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Race/skin color and mental health disorders in Brazil: a systematic review of the literature

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Abstract *Mental health disorders contribute a significant burden to society. This systematic literature review aims to summarize the current state of the literature on race/skin color and mental health disorders in Brazil. Methods: PubMed and Lilacs were searched using descriptors for mental health disorders (depression, anxiety, Common Mental Disorders, psychiatric morbidity, etc.) and race to find studies conducted in Brazil. Studies of non-population groups, that did not analyze race/skin color, or for which the mental disorder was not the object of study were excluded. After evaluation of quality, 14 articles were selected for inclusion. There was an overall higher prevalence of mental health disorders in non-Whites. Of the six multivariate analyses that found statistically significant results, five indicated a greater prevalence or odds of mental health disorder in non-Whites compared to Whites (measure of association between 1.18-1.85). This review identified the trend in the literature regarding the association between race and mental health disorders. However, important difficulties complicate the comparability of the studies, principally in function of the differences in the mental health disorders studied, the method of categorizing race/skin color, and the screening tools used in the studies analyzed.*

Key words *Race, Skin color, Mental health*

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Introduction

Mental health is one of the largest contributors to the burden of disability worldwide; in the Global Disease Burden Study 2010, mental and substance abuse disorders accounted for the highest proportion (22.9%) of years lived with disability (YLD). Depressive disorders are particularly important to study: within the category of mental and substance abuse disorders, the affective mental health disorders such as depression and anxiety disorders account for the largest portion of YLD globally[1]. This pattern of morbidity burden also exists in Brazil. Schramm et al.[2] showed that neuropsychiatric disorders accounted for the highest proportion of YLD, both in Brazil as a whole (34%) and in the Northeast (32.9%). Despite the costly impact on population health, mental health is less studied than physical health. Few studies have examined the association between race/skin color and mental health in Brazil, or even included race as a unit of analysis.

Relatively little research has been performed in Brazil on health inequalities according to race/skin color, principally because researchers do not include a question about race/skin color on survey instruments. Chor and Lima[3] attribute this to three potential hypotheses: acceptance of the "myth of racial democracy"; difficulties in classifying race/ethnicity; and the opposition between class and race. Although Brazil never had a legal or formal policy of racial segregation, this does not mean race has no influence on Brazilian society–there are clear inequalities present[4,5].

Race/skin color can influence the opportunities that a person receives in life–educational, financial, and social–which affects socioeconomic status[6,7]. A current theoretical framework to explain the path that connects race to mental health is that exposure to stress is the causal mechanism[8]. According to Williams et al.[9], race may influence exposure to stress through two possible pathways: stress linked to social structure, social status, and social roles – i.e. the stress caused by the fact that race is a determinant of socioeconomic position; and stress linked to experiences of racism and discrimination.

Many of the studies on the association between race and mental health were performed in the United States[9-14]. Considering the difference in social, cultural, and historical contexts between the United States and Brazil, the results of studies performed in the US may not be representative of the association between race and mental health in Brazil. Therefore the objective of this study is to systematically review the literature on race and mental health in Brazil to understand this association in the Brazilian context.

Methodology

Search process

Two reference databases were used to capture all the published research on this theme – PubMed was searched to find the internationally published research, and Lilacs was searched to find the research published in Brazil. Search strings were created separately for each database. Keywords were chosen according to the theme of the review, with the aim of using general terms to cast the widest net.

The controlled vocabulary thesauruses for each database were consulted to find the controlled vocabulary corresponding with the keywords–the MeSH (Medical Subject Headings) system for PubMed, and the DeCS (Descriptores en Ciências de la Salud) system for LILACS. Free terms were also used so as not to miss articles that have not yet been indexed.

Search strings

The PubMed search was carried out using the following search string: "((((((((((“Depression”[Mesh]) OR “Depressive Disorder”[Mesh]) OR “Anxiety Disorders”[Mesh]) OR “Stress, Psychological”[Mesh]) OR “Minor psychiatric disorders”) OR “psychiatric morbidity”) OR “psychological distress”) OR “common mental disorders”)) AND (((((“Ethnic Groups”[Mesh]) OR race) OR “skin color”) OR black) OR white)) AND brazil*". The LILACS search was elaborated using the following search string: tw:((“distúrbios psíquicos menores” OR “transtornos psiquiátricos menores” OR “distúrbios psiquiátricos menores” OR “morbidade psiquiátrica” OR “transtornos mentais comuns” OR “depressão” OR “transtorno depressivo” OR “transtornos de ansiedade” OR “estresse psicológico”) AND (“Distribuição por raça ou etnia” OR “grupos étnicos” OR “Desigualdades em Saúde” OR raça OR “cor da pele” OR branco OR branca OR negro OR negra OR preto OR preta)) AND (instance:”regional”) AND (db:(“LILACS”)). No date, year, or language limits were applied to these searches. The software StArt (State of the Art through Systematic Review) was used to facilitate the systematic review process.

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Inclusion/exclusion criteria

Only cross-sectional studies on the prevalence of the aforementioned mental health disorders were included in this systematic review, and only studies for which the mental health disorder was an object of study. Studies that did not include a race or skin color variable were excluded. Population studies, or studies of specific populations groups were included in the study; however, studies of non–population groups (for example, people with a specific medical condition other than the mental health disorders of interest) were excluded. All included studies reported at least the prevalence of the mental health condition by race. Other studies also include race in the multivariate analysis. Considering that racial categorization as well as the association between race and health outcomes may be culturally determined, this review was limited to the Brazilian context–only studies performed in Brazil were included.

After the initial search, all abstracts were read to determine relevance, according to the aforementioned inclusion and exclusion criteria. Since race, when not the object of study, was not necessarily mentioned in the title or abstract, articles were not eliminated if they did not mention race as a variable in the abstract stage.

The search in PubMed resulted in 70 articles, and the search in Lilacs resulted in 192 (Figure 1). Of the 262 total articles identified by the search strings, 209 abstracts were rejected for not fitting the inclusion/exclusion criteria. Since the StArt software screens out most duplicated articles, only 5 articles were identified as duplicates. The full-texts of the 48 articles deemed possibly relevant were read in their entirety to determine if they reported the mental health outcome by race in at least the bivariate analysis. Of those 48 articles, 17 articles met the stated criteria. The reference lists of each of these 17 articles were then combed, and three more relevant articles were identified, downloaded, and judged to fit the criteria to be included in the study.

Evaluation of quality

The Joanna Briggs Institute Prevalence Critical Appraisal Tool (JBI-PCT) was used to assess the quality of cross–sectional studies, which consists of 10 questions on various elements of study quality, including the sample and sample selection, appropriate statistical analysis and control for confounding[15].

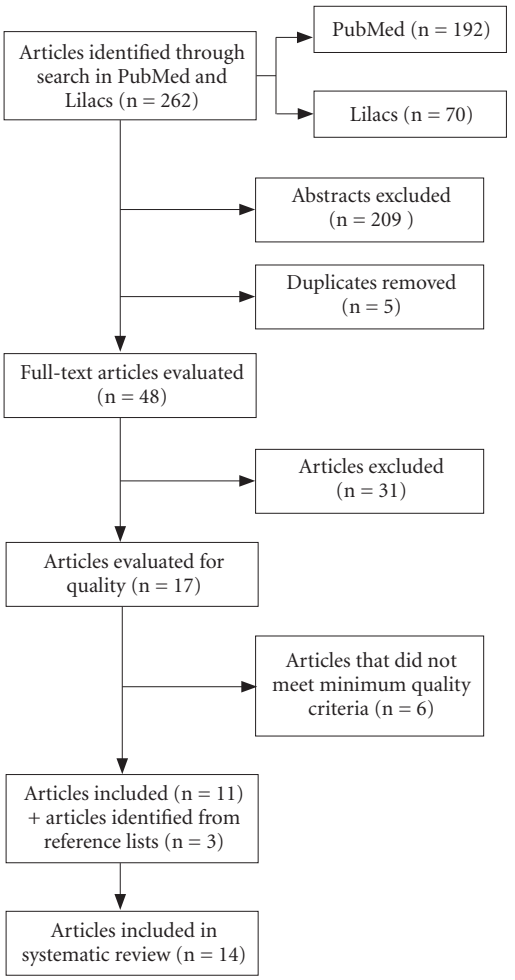

Figure 1. Process of identifying articles for inclusion in the systematic review.

Results

Of 20 studies that met the inclusion criteria, six were judged not to not meet the minimum quality criteria as laid out in the JBI-PCT, primarily due to lack of randomization in the sampling strategy or due to insufficient sample size. Thus, 14 articles were identified for final inclusion (Figure 1).

Setting and subjects

As seen in Table 1, three of the fourteen included studies were of the general population[16-18], one with middle–aged women[19], three were specifically of older adults[20-22], two with young

adults[23,24], and five were of pregnant women or women who recently gave birth[25-29].

Mental health disorders studied

All the included studies examined affective mental health disorders. Three of the fourteen studies examined depression[16-18], three examined psychiatric morbidity (referred to as depressive symptoms, or depression morbidity)[19-22], two studied Common Mental Disorders[23,24], and five studies examined ante- or post-natal depression, or depression during pregnancy[25-29]. Although anxiety was included in the search terms, only one study included any measure specific to anxiety; this study examined both antenatal depression and antenatal anxiety[25].

Although several studies examined the same mental health outcome, there was little concordance in the tool used to assess that outcome. Only two screening tools appeared more than once – the Edinburgh Postnatal Depression Scale (EDPS), and the Geriatric Depression Scale. However, of the three studies that used the EDPS, two used a cut–off of 12[26,29], and the other used a cut-off of 13[28]. The two studies that used the GDS used different versions of the scale, as one used the 30–item version[21], and the other used the 15-item version[20]. All studies used instruments that were validated for use in Brazilian Portuguese.

As seen in Table 1, for the bivariate analyses twelve studies reported prevalence by race, and one reported a prevalence ratio but not prevalence[18-29]. Only ten articles included race in the multivariate analysis[16-18,20,22,23-26,28]; although in one study the absence of race/skin color in the multivariate model was due to the use of step–wise regression[27].

Prevalence

Of the studies on depression in the general population, only one reported prevalence of depression by race, and this study found a higher prevalence in the non-White categories (Moreno: 12.0%, Mulatto: 15.7%, and Black: 11.2%) than among Whites (9.4%)[18]. One study on Common Mental Disorders (CMD) found a higher prevalence among Black Brazilians (51.6%) than White Brazilians (37.0%), but a lower prevalence among Brown Brazilians (32.8%), though these differences were not significant[24]. One of the studies on CMD found a significantly higher prevalence of CMD among Black/Mixed Brazilians than White Brazilians, and this was true in men and women[23].

Depression symptoms were seen to be significantly higher among Black middle–aged women (52.8%) than among White women (42.3%)[19]. Among older adults, a significantly higher prevalence of depressive symptoms/depression morbidity was seen in non-Whites as compared to Whites[20,22]. The difference among non-Whites varied however in one study Afro-Brazilians (46.5%) and multiracial Brazilians (45.7%) had a higher prevalence than Whites (37.8%)[22], while in another Blacks had nearly the exact same prevalence as Whites (17.0% vs. 17.1%, respectively) and the highest prevalence was found among the category of Asian/Mulatto/Indigenous (25.0%)[20]. Another study found a lower prevalence among non-Whites (22.7%) than among Whites (27.5%), however the difference was not significant[21]. For antepartum and post–partum depression, no statistically significant differences were found by race[25-29].

Multivariate analyses

The multivariate analyses show differing results, as can be seen in Table 1. Prevalence ratios of depression in one study show that Black Brazilians are actually significantly less likely like to have depression than Whites (OR = 0.72; 95% CI: 0.56–0.94), and this difference was significant[16]. However, another study of depression in the general population shows that Moreno (OR = 1.30; 95% CI: 0.85-2.01), Mulatto (OR = 1.78; 95% CI: 1.09-2.90) and Black Brazilians (OR = 1.14; 95% CI: 0.70-1.87) Black Brazilians all have greater odds of depression compared to White Brazilians, though this result was only significant for the Mulatto group[18]. In a study that adjusted for discrimination, no significant difference was found in odds of CMD between Black/Brown and White Brazilian university students (OR = 0.9; 95% CI: 0.5–1.4)[24]. Yet, another study, one that did not adjust for discrimination, found that Black or Mixed Brazilian women have a 25% higher prevalence of CMD as White women (OR = 1.25; 95% CI: 1.09–1.43); a similar pattern was seen among men, yet this finding was of only marginal significance (OR = 1.18; 95% CI: 0.98–1.42)[23].

Among older adults, multiracial Brazilians showed significantly higher prevalence of depression morbidity (PR = 1.41; 95% CI: 1.07–1.86), and marginally significant higher odds (OR = 1.21; 95% CI: 0.99–1.48) than Whites. Afro–Brazilian older adults also had marginally significant higher odds of depression morbidity (OR = 1.22; 95% CI: 0.98–1.53) than Whites[20,22].

Table 1. Included studies.

Authors	Population Studied	Screening Tool	Prevalence by Race	Measure of Association (95% CI)
Studies on Depression				
Munhoz et al., 2013[16]	Adults, 20+ (n = 2925)	PHQ-9, cut-off of ≥9	*Prevalence not reported*	Prevalence Ratio Black: 0.72 (0.56-0.94) Other: 1.12 (0.89-1.41)
Pavão et al., 2012[17]	Adults, 20+ (n = 3863)	Self-report of ever told by a physician you have depression	*Prevalence not reported*	Odds Ratio Mulatto: 1.00 (ref) Black: 1.35 (0.91-2.01)
Almeida-Filho et al., 2004[18]	Adults (n = 2302)	PSAD subscale of QMPA, cut-off of ≥23 on PSAD combined with ≥13 on depression subscale	White: 9.4% Moreno: 12.0% Mulatto: 15.7% Black: 11.2%† Non-White (combined): 12.7%†	Odds Ratio Moreno: 1.30 (0.85-2.01) Mulatto: 1.78 (1.09-2.90) Black: 1.14 (0.70-1.87) Non-White (combined): 1.40 (0.94-2.09)
Studies of depressive symptoms				
Guimarães et al., 2009[19]	Middle-aged women (n = 1249	PRIME-MD, caseness determined by a "yes" to one of three pre-determined questions	White: 42.3% Mulatto: 46.4% Black: 52.8%*	--
Bretanha et al., 2005[20]	Older adults, 60+ (n = 1593)	GDS-15, cut-off of ≥6	White: 17.0% Black: 17.1% Asian/Mulatto/Indigenous: 25.0%	Prevalence Ratio Black: 0.96 (0.65-1.43) Asian/Mulatto/Indigenous: 1.41 (1.07-1.86)
Quatrin et al., 2014[21]	Older adults, 60+ (n = 1007)	GDS-30, cut-off of ≥11	White: 27.5% Non-White: 22.7%	--
Blay et al., 2007[22]	Older adults, 60+ (n = 6961)	SPES, cut-off of ≥2	White: 37.8% African-Brazilian: 46.5% Asian: 34.8% Multiracial: 45.7%*	Odds Ratio Afro-Brazilian: 1.22 (0.98-1.53) Asian: 0.90 (0.35-2.32) Multiracial: 1.21 (0.99-1.48)
Studies of Common Mental Disorders				
Anselmi et al., 2008[23]	Young adults, 23-24 (n = 4285)	SRQ-20, cut-off of ≥8 for women, ≥6 for men	*Men:* White: 21.9% Black/Mixed: 26.9%* *Women:* White: 30.0% Black/Mixed: 41.1%*	Prevalence Ratio *Men:* Black/Mixed: 1.18 (0.98-1.42) *Women*: Black/Mixed: 1.25 (1.09-1.43)
Bastos et al., 2014[24]	Undergraduate students (n = 424)	GHQ-12, cut-off of ≥3	White: 37.0%; Brown: 32.8%; Black: 51.6%	Odds Ratio Black/Brown: 0.9 (0.5-1.4)
Studies of depression related to pregnancy (pre-natal, post-partum, during pregnancy)				
Faisal-Curry e Menezes, 2007[25]	Pregnant women (n = 432)	**Antenatal depression:** BDI, cut-off of ≥16	White: 19.9% Non-White: 19.1%†	Odds Ratio Non-White: 0.95 (0.5-1.81)
		Antenatal anxiety: STAI, cut-off of ≥41	White: 58.8% Non-White: 63.0%†	Others: 1.19 (0.70-2.00)
Melo et al., 2011[26]	Pregnant women, 18+ (n = 555)	**Antepartum Depression:** EPDS, cut-off of ≥12	White: 34.9% Non-White: 65.1%	Prevalence Ratio Non-White: 1.48 (1.09-2.01)
		Postpartum Depression: EPDS, cut-off of ≥12	White: not reported Non-White: 70.0%	Non-White: 1.85 (1.11-3.08

it continues

Table 1. continuation

Authors	Population Studied	Screening Tool	Prevalence by Race	Measure of Association (95% CI)
Pereira et al., 2009[27]	Pregnant women (n = 331)	**Depression during pregnancy:** CIDI	White: 14.1% Non-White: 14.3%	--
Tannous et al., 2008[28]	Women who recently gave birth to live infants (n = 271)	**Postnatal depression:** EPDS, cut-off of ≥13	Caucasian: 16.6%, Non-Caucasian: 28.1%†	Prevalence Ratio Non-Caucasian: 0.80 (0.49-1.32)
Ruschi et al., 2007[29]	Women 15-45 who gave birth to a live infant 31-180 days prior (n = 292)	**Postnatal depression:** EPDS, cut-off of ≥12	White: 47.8% Black: 17.4% Brown: 34.8%	--

If not designated otherwise, Whites are considered the reference group. *$p < 0.05$. † p-value not reported.

One study of antepartum depression found a statistically significant difference by race: non–Whites had a 48% higher prevalence of antepartum depression than Whites (OR = 1.48; 95% CI: 1.09–2.01)[26]. Postpartum depression was also found to be significantly different by race–non–Whites had a prevalence 85% higher than in Whites (OR = 1.85; 95% CI: 1.11–3.08)[26]. Only one study assessed anxiety, specifically antenatal anxiety, but did not find any significant results[25].

As seen in Table 2, nearly of all the significant associations found in these articles were in the positive direction for the non–White race/skin color group. The studies were most commonly carried out in the states of Rio de Janeiro and Rio Grande do Sul, and in most studies 50% or more of the sample population was White.

Discussion

The existing cross–sectional studies on mental health outcomes and race identified in this review suggest that the prevalence of mental health disorders is higher among Afro–Brazilians than Whites. There was not universal consensus among these studies, yet of the multivariate analyses that found statistically significant associations, nearly all were in the positive direction between non–Whites and mental health disorders; all of the analyses included socioeconomic variables such as educational level and family income. This begs future exploration, especially considering that nearly half of the existing literature was based on studies that did not have a diverse study sample. For example, of the 14 studies to include race as a variable of analysis, six had samples that were over three quarters White. According to the 2010 Census, Brazil's population is 47.7% White, and 50.7% Black/Brown[30]; however, in the South/Southeast of Brazil, where these six studies were carried out, there is a higher concentration of White Brazilians. Of the studies with a more mixed sample, and therefore greater statistical power to assess race, all significant associations were in the positive direction.

Race does not have a biological relationship with health, therefore there is no biological basis for an association between race and mental health[31,32]. The imperative to study this relationship stems from a need to identify the populations with the highest burden of poor mental health who are therefore most in need of treatment, and additionally to better explore and understand (in order to eventually prevent) what societal and contextual factors may be contributing to this association. Since the relationship between race and mental health is not biological, it is not immutable. If the contributing or causal factors could be identified, they could be prevented and therefore reduce or eliminate the inequality. The idea that racial disparities in health are caused by biology and genetics has been discredited, and other theories have taken its place to explain the association between race and health outcomes. A stress theory has been posited, and supported by several studies that found that stress accounts for much of the difference in depressive symp-

Table 2. Setting, distribution of race in study sample and direction of association in multivariate analysis.

Authors	Study Setting	Racial Distribution of Study Sample	Direction of multivariate Association[a]
Munhoz et al., 2013[16]	Rio Grande do Sul	80.1% White 12.1% Black 7.8% Other	Black: - * Others: +
Pavão et al., 2012[17]	Representation from all regions of Brazil	77.2% Mulatto 22.8% Black	Mulatto: (ref) Black: +
Almeida-Filho et al., 2004[18]	Bahia	14.9% White 45.9% Moreno 15.9% Mulatto 20.7% Black	Moreno: + Mulatto + * Black +
Guimarães et al., 2009[19]	Rio de Janeiro	43.3% White 40.1% Mulatto 16.6% Black	--
Bretanha et al., 2005[20]	Rio Grande do Sul	78.6% White 8.7% Black 12.7% Asian/ Mulatto/Indigenous	Black: - Asian/Mulatto/ Indigenous: + *
Quatrin, et al., 2014[21]	Rio Grande do Sul	95.7% White 4.3% Non-White	--
Blay et al., 2007[22]	Rio Grande do Sul	84.2% White 6.8% Afro-Brazilian 8.6% Multiracial	Afro-Brazilian: + * Multiracial: + *
Anselmi et al., 2008[23]	Rio Grande do Sul	78.1% White 21.9% Black/Mixed	Black/Mixed: + *
Bastos et al., 2014[24]	Rio de Janeiro	51.4% White 32.8% Brown 15.2% Black	Black/Brown: -
Faisal-Curry e Menezes, 2007[25]	São Paulo	83.0% White 17.0% Non-White	Non-White (Depression): - Non-White (Anxiety): +
Melo et al., 2011[26]	Pernambuco; São Paulo	45.5% White 54.5% Non-White	Non-White: + *
Pereira et al., 2009[27]	Rio de Janeiro	45.0% White 55.0% Non-White	--
Tannous et al., 2008[28]	Porto Alegre	64.6% White 35.4% Non-White	Non-White: -
Ruschi et al., 2007[29]	Espírito Santo	49.0% White 16.8% Black 34.2% Brown	--

[a] Compared to Whites as the reference group. * Statistically significant ($p < 0.05$).

toms by race[8], and that race-related discrimination adversely affects health[9,33]. A more recent meta-analysis found that perceived discrimination is directly related to poorer mental health status, and experimental studies showed experiences of discrimination may produce a negative psychological stress response and a heightened physiological stress response[34]. There is a tendency that articles on mental health either focus on discrimination or on race, as if race can be the factor of interest or discrimination can–but not both. Yet this misses an important point, that the experience of discrimination may lead equally to poor outcomes among all it affects, yet Black and Mixed Brazilians still suffer a higher burden of its sequelae since they are more likely to have experiences of discrimination. One study found that Black Brazilians have over 50% higher odds of having experienced discrimination than Whites, even after controlling for income, education, social status, and health problems[35]. Studies that explore the association between discrimination

and mental health are important and necessary, yet they should also report results by race and the association by race to show which population groups bear the risk associated with experiences of discrimination.

This systematic review suggests a positive association between race and mental health disorders, and points out the need for further research into this association, as well as into the prevalence/mental health burden of Black and Mixed Brazilians. In the initial search results, 262 articles were identified. Many of these articles reported on race—but only when describing the demographics of the sample population. Those that included race as a variable of analysis often did not report the prevalence of mental health disorder by race, or conduct a multivariate analysis that included race. Efforts should be made to stimulate the inclusion of race as an analytic variable in studies of mental health in Brazil.

Eight of the 14 studies in this systematic review were carried out in the South or Southeast of Brazil, a pattern also seen in mental health research in Brazil as a whole[36]. Geographic diversity is important in understanding if there are regional differences in the relationship between race and mental health, yet is also important from a statistical standpoint–there is less racial diversity in the South and Southeast of Brazil, therefore more challenging to recruit a sample with a sufficient number of Black participants to assess the relationship with race. Nearly half of the studies had a sample in which 75% or more of the participants were White. While it is still possible to assess the relationship between race and mental health in such samples, the results will be less reliable due to the small numbers of other racial groups in the analysis.

The lack of standardization of racial categories used in these studies is problematic when attempting to compare results across studies. Some studies used a binary categorization of White compared to Non–White, while others included separate categories for *Mulatto* or *Moreno*, or Multiracial. This reflects the complexity of perceptions of skin color and race in Brazil, but complicates interpretation. Because of the difference in racial categorization, estimating prevalence of mental health disorders by race/skin color group was not possible. Future research should use the five standardized race categories used in the Brazilian Census: Black, White, *Parda*, Asian, and Indigenous. To capture all those with Afro–Brazilian heritage, researchers commonly group Black and *Parda* together as *Negra*. This way the literature on race/skin color and mental health would be more comparable and better able to estimate prevalence of mental health disorders according to standardized race/skin color categories. Obtaining these prevalence estimates is an important step in identifying health disparities, allocating resources, and designing interventions.

This identified the general trend in the published literature in the association between race/skin color and mental health outcomes, however there are important difficulties complicating the direct comparability between these studies. This is primarily due to the different mental health outcomes studied, the different populations studied, and the different screening tools and cut–off points used. However, so few studies on mental health have been conducted in Brazil that assess race that it becomes necessary to look at what little, varied literature exists to stimulate interest in conducting new studies.

This review serves to highlight the state of the literature on this theme. As the results show, the literature is currently limited, and what exists is very fragmented. Few national studies on mental health included a race/skin color variable, and when studies included such a variable different categorizations were used.

Collaborations

JR Smolen and EM Araújo designed the study and search string. JR Smolen carried out the search of the literature. Both EM Araújo and JR Smolen interpreted the results. JR Smolen drafted the article, and EM Araújo assisted with the introduction and discussion, as well as a critical review of the draft and methodology. EM Araújo approved the final draft of the paper. JR Smolen and EM Araújo designed the study and search string. JR Smolen carried out the search of the literature. Both EM Araújo and JR Smolen interpreted the results. JR Smolen drafted the article, and EM Araújo assisted with the introduction and discussion, as well as a critical review of the draft and methodology. EM Araújo approved the final draft of the paper.

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