RACIAL DISCRIMINATION AND HEALTH IN BRAZIL: EVIDENCE FROM A POPULATION-BASED SURVEY

Ana Luiza Braz Pavão, MD; George Basil Ploubidis, PhD; Guilherme Werneck, PhD; Mônica Rodrigues Campos, PhD

Objective: To investigate the association between racial discrimination and three health outcomes: self-rated health (SRH), physical morbidity and depression, in the Brazilian population.

Design: Cross-sectional study based on data obtained from a representative national survey carried out in 2008: The Research for Social Dimension of Inequalities.

Participants: 3,863 household heads who classified themselves as Blacks or Mullatoes regarding their race and answered the entire research questionnaire.

Main Outcome Measures: Racial discrimination was measured through a scale of 9 domains based on a previously validated instrument and classified into two categories: no discrimination and any experience of racial discrimination. SRH was based on the question from the SF-36 quality of life instrument. Physical morbidity and depression were obtained from a list of chronic diseases from the questionnaire. Regression analysis was carried out for the three health outcomes controlling for socioeconomic, demographic, health behavior variables, and body mass index.

Results: Racial discrimination was negatively associated with health for all evaluated outcomes. Any experience of racial discrimination was associated with 1.37 more chance of having worse SRH, 1.55 more chance of having more physical morbidities and 1.77 more chance of having depression, even after controlling for confounders.

Conclusion: An impact of racial discrimination on the health of the Brazilian population was found, regardless of the health indicator used, which revealed that depression was the health outcome with the most pronounced association. (*Ethn Dis*. 2012;22[3]:353–359)

Key Words: Cross-sectional Studies, Racial Discrimination, Health Status Indicators, Population, Brazil

From Department of Epidemiology, Social Medicine Institute, State University of Rio de Janeiro (ALBP) and Department of Population Studies, Faculty of Epidemiology and Population Health, University of London (GP) and Department of Epidemiology, Social Medicine Institute, State University of Rio de Janeiro (GW) and Department of Social Sciences, National School of Public Health, Oswaldo Cruz Foundation (MRC).

Address correspondence to Ana Luiza Braz Pavão, MD; Av. Lúcio Costa, n° 3360, apt° 303 / 01; 22630-010; (+5521) 2496-9111; analuizabp@yahoo.com.br

INTRODUCTION

Racism, the belief that some races are superior to others, is used to devise and justify actions that create inequality between racial groups.[1] Perceived racial discrimination is one aspect of racism that is increasingly receiving empirical attention as a class of stressors that could have negative consequences for health.[2] According to Krieger, there are five main key pathways through which racism can harm health: economic and social deprivation; toxic substances and hazardous conditions; socially inflicted trauma (mental, physical, and sexual); targeted marketing of commodities such as junk food and psychoactive substances; and inadequate or degrading medical care.[3]

Brazil, among countries on the American continent, has the largest population of individuals with African ancestry. In a total population of 190 million, 7.4% were classified as Black and 42.3% as Mulattoes.[4] Miscegenation is intrinsically connected with Brazilian history and, although now considered a sign of racial tolerance, individuals with Black skin color have poorer social and health indicators than Whites.[5–9] This situation of worse social and health status is an artifact of centuries of slavery, which lasted until the 19th century. After that, many advances were achieved: the end of slavery in 1888; the first concepts of racism that appeared in Brazilian law in 1951; racism viewed as a crime by the Federal Constitution of 1988; and, more recently, the introduction of quotas to permit the admission of African descendants to some public universities. Many efforts have been made to minimize the effects of a history of racism and racial discrimination in Brazil, however, these effects still remain in Brazilian society and they may affect the health of people of African ancestry.

There is growing evidence that racial discrimination is an important risk factor for health.[10] In a systematic review of 138 studies on self-reported racism and health, mainly developed in the United States and Europe, the authors found an association between self-reported racism and ill health in oppressed racial groups.[11] A meta-analysis on perceived discrimination and health also showed a significant negative effect of racial discrimination on both physical and mental health outcomes and revealed that discrimination was associated with higher levels of stress response and also with unhealthy behaviors.[12] In Brazil, few studies have evaluated racial inequalities in health, and the studies that evaluated the impact of racial discrimination on health are scarce. Still, the existing evidence suggests that Blacks and Mullatoes have worse health status than Whites.[8,9,13,14]

According to Chor et al,[8] Blacks have more premature deaths and twice the chance of death due to physical attacks than Whites. Another study evaluated health inequalities based on sex and ethnicity and found that Black males, White females and Black females had a higher chance of having fair or poor health status compared to White males.[13] A longitudinal study of Brazilian workers showed that Blacks and Mulattoes who experienced racial discrimination had

50% more chance of having high blood pressure than those in the same racial group who did not experience that condition.[14] The aim of our study was to analyze the impact of the racial discrimination experience on the health of Brazilian Blacks and Mullatoes, by estimating the association between racial discrimination and three health outcomes: self-rated health, physical morbidity and depression. We controlled the analysis for other health risk factors (ie, socioeconomic, demographic, health behavior variables, and body mass index) to isolate the effect of racial discrimination on health.

METHODS

This is a cross-sectional study based on the Brazilian national survey carried out in 2008 (Research for Social Dimension of Inequalities) which consisted of 8,048 households randomly sampled from all five Brazilian geographic regions (North, Northeast, Mid-West, Southeast and South), comprising 12,324 individuals (household head and spouse) aged ≥20 years. The main purpose of our study was to create a system of sociological indicators to evaluate the process of inequality and social mobility in Brazil and also to assess Brazilians' life conditions. The study was coordinated by the University Institute of Research of Rio de Janeiro (IUPERJ) and included the collaboration of several others Brazilian academic and research institutions.

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The survey population was obtained through stratified multi-stage random sampling and the unit of analysis was the residence. National participants were classified into 6 domains according to the geographic region of origin and whether it was an urban or a rural area. A sample stratum with the 10% richest clusters was created to improve reliability of inequality indicators. Participants were interviewed by a self-assessed questionnaire and their anthropometric measures were collected.

Data collection occurred between July, 2008 and December, 2008. The questionnaire comprised several modules: house features; household head's and spouse's characteristics; parents', siblings' and friends' characteristics; economic activities and job; health, anthropometry, fecundity; life-related conditions; perceptions of justice; and experience of discrimination. The modules were answered both by the family's head and the spouse, except in the case of the modules related to life-related conditions; perceptions of justice and experience of discrimination, which were answered exclusively by the household head. In one of the modules, household head's and spouse's characteristics, participants were asked how they would classify themselves in relation to their skin color or race. The final sample was composed of 3,863 household heads who had complete data on the questions related to racial discrimination and who classified themselves as Blacks or Mullatoes.

Three different health outcomes were evaluated: self-rated health, physical morbidity and depression. Self-rated health was obtained from the Portuguese version of the quality of life questionnaire - Short-Form 36, "In general, would you say your health is: excellent, very good, good, fair or poor?" Physical morbidity was assessed through a list of chronic diseases, from which the interviewee had to say if any physician or health professional has ever told him/her that he/she had had the condition (yes/no answer), based on the question, "For each disease I will read now, I would like you to say if any physician or other health professional has ever told you that you have it." The list of chronic diseases included 16 morbid conditions: arthritis, cancer, cardiac disease, diabetes, hypertension, tuberculosis, spinal disease, cirrhosis, gout disease, tendonitis, repetitive stress injury, chronic bronchitis, depression, chronic renal disease, asthma, hypercholesterolemia. The original list included one mental health condition (depression), but we decided to exclude this information to focus on physical chronic conditions.

The exposure variable was experience of racial discrimination. It was assessed through the question, "Have you ever felt discriminated, or unable to do something, or has anyone ever bothered you or made you feel inferior because of your color?" The interviewees had to answer this question in 9 domains: at school, getting a job, getting housing, at work, on the street or in a public setting, getting medical care, at a restaurant, at a bank opening an account or getting a loan, or by the police or justice. This instrument of self-reported racial discrimination, called experiences of discrimination (EOD), is based on previous work by Krieger.[15] We used the revised version, which asked about the frequency of occurrence of racial discrimination.[16] In this version, interviewees also had to answer how often this happened (never, once, 2 or 3 times, 4 times or more). Then, an index variable was created comprising the sum score of answers to these questions (0 to 45). Based on previous research, the index was

subsequently recoded to a dichotomous variable: no discrimination vs any experience of racial discrimination.[10] The psychometric properties of the self-reported racial discrimination instrument had been previously evaluated and indicated that EOD could be validly employed with working class African Americans.[16,17]

The analysis also included several covariates that may affect health and could be acting as potential confounders: sex, age, race, income, education, smoking habits, alcohol consumption, physical activity, and body mass index (BMI). Age was classified into 3 categories: 20–39 years, 40–64 years and ≥65 years. Race classification was divided into Blacks or Mulattoes. Income classification was based on the Brazilian monthly minimum wage (MW) of May, 2010 of 510.00 Brazilian reais (approximately US $300.00) and has five categories: ≤0.5 MW, >0.5 and ≤ 1 MW, >1 and ≤1.5 MW; >1.5 and ≤2 MW, and >2 MW. Education was categorized into five strata: none, 1 to 4 years, 5 to 8 years, secondary school, and college or more. Smoking habits were classified into three categories: never smoked, smoked but stopped smoking, and smokes. The categories for alcohol consumption (regarding consumption in the last year) were: none, 1 time/month, 1–4 times/month, up to 3 times/week, from 4 times/week to daily. For physical activity, the classification was: sitting most of the day, not walking very much during the day, walks a lot during the day but without carrying things, carrying light loads or doing light exercises regularly, and carrying heavy loads or exercising heavily. The categories for BMI were: low weight, healthy, overweight and obese.

Statistics

We developed three multivariable logistic regression models to assess the effect of racial discrimination on each health outcome: self-rated health, physical morbidity and depression, controlling for the confounders. For self-rated health and physical morbidity, ordinal logistic regression was used, and, for depression, binary regression analysis was applied. Results are presented as adjusted odds ratios with 95% confidence intervals. Data were analyzed using Stata/IC software version 11 (Stata Corporation, College Station, USA).

Table 1. Descriptive analysis for sociodemographic characteristics of 3,863 Brazilian Blacks and Mullatoes. Data from Research for Social Dimension of Inequalities, 2008

		n	%
Sex	male	2,478	65.6
	female	1,385	34.4
Age, years	20 to 39	1,244	31.3
	40 to 64	1,894	49.9
	≥65	725	18.8
Race	Mulatto	2,986	77.2
	Black	877	22.8
Income	≤0.5 MW[a]	1,780	48.0
	>0.5 and ≤1 MW	1,068	32.3
	>1 and ≤1.5 MW	281	7.9
	>1.5 and ≤2 MW	171	5.1
	>2 MW	227	6.7
Education	none	733	21.0
	1 to 4 years	1,101	31.9
	5 to 8 years	792	20.7
	secondary school	746	20.0
	college or more	217	6.3
Total		3,863	100.0

[a] Brazilian minimum wage.

RESULTS

The majority of the population was male (65.6%) while the most prevalent age was 40 to 64 years (49.9%). Regarding race, 77.2% classified themselves as Mullatoes and 22.8% as Blacks. The most prevalent income level was the lowest one (≤.5 MW) (48.0%) and the most frequent level of education was 1 to 4 years (31.9%) (Table 1). About half of the population said they had never smoked (49.5%) or consumed alcoholic beverages (54.1%), while the majority of the interviewees said they usually walk during the day but without carrying things (44.9%). Regarding BMI values, 44.5% were classified as healthy, followed by 34.8% considered in overweight (Table 2).

Descriptive analysis for the health outcomes showed that 36.3% of the population considered their health good, followed by 31.7% who considered their health just fair. Regarding physical morbidity, the majority reported having no diseases (40.7%), whereas 26.4% indicated the presence of one physical chronic morbidity. Finally, depression was present in 9.2% of the interviewees. In relation to the exposure variable, no experience of racial discrimination was referred in 77.7% of cases and any level of experience of racial discrimination was found in 22.4% of household heads (Table 3).

We observed an association between racial discrimination and self-rated health after statistically controlling for several confounders. We found that for individuals with any experience of racial discrimination, the chance of having a worse perception about their health increased about 1.37 times (P=.002). Furthermore, being female, increased age, smoking habits, and being in overweight or obese raised the chance of having worse self-rated health. On

Table 2. Descriptive analysis for health behavior and body mass index (BMI) of 3,863 Brazilian Blacks and Mullatoes. Data from Research for Social Dimension of Inequalities, 2008

		n	%
Smoking	never	1,917	49.5
	stopped smoking	1,113	28.0
	smokes	833	22.5
Alcohol consumption	none	2,086	54.1
	1 time/month	733	17.6
	1–4 times/month	628	16.3
	up to 3 times/week	226	6.0
	from 4 times/week to daily	190	6.0
Physical activity	sitting most part of the day	667	17.8
	not walking very much	424	11.6
	walk but without carrying	1,774	44.9
	carrying light loads	594	15.1
	heavy work	367	10.7
Body Mass Index	low weight	132	3.4
	healthy	1,689	44.5
	overweight	1,343	34.8
	obese	636	17.3
Total		3,863	100.0

the other hand, factors such as belonging to higher income levels, higher educational levels, moderate levels of alcohol consumption (from 1 time/month to 3 times/week), and higher levels of physical activity reduced the chance of having a worse perception of health (Table 4).

In the second model, we evaluated the association between racial discrimination and physical morbidity, controlling for several confounders. We found that any experience of racial discrimination was strongly associated with physical morbidity, compared to no discrimination. The presence of some degree of racial discrimination increased the chance of having physical morbidity 1.55 times ($P<.001$). Besides, as for self-rated health, being female, increased age, smoking habits, and being in overweight or obese were associated with higher chances of having a worse physical health outcome. Individuals who stopped smoking had 1.43 times more chance of having more physical morbidities. Factors associated with a decrease in physical chronic morbidity levels were: moderate level of alcohol consumption (1–4 times/month), and higher levels of physical activity (walks but without carrying, carrying light loads, and heavy work) with a dose-response gradient (Table 4).

We observed a positive association between the experience of racial discrimination and depression. For any experience of racial discrimination, the chance of having depression was increased 1.77 times ($P=.001$). In this model, factors that also showed an increased chance of having depression were: being female, income (only for the stratum: >1 and ≤ 1.5 MW), smoking habits (smokes), higher level of alcohol consumption (from 4 times/week to daily), and being obese. No differences were found for age. Factors that decreased the chance of depression were: higher levels of education (for secondary school, and college or more), and physical activity (walks but without carrying and carrying light loads). Regarding race, for the three health outcomes measures, no significant differences were found (Table 4).

Table 3. Descriptive analysis for the health outcomes and the exposure variable. Data from Research for Social Dimension of Inequalities, Brazil, 2008

		n	%
Exposure variable			
Racial discrimination	no discrimination	2,994	77.7
	any experience	869	22.4
Health outcomes			
Self-rated health	excellent	404	10.3
	very good	458	12.1
	good	1,385	36.3
	fair	1,251	31.7
	poor	365	9.6
Physical morbidity	healthy	1,579	40.7
	1 morbidity	991	26.4
	2 morbidities	597	15.7
	3 or more morbidities	696	17.3
Depression	yes	371	9.2
	no	3,492	90.4
Total		3,863	100.0

DISCUSSION

Racial discrimination was strongly associated with the three health outcomes analyzed in this study: self-rated

We found that the experience of any level of racial discrimination was associated with a 1.4 increase in chance of having perceived ill health.

Table 4. Logistic regression analysis of the association between racial discrimination and the three health outcomes: self-rated health, physical morbidity and depression. Research for Social Dimension of Inequalities (PDSD), Brazil, 2008

		Self-rated health		Physical morbidity		Depression	
		OR	CI 95%	OR	CI 95%	OR	CI 95%
Discrimination	no discrimination	1.00		1.00		1.00	
	any experience	1.37[a]	1.12–1.68	1.55[b]	1.25–1.91	1.77[a]	1.25–2.50
Sex	male	1.00		1.00		1.00	
	female	1.55[b]	1.29–1.87	1.99[b]	1.65–2.40	3.65[b]	2.55–5.23
Age, years	20 to 39	1.00		1.00		1.00	
	40 to 64	2.01[b]	1.64–2.45	2.80[b]	2.25–3.48	1.18	.78–1.77
	≥65	3.09[b]	2.30–4.16	6.18[b]	4.59–8.31	.84	.48–1.46
Race	Mullato	1.00		1.00		1.00	
	Black	1.15	.95–1.39	1.10	.90–1.34	1.35	.91–2.01
Income	≤0.5 MW[c]	1.00		1.00		1.00	
	>0.5 and ≤1 MW	.73[a]	.61–.89	1.13	.93–1.37	1.19	.81–1.74
	>1 and ≤1.5 MW	.71[a]	.52–.96	1.15	.83–1.58	1.91[a]	1.07–3.41
	>1.5 and ≤2 MW	.43[b]	.28–.65	1.30	.86–1.97	1.67	.79–3.60
	>2 MW	.63[a]	.43–.91	1.16	.79–1.71	1.85	.91–3.77
Education	none	1.00		1.00		1.00	
	1 to 4 years	.73[a]	.58–.92	1.02	.81–1.27	.83	.55–1.25
	5 to 8 years	.54[b]	.41–.71	1.08	.82–1.41	.84	.52–1.35
	secondary school	.48[b]	.36–.65	.84	.63–1.12	.52[a]	.29–.94
	college or more	.28[b]	.19–.41	.76	.48–1.21	.26[a]	.10–.66
Smoking	never	1.00		1.00		1.00	
	stopped smoking	1.40[a]	1.14–1.71	1.43[b]	1.17–1.75	1.14	.78–1.69
	smokes	1.45[a]	1.18–1.80	1.31[a]	1.05–1.62	1.61[a]	1.10–2.36
Alcohol consumption	none	1.00		1.00		1.00	
	1 time/month	.80	.64–1.01	.83	.66–1.04	.98	.62–1.54
	1–4 times/month	.70[a]	.55–.89	.75[a]	.58–.97	1.36	.83–2.22
	up to 3 times/week	.62[a]	.45–.85	.83	.59–1.17	1.11	.48–2.55
	from 4 times/week to daily	.85	.58–1.24	.87	.58–1.31	2.94[a]	1.52–5.69
Physical activity	sitting most part of the day	1.00		1.00		1.00	
	not walking very much	1.01	.73–1.40	.89	.65–1.20	.71	.42–1.18
	walk but without carrying	.69[a]	.54–.87	.77[a]	.62–.97	.58[a]	.39–.84
	carrying light loads	.52[b]	.39–.69	.58[b]	.43–.78	.39[a]	.21–.72
	heavy work	.45[b]	.32–.63	.43[b]	.30–.63	.64	.32–1.28
Body mass index	healthy	1.00		1.00		1.00	
	low weight	1.10	.68–1.79	.82	.56–1.22	1.41	.63–3.15
	overweight	1.22[a]	1.01–1.47	1.41[b]	1.17–1.70	1.16	.81–1.67
	obese	1.79[b]	1.42–2.26	2.59[b]	2.04–3.28	1.53[a]	1.01–2.32

[a] $P<.05$.
[b] $P<.001$.
[c] Brazilian minimum wage.

health, physical morbidity and depression, even after the adjustment for socioeconomic, demographic, health behavior variables, and BMI. Self-rated health is a subjective indicator considered to be the individual perception of health that combines both physical and emotional components, including sense of wellbeing and satisfaction with life.[18] We found that the experience of any level of racial discrimination was associated with a 1.4 increase in chance of having perceived ill health. This result is consistent with previous findings. Many studies, two of them systematic reviews, have shown the association between perceived racial discrimination and poor self-reported health.[11,12,19] In a study carried out with 1,722 African American young adults, the authors also evaluated the association between perceived racial discrimination based on seven domains (at school, getting a job, getting housing, at work, at home, getting medical care, on the street or in a public setting) and self-rated health, and found that self-perceived discrimination was associated with a reduced odds of excellent to good health.[10]

With respect to physical morbidity, racial discrimination increased the chance of having chronic diseases (eg, arthritis, heart disease, cancer, tuberculosis, diabetes, and hypertension) about 1.6 times. This result is consistent with a longitudinal study carried out in a Brazilian sample of workers, which found 50% more chance of hypertension among non-Whites who experienced racial discrimination.[14] The authors argued that the effect of racial

discrimination on the incidence of hypertension was probably mediated through chronic stress, which directly contributes to disease occurrence and to health behavioral attitudes towards hypertension (for example, alcohol consumption, sedentariness, diet changes). There is also evidence in literature showing that repeated surges of blood pressure, potentially from racial discrimination, can lead to physical damage to blood vessels and, ultimately, atherosclerosis.[20] Corroborating this evidence, a recent study has shown that exposure to discrimination, even after controlling for age, race, socioeconomic status, health status and health behavior, predicted higher circulating levels of E-selectin in men, which is a marker of endothelial dysfunction associated with atherosclerosis and cardiovascular disease risk.[21]

Depression was the health outcome which had the strongest association with racial discrimination in this study. The chance of having depression after any experience of racial discrimination increased 77% compared to no experience of racial discrimination. This is consistent with many studies. Paradies carried out a systematic review on self-reported racism and health and found the most consistent findings for negative mental health outcomes (for example, psychological/psychiatric/emotional distress and depression/depressive symptoms).[11] According to Borrell, mental health has been the outcome most commonly examined when studying racial discrimination effects[10] and most of them report an association between perceived discrimination and worse mental health regardless of the indicator used. A study carried out in South Africa showed that perceived chronic racial and non-racial discrimination acts independently of demographic factors, other stressors, psychological factors and multiple socioeconomic status indicators to adversely affect mental health.[22] Another study found that racial discrimination was an important predictor of poor mental health status, measured using the Mental Component Summary (MCS12) of the Medical Outcomes Study Short Form 12, among Black and Latino immigrants in New Hampshire, United States.[23] Self-reported racial discrimination was associated with increased risk of mental disorders among Asian Americans and this relationship was not explained by social desirability, physical health, other stressors, and sociodemographic factors.[24] In Brazil, a study carried out among adolescents from an urban area found the prevalence of major depression among those reporting racial discrimination 10.4% higher than the prevalence among adolescents that did not report any experience of racial discrimination and this result persisted after the adjustment for age, sex, socioeconomic status, skin color and self-esteem.[9]

There is biological evidence that supports the occurrence of physiological stressful reactions when individuals are exposed to situations of racism and discrimination.[25] It may be that either direct pathopsychological effects on the brain or indirect neurophysiological changes wrought through other body systems (or a combination of both) mediate the association between self-reported racism and poor mental health outcomes.[11] Regarding this mechanism, some investigations have revealed that coping strategies and other processes of psychological compensation moderate the relationships between discrimination and physiological variables.[26] For example, studies have shown that ethnic identity (the strength of identification with an ethnic group, having a sense of ethnic pride, involvement in ethnic practices, and cultural commitment to one's racial/ethnic group) is a coping resource for racial/ethnic minorities, buffers the stress of racial/ethnic discrimination, and may protect mental health.[27,28]

The understanding of racism is crucial to the knowledge of racial inequalities in health.[29] Racial inequalities in health have received little investigation in the Brazilian population.[8] The objective of our study was to help evaluate the impact of racial discrimination on health, especially in a developing country like Brazil, where the knowledge of this impact is still rare. It is commonly believed that a high level of tolerance concerning racial differences is the norm in Brazil in the concept of racial democracy.[7,9] However, our findings, in accordance with other studies carried out in national and foreign settings, revealed that racial discrimination produces a considerable effect on physical, mental, and perceived health of the Brazilian population of Blacks and Mullatoes, despite the adjustment for several confounders.

The most important limitation of our study was the cross-sectional nature of the design, which precludes the achievement of temporality between exposure and outcome (the guarantee that the exposure precedes the outcome in time) impairing inferences about cause and effect.[30] Another limitation is the self reported nature of our data. Among the strengths of this study were the nationally representative population-based sample and the availability of many data related to the sample, which made possible the measurement of different health outcomes, as well as potential confounding factors. The occurrence of racial discrimination and the presence of racial inequalities affect the capacity for integration of Blacks into Brazilian society and jeopardize the proposal to build a democratic society with equal opportunities for all.[7] Therefore, the results of this study highlight the importance of creating political actions towards eradicating racism in order to minimize racial disparities in health.

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AUTHOR CONTRIBUTIONS

Design and concept of study: Braz Pavão, Ploubidis, Werneck, Rodrigues Campos

Acquisition of data: Braz Pavão, Rodrigues Campos

Data analysis and interpretation: Braz Pavão, Ploubidis, Werneck

Manuscript draft: Braz Pavão, Ploubidis, Werneck

Statistical expertise: Braz Pavão, Ploubidis, Werneck, Rodrigues Campos

Administrative: Braz Pavão, Rodrigues Campos

Supervision: Braz Pavão, Ploubidis, Werneck