of childcare, with a view to promoting and supporting breastfeeding for all women, but especially for white women, since only one third among them were breastfeeding until the end of the child's first year of life.

Black and brown women in this study have lower levels of education when compared to white women, as in almost every country⁽¹⁵⁾. Even in face of data scarcity, studies indicate that the highest rates of illiteracy, late school enrollment, and higher dropout and repetition rates are among the black population⁽²⁾.

Black women also have more vaginal births. This association was evidenced in a study with the objective to analyze differences in prenatal care and delivery in the Unified Health System according to race/color based on data from the Research of the Active Ombudsman of the Stork Network (*Pesquisa da Ouvidoria Ativa da Rede Cegonha*). A statistically significant difference was observed in relation to vaginal delivery, since the proportion of this type of delivery was higher in black women⁽¹⁶⁾.

Since the benefits of support offered by a companion are varied, there is a lack of companion more frequently observed among the black and brown women of this study, and constitutes a negative factor for the development of pregnancy, childbirth and the puerperium period. Factors associated with the presence of partners include: increased vaginal births and decreased labor time, aspects favoring the recovery of women in the puerperium, and consequently care of the newborn in the postpartum period⁽¹⁷⁾. Specifically, a lack of partner is unfavorable to

the breastfeeding process and for caring for the baby in the first year of life⁽¹⁸⁾.

A limitation of this study is the absence of indicative variables of the quality of care developed, which could contribute to expanding the performed analysis on the care provided to the mother-baby binomial according to skin color. However, the breadth of socio-demographic variables and the presence of traditional prenatal and delivery indicators, recognized as being associated with the studied outcomes, reduce the chances that the presented results are confused by factors which were not considered.

CONCLUSION

Mothers who self-referred as being black or brown had unfavorable sociodemographic characteristics when compared to those with white skin color, specifically regarding education and the presence of a companion. These women were more frequently attended in prenatal and delivery in public services and more frequently evolved to vaginal delivery. Despite the poor sociodemographic conditions among black and brown women, skin color was not associated with birth weight, the need for admission after childbirth to the ICU/PCU, or the occurrence of respiratory infection in the first year of life. However, black women are more often breastfeeding at the end of the child's first year of life.

RESUMO

Objetivo: analisar as características maternas e desfechos perinatais e do primeiro ano de vida segundo a cor da pele autorreferida pelas mães. **Método:** estudo de coorte com 507 mães e seus bebês, desenvolvido em município do interior paulista. O seguimento ocorreu de junho de 2015 a fevereiro de 2017. Os dados foram coletados em cinco momentos: no primeiro mês e aos três, seis, nove e 12 meses de vida da criança. Foram incluídas no estudo variáveis sociodemográficas, relativas ao pré-natal e parto. Entre os desfechos perinatais foram analisados o peso ao nascer e a necessidade de internação em unidades neonatais e entre os desfechos do primeiro ano de vida, ocorrência de infecção respiratória e a vigência de aleitamento materno. **Resultados:** mulheres pretas/pardas apresentam situação sociodemográfica desfavorável quando comparadas às brancas. O único desfecho associado à cor da pele foi a vigência de aleitamento materno, mais favorável entre as mulheres pretas/pardas. **Conclusão:** apesar da situação sociodemográfica desfavorável, considerando os desfechos selecionados, mulheres pretas/pardas não tiveram piores resultados. A hipótese de que a qualidade do atendimento pode anular os efeitos negativos de suas condições sociodemográficas precisa ser testada em futuros estudos.

DESCRITORES

Grupo com Ancestrais do Continente Africano; Enfermagem Materno-Infantil; Assistência Perinatal; Aleitamento Materno.

RESUMEN

Objetivo: Analizar las características maternas y los resultados perinatales y del primer año de vida según el color de la piel autorreferida por las madres. **Método:** Estudio de cohorte con madres y sus bebés, desarrollado en un municipio del interior del Estado de São Paulo. El seguimiento ocurrió de junio de 2015 a febrero de 2017. Los datos fueron recogidos en cinco momentos: al primer mes y a los tres, seis, nueve y 12 meses de vida del niño. Fueron incluídas en el estudio variables sociodemográficas, relacionadas con el prenatal y el parto. Entre los resultados perinatales, fueron analizados el peso al nacer y la necesidad de hospitalización en unidades neonatales, y entre los resultados del primer año de vida, ocurrencia de infección respiratoria y la vigencia de la lactancia. **Resultados:** Participaron en el estudio 507 madres. Mujeres negras/mestizas presentaron situación sociodemográfica desfavorable cuando comparadas con las blancas. El único resultado más favorable entre las mujeres negras/mestizas fue la vigencia de lactancia. **Conclusión:** A pesar de la situación sociodemográfica desfavorable, considerando los resultados seleccionados, mujeres negras/mestizas no tuvieron peores resultados. El supuesto de que la calidad de la atención puede anular los efectos negativos de sus condiciones sociodemográficas necesita probarse en futuros estudios.

DESCRIPTORES

Grupo de Ascendencia Continental Africana; Enfermería Maternoinfantil; Atención Perinatal; Lactancia Materna.

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