

# **The more you need, the less you get: Intersectionality and the inverse care law in the Brazilian depression care cascade**

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## **Abstract**

Substantial research has shown that the population distribution of major depressive disorder (MDD) is strongly influenced by race, gender, and socioeconomic position. However, a deeper understanding of inequities in access to care for MDD according to these social markers is yet to be reached. We use data from the 2019 Brazilian National Health Survey, which includes 87,187 respondents aged 18 years and over, to test two hypotheses derived from the inverse care law: women, Black, and low-education respondents have higher frequencies of MDD, but lower access to each step of the depression care cascade, including diagnosis by a health professional, regular healthcare visits, and access to specialised treatment (H1); low-education Black women show the highest MDD frequency and the lowest access to care across the entire cascade (H2). Partially supporting H1 and H2, our results reveal a bottleneck in the first step of the depression care cascade. While no racial inequities were observed in the MDD prevalence, Black individuals were less likely than whites to be diagnosed by a health professional (OR 0.74). Women (OR 2.64) and low-education (OR 1.18) were more likely to have probable MDD in relation to men and high-education respondents, respectively, but only women (OR 1.58) were more likely to be diagnosed. Low-education Black women were equally more likely to have probable MDD (OR 3.11) than high-education white men. Conversely, high-education white women emerged as the most likely to be diagnosed with MDD (OR 1.63). Our findings suggest the inverse care law applies to the depression care cascade in Brazil through indication that its healthcare system perpetuates a multilayered system of oppression that overlooks multiply marginalised individuals. We also show that adequate screening by health care professionals should mitigate the complex patterns of inequity revealed by our study.

**Keywords:** Depression; Healthcare Disparities; Mental Health Services; Race; Gender; Socioeconomic Factors; Brazil

## **1 Introduction**

Major depressive disorder (MDD) is the most common mental illness worldwide (Liu et al., 2020). It is a chronic condition characterised by severe sadness and hopelessness, lack of interest and energy, and thoughts of death, which prohibits normal functioning and impairs quality of life. The onset of MDD typically occurs by 18 years of age, and it is followed by a series of relapsing and remitting episodes over the life course (Rudenstine, 2014). The lifelong sequelae of MDD make it an onerous and complex disorder (Rudenstine, 2014), the treatment of which usually requires a combination of psychotherapies and antidepressant treatment (American Psychiatric Association, 2010, Fleck et al., 2009).

MDD is particularly challenging in periphery countries, where insufficient and inadequate access to quality care is widespread, particularly for marginalised groups (Kruk et al., 2018). In Brazil, evidence suggests that just over one-fourth of adults with MDD had been diagnosed by a clinician, and less than one-fifth of them were taking antidepressants at the time of interview (Fujii et al., 2012). Research on remission rates is scarce, but data from primary care studies in Southern Brazil showed that three-quarters of adults with MDD did not have complete remission after nine months (Fleck et al., 2005). Data from the 2013 Brazilian National Health Survey showed that 7.9% of respondents aged 18 and over had moderate to severe depression (corresponding to over 11 million individuals), of whom 78% were not receiving any treatment (Lopes et al., 2016). At the same time, disadvantaged groups showed expressively higher rates of MDD than the national average and were also less likely to receive any treatment relative to whites, males, and those in advantaged socioeconomic positions (SEP) (Lopes et al., 2016).

Despite substantial international research showing inequities between racial/ethnic groups in mental health outcomes (Williams, 2018, Pascoe and Smart Richman, 2009), including access to mental health services (McGuire and Miranda, 2008, Richman et al., 2007, Bhui et al., 2018b), current gaps in the literature on the topic warrant further investigation. In particular, a deeper understanding of the access to continuity of care for MDD among people lying at the intersection of multiple axes of inequality is yet to be reached. This study aims to further existing knowledge by investigating the effects of race, including its intersections with other axes of inequality, on access to the MDD treatment continuum (Ault-Brutus, 2012, Hahm et al., 2015, Perez et al., 2020). We specifically take race as “a complex assortment of distinguishing histories and specific life situations that bear on access, opportunities, differential treatment, and self-worth, which affects many facets of a person’s lived experience as well as societal

relationships and policies” (Garcia, 2017). Drawing from intersectionality theory (Collins, 2015), we also assume that intersecting markers of social difference (e.g., race, gender, and education) are expressions of interlocking systems of oppression that operate at the macro-level of contemporary societies. Using 2019 nationally representative data from Brazil, we ask: To what extent does race, gender, education (as a marker of SEP), and their intersections shape inequities in the depression care cascade in Brazil? By considering the complex combination of race with other axes of inequality, this study aims to assess how the Brazilian universal health system is performing in the provision of equitable access to the most marginalised groups in society. By so doing, we investigate whether the inverse care law, originally proposed by Hart (1971), takes place in the depression care cascade.

### ***1.1 Racial inequities in mental healthcare in Brazil***

Following national reforms of mental healthcare that have sought to deinstitutionalise psychiatric care since the 1990s, the provision of community mental healthcare has increased in Brazil in the past few decades. This was achieved by the creation of Psychosocial Care Centres (known as CAPS, *Centros de Atenção Psicossocial*, in Portuguese), as well as the Psychosocial Care Networks, created in 2011 to build an integrated system with mental health professionals in primary care (*Núcleos de Apoio à Saúde da Família—NASF*) (see Amaral et al. (2018) for a review of the pathways to mental healthcare in Brazil). Access to specialised health professionals and psychotropic drugs has, nevertheless, remained limited, being poorly distributed across Brazilian geographic regions, especially the outskirts of large urban centres (Almeida, 2019, de Jesus Mari, 2018).

Mental healthcare in Brazil is especially important because depressive disorders are the fourth leading cause of years lived with disability (GBD 2016 Disease and Injury Incidence and Prevalence Collaborators, 2017). MDD risk is augmented by stressful events and, more broadly, by a lack of policies that alleviate the burdens of everyday life. In particular, racism is an important determinant of a range of depressive disorders (Williams and Mohammed, 2013, Bhui et al., 2018a). Brazilian-based research has shown that the Black population is especially more likely to be depressed than the white (Santana et al., 2007, Smolen and Araujo, 2017). This observation is often discredited, though, by longstanding eugenic conceptions that hold Black individuals as less prone to mental suffering (Damasceno and Zanello, 2018). Thus, anti-

racist mental healthcare can not only more accurately identify depressed individuals across disadvantaged groups, but also provide equitable delivery of services in every step of the depression care cascade. The “care cascade” or “treatment cascade”, described here as where ‘the affected individual must access healthcare, be recognised clinically, initiate treatment, receive adequate treatment, and respond to treatment’ (Pence et al., 2012), has been scarcely investigated in the Brazilian literature on the topic.

Extant evidence has shown that diagnosis and treatment rates are lower among men, low-income earners and those working in manual social classes (Fujii et al., 2012). There has also been less access to mental health services among Black individuals and adults with lower educational attainment (Lopes et al., 2016). A recent study conducted in Southeast Brazil showed that white adults had higher mental healthcare utilisation rates and were more likely to use psychotropic drugs than their Black peers (Fernandes et al., 2020). The inverse care law in the depression care cascade has been observed elsewhere (Chew-Graham et al., 2002), but may be particularly pernicious in Brazil, given recent governmental actions to weaken the country’s universal healthcare system (Morosini et al., 2020, Morosini and Fonseca, 2017). (*Morosini et al., 2020, Morosini and Fonseca, 2017*). The current universal health system is based on the Family Health Strategy (FHS), which focuses on a multidisciplinary approach to community health (a hearty discussion on the current situation to maintain universal and equitable health services can be found at Giovanella et al. (2020)). While coverage of the Family Health Strategy has increased over the last ten years, with the Black population being more likely to be covered, this group was less likely to be covered by health insurance and more likely to report difficulty accessing overall health services (Constante et al., 2021). In addition to the overall dismantling of overall public health services, Psychosocial Care Centers and Networks are only ten years old and coverage of community services has been shown to be not only insufficient (Gryschek and Pinto, 2015), but also precarious (Andreoli et al., 2007, Trape and Campos, 2017).

## ***1.2 An intersectional approach to mental healthcare***

Individuals lying at the intersection of multiple axes of inequality are subjected to various forms of discrimination and oppression (Crenshaw, 1989). Though Browns and Blacks currently comprise the numerical majority of the Brazilian population, cultural, systemic, and institutional forms of racism have placed them in the most deprived areas of the country (Silva

and Paixão, 2014). With lower quality of life and higher odds of dying prematurely (Chor, 2013, Martins, 2006), these marginalised groups have also been less likely to be represented among policy-makers (Campos and Machado, 2017). Black men, but especially Black women, have the lowest monthly wages, as well the worst levels of education, compared to their whites peers (Lopes, 2005).

Stress has been at the centre of mechanisms explaining why marginalised groups show worse mental health status (Williams, 2018). It is the pathway from race-related stressors to mental health that can inform policies to reduce the burden among these groups. Studying the intertwined relationship between social categories, such as race, gender, and education, enables a deeper understanding of how these underlie inequities in depression rates and limit access to mental healthcare. Few Brazilian studies have investigated the relationships between race and mental health disorders (Smolen and Araujo, 2017, Damasceno and Zanillo, 2018), and even fewer have highlighted how intersections between the aforementioned markers of social difference shape inequities in depression care. Two studies conducted in predominantly non-white northeastern Brazilian cities stand out: one carried out in Salvador, and the other, in Feira de Santana. While the first showed that Black women presented higher prevalence of depressive disorders compared to white women, regardless of their working class (Almeida-Filho et al., 2004), the second revealed intersectional inequities by race and gender – common mental disorders were expressively higher among Black women relative to white men (Smolen et al., 2018).

It is unknown, though, whether the higher prevalence of MDD among multiply marginalised groups translates into higher access throughout the mental care cascade. The present study fills this knowledge gap. Our study also follows the footsteps of a US investigation, which examined intersectional inequities in screening for depression, access to mental healthcare, and adequacy of care (Hahm et al., 2015). The findings of this previous analysis highlighted that Blacks, regardless of gender, were less likely to be screened for depression in relation to whites. However, within-group comparisons revealed that Black women were less likely to be screened than Black men. Inequities by race and gender were complex and varied along the continuum of care; Black women were more likely than Black men to receive treatment, for example (Hahm et al., 2015).

### **1.3. Hypotheses**

By considering the intersection of race with gender and education, we tested two hypotheses. The first posits that women, Blacks, and low-education respondents have higher frequency of MDD, but have lower access to each step of the care cascade, compared to men, whites, and high-education individuals, respectively (H1). The second hypothesis contends that low-education Black women have the highest frequency of MDD and the lowest access to care across the entire cascade (H2).

## **2 Methods**

### **2.1 Study data**

This study analysed data from the 2019 Brazilian National Health Survey (*Pesquisa Nacional de Saúde*, PNS), a country-wide cross-sectional survey of the non-institutionalised resident population. The PNS sampling process was carried out in three stages: the primary sampling units (PSU) were the census tracts, followed by selection of households, and residents aged 15 and over. Individual data from 90,846 respondents were collected through an interviewer-administered questionnaire. Further information on sampling procedures, inclusion criteria, and data collection can be found elsewhere (Stopa et al., 2020).

### **2.2 Dependent variables**

We investigated four dependent variables. First, the prevalence of moderate to severe probable MDD ( $Y_1$ ), measured with the Patient Health Questionnaire (PHQ-9). Previously assessed in the Brazilian general population (Santos et al., 2013), the PHQ-9 identifies individuals at risk of MDD by means of nine items. These comprise depressed mood, loss of interest in doing things, sleep problems, lack of concentration, tiredness, change in appetite or weight, feelings of worthlessness, feeling whether slow, and suicide ideation. We identified adults with moderate to severe MDD symptoms by selecting participants with PHQ-9 scores equal to or higher than 10, as this threshold has high sensitivity (72.5%) and specificity (88.9%) for identifying MDD (Santos et al., 2013). Second, clinical diagnosis of depression by a healthcare professional ( $Y_2$ ), which was assessed with the question “Has a doctor or mental health

professional (such as a psychiatrist or psychologist) ever diagnosed you with depression?” The third outcome comprised regular visits to a medical doctor/ health service because of depression (Y<sub>3</sub>). Those who reported having been diagnosed with depression were asked: “Do you go to the medical doctor / health service regularly because of depression or only when you have a problem?” Respondents that did not visit the service regularly or did so only when there was a health issue were considered non-regular users. The fourth and final outcome was access to specialised treatment for depression (Y<sub>4</sub>). Regular service users with a formal diagnosis of depression were asked “What treatments do you currently take for depression?” Those answering psychotherapy, medication, or other types of treatment (acupuncture, medicinal plants and herbal medicine, homoeopathy, meditation, yoga, tai chi chuan, lian gong, or some other integrative and complementary practice) were considered to have access to specialised treatments.

### **2.3 Explanatory variables**

Race (X<sub>1</sub>), gender (X<sub>2</sub>), and education (X<sub>3</sub>) were the explanatory variables. Self-reported race (officially termed as “colour/race” in Brazil) was measured according to the categories of the Brazilian Institute of Geography and Statistics: 1) white; 2) Black; 3) Yellow; 4) Brown; and 5) Indigenous. As this study focused only on inequities between whites and Blacks, Brown and Black Brazilians were grouped together following their similar experiences of social and political marginalisation (Lopes, 2005). Gender was measured in terms of either men or women. Level of education was classified as low ( $\leq 8$  years of study) or high ( $\geq 9$  years of study). The intersections between race, gender, and education were also evaluated by identifying all potential combinations among these markers of social difference (X<sub>4</sub>).

### **2.4 Covariates**

Age (years) was considered in its continuous format. While we could not measure which type of service respondents routinely use to access mental health services, we considered Family Health Strategy registration (yes/no) and health insurance coverage (yes/no) as covariates in our analyses.



## ***2.5 Analytical plan***

Following Pence et al. (2012), the depression care cascade is required for successful depression treatment, as presented in Figure 1. We considered only respondents for which data were available across all three explanatory variables. This analytical sample corresponded to 87,187 respondents. To assess H1, a series of cross-tabulations were conducted to present the distribution of the outcomes according to each social category. Relative frequencies of each variable were presented together with their 95% confidence intervals (95% CIs). We then estimated a series of logistic regression models adjusted by age (years), registration in the FHS (yes/no) and health plan coverage (yes/no) to investigate social inequities in each outcome. To test H2, we first stratified the analyses for race, gender and education. In a series of subsequent models, we included interaction terms between race, gender, and education to examine intersectional inequities across all dependent variables. We then calculated model-predicted probabilities of each outcome for all intersectional groups – these probabilities were used as estimates of inequities along the cascade of care. Following the regression models abovementioned, we also performed the same analysis considering an interaction term with age categorised into younger and older adults, with registration in FHS, and with health plan coverage for each of the investigated outcome. All analyses considered the complex survey design and sampling weights, and were conducted in Stata 16.0 (Stata Corporation, College Station, USA).

## ***2.6 Ethical aspects***

This study is based on data from the 2019 PNS, whose microdata is publicly available at the following website: <ftp://ftp.ibge.gov.br/PNS/2019/Microdados/>. The research protocol was approved by the Brazilian National Research Ethics Committee (process number 3.529.376). Each participant received relevant information about the study, according to the guidelines established in the 466/12 Resolution of the National Health Council, which guarantees ethical aspects of scientific research involving humans in Brazil. In addition to verbal agreement, respondents were asked to sign a written consent agreement.

## **3 Results**

The sample was mostly comprised of Black individuals (56.1%), women (53.2%), and high-education respondents (57.4%). As a whole, the mean age of the sample was 45 years, and most individuals report being registered in the FHS (61.1%) and not being health plan holders (73.0%). According to the PHQ-9, 11.5% had moderate to severe probable MDD (Table 1). Among them, 35.8% were diagnosed with depression by a health professional. Of those diagnosed with depression, 48.7% had access to regular services for depression. Among respondents with access to regular services, 97.7% had access to specialised treatment for depression. Table 1 also shows the prevalence of each outcome according to race, gender, and SEP. Overall, no stark differences were observed between whites and Blacks, except for being diagnosed with MDD by a health professional (40.4% and 32.4%, respectively).

While higher prevalence of moderate to severe probable MDD was observed among women and low-education respondents, no significant racial inequities were noted within each gender and SEP stratum (Figure 2). Further analyses revealed, however, that differences between men and women, as well as between low- and high-education respondents were impacted by race in the second step of care: Black women showed an expressively lower frequency (34.3%) of being diagnosed with MDD by a health professional in relation to white women (44.3%); similar inequities were observed between high-education Blacks (33.1%) and whites (41.3%), and low-education Blacks (31.7%) and whites (39.2%). Figure 2 also shows that despite having lower prevalence of probable MDD, high-education individuals were more likely to be diagnosed with MDD. While access to regular services for depression ranged from 42.9% among Black men to 51.6% among white men, Black women as well as low-education Blacks showed the lowest frequency of access to specialised treatment.

Table 2 presents racial and intersectional inequities for each outcome of the depression care cascade, adjusted for age, registration in the FHS, and health plan coverage. The analyses showed that there were no significant inequities between whites and Blacks across the outcomes. Nevertheless, Blacks were significantly less likely to be diagnosed with MDD by a health professional (OR 0.74, 95% CI 0.63;0.88). Table 2 also shows that low-education white (OR 3.06, 95% CI 2.54;3.70) and Black (OR 3.11, 95% CI 2.61;3.71) women presented the highest risk of MDD in contrast with high-education white men. This table reveals that while all women were more likely to have probable MDD in relation to high-education white men, only white women seemed to be more likely to be diagnosed with MDD. Moreover, no significant difference was observed for the third and fourth step of the depression care cascade.

Among groups of men, low-education Black men presented the lowest odds compared to high-education white men to be diagnosed with MDD by a health professional. Additionally, none of the results obtained from the interaction with groups of age, registration in the FHS, and with health plan coverage were of significance to be presented.

Figure 2 shows the predicted probabilities of the intersectional inequities adjusted by age, registration in the FHS, and health plan coverage along the depression care cascade. Though women presented higher frequencies of moderate to severe probable MDD than men, they showed lower access to care (i.e. sharper decline between steps). While among high-education white men the difference between those that have moderate to severe probable MDD and were not diagnosed by a health professional were at 4.4 percentage points (pp), this was even higher for low-education Black women (11.6 pp), low-education white women (10.1pp), high-education Black women (9.8pp), and high-education white women (7.9pp). Although the second and third steps of the cascade were not largely characterised by intersectional inequities, women were three times more likely to be excluded from these steps than men.

#### **4 Discussion**

This study aimed to assess how the Brazilian healthcare system performs in the provision of equitable access to the depression care cascade. We hypothesised that women, Blacks, and low-education respondents have higher frequency of MDD but lower access to each step of the care cascade, compared to their counterparts (H1), as well as that low-education Black women face the highest risk of probable MDD but the lowest access to care from diagnosis to treatment (H2). Our results partially support both H1 and H2, but highlight the need to take into account the complex patterns of inequity that emerge upon investigating race, gender and SEP in combination.

No significant differences between whites and Blacks were observed in the prevalence of probable MDD, but ensuing models revealed that Black individuals were significantly less likely to be diagnosed with MDD by a health professional. Such inequity in the first step of care was not observed for the other steps in the care cascade, however. Equitable access to diagnosis from a health professional requires having a healthcare system that follows anti-racist policies and practices. It also involves acting against the longstanding and widespread view according to which Blacks are less inclined to develop mental illness (Damasceno and Zanella, 2018).

In the first hypothesis, although women and low-education participants were more likely to have MDD, only women were more likely to be diagnosed compared to their counterparts. High-education individuals were more likely to be diagnosed even though they presented lower prevalence of probable MDD. No significant differences were observed in the next step of the depression care cascade; neither social group that was more likely to have probable MDD were more likely to have access to regular services and specialised treatment for depression. While differences were observed in the first step between men and women and high and low-education, the results of these two social characteristics analysed alone are difficult to explain, but it seems that: *i*) health stressors have a higher burden on women and low-education individuals; and *ii*) the Brazilian health system needs to recognise MDD and embrace it as a chronic condition that requires equitable management from clinical recognition to adequacy of treatment, aiming for remission (Pence et al., 2012). In fact, a comparison between the two PNS surveys (2013-2019) shows that health stressors continued to act strongly in Brazil as women and low-education individuals remained with higher frequencies of probable MDD than their privileged peers throughout the six-year period.

Contrary to H2, low-education Black women did not show the highest MDD frequency and the lowest access to care across the entire cascade. We observed that low-education Black showed the greatest odds compared to high-education white men to have probable depression, but it seems that other social groups shared the lack of access across the care cascade. Our findings are consistent with a study conducted in Northeast Brazil (Almeida-Filho et al., 2004), which showed that Black women were less likely to be depressed when placed in privileged social groups.

As our study is cross-sectional, we recommend additional research using longitudinal data to confirm the presently observed findings. Considering our findings and the adjacent literature, we also propose actions through the four mechanisms by which racism may operate (Jones, 2002) to impact the depression care cascade. To reduce inequities in depression and its continuity of care, structural mechanisms need to be recognised as those that perpetuate the high risk of MDD in this country. Racial segregation (Silva and Paixão, 2014), existing inequities from education to the job market (Lopes, 2005), and high incarceration rates among Blacks all need to be confronted to prevent and reduce current levels of MDD and other mental disorders. Building green spaces close to marginalised areas, while improving public transport and other public facilities are other governmental actions that should be considered (Dinwiddie

et al., 2013). The need to increase funding for mental healthcare prevention programs targeted at marginalised groups and non-affluent areas is also of utmost importance. Practices that can eliminate racial targeting by the police, as well as racial bias by health professionals also need to be acknowledged to reduce adverse mental health. Finally, the pervasive, ongoing norms in the healthcare environment which view Black men and women as inherently stronger than whites need to be eliminated.

While this study's strength lies in presenting both racial and intersectional inequities not only in the prevalence of depression but other outcomes that represent the continuity of care for depression in Brazil, our findings are not without limitations. As a marker of socioeconomic position, education is based on self-report and, although widely accepted, is one characteristic that represents only one aspect of an individual's complex social status. Gender was also measured in 2019 PNS in its binary form, limiting our analyses by not considering multiple gender identities. Another limitation refers to not considering the structural characteristics of the healthcare system that are known to impact mental health (e.g. actual policies implementation, financial and structural characteristics of the services used by the respondents).

Notwithstanding these limitations, this study demonstrates the importance of not only studying racial and intersectional inequities in chronic health conditions, such as depression, but to understand how multiply marginalised groups are faced with restricted access to healthcare throughout the care cascade. Our results reveal that the inverse care law operates in the Brazilian depression care cascade, as high-education whites had lower prevalence of probable MDD but showed higher frequency of depression diagnosis by a health professional. Multiply marginalised groups are thus faced with unmet healthcare needs, as they seem to lack the opportunity to access mental health services to treat and relieve the burden of MDD. These findings indicate that the Brazilian healthcare system perpetuates a multilayered system of oppression that overlooks multiply marginalised individuals. Results also indicate that adequate screening awareness among healthcare professionals needs to be undertaken as MDD is a chronic condition and requires longstanding support.

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## **Declaration of interest statement**

The authors have no conflict of interest to disclose.

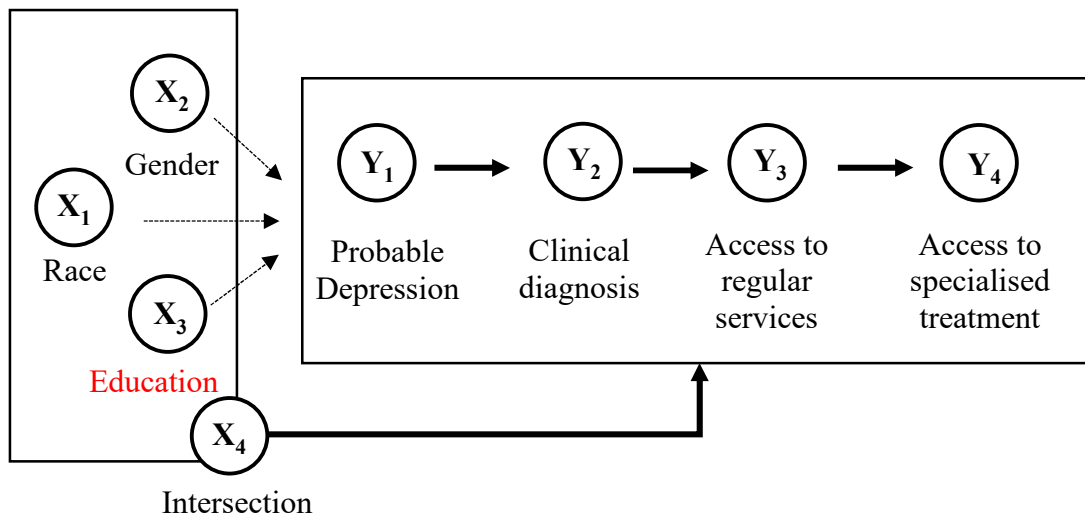
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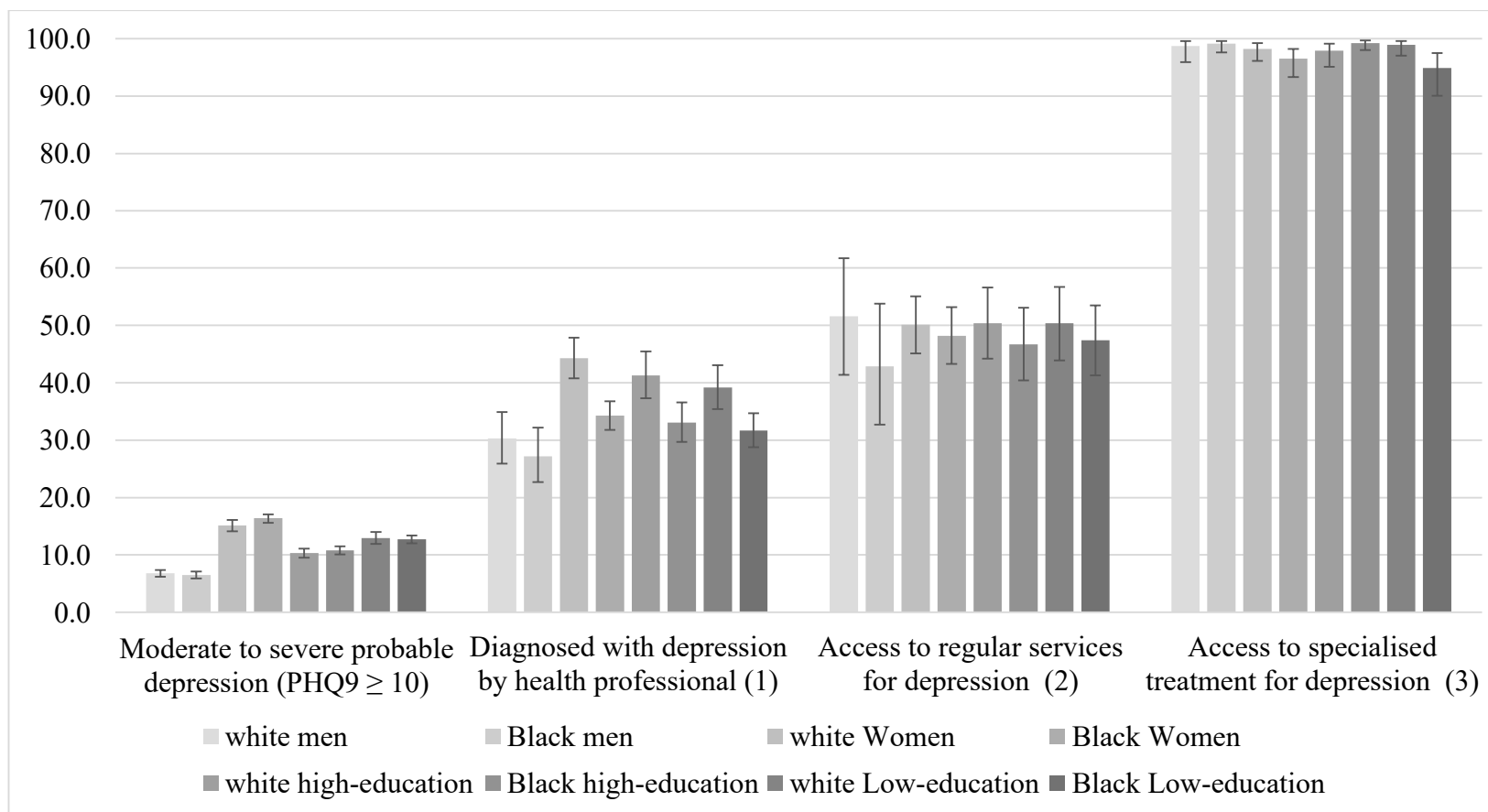


**Figure 1** – Analytical framework for racial and intersectional inequities along the depression care cascade. Adapted from Pence et al. (2012).

**Table 1** - Prevalence of outcomes along the depression care cascade according to race, gender, and education. Brazilian National Health Survey, 2019.

<b>Outcomes / explanatory variables</b>	<b>N</b>	<b>n</b>	<b>% (95% CI)*</b>
<b>Moderate to severe probable depression (respondents with a PHQ9 score <math>\geq</math> 10)</b>	<b>87,187</b>	<b>9,635</b>	<b>11.5 (11.1;11.9)</b>
white	32,409	3,414	11.3 (10.6;11.9)
Black	54,778	6,221	11.7 (11.2;12.2)
men	41,019	2,605	6.6 (6.2;7.1)
Women	46,168	7,030	15.8 (15.2;16.4)
high-education	45,703	4,700	10.5 (10.1;11.1)
Low-education	41,484	4,935	12.8 (12.2;13.4)
<b>Diagnosed with depression by a health professional among those with a PHQ9 score <math>\geq</math> 10</b>	<b>9,635</b>	<b>3,164</b>	<b>35.8 (34.1;37.6)</b>
white	3,414	1,340	40.4 (37.6;43.3)
Black	6,221	1,824	32.4 (30.2;34.6)
men	2,605	633	28.5 (25.3;32.0)
Women	7,030	2,531	38.5 (36.5;40.6)
high-education	4,700	1,591	37.0 (34.4;39.7)
Low-education	4,935	1,573	34.5 (32.2;37.0)
<b>Access to regular services for depression among those with a PHQ9 score <math>\geq</math> 10 who were diagnosed with depression</b>	<b>3,164</b>	<b>1,459</b>	<b>48.7 (45.4;51.9)</b>
white	1,340	645	50.4 (45.9;54.9)
Black	1,824	814	47.1 (42.6;51.2)
men	633	297	47.0 (39.5;54.6)
Women	2,531	1,162	49.1 (45.4;52.8)
high-education	1,591	741	48.7 (44.2;53.2)
Low-education	1,573	718	48.6 (44.2;53.1)
<b>Access to specialised treatment for depression among those with PHQ9 score <math>\geq</math> 10 who were diagnosed with depression and had access to regular service for depression</b>	<b>1,459</b>	<b>1,415</b>	<b>97.7 (96.3;98.5)</b>
white	645	628	98.3 (96.7;99.1)
Black	814	787	97.1 (94.5;98.4)
men	297	287	98.9 (97.6;99.5)
Women	1,162	1,128	97.4 (95.6;98.4)
high-education	741	722	98.5 (97.0;99.2)
Low-education	718	693	96.7 (94.0;98.2)

95% CI – 95% Confidence Interval; PHQ-9 - Patient Health Questionnaire; \* survey weights applied



**Figure 2** - Prevalence of the outcomes along the depression care cascade according to race, stratified by gender or education. Brazilian National Health Survey, 2019.

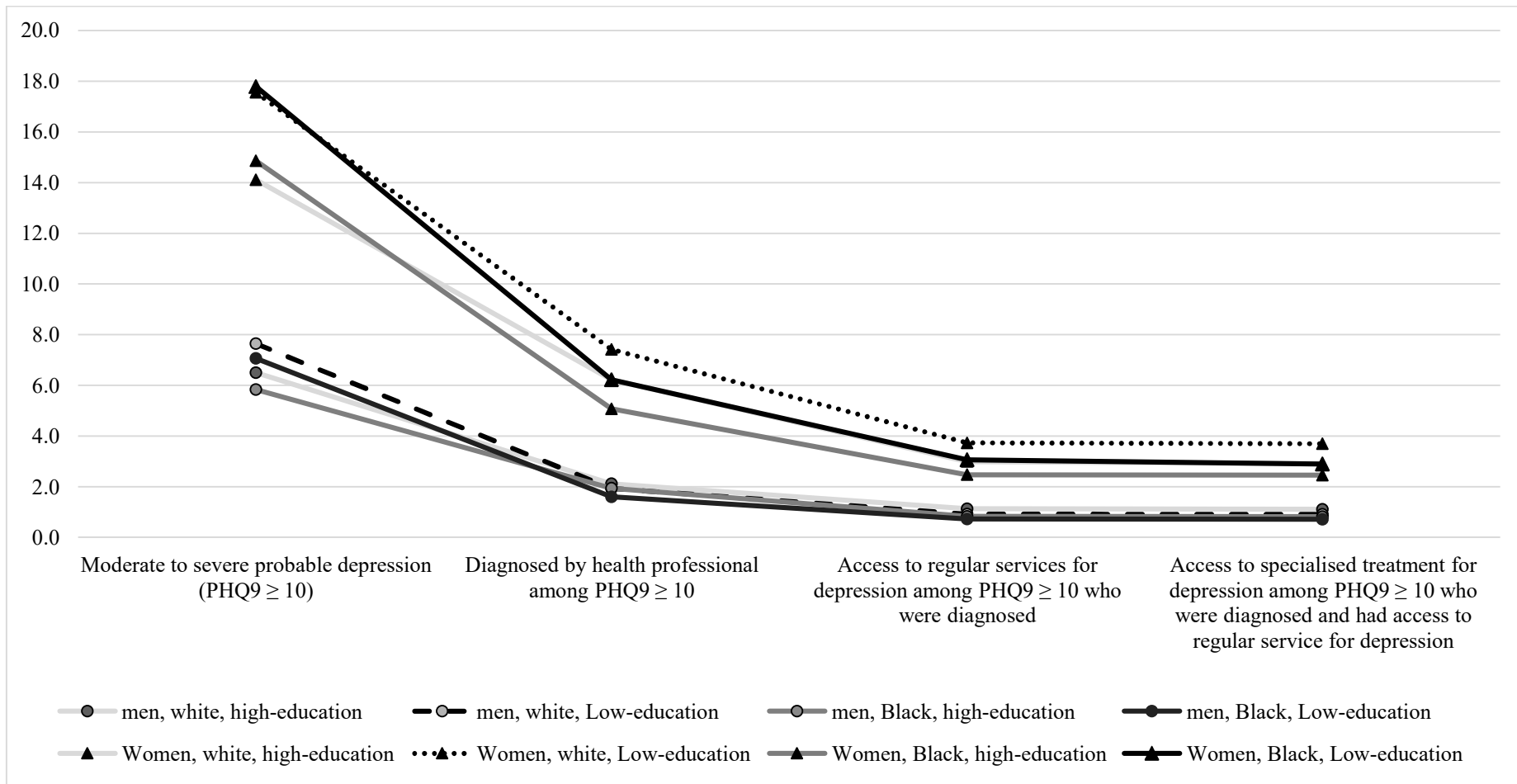
**Figure 2 – Legends**

1 – Among respondents with a PHQ9 score  $\geq 10$ ; 2 – Among respondents with a PHQ9 score  $\geq 10$  who were diagnosed with depression; 3 – Among respondents with a PHQ9 score  $\geq 10$  who were diagnosed with depression and had access to regular service for depression

**Table 2** - Association of each outcome of the depression cascade of care according with race, gender, and education, as well as their intersections, adjusted for age, registration in the Family Health Strategy, and health plan coverage. Brazilian National Health Survey, 2019.

<b>Social characteristics adjusted for age</b>	<b>Moderate to severe probable depression (PHQ9 ≥ 10)</b>	<b>Diagnosed with depression by a health professional<sup>1</sup></b>	<b>Access to regular services for depression<sup>2</sup></b>	<b>Access to specialised treatment for depression<sup>3</sup></b>
	<b>OR (95% CI)</b>	<b>OR (95% CI)</b>	<b>OR (95% CI)</b>	<b>OR (95% CI)</b>
Race				
white	ref	ref	ref	ref
Black	1.01 (0.93;1.10)	0.74 (0.63;0.88)	0.94 (0.73;1.20)	0.58 (0.21;1.59)
Black (adjusted for gender and education)	1.00 (0.92;1.08)	0.74 (0.63;0.88)	0.93 (0.73;1.19)	0.62 (0.25;1.54)
Gender				
men	ref	ref	ref	ref
Women	2.64 (2.42;2.87)	1.58 (1.31;1.90)	1.08 (0.78;1.50)	0.44 (0.17;1.13)
Education				
high-education	ref	ref	ref	ref
Low-education	1.18 (1.08;1.29)	0.85 (0.70;1.03)	1.03 (0.77;1.38)	0.54 (0.16;1.76)
Gender * Race * Education				
men, white, high-education	ref	ref	ref	ref
men, white, Low-education	1.19 (0.95;1.49)	0.70 (0.43;1.13)	0.81 (0.37;1.76)	0.96 (0.08;11.91)
men, Black, high-education	0.89 (0.71;1.11)	1.03 (0.64;1.67)	0.65 (0.29;1.47)	1.62 (0.20;12.82)
men, Black, Low-education	1.09 (0.89;1.34)	0.60 (0.38;0.93)	0.74 (0.35;1.56)	1.42 (0.19;10.62)
Women, white, high-education	2.36 (1.97;2.84)	1.63 (1.14;2.35)	0.82 (0.45;1.51)	0.51 (0.09;2.86)
Women, white, Low-education	3.06 (2.54;3.70)	1.52 (1.04;2.22)	0.90 (0.50;1.63)	1.46 (0.22;9.54)
Women, Black, high-education	2.51 (2.11;2.98)	1.07 (0.75;1.54)	0.85 (0.46;1.57)	1.60 (0.25;10.12)
Women, Black, Low-education	3.11 (2.61;3.71)	1.11 (0.78;1.60)	0.86 (0.47;1.57)	0.25 (0.04;1.39)

OR – odds ratio; 95% CI – 95% Confidence Interval; 1 – Among respondents with a PHQ9 score ≥ 10; 2 – Among respondents with a PHQ9 score ≥ 10 who were diagnosed with depression; 3 – Among respondents with a PHQ9 score ≥ 10 who were diagnosed with depression and had access to regular service for depression



**Figure 3** - Predicted probabilities of the depression care cascade according to the intersection between race, gender, and education, adjusted by age, registration in the Family Health Strategy, and health plan coverage. Brazilian National Health Survey, 2019.