cidacs
Centro de Integração de Dados e Conhecimentos para Saúde

Ministério da Saúde
FIOCRUZ
Fundação Oswaldo Cruz
Instituto Gonçalo Moniz

Ethno-racial inequalities and health in Brazil

Racial and ethnic classifications in epidemiology - global perspectives

Mauricio L. Barreto

WCE
WORLD CONGRESS OF EPIDEMIOLOGY 2024

Brazil in a nutshell

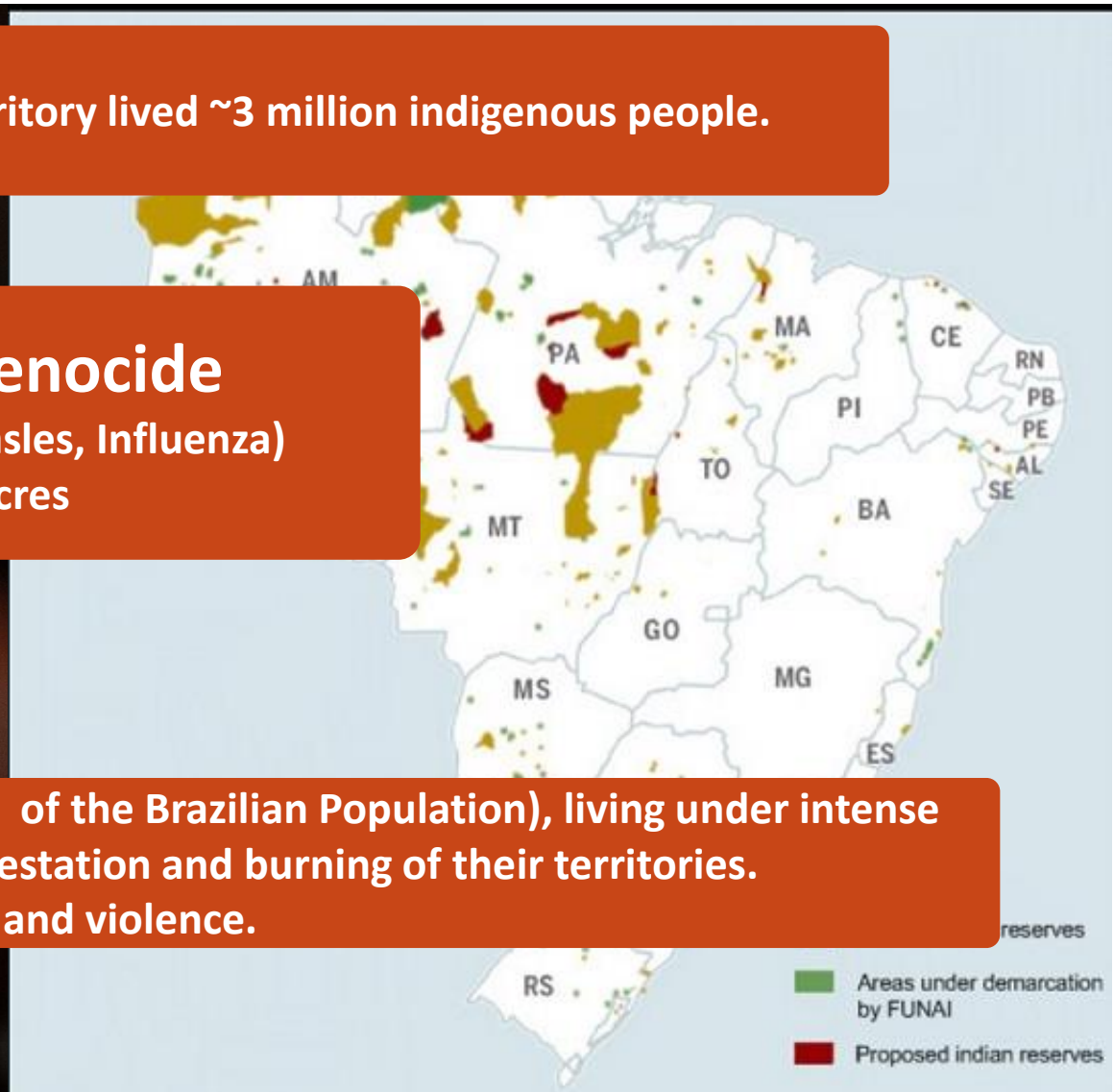
- That largest Latin American country (8.5 million Km^2)
- Population of ~215 million inhabitants
- Colonized by Portuguese in the 16th century
- Gained independence in 1822 and became a Republic in 1889
- Tradition of authoritarian governments, with alternating periods of democracy.

Original Population

At the start of colonization (1500), in the Brazilian territory lived ~3 million indigenous people.

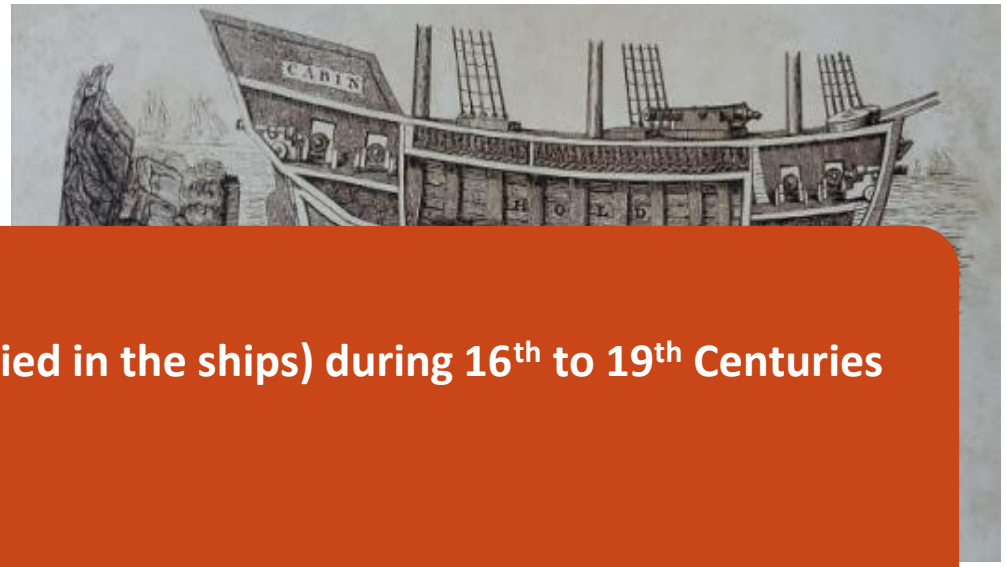
Indigenous Genocide

Diseases (smallpox, measles, Influenza)
Wars, massacres



Nowadays, indigenous population is less than 1 million (0.5% of the Brazilian Population), living under intense pressure of land invasions, increasing mining, deforestation and burning of their territories.
Escalating land insecurity and violence.

Slave Trade

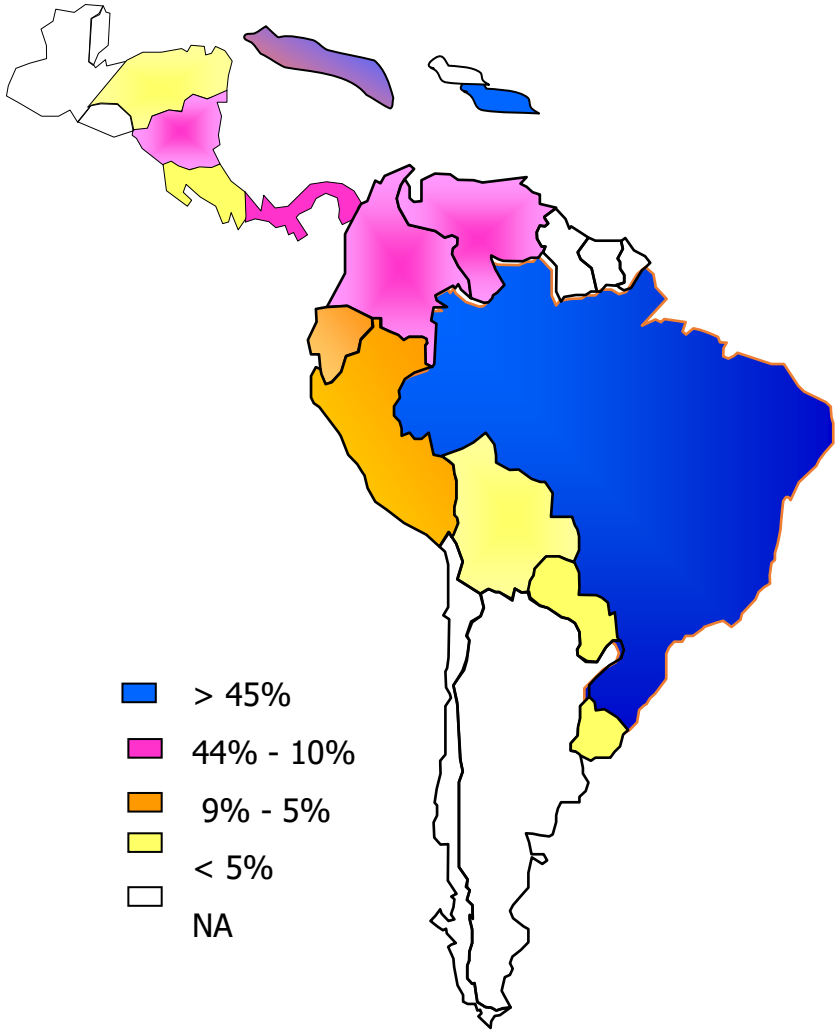


~5 million enslaved people arrived from Africa (other million (~20%) died in the ships) during 16th to 19th Centuries

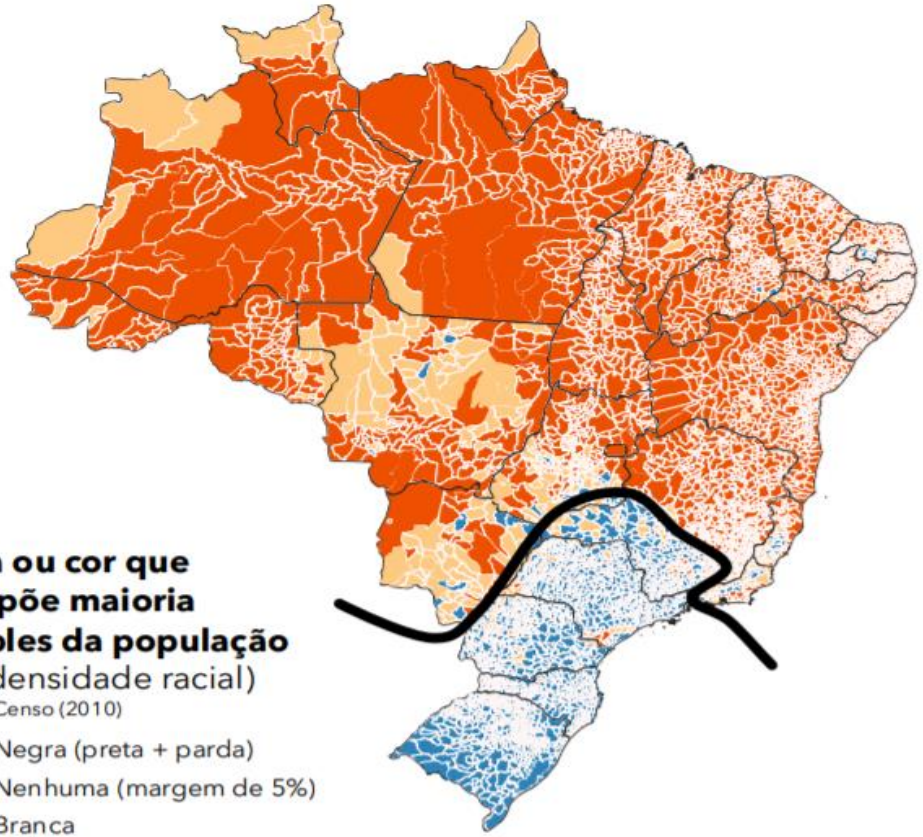
By 1850 stop slavery traffic

1888 slavery ended. But, enslaved people were freed without land, housing, education, job or any other basic rights.

Percentage share of Afro-Latin American population by country



→ Mapa de densidade racial da população brasileira



Fonte: Censo (2010). Elaboração dos autores.

Origin and dynamics of admixture in Brazilians and its effect on the pattern of deleterious mutations

Fernanda S. G. Kehdy[a,1], Mateus H. Gouveia[a,1], Moara Machado[a,1], Wagner C. S. Magalhães[a,1], Andrea R. Horimoto[b], Bernardo L. Horta[c], Rennan G. Moreira[a], Thiago P. Leal[a], Marilia O. Scliar[a], Giordano B. Soares-Souza[a], Fernanda Rodrigues-Soares[a], Gilderlanio S. Araújo[a], Roxana Zamudio[a], Hanaisa P. Sant Anna[a], Hadassa C. Santos[b], Nubia E. Duarte[b], Rosemeire L. Fiaccone[d], Camila A. Figueiredo[e], Thiago M. Silva[f], Gustavo N. O. Costa[f], Sandra Beleza[g], Douglas E. Berg[h,i], Lilia Cabrera[j], Guilherme Debortoli[k], Denise Duarte[l], Silvia Ghirotto[m], Robert H. Gilman[n,o], Vanessa F. Gonçalves[p], Andrea R. Marrero[k], Yara C. Muniz[k], Hansi Weissensteiner[q], Meredith Yeager[r], Laura C. Rodrigues[s], Mauricio L. Barreto[f], M. Fernanda Lima-Costa[t,2], Alexandre C. Pereira[b,2], Maíra R. Rodrigues[a,2], Eduardo Tarazona-Santos[a,2,3], and The Brazilian EPIGEN Project Consortium[4]

Proc Natl Acad Sci U S A. 2015 Jul 14;112(28):8696-701.

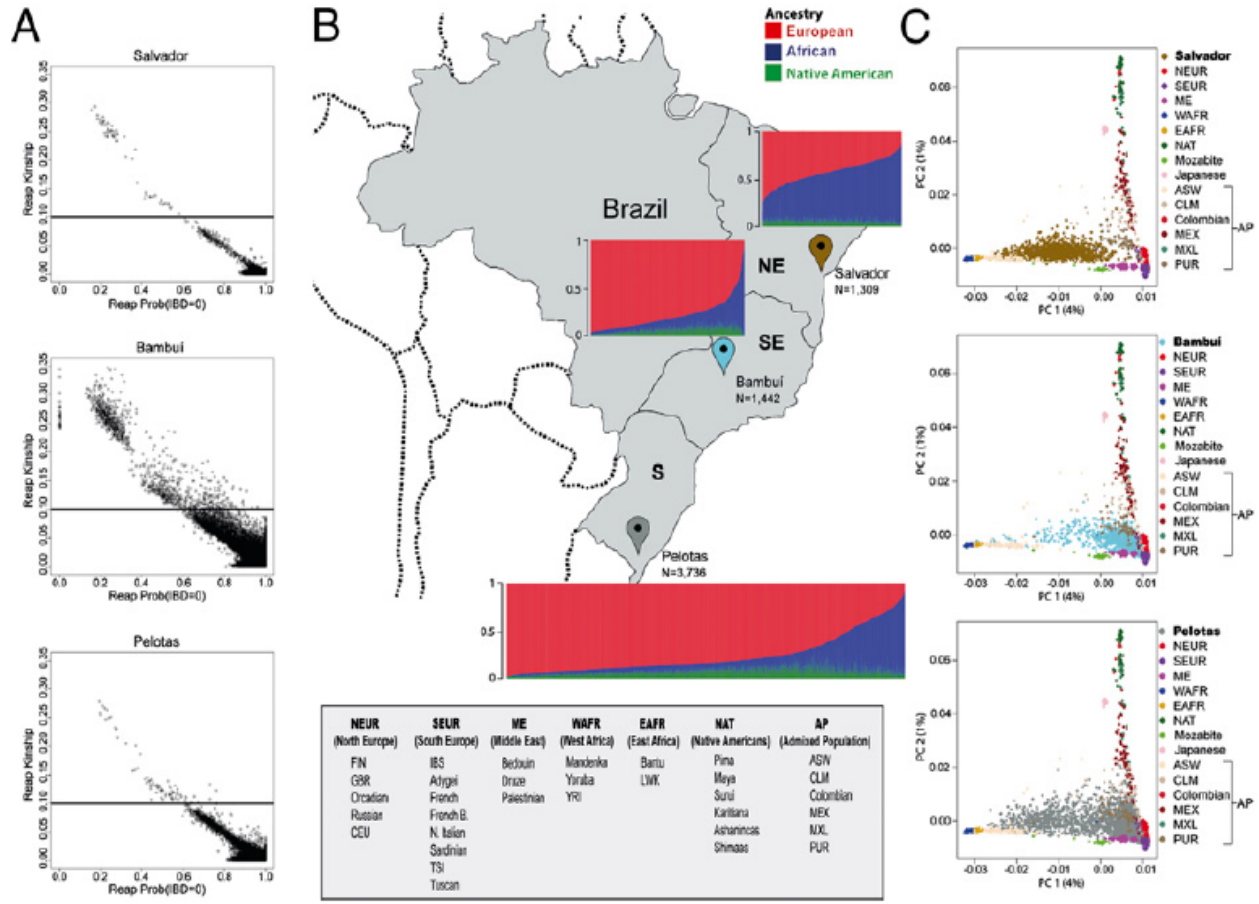


Fig. 1. Continental admixture and kinship analysis of the EPIGEN Brazil populations. (*A*) Kinship coefficient for each pair of individuals and the probability that they share zero identity by descent (IBD) alleles (IBD = 0). Horizontal lines represent a kinship coefficient threshold used to consider individuals as relatives. (*B*) Brazilian regions, the studied populations, and their continental individual ancestry bar plots. *N* represents the numbers of EPIGEN individuals in the Original Dataset (including relatives; detailed in *SI Appendix*, section 6). (*C*) PCA representation, including worldwide populations and the EPIGEN populations, using only unrelated individuals (Dataset U; explained in *SI Appendix*, section 6). The three graphics derive from the same analysis and are different only for the plotting of the EPIGEN individuals. AP, admixed population; ASW, Americans of African ancestry in USA; CEU, Utah residents with Northern and Western European ancestry; CLM, Colombians from Medellin, Colombia; EAFR, east Africa; FIN, Finnish in Finland; French B, Basque; GBR, British in England and Scotland; IBS, Iberian population in Spain; LWK, Luhya in Webuye, Kenya; ME, Middle East; MXL/MEX, Mexican ancestry from Los Angeles; N., (North) Italian; NAT, Native American; NE, northeast; NEUR, north Europe; PC, principal component; PUR, Puerto Ricans from Puerto Rico; S, south; SE, southeast; SEUR, south Europe; TSI, Toscani in Italia; YRI, Yoruba in Ibadan, Nigeira; WAFR, west Africa.

Genomic ancestry and ethnoracial self-classification based on 5,871 community-dwelling Brazilians (The Epigen Initiative)

M. Fernanda Lima-Costa[1], Laura C. Rodrigues[2], Maurício L. Barreto[3], Mateus Gouveia[4], Bernardo L. Horta[5], Juliana Mambrini[1], Fernanda S. G. Kehdy[4], Alexandre Pereira[6], Fernanda Rodrigues-Soares[4], Cesar G. Victora[5], Eduardo Tarazona-Santos[4] & Epigen-Brazil group*

SCIENTIFIC REPORTS | 5 : 9812 | DOI: 10.1038/srep09812

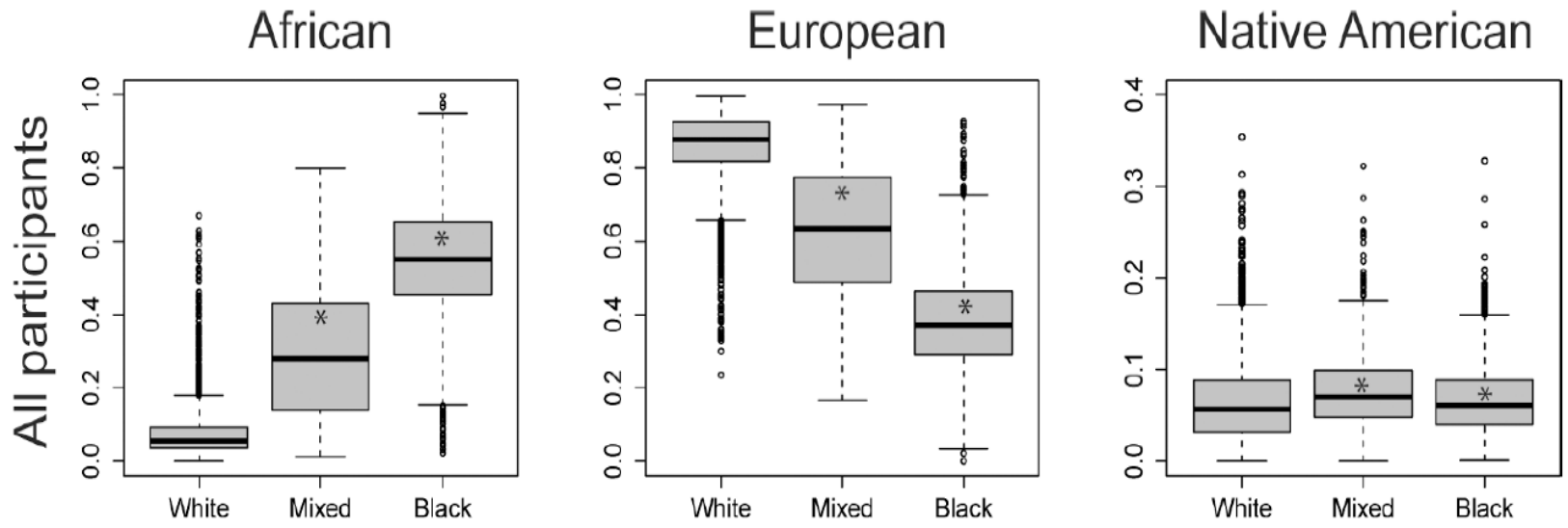
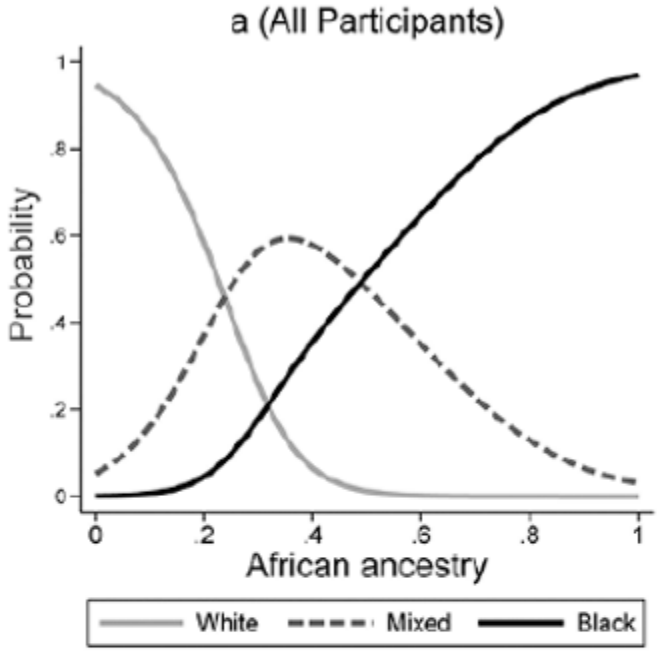


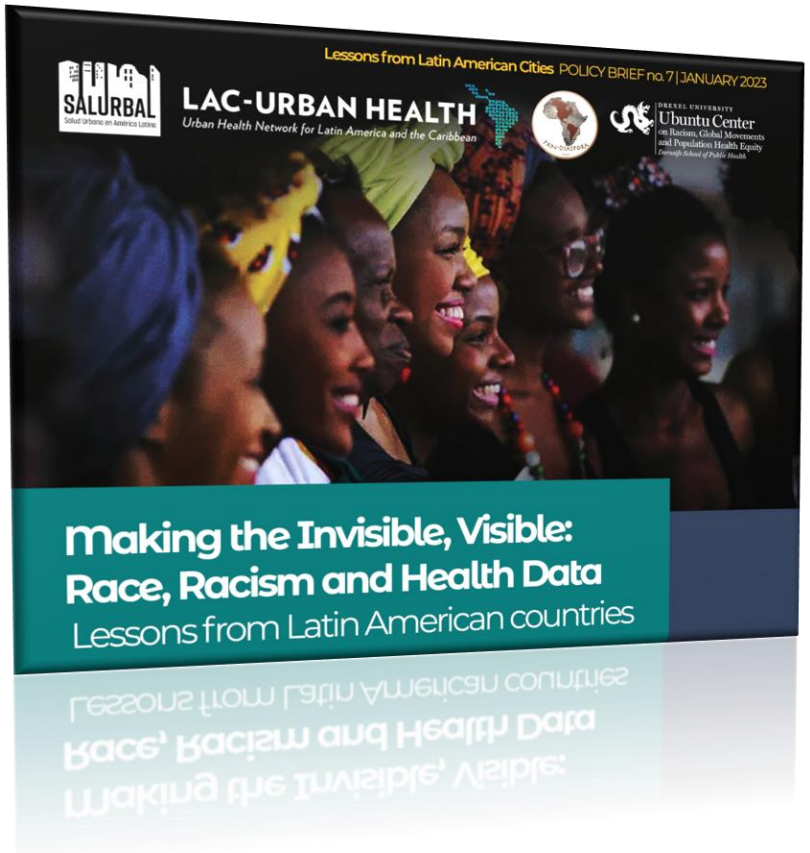
Figure 1 | Box plot contrasting ethnoracial self-classification (White, Mixed and Black) to median individual proportion of genomic African, European and Native American ancestries in all participants, and by cohort population (The Epigen Initiative). Mixed is "pardo" in official Portuguese. (*) p <0,001 for comparisons between each ethnoracial category to White.



Predicted probability of ethno-racial self-classification as Black, Mixed and White along the genomic proportion of African ancestry continuum in all participants (Epigen-Brazil). Mixed is "pardo" in official Portuguese.

Making the Invisible, Visible: Race, Racism and Health Data

Lessons from Latin American Countries



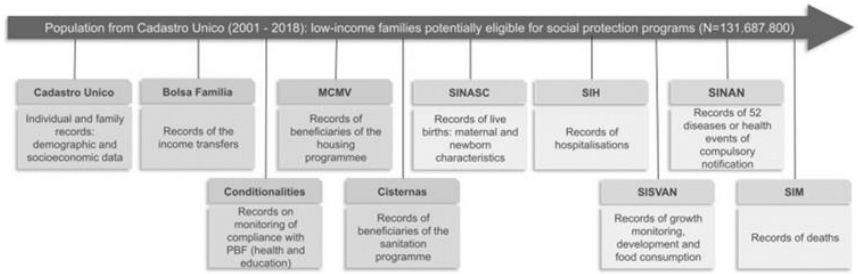
To advance research and action on racial/ethnic health inequities in Latin American countries, local, state, and national decision-makers must improve the collection of high-quality data on race and ethnicity and make it available to researchers and all society.

Key points:

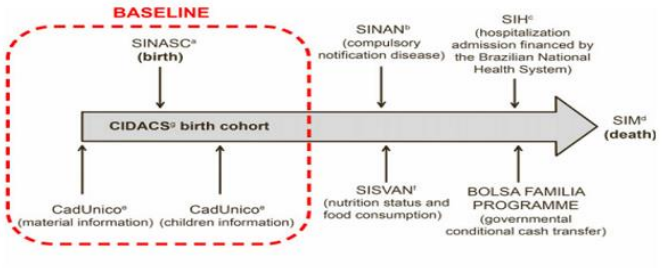
- Afro-descendants and Indigenous people make up more than 1/3 of the population of Latin American region. Data on the health of these populations remains limited.
- The absence and poor quality of data on race and ethnicity in many Latin American countries makes Afro-descendent and Indigenous populations invisible in national health surveys and vital statistics registries.
- This lack of data prevents documentation of and action to address racial health inequities.
- Black and Indigenous movements in Latin America have led mobilization efforts to encourage governments to gather data on race and ethnicity and in recent years, more governments in the region have begun collecting this data.
- Institutional racism continues to generate and maintain barriers to gathering, disseminating, and using this data.

Ethno-racial inequalities in health in Brazil: Evidence from the use of Cidacs Cohorts

Coorte de 100 milhões de brasileiros



Coorte de Nascimentos



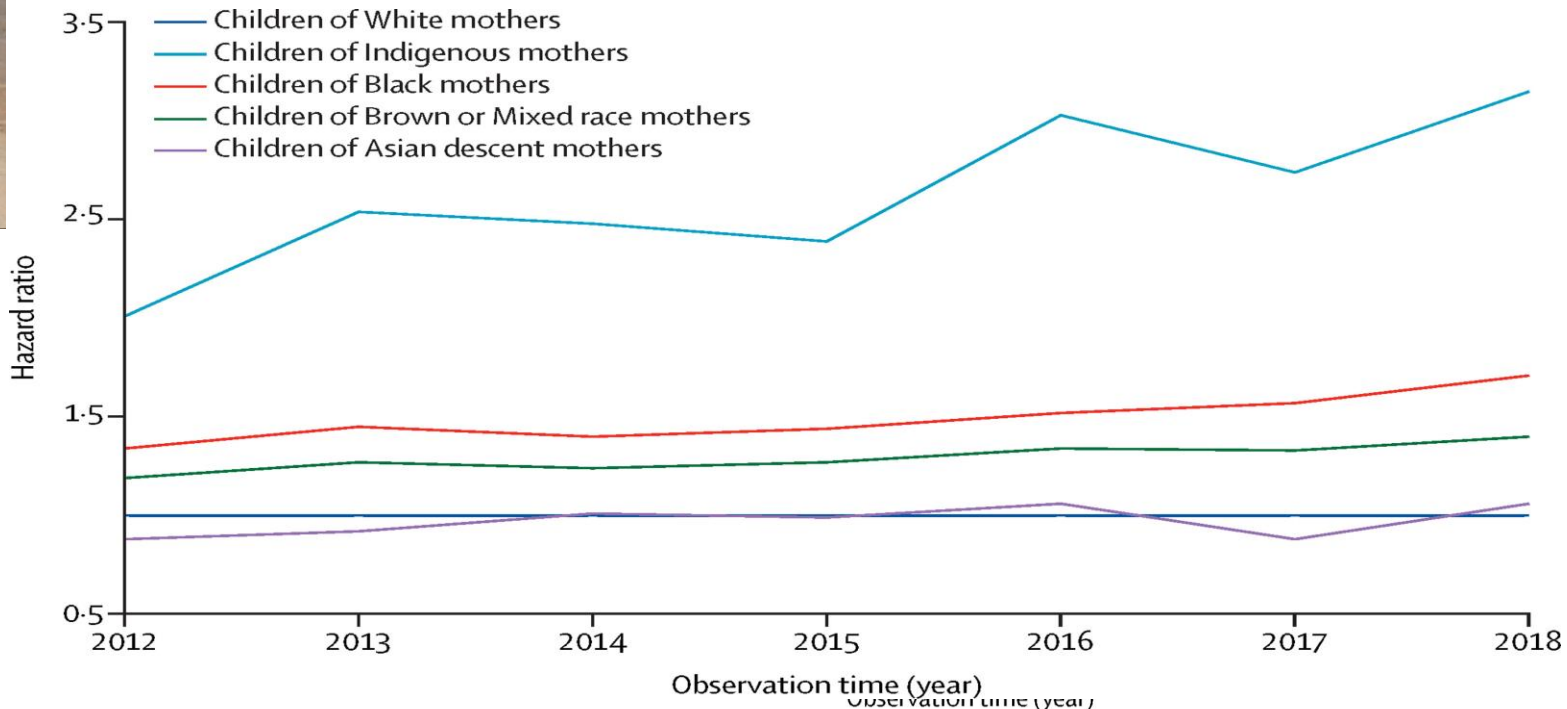
THE LANCET
Global Health

ARTICLES | VOLUME 10, ISSUE 10, E1453-E1462, OCTOBER 01, 2022

Ethnoracial inequalities and child mortality in Brazil: a nationwide longitudinal study of 19 million newborn babies

Poliana Rebouças, PhD • Emanuelle Goes, PhD • Julia Pescarini, PhD • Dandara Ramos, PhD • Maria Yury Ichihara, PhD • Samila Sena, MSc • Rafael Veiga, PhD • Laura C Rodrigues, PhD • Prof Maurício L Barreto, MD PhD • Enny S Paixão, PhD • Show less

Open Access • Published: October, 2022 • DOI: https://doi.org/10.1016/S2214-109X(22)00333-3 •



	Children of White mothers	Children of Indigenous mothers	Children of Black mothers	Children of Brown or Mixed race mothers	Children of Asian descent mothers
years at risk (95% CI)					
HR (95% CI)	1 (ref)	52·82 (42·83–65·14)	3·46 (2·66–4·50)	3·30 (2·79–3·90)	1·12 (0·28–4·51)
Adjusted HR (95% CI)	1 (ref)	16·39 (12·88–20·85)	2·34 (1·78–3·06)	2·05 (1·71–2·45)	0·98 (0·24–3·94)
Selected accidental causes*					
Participants					
Deaths per 100 000 pers years at risk (95% CI)					
HR (95% CI)					
Adjusted HR (95% CI)					
Ill-defined causes					
Participants					
Deaths per 100 000 pers years at risk (95% CI)					
HR (95% CI)					
Adjusted HR (95% CI)					

Data are n/N (%) or HR (95
accidental causes refer to d

Table 3: Crude and adjusted HRs for the association between maternal race and skin colour and mortality younger than age 5 years, according to the main causes of death

Indigenous Yanomami child: 8 years old and 26 lbs

CHILDREN FROM INDIGENOUS MOTHERS

16X HIGHER RISK OF DEATH FROM MALNUTRITION

14X HIGHER RISK OF DEATH FROM DIARRHEA

6,5X HIGHER RISK OF DEATH FROM LRI

CHILDREN FROM BLACK MOTHERS

1.8 X HIGHER RISK OF DEATH FROM MALNUTRITION

1.7X HIGHER RISK OF DEATH FROM DIARRHEA

1.7X HIGHER RISK OF DEATH FROM LRI

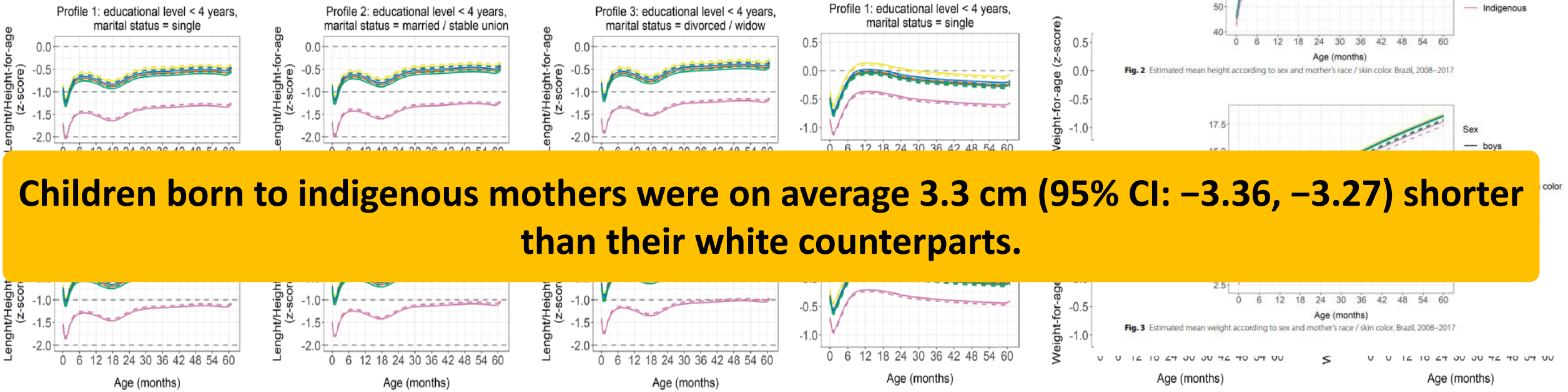
Benes Matos da Silva *et al. BMC Pediatrics* (2024) 24:103
https://doi.org/10.1186/s12887-024-04550-3

BMC Pediatrics

RESEARCH Open Access

Ethnoracial disparities in childhood growth trajectories in Brazil: a longitudinal nationwide study of four million children

Helena Benes Matos da Silva[1,2*†], Rita de Cássia Ribeiro-Silva[1,2], Juliana Freitas de Mello e Silva[2†], Irina Chis Ster[3], Poliana Rebouças[2], Emanuelle Goes[2], Maria Yury Ichihara[2], Andrêa Ferreira[2,4], Julia M. Pescarini[5],



Children born to indigenous mothers were on average 3.3 cm (95% CI: −3.36, −3.27) shorter than their white counterparts.

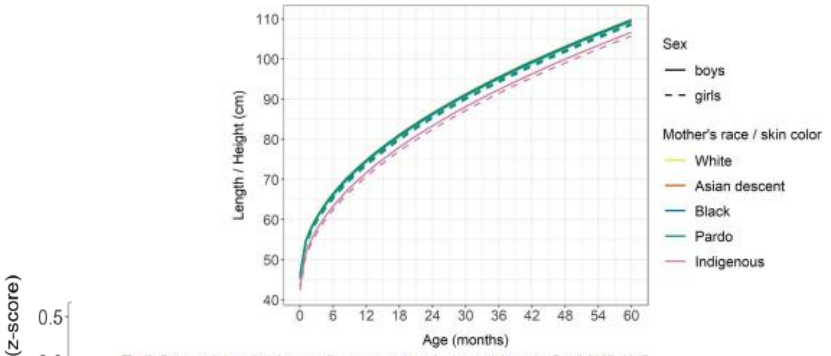


Fig. 2 Estimated mean height according to sex and mother's race / skin color. Brazil, 2008–2017

Fig. 3 Estimated mean weight according to sex and mother's race / skin color. Brazil, 2008–2017

Fig. 5 Estimated mean curves for length/height-for-age z-scores, according to mother's age, educational level, and marital status. Brazil, 2008–2017

4 Estimated mean curves for weight-for-age z-scores model, according to mother's age, educational level, and marital status. Brazil, 2008–2017

Ethno-racial inequalities on adverse birth and neonatal outcomes: a nationwide, retrospective cohort study of 21 million Brazilian newborns

Poliana Rebouças,[a,*] Enny S. Paixão,[a,b] Dandara Ramos,[a,d] Julia Pescarini,[a] Elzo Pereira Pinto-Junior,[a] Ila R. Falcão,[a] Maria Yury Ichihara,[a] Samila Sena,[a] Rafael Veiga,[a] Rita Ribeiro,[a,e] Laura C. Rodrigues,[c] Maurício L. Barreto,[a,d] and Emanuelle F. Goes[a,d]

[a]Center for Data and Knowledge Integration for Health (CIDACS), Gonçalo Moniz Institute, Oswaldo Cruz Foundation, Salvador, Bahia, Brazil
[b]Maternal, Adolescent, Reproductive & Child Health (MARCH) Centre, London School of Hygiene & Tropical Medicine, London, UK
[c]Faculty of Epidemiology and Population Health, London School of Hygiene & Tropical Medicine, London, UK
[d]Instituto de Saúde Coletiva, Federal University of Bahia, Salvador, Bahia, Brazil
[e]Faculdade de Nutrição, Federal University of Bahia, Salvador, Bahia, Brazil

The Lancet Regional Health - Americas 2024;37: 100833
Published Online xxx
https://doi.org/10.1016/j.lana.2024.100833

Summary

Background Ethno-racial inequalities are critical determinants of health outcomes. We quantified ethnic-racial inequalities on adverse birth outcomes and early neonatal mortality in Brazil.

Methods We conducted a cohort study in Brazil using administrative linked data between 2012 and 2019. Estimated the attributable fractions for the entire population (PAF) and specific groups (AF), as the proportion of each adverse outcome that would have been avoided if all women had the same baseline conditions as White women, both unadjusted and adjusted for socioeconomics and maternal risk factors. AF was also calculated by comparing women from each maternal race/skin colour group in different groups of mothers' schooling, with White women with 8 or more years of education as the reference group and by year.

Findings 21,261,936 newborns were studied. If all women experienced the same rate as White women, 1.7% of preterm births, 7.2% of low birth weight (LBW), 10.8% of small for gestational age (SGA) and 11.8% of early neonatal deaths would have been prevented. Percentages preventable were higher among Indigenous (22.2% of preterm births, 17.9% of LBW, 20.5% of SGA and 19.6% of early neonatal deaths) and Black women (6% of preterm births, 21.4% of LBW, 22.8% of SGA births and 20.1% of early neonatal deaths). AF was higher in groups with fewer years of education among Indigenous, Black and *Parda* for all outcomes. AF increased over time, especially among Indigenous populations.

Interpretation A considerable portion of adverse birth outcomes and neonatal deaths could be avoided if ethnic-racial inequalities were non-existent in Brazil. Acting on the causes of these inequalities must be central in maternal and child health policies.

Funding Bill & Melinda Gates Foundation and Wellcome Trust.

Keywords: Low birth weight; Prematurity; Small for gestational age; Newborn; Health inequalities

Introduction

Racial inequalities are a persistent barrier to maternal and child health in Brazil. With adverse outcomes disproportionately affecting Black and Indigenous women and children.[1,2] The legacy of slavery and colonialism has left deep-rooted consequences for Black and Indigenous populations in Brazil by defining life conditions, civil rights and access to services. Here, we understand Racism from a systemic perspective, as it encapsulates all its manifestations and processes that create and sustain racial inequalities.[3] There is vast documentation of the racialized disparities in socioeconomic conditions,[4] healthcare access[5,6] and health outcomes in the Brazilian population[7] and, even under policies such as the National Policy of Integral Health for Black Population and the National Policy of Attention

21,26 million Brazilian newborns were studied

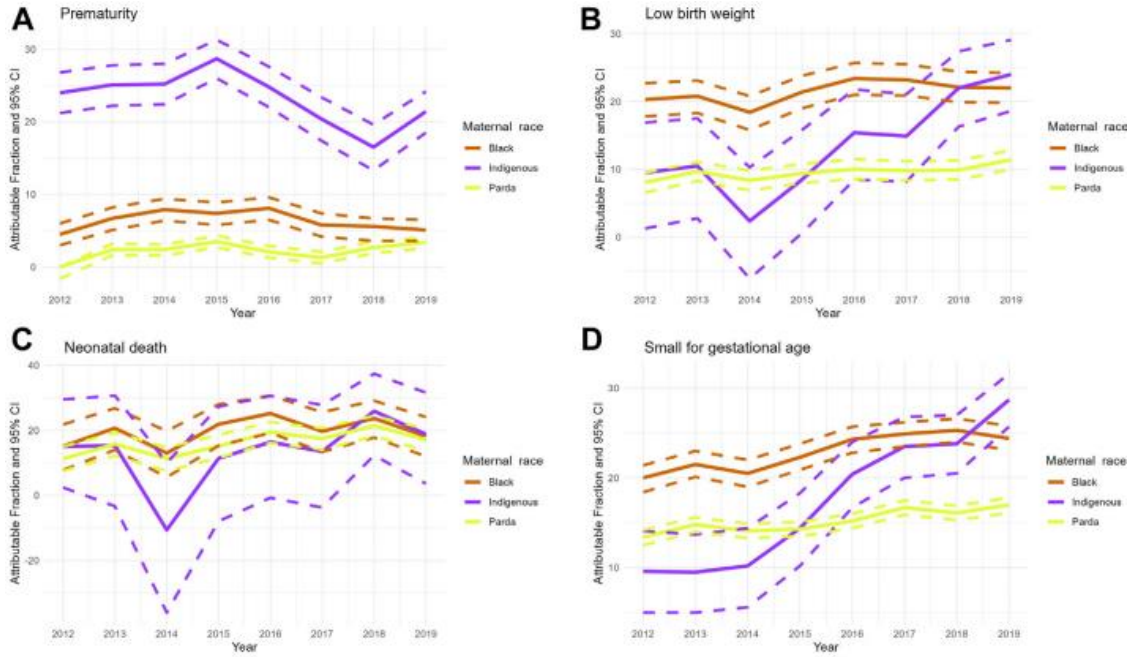


Fig. 5: Attributable fractions trends of preterm birth, LBW, SGA and early neonatal mortality by maternal race/skin colour group.

AF increased over time, greater among Indigenous populations

Percentage of preventable outcomes: 1.7% of preterm births, 7.2% of low birth weight (LBW), 10.8% of small for gestational age (SGA) and 11.8% of early neonatal deaths

Percentages preventable were higher

ON Indigenous: PT-22.2%; LBW-17.9%; SGA-20.5%; Early neonatal deaths- 19.6%

ON Black women: PT-6%; LBW-21,4%; SGA-22,8%; Early neonatal deaths- 20,1%

Among Indigenous, Black and *Parda* with **fewer years of education** for all outcomes.

Maternal and congenital syphilis attributable to ethnoracial inequalities

Maternal and congenital syphilis attributable to ethnoracial inequalities: a national record-linkage longitudinal study of 15 million births in Brazil

Enny S Paixao*, Andrêa J F Ferreira*, Julia M Pescarini, Kerry L M Wong, Emanuelle Goes, Rosemeire Fiaccone, Guilherme Lopes de Oliveira, Poliana Reboucas, Andrey Moreira Cardoso, Liam Smeeth, Mauricio L Barreto, Laura C Rodrigues†, Maria Yury Ichihara†

Summary

Background This study estimated ethnoracial inequalities in maternal and congenital syphilis in Brazil, understanding race as a relational category product of a sociopolitical construct that functions as an essential tool of racism and its manifestations.

Methods We linked routinely collected data from Jan 1, 2012 to Dec 31, 2017 to conduct a population-based study in Brazil. We estimated the attributable fraction of race (skin colour) for the entire population and specific subgroups compared with White women using adjusted logistic regression. We also obtained the attributable fraction of the intersection between two social markers (race and education) and compared it with White women with more than 12 years of education as the baseline.

Findings Of 15 810 488 birth records, 144 564 women had maternal syphilis and 79 580 had congenital syphilis. If all women had the same baseline risk as White women, 35% (95% CI 34·89–36·10) of all maternal syphilis and 41% (40·49–42·09) of all congenital syphilis would have been prevented. Compared with other ethnoracial categories, these percentages were higher among Parda/Brown women (46% [45·74–47·20] of maternal syphilis and 52% [51·09–52·93] of congenital syphilis would have been prevented) and Black women (61% [60·25–61·75] of maternal syphilis and 67% [65·87–67·60] of congenital syphilis would have been prevented). If all ethnoracial groups had the same risk as White women with more than 12 years of education, 87% of all maternal syphilis and 89% of all congenital syphilis would have been prevented.

Interpretation Only through effective control of maternal syphilis among populations at higher risk (eg, Black and Parda/Brown women with lower educational levels) can WHO's global health initiative to eliminate mother-to-child transmission of syphilis be made feasible. Recognising that racism and other intersecting forms of oppression affect the lives of minoritised groups and advocating for actions through the lens of intersectionality is imperative for attaining and guaranteeing health equity. Achieving health equality needs to be addressed to achieve syphilis control. Given the scale and complexity of the problem (which is unlikely to be unique to Brazil), structural issues and social markers of oppression, such as race and education, must be considered to prevent maternal and congenital syphilis and improve maternal and child outcomes globally.

Funding Wellcome Trust, CNPq-Brazil.

Lancet Glob Health 2023; 11: e1734–42

See Comment page e1670

For the Portuguese translation of the abstract see Online for appendix 1

*Contributed equally

†Contributed equally

Department of Infectious Disease Epidemiology and International Health, London School of Hygiene & Tropical Medicine, London, UK (E S Paixao PhD, J M Pescarini PhD, K L M Wong PhD, Prof L Smeeth PhD, Prof L C Rodrigues PhD); **Centro de Integração de Dados e Conhecimentos para Saúde, Salvador, Bahia, Brazil** (E S Paixao, A J F Ferreira PhD, J M Pescarini, E Goes PhD, R Fiaccone PhD, G Lopes de Oliveira PhD, P Reboucas PhD, Prof M L Barreto PhD, Prof L C Rodrigues, M Y Ichihara PhD); **The Ubuntu Center on Racism, Global Movements & Population Health Equity, Dornsife School of Public Health, Drexel University, Philadelphia, PA, USA** (A J F Ferreira); **Instituto de Matemática e Estatística, Universidade Federal da Bahia, Salvador, Bahia, Brazil** (R Fiaccone); **Centro Federal de Educação Tecnológica de Minas Gerais, Belo Horizonte, Minas Gerais, Brazil** (G Lopes de Oliveira); **Escola Nacional de Saúde Pública, Rio de Janeiro, Brazil** (A M Cardoso PhD)

Correspondence to: Dr Enny Paixao, Department of Infectious Disease Epidemiology and International Health, London School of Hygiene & Tropical Medicine, London WC1E 7HT, UK **enny.cruz@lshtm.ac.uk**

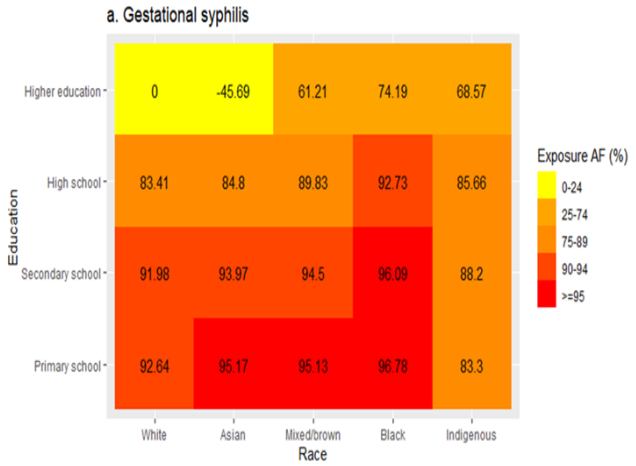
Introduction

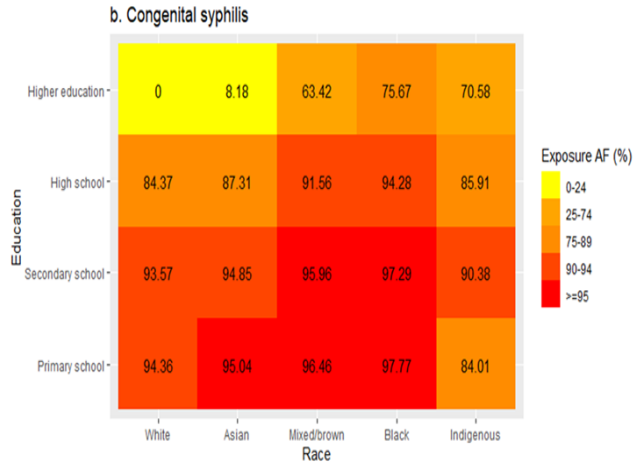
Despite international efforts to eliminate congenital syphilis as a public health concern, it has remained endemic in several low-income and middle-income countries, with the highest rates observed in the African and Eastern Mediterranean region, and has increased rates in high-income countries, including the USA, Canada, and Australia.[1–3] When untreated, maternal syphilis can result in adverse maternal and neonatal outcomes, including stillbirths, low birthweight, long-term neurodevelopmental disorders, and neonatal death.[4–6] However, neither maternal nor congenital syphilis is distributed in the population equally, with

A growing body of literature has reported ethnoracial inequities regarding maternal and child outcomes.[5,10,11] Studies on racial inequities in health are based on the history of oppression and ethnoracial hierarchies faced by Brown, Black, and Indigenous individuals over many years, and the systematic racial discrimination faced until the present day.[12–14] Racial categories are not biologically meaningful; they have become an indelible marker for overlapping experiences of racialisation and the historical, political, and social processes that shape daily lives.[12,13,15] Therefore, racism is considered the driver of racial health inequities in society since, historically, the enterprise of racial categorisation has been in the

More than 15 million live births records, **144,564 had maternal syphilis and 79,580** had **congenital syphilis** (2012 -2017)

- If all women experienced the syphilis rates of white women, 40% of all SG and 45% of all SC would have been prevented.
- The risk of GS and CS was higher among black and mixed-race women. They were also less likely to receive adequate treatment and were diagnosed later than white women.
- An especially high risk for gestational and congenital syphilis was observed due to the intersection of low education in black women.





Ethnoracial inequalities on cervical and breast cancer mortality in Brazil

ETHNICITY & HEALTH
https://doi.org/10.1080/13557858.2023.2245183

Taylor & Francis
Taylor & Francis Group

OPEN ACCESS Check for updates

The intersection of race/ethnicity and socioeconomic status: inequalities in breast and cervical cancer mortality in 20,665,005 adult women from the 100 Million Brazilian Cohort

Emanuelle F. Góes[a*], Joanna M. N. Guimarães[a*], Maria da Conceição C. Almeida[b], Ligia Gabrielli[c,d], Srinivasa Vittal Katikireddi[e], Ana Clara Campos[a], Sheila M. Alvim Matos[d], Ana Luísa Patrão[f], Ana Cristina de Oliveira Costa[g], Manuela Quaresma[h], Alastair H. Leyland[e], Mauricio L. Barreto[a,d], Isabel dos-Santos-Silva[h**] and Estela M. L. Aquino[d**]

[a]Centre for Data and Knowledge Integration for Health (CIDACS), Gonçalo Moniz Institute, Oswaldo Cruz Foundation, Bahia, Brazil; [b]Gonçalo Moniz Institute, Oswaldo Cruz Foundation, Salvador, Brazil; [c]Centro de Diabetes e Endocrinologia da Bahia, Secretaria de Saúde do Estado da Bahia, Bahia, Brazil; [d]Instituto de Saúde Coletiva, Universidade Federal da Bahia, Salvador, Brazil; [e]MRC/CSO Social & Public Health Sciences Unit, University of Glasgow, Glasgow, UK; [f]Center for Psychology, Faculty of Psychology and Education Science, University of Porto, Porto, Portugal; [g]Programa de Pós-graduação em Saúde Coletiva do Instituto René Rachou/FIOCRUZ Minas; [h]Faculty of Epidemiology and Population Health, London School of Hygiene & Tropical Medicine, London, UK

ABSTRACT

Objectives: There is limited evidence regarding the impact of race/racism and its intersection with socioeconomic status (SES) on breast and cervical cancer, the two most common female cancers globally. We investigated racial inequalities in breast and cervical cancer mortality and whether SES (education and household conditions) interacted with race/ethnicity.

Design: The 100 Million Brazilian Cohort data were linked to the Brazilian Mortality Database, 2004–2015 (n = 20,665,005 adult women). We analysed the association between self-reported race/ethnicity (White/'Parda'(Brown)/Black/Asian/Indigenous) and cancer mortality using Poisson regression, adjusting for age, calendar year, education, household conditions and area of residence. Additive and multiplicative interactions were assessed.

Results: Cervical cancer mortality rates were higher among Indigenous (adjusted Mortality rate ratio = 1.80, 95%CI 1.39–2.33), Asian (1.63, 1.20–2.22), 'Parda'(Brown) (1.27, 1.21–1.33) and Black (1.18, 1.09–1.28) women vs White women. Breast cancer mortality rates were higher among Black (1.10, 1.04–1.17) vs White women. Racial inequalities in

ARTICLE HISTORY
Received 20 December 2022
Accepted 1 August 2023

KEYWORDS
Racism; racial inequalities; socioeconomic status; cancer; mortality; intersectionality; Brazil

More than 20 million adult women (2004-2015)

Table 2. Mortality rate ratios from cervical and breast cancer associated with race/ethnicity. 100 Million Brazilian Cohort (2004-2015), N = 20,665,005 women aged 18–100 years.

	Cervical cancer – MRR (95%CI)		Breast cancer - MRR (95%CI)	
Variables	Model 1	Model 2	Model 1	Model 2
Race/ethnicity				
White	1.00	1.00	1.00	1.00
'Parda'(Brown)	1.31 (1.25–1.38)	1.27 (1.21–1.33)	0.83 (0.80–0.87)	0.86 (0.82–0.89)
Black	1.22 (1.13–1.32)	1.18 (1.09–1.28)	1.09 (1.03–1.15)	1.10 (1.04–1.17)
Asian descent	1.58 (1.17–2.14)	1.63 (1.20–2.22)	0.75 (0.55–1.03)	0.77 (0.55–1.08)
Indigenous	1.99 (1.56–2.54)	1.80 (1.39–2.33)	0.49 (0.35–0.70)	0.63 (0.44–0.91)
Education level (years)				
>9 years		1.00		1.00
6–9		1.80 (1.63–1.98)		0.98 (0.92–1.05)
<=5		2.57 (2.34–2.81)		0.99 (0.93–1.05)
P-for linear trend		<0.001		0.843
Adequate household conditions*				
3 or 4		1.00		1.00
1 or 2		1.33 (1.25–1.41)		0.81 (0.76–0.85)
None		1.53 (1.38–1.70)		0.75 (0.67–0.84)
P-for linear trend		<0.001		<0.001

Abbreviations: MRR, Mortality rate ratio; CI, Confidence interval.
*Availability of adequate facilities for water supply, sewage disposal, waste disposal/garbage collection, and electricity supply (see Methods section and Supplemental material 1).
Model 1: adjusted for age and calendar year.
Model 2: Model 1 + education level, household conditions and area of residence (rural vs urban).

Cervical cancer mortality was higher among indigenous women (1.80, 95%CI 1.39–2.33), Asian (1.63, 1.20–2.22), mixed race (1.27, 1.21–1.33), and black women (1.18, 1.09–1.28) compared with white women. It was higher among poor women.

Breast cancer mortality was higher among black women (1.10, 1.04–1.17) compared with white women

“The work done by Brazilian Black Movements has been fundamental in maintaining and improving race information in the census, and in increasing the inclusion of race data in health information system and health surveys.”

cidacs
Centro de Integração de Dados e Conhecimentos para Saúde

Ministério da Saúde
FIOCRUZ
Fundação Oswaldo Cruz
Instituto Gonçalo Moniz

Obrigado! Thank you!

E-mail: mauricio.barreto@fiocruz.br
mauricio@ufba.br

COLABORADORES CIENTÍFICOS:

APOIADORES:

Parque Tecnológico da Bahia
Rua Mundo, 121, Trobogy
Salvador - Ba, CEP 41745-715

www.cidacs.bahia.fiocruz.br
cidacs@bahia.fiocruz.br

fiocruzbahia.cidacs
cidacs_fiocruz
Cidacs Fiocruz