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Racism and Health: Evidence and Needed Research

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Abstract

In recent decades, there has been remarkable growth in scientific research examining the multiple ways in which racism can adversely affect health. This interest has been driven in part by the striking persistence of racial/ethnic inequities in health and the empirical evidence that indicates that socioeconomic factors alone do not account for racial/ethnic inequities in health. Racism is considered a fundamental cause of adverse health outcomes for racial/ethnic minorities and racial/ethnic inequities in health. This article provides an overview of the evidence linking the primary domains of racism—structural racism, cultural racism, and individual-level discrimination—to mental and physical health outcomes. For each mechanism, we describe key findings and identify priorities for future research. We also discuss evidence for interventions to reduce racism and describe research needed to advance knowledge in this area.

INTRODUCTION

Scientific research on the multiple ways in which racism can affect health and racial/ethnic inequities in health has experienced steady and sustained growth. This article provides an overview of key findings and trends in this area of research. It begins with a description of the nature of racism and the principal mechanisms—structural, cultural, and individual—by which racism can affect health. For each dimension, we review key research findings and describe needed scientific research. We also discuss evidence for interventions to reduce racism and describe research needed to advance knowledge in this area. Finally, we discuss crosscutting priorities across the three domains of racism.

The patterning of racial/ethnic inequities in health was an early impetus for research on racism and health (139). First, rates of disease and death are elevated for historically marginalized racial groups, blacks (or African Americans), Native Americans (or American Indians and Alaska Natives), and Native Hawaiians and Other Pacific Islanders, who tend to have earlier onset of illness, more aggressive progression of disease, and poorer survival (5, 134). Second, empirical analyses have revealed the persistence of racial differences in health even after adjustment for socioeconomic status (SES). For example, at every level of education and income, African Americans have a lower life expectancy at age 25 than do whites and Hispanics (or Latinos), and blacks with a college degree or more education have a lower life expectancy than do whites and Hispanics who graduated from high school (16). Third, research has also documented declining health for Hispanic immigrants over time: Middle-aged US-born Mexican Americans and Mexican immigrants who had resided 20+ years in the United States had a health profile that did not differ from that of African Americans (55).

RACISM AND HEALTH

Racism is an organized social system in which the dominant racial group, based on an ideology of inferiority, categorizes and ranks people into social groups called "races" and uses its power to devalue, disempower, and differentially allocate valued societal resources and opportunities to groups defined as inferior (13, 140). Race is primarily a social category, based on nationality, ethnicity, phenotypic, or other markers of social difference, which captures differential access to power and resources in society (133). Racism functions on multiple levels. The cultural agencies within a society socialize the population to accept as true the inferiority of nondominant racial groups. This view leads to negative normative beliefs (stereotypes) and attitudes (prejudice) toward stigmatized racial groups, which undergird differential treatment of members of these groups by both individuals and social institutions (13, 140). A characteristic of racism is that its structure and ideology can persist in governmental and institutional policies in the absence of individual actors who are explicitly racially prejudiced (7).

As a structured system, racism interacts with other social institutions, shaping them and being reshaped by them, to reinforce, justify, and perpetuate a racial hierarchy. Racism has created a set of dynamic, interdependent, components or subsystems that reinforce each other, creating and sustaining reciprocal causality of racial inequities across various sectors of society (106). Thus, structural racism exists within, and is reinforced and supported by, multiple societal systems, including the housing, labor, and credit markets, and the education, criminal justice, economic, and health care systems. Accordingly, racism is adaptive over time, maintaining its pervasive adverse effects through multiple mechanisms that arise to replace forms that have been diminished (99, 140).

The persistence of racial inequities in health should be understood in the context of relatively stable racialized social structures that determine differential access to risks, opportunities, and resources that drive health. We conceptualize this system of racism, chiefly operating through institutional and cultural domains, as a basic or fundamental cause of racial health inequalities (73, 99, 133, 136). According to Lieberson (72), fundamental causes are critical causal factors that generate an outcome; by comparison, surface causes are associated with the outcome, but changes in these factors do not trigger changes in the outcome. Instead, as long as the fundamental causes are operative, interventions on surface causes only give rise to new intervening mechanisms to maintain the same outcome. Sociologists have argued that SES is a fundamental cause of health (52, 132), with Link and colleagues (73, 100) providing considerable evidence in support of this perspective. In 1997, Williams (133) argued that alongside SES and other upstream social factors, racism should be recognized as a fundamental cause of racial inequities in health. Evidence continues to accumulate, highlighting racism as a driver of multiple upstream societal factors that perpetuate racial inequities in health for multiple nondominant racial groups around the world (99, 140).

STRUCTURAL OR INSTITUTIONAL RACISM

We use the terms institutional and structural racism interchangeably, which is consistent with much of the social science literature (13, 54, 106). Institutional racism refers to the processes of racism that are embedded in laws (local, state, and federal), policies, and practices of society and its institutions that provide advantages to racial groups deemed as superior, while differentially oppressing, disadvantaging, or otherwise neglecting racial groups viewed as inferior (13, 104). We argue that structural racism is the most important way through which racism affects health. We highlight evidence of the health impact of residential segregation but acknowledge that there are multiple other forms of institutional racism in society. For example, structural racism in the criminal justice system (84, 130) can adversely affect health through multiple pathways (38, 66, 130).

Racial Residential Segregation

Racial residential segregation remains one of the most widely studied institutional mechanisms of racism and has been identified as a fundamental cause of racial health disparities owing to the multiple pathways through which it operates to have pervasive negative consequences on health (7, 39, 59, 136). Racial residential segregation refers to the occupancy of different neighborhood environments by race, which was developed in the United States to ensure that whites resided in separate communities from blacks. Segregation was created by federal policies as well as by explicit governmental support of private policies such as discriminatory zoning, mortgage discrimination, redlining, and restrictive covenants (107). This physical separation of races in distinctive residential areas (including the forced removal and relocation of American Indians) was shaped by multiple social institutions (83, 136). Although segregation has been illegal since the Fair Housing Act of 1968, its basic structures established by the 1940s remain largely intact.

In the 2010 US Census, residential segregation was at its lowest level in 100 years, and the decline in segregation was observed in all the nation's largest metropolitan areas (43). However, the recent declines in segregation have been driven by a few blacks moving to formerly all-white residential areas; the declines in segregation have had a negligible impact on census tracts with a very high percentage of blacks, the residential isolation of most African Americans, and

the concentration of urban poverty (44). Although segregation is increasing for Hispanics, the segregation of African Americans remains distinctive. In the 2000 census, middle-class blacks were more segregated than poor Hispanics and Asians (81), and the segregation of immigrant groups has never been as high as the current segregation of African Americans (83).

Segregation and Health: Pathways

Segregation affects health in multiple ways (136). First, it is a critical determinant of SES, which is a strong predictor of variations in health. Research has found that segregation reduces economic status in adulthood by reducing access to quality elementary and high school education, preparation for higher education, and employment opportunities (136). Schools in segregated areas have fewer high-quality teachers, lower levels of educational resources and per-student spending, and higher levels of neighborhood violence, crime, and poverty (91). Segregation also reduces access to employment opportunities by triggering the movement of low-skill, high-pay jobs from areas where racial minorities are concentrated to other areas and by enabling employers to discriminate against job applicants by using their place of residence as a predictor of whether the applicant would be a good employee (136). One national study found that the elimination of segregation would erase black–white differences in income, education, and unemployment and reduce racial differences in single motherhood by two-thirds (29). Thus, segregation is responsible for the large and persistent racial/ethnic differences in SES. In 2016, for every dollar of income that white households received, Hispanics earned 73 cents and blacks earned 61 cents (110). And racial differences in wealth are stunningly larger. For every dollar of wealth that white households have, Hispanics have 7 pennies, and blacks have 6 pennies (122).

Erratum >

Segregation can also adversely affect health by creating communities of concentrated poverty with high levels of neighborhood disadvantage and low-quality housing stock, and with both government and the private sector demonstrating disinterest or divestment from these communities. In turn, the physical conditions (poor-quality housing and neighborhood environments) and the social conditions (co-occurrence of social problems and disorders linked to concentrated poverty) that characterize segregated geographic areas lead to elevated exposure to physical and chemical hazards, increased prevalence and co-occurrence of chronic and acute psychosocial stressors, and reduced access to a broad range of resources that enhance health (59, 87, 128, 136). The living conditions created by concentrated poverty and segregation make it more difficult for residents of these contexts to practice healthy behaviors (7, 59, 128, 136). Segregation also adversely affects the availability and affordability of care, contributing to lower access to high-quality primary and specialty care and even pharmacy services (129).

Epidemiological Evidence Linking Segregation to Health

A 2011 review of nearly 50 empirical studies generally found that segregation was associated with poorer health (128). A 2017 review and meta-analysis focused on 42 articles that examined the association between segregation and birth outcomes found that segregation was associated with increased risk of low birth weight and preterm birth for blacks (85). Other recent studies show that segregation is associated with increased risk of preterm birth for US-born and foreign-born black women (79) and with stillbirth for blacks and whites; the effects are more pronounced for blacks than for whites (131). A systematic review of 17 papers examining segregation and cancer found that segregation was positively associated with later-stage diagnosis, elevated mortality, and lower survival rates for both breast and lung cancers for blacks (64). Recent studies highlight variation in the association between segregation and health for population subgroups. One national study

found that segregation was associated with poor self-rated health for blacks in high-poverty but not lower-poverty neighborhoods (32). It was unrelated to poor health for whites but benefited whites indirectly by reducing the likelihood of their location in high-poverty neighborhoods (32). And a 25-year longitudinal study found that cumulatively higher exposure to segregation was associated with elevated risk of incident obesity in black women but not black men (101).

Recommendations for Research on Institutional Racism

Several strategies should be implemented to further our understanding of how institutional racism adversely affects health. First, there is a need to broaden our conceptualization and assessment of the multiple domains and contexts in which these structural processes are operative and to empirically assess their impact on health. In a study of structural racism and myocardial infarction (MI), Lukachko and colleagues (74) utilized four state-level measures of structural racism: political participation, employment, education, and judicial treatment. The analyses revealed that state-level racial disparities that disadvantaged blacks in political representation, employment, and incarceration were associated with increased risk of MI in the prior year. Among whites, structural racism was unrelated to or had a beneficial effect on the risk of MI.

Second, immigration policy has been identified as a mechanism of structural racism (39), and systematic attention should be given to understanding how contemporary immigration policies adversely affect population health. Recent research suggests that anti-immigrant policies can trigger hostility toward immigrants, leading to perceptions of vulnerability, threat, and psychological distress for both those who are directly targeted and those who are not (46). One study found that a large federal immigration raid was associated with an increase in low birthweight risk among infants born to Latina but not white mothers in that community a year after the raid (90). Immigration policies can also adversely affect health by leading to reduced utilization of preventive health services by both documented and undocumented immigrants (80, 117, 127).

Third, some of the methodological limitations of the current literature need to be addressed. Research on structural racism has been limited by the availability of data on structural levels, and ecological analyses are limited in capturing the underlying processes. The available evidence suggests that the associations between segregation and health tend to vary on the basis of the choice of a geographic unit of analysis (7, 39, 59, 128). While smaller units tend to produce the most reliable estimates, the appropriate geographic level may not be consistent across all health outcomes. These analytic challenges are further exacerbated by difficulties in disentangling the potential mediating and moderating effects that contribute to observed patterns. Many studies adjust for variables such as poverty or other indicators of low SES and the social context, which are likely a part of the pathway by which segregation exerts its effects (59, 128). Future research needs to identify the proximal mechanisms that link segregation to health by using longitudinal data to establish temporality and by leveraging new statistical techniques (59, 128). More complex systems modeling approaches are also needed that seek to capture the impact of all the dynamic historical processes that influence each other over time at multiple levels of analysis (31, 92).

Fourth, greater attention should be given to similarities and differences across national and cultural contexts. For example, segregation levels are rising in Europe and are positively associated with darker-skinned nationalities and being Muslim, but there has been little analysis of the effects of this segregation on SES and health (82). A study that compared a national sample of Caribbean blacks in the United States to those in England found that in the United States increased black Caribbean ethnic density was associated with improved health, whereas increased black ethnic density was associated with worse health; the opposite pattern was evident for Caribbean blacks in England, however (10). Comparative research could enhance our understanding of the contextual

factors such as variation in the racialization of ethnic groups that could contribute to the observed associations.

Finally, we need a better understanding of the conditions under which group density can have positive versus adverse effects on health (86). A national study of Hispanics found that segregation was adversely related to poor self-rated health among US-born Hispanics, but it had a salutary effect on the health of foreign-born Hispanics (33). We need a clearer understanding of when and how segregation can give rise to health-enhancing versus health-damaging factors.

CULTURAL RACISM

Cultural racism refers to the instillation of the ideology of inferiority in the values, language, imagery, symbols, and unstated assumptions of the larger society. It creates a larger ideological environment wherein the system of racism can flourish and can undergird both institutional- and individual-level discrimination. It manifests itself through media, stereotyping, and norms within society and its institutions (48, 140). It can yield inconspicuous forms of racism, such as implicit bias, as a result of the commonplace and continuous negative imagery about racial and ethnic minorities (140). Cultural forms of racism may serve as the conduit through which views regarding the limitations, stereotypes, values, images, and ideologies associated with racial/ethnic minority groups are presented to society and are consciously or subconsciously adopted and normalized (105, 113).

The internalization of racism yields a tendency to focus on individual pathology and abilities rather than examining structural components that give rise to racial inequities. This internalization affects most members of the dominant group and a nontrivial proportion of the marginalized group as well, given that both groups are exposed to key socializing agents of the larger society that perpetuate racist beliefs (105). Research indicates that negative racial and ethnic stereotypes persist in entertainment, media, and fashion (19, 140). A recent national survey of adults who work with children found that whites had high levels of negative racial stereotypes (lazy, unintelligent, violent, and having unhealthy habits) toward nonwhites, with the highest levels toward blacks followed by Native Americans and Hispanics (103).

Cultural Racism and Health

Cultural racism can affect health in multiple ways. First, cultural racism can drive societal policies that lead to the creation and maintenance of structures that provide differential access to opportunities (140). For example, a study of white residents revealed that their negative stereotypes about blacks influenced their housing decisions in ways that would maintain residential segregation (63). In this study, whites rated an all-white neighborhood more positively (on the cost of housing, safety, future property value, and quality of schools) than an identical neighborhood if a black person were pictured in it.

Second, cultural racism can also lead to individual-level unconscious bias that can lead to discrimination against outgroup members. In clinical encounters, these processes lead to minorities receiving inferior medical care compared with care received by whites. Research indicates that across virtually every type of diagnostic and treatment intervention blacks and other minorities receive fewer procedures and poorer-quality medical care than do whites (112). Recent research documents the persistence of these patterns and reveals that higher implicit bias scores among physicians are associated with biased treatment recommendations in the care of black patients (123). Providers' implicit bias is also associated with poorer quality of patient–provider communication, including the provider's nonverbal behavior (26).

Stereotype threat is a third pathway. This term refers to the anxieties and expectations that can be activated in stigmatized groups when negative stereotypes about their group are made salient. These anxieties can adversely affect academic performance and psychological functioning (114). Some limited evidence indicates that stereotype threat can lead to increased anxiety, reduced self-regulation, and impaired decision making, which can lead to unhealthy behaviors, poor patient–provider communication, lower levels of adherence to medical advice, increased blood pressure, and weight gain among stigmatized groups (6, 114, 141). Relatedly, a study documented that exposure of American Indian students to Native American mascots leads to declines in self-esteem, community worth, and achievement aspirations (36).

Fourth, as noted, some members of stigmatized racial populations respond to the pervasive negative racial stereotypes in the culture by accepting them to be true. This endorsement of the dominant society's beliefs about their inferiority is called internalized racism or self-stereotyping. Research indicates that it is associated with lower psychological well-being and higher levels of alcohol consumption, depressive symptoms, and obesity (139).

Recommendations for Research on Cultural Racism

Future research should aim to understand how and why cultural racism, measured as elevated levels of racial prejudice at the community level, is associated with poorer health for racial minorities and sometimes for all persons who live in that community. Recent studies have found that residing in communities with high levels of racial prejudice is positively associated with overall mortality (21), heart disease mortality (67), and low birthweight (22). Community-level prejudice against immigrants has also been associated with increased mortality among US-born immigrant adults (89). However, these studies are ecological in nature and lack adjustment for individual-level factors.

In addition, we need to better understand how internalized racism can affect health. There is limited understanding of the conditions under which internalized racism has adverse consequences for health, of the groups that are most vulnerable, and of the range of health and health-related outcomes that may be affected (140). The optimal measurement of internalized racism is also a challenge. Studies have used scales of internalized racism, minority group endorsement of negative stereotypes, and African Americans' scores on antiblack bias on the implicit association test. It is currently unclear how these measures correlate with each other and the extent to which they may capture different aspects of internalized racism. Future work should also examine internalized racism in a more collective form, beyond the individual, that could facilitate understanding of the cultural and structural pervasiveness of racism at the societal level (105). Research should also assess if and how racist ideologies and oppression become internalized among immigrants in the United States and how these are associated with health outcomes.

DISCRIMINATION

Discrimination is the most frequently studied domain of racism in the health literature. It exists in two forms: (*a*) where individuals and larger institutions, deliberately or without intent, treat racial groups differently, resulting in inequitable access to opportunities and resources (e.g., employment, education, and medical care) by race/ethnicity; and (*b*) self-reported discrimination, a subset of these experiences that individuals are aware of. These latter incidents are a type of stressful life experience that can adversely affect health, similar to other kinds of psychosocial stressors. Considerable scientific evidence supports the first pathway, much of it captured through audit studies (those in which researchers use individuals who are equally qualified in every respect but

differ only in race or ethnicity) that document the persistence of discrimination in many contexts, including employment, education, housing, credit, and criminal justice systems (93). This discrimination in social institutions contributes to the differential access to resources and opportunities and results in SES and other material disadvantages.

Self-Reported Discrimination and Health

A large proportion of the discrimination literature focuses on the second pathway; the evidence indicates that stigmatized racial and ethnic populations and other socially marginalized groups around the world report experiences of discrimination that are inversely related to good health (69, 109, 139). Researchers refer to these experiences as self-reported discrimination, perceived discrimination, and racial discrimination, and we use these terms interchangeably. Self-reports of discrimination can adversely affect health by triggering negative emotional reactions that can lead to altered physiological reactions and changes in health behaviors, which can increase the risk of poor health (41). We highlight key patterns and trends in this research on discrimination and health.

A 2015 meta-analysis assessed the scientific evidence for the association between self-reported racial discrimination and health from more than 300 articles published between 1983 and 2013 (95). Eighty-one percent of studies were from the United States followed by those from the United Kingdom, Australia, Canada, the Netherlands, and 15 other countries. The analyses found that the association between discrimination and mental health was stronger than that between discrimination and physical health. This finding was inconsistent with a prior review that found similar effect sizes for physical and mental health (96). Ethnicity moderated the effect of self-reported racial discrimination on health; the association between perceived racial discrimination and mental health was stronger for Asian Americans and Latino Americans compared with blacks and the association with physical health was stronger for Latinos than for blacks.

Although the review by Paradies and colleagues (95) is the most comprehensive published to date, it excluded many studies that are included in other reviews. Because of its focus on experiences of "racism," it excluded studies using measures of discrimination, bias, and unfair treatment where race or ethnicity were not explicitly noted as the reason for discrimination. This exclusion included many studies using the Everyday Discrimination Scale and the Major Experiences of Discrimination Scale (137, 143), which use a two-stage approach wherein respondents are first asked about generic experiences of bias and then a follow-up question ascertains the main reason. Many studies that have used these measures have not asked or analyzed the follow-up question. Relatedly, studies were also excluded that used a version of these two instruments that were utilized in the national Midlife in the United States (MIDUS) study (58). It explicitly asked respondents to report only instances where they had been "discriminated against" because of their race or other specific social characteristics (58). It appears that the use of "discrimination" does not affect the reports of bias by blacks but depresses reports by whites (8). Multiple reviews have concluded that the deleterious health effects of discrimination are generally evident with the generic perception of bias or unfair treatment, irrespective of which social status category to which the experience is attributed (69, 96, 139).

Several recent reviews provide additional evidence of the pervasive negative health effects of exposure to discrimination. A 2015 review indicated that self-reported discrimination is related not only to indicators of mental health symptoms and distress but also to defined psychiatric disorders (69). Moreover, there is growing evidence that self-reported discrimination is associated with preclinical indicators of disease, including increased allostatic load, inflammation, shorter telomere length, coronary artery calcification, dysregulation in cortisol, and greater oxidative stress (69).

Linkages between self-reported racial discrimination and physical health outcomes have been documented in multiple recent reviews, with research indicating positive associations between reports of discrimination and adverse cardiovascular outcomes (71), body mass index (BMI) and incidence of obesity (12), hypertension and nighttime ambulatory blood pressure (34), engagement in high-risk behaviors (41), alcohol use and misuse (42), and poor sleep (111). Research also indicates that experiences of discrimination can shape health care–seeking behaviors and adherence to medical regimens. A 2017 review and meta-analysis of studies on discrimination and health service utilization revealed that perceived discrimination was inversely related to positive experiences with regards to health care (e.g., satisfaction with care or perceived quality of care) and reduced adherence to medical regimens and delaying or not seeking health care (11).

Research on stress and health reveals that in addition to stressful experiences affecting health through actual exposure, the threat of exposure as captured by responses of vigilance, worry, rumination, and anticipatory stress can prolong the negative effect of stressors and exacerbate the negative effects of stressful experiences on health (18). Increased attention has been given to capturing vigilance with regard to the threat of discrimination. Several recent studies have used the heightened vigilance scale (24) or a shortened version of it and have found that vigilance about discrimination was positively associated with depressive symptoms (65), sleep difficulties (49), and hypertension (51) and contributed to racial differences for these outcomes. Another recent study with the same measure also found that heightened vigilance was associated with increased waist circumference and BMI among black but not white women (50). However, these studies have all been cross-sectional, and future research using longitudinal study designs would strengthen the evidence for vigilance as a risk factor for health.

Another trend in recent research on discrimination and health is increasing attention to its negative effects on the health and well-being of children and adolescents. A 2013 review of discrimination and the health of persons aged 0–18 years found 121 studies that had examined this association (102). There were consistent positive associations between self-reported discrimination and indicators of mental health problems, negative health behaviors, and physical health outcomes. Accumulating evidence also demonstrates that the adverse health effects of discrimination in childhood and adolescence are evident early in life and are a likely contributor to racial inequities in health in young adulthood. For example, a study of black adolescents found that those who reported high levels of discrimination at ages 16, 17, and 18 had elevated levels of stress hormones (cortisol, epinephrine, and norepinephrine), blood pressure, inflammation, and BMI by age 20 (17).

Research has documented cumulative effects of discrimination on health; greater negative impact is evident with increasing levels of exposure to the stress of discrimination. A longitudinal study of ethnic minorities in the United Kingdom identified a dose–response relationship between the accumulation of experiences of discrimination with the deterioration in mental health, with the greatest degree of mental health deterioration evident among those who reported two or more experiences of discrimination at both time points (125).

Recommendations for Research on Discrimination and Health

As noted, audit studies and other field experiments document the existence of discrimination in many societal institutions and contexts. More concerted efforts are needed to apply knowledge and insights from these studies on the structuring and persistence of discrimination within institutional settings to understand how such discrimination sustains racial disadvantage in ways that shape health outcomes and impact racial health inequities. More generally, despite the burgeoning literature on self-reported discrimination and health, some fundamental questions remain unanswered, including the conditions under which particular aspects of discrimination are related to

changes in health status for specific indicators of health status. Such analyses might shed light on findings where the pattern is not uniform. For example, cohort studies have found a positive association (9), no association (2), and an inverse association between discrimination and all-cause mortality (35). The contribution of differences in the assessment of discrimination and in the populations covered to the observed patterns is not well understood.

Prior reviews indicate that the literature on self-reported discrimination and health has been plagued with multiple measurement challenges that probably lead to an underestimation of the actual effects of discrimination on health (61, 135). These challenges include identifying the optimal approaches for accurately and comprehensively measuring discrimination and ensuring adequate assessment of key stressful components of discriminatory experiences, such as their chronicity, recurrence, severity, and duration, and distinguishing incidents that are traumatic from those that are not. These challenges remain urgent issues to address in future research.

A limitation of most prior research on discrimination and health is the focus on singular identities of the study participants. Emerging evidence suggests that utilizing an intersectionality framework that examines associations between discrimination and health, with the simultaneous consideration of multiple social categories (e.g., race, sex, gender, SES), leads to larger associations than when only a single social category is considered (70). Experiences of discrimination should also be considered both for an individual's self-identified race, as well as for one's socially assigned race (124). Recent studies also provide striking evidence of the persistence of discrimination based on skin color within multiple Latino ethnicities (97) and for blacks (88), suggesting that skin color should be an essential domain of assessing discrimination in future research.

An enhanced understanding of how discrimination combines with other stressors to shape health and racial/ethnic inequities in health is also needed. Self-reported experiences of discrimination do not fully encompass psychosocial stressors linked to nondominant racial/ethnic status nor the full contribution of racism-related stressors. A study that measured multiple dimensions of discrimination (everyday, major experiences, and work discrimination) along with brief measures of childhood adversity, lifetime traumas, recent life events, and chronic stressors in the domains of work, finances, relationships, and neighborhood found a graded association between the number of stressors and multiple indicators of morbidity, with each additional stressor associated with worse health (115). Moreover, stress exposure explained a substantial portion of the residual effect of race/ethnicity after adjustment had been made for SES. Fully capturing stressful exposures for vulnerable populations should also include the assessment of stressors linked to the physical, chemical, and built environment (139).

Attention should also be given to understanding the contribution of stressors that, at face value, are not linked to racism but that reflect the effects of racism on health. Research on community bereavement shows that structural conditions linked to racism lead to lower life expectancy for blacks compared with whites (121). As a result, compared with whites, black children are three times as likely to lose a mother by age 10, and black adults are more than twice as likely to lose a child by age 30 and a spouse by age 60. This elevated rate of bereavement and loss of social ties is a stressor that adversely affects levels of social ties and physical and mental health of blacks across the life course (119). The death of loved ones is included on standard assessments of life events, but its links to racism are not typically recognized.

Another priority for future research is to better identify the conditions under which vicarious experiences of discrimination can affect health. The term vicarious discrimination refers to discriminatory experiences that were not directly experienced by an individual but were faced by others in their network or with whom they identify (47). A recent systematic review of 30, mainly longitudinal, studies found that that indirect, secondhand exposure to racism was adversely related to child health (47). The range of contexts in which vicarious discrimination occurs is broad.

Recent studies suggest that online discrimination through social media and frequent reports and visualization of incidents of police violence directed toward black, Latino, and Native American communities may also have negative health consequences (120). A recent, nationally representative, quasi-experimental study found that each police killing of an unarmed black male American worsened mental health among blacks in the general population (14).

Increased hostility and resentment toward racial and ethnic minority groups and immigrants in the United States as well as political polarization associated with the 2016 US presidential election and its aftermath also deserve more research attention (138). A recent longitudinal study of high school juniors interviewed before and after the 2016 US presidential election found that many reported concern, worry, or stress regarding the increasing hostility toward and discrimination of people because of their race, immigrant status, religion, or other social factors. A year later, higher concern about discrimination was associated with increases in cigarette smoking, alcohol use, and substance use as well as greater odds of depression and attention-deficit hyperactivity disorder (ADHD) (68).

Future research also needs to better document the role of discrimination, and other dimensions of racism, in accounting for racial disparities in health. Studies from Australia, New Zealand, South Africa, and the United States have found that self-reports of discrimination make an incremental contribution over and above income and education in accounting for racial/ethnic inequities in health (139). However, most studies of discrimination neglect to empirically quantify the contribution of discrimination to the patterns and trends of inequities in health.

INTERVENTIONS

Future research on racism and health needs to give more sustained attention to identifying interventions to reduce and prevent racism, as well as to ameliorate its adverse health effects. Research on interventions to address the multiple dimensions of racism is still in its infancy (94, 141).

Addressing Institutional Racism

Reskin (106) emphasizes that because racism is a system that consists of a set of dynamically related components or subsystems, disparities in any given domain are a result of processes of reciprocal causality across multiple subsystems. Accordingly, interventions should address the interrelated mechanisms and critical leverage points through which racism operates and explicitly design multilevel interventions to get at the multiple processes of racism simultaneously. The systemic nature of racism implies that effective solutions to addressing racism need to be comprehensive and emphasize upstream/structural/institutional interventions (142). The civil rights policies of the 1960s are prime examples of race-targeted policies that improved socioeconomic opportunities and living conditions, narrowed the black–white economic gap between the mid-1960s and the late 1970s, and reduced health inequities (3, 4, 27, 45, 57). Interventions to improve household income, education and employment opportunities, and housing and neighborhood conditions have also demonstrated health benefits (141).

Additional income to households with modest economic resources suggests that added financial resources are associated with improved health (141). The Great Smoky Mountains Study was a natural experiment that assessed the impact of extra income received by American Indian households, due to the opening of a casino, on the health of Native youth (28). The study found declining rates of deviant and aggressive behavior among adolescents whose families received additional income, increases in formal education and declines in the incidence of minor criminal offenses in young adulthood, and the elimination of Native American–white disparities on both

of these outcomes (1). The Abecedarian Project, which randomized economically disadvantaged children birth to 5 years of age, most of them black, to an early-childhood nurturing program, also illustrates that intervention efforts at an early age can be beneficial (20). By their mid-30s, individuals in the intervention group had lower levels of multiple risk factors for cardiovascular disease as compared with the controls. Community initiatives and efforts to build community capacity around racism may also have the potential to improve health (140, 141). One study demonstrated that cultural empowerment among Native communities, in the form of civil and governmental sovereignty and the presence of a building for cultural activities, had a strong inverse relationship with youth suicide (23).

Addressing Cultural Racism

Most interventions aimed at reducing cultural racism focus on addressing implicit biases or enhancing cultural competence. A recent review found that cultural competency interventions can lead to improvements in provider knowledge, skills and attitudes regarding cultural competency, and health care access and utilization, but little evidence indicates that these interventions affect health outcomes and health equity (118). While extensive evidence documents that health care students and professionals have an antiblack bias, there are no effective interventions to reduce this bias among providers (75). However, Devine and colleagues (30) documented that a comprehensive program that deployed multiple strategies to reduce implicit biases found a sustained reduction in implicit biases in nonblack undergraduate students three months after the program began. Future research needs to assess the generalizability of the effects of this intervention to other groups.

Interventions, targeted at individuals, that seek to neutralize cultural racism have shown positive socioeconomic and health benefits. Values affirmation interventions (in which youth enhance their sense of self-worth by reflecting on and writing about their most important value) and social belonging interventions (which create a sense of relatedness) have been shown to markedly improve academic performance and health of stigmatized racial groups (25). An emerging body of evidence suggests that similar self-affirmation strategies can enhance an individual's capacity to cope with stressful situations and lead to improved health behaviors (25).

Addressing Discrimination

Effective strategies can be deployed to reduce discrimination against individuals that occurs within institutional contexts. For example, in the employment domain, research reveals that discrimination can be reduced and the proportion of underrepresented groups markedly increased through organizational policy changes that require mandatory programs, or programs with explicit authority and accountability, that are supported by organizational leadership and are rigorously monitored (56). Discrimination can also be minimized in employment decisions by requiring applications to be reviewed with the names of the applicants removed from the application package (60). Many interventions targeting interpersonal discrimination focus on reductions in prejudice and stereotyping through increased interracial contact. However, evidence in support of the contact theory of prejudice indicates that reductions in prejudice and discrimination are observed only when groups meet specific conditions: They are equivalent in status, have shared goals, cooperate to achieve shared goals, and have the support of authority figures (98).

Research on interpersonal discrimination also suggests that coping strategies and resources (such as social ties, religious involvement, and optimism) can mitigate at least some of the detrimental effects of racial discrimination on health (69). Racial identity is another promising

strategy, but studies have found both protective and exacerbating effects of identity (144). At the present time, we do not clearly understand the determinants of discrepant findings and the conditions under which specific aspects of identity have positive or negative effects for particular indicators of health for specific population subgroups.

Needed Research on Interventions

Although there is emerging evidence that a broad range of strategies may reduce certain aspects of racism and enhance racial equity, there is still much that we do not understand. For example, interventions that have improved neighborhood and housing conditions have been implemented on a small scale, and they have yet to seriously address either residential racial segregation or the concentration of poverty in the metropolitan areas in which they have been implemented. Residential segregation has been identified as a leverage point or fundamental causal mechanism by which institutional racism creates and sustains racial economic inequities (106, 136). Thus, dismantling the core institutional mechanisms of segregation will require scaling up interventions that address its key underlying mechanisms. Relatedly, we lack the empirical evidence to identify which mechanisms of segregation (e.g., educational opportunity, labor market, housing quality) should be tackled first, would have the largest impact, and is most likely to trigger ripple effects to other pathways.

Research also needs to identify if and when observed health effects of reducing racism would be larger if comprehensive, multilevel intervention strategies (instead of interventions targeted at a single level) were deployed to neutralize the negative impact of the pathogenic effects of racism. For example, we are unaware of whether we would observe larger positive effects if interventions focused on upstream interventions (e.g., in housing, education, and additional income) were combined with an individual-level targeted strategy such as a self-affirmation intervention (25). Relatedly, interventions need to be evaluated for the extent to which they may be differentially effective across various subgroups of the population. The cost-effectiveness of interventions also needs to be assessed for population subgroups.

Taking the systemic nature of racism seriously also highlights that it is deeply embedded in other political, economic, and cultural structures of society and that many powerful societal actors are likely to be resistant to change because they currently benefit from the status quo. Research to advance an agenda to dismantle racism and its negative effects must invest in studies that delineate how to overcome societal inertia, increase empathy for stigmatized racial/ethnic populations, build political will, and identify optimal communication strategies to raise public and stakeholder awareness of the societal benefits of a racial equity agenda (142).

CROSSCUTTING ISSUES

Much of the research described in this review has focused on a single mechanism of racism (structural/institutional, cultural, discrimination) through which racism may influence health. Differentiating between these mechanisms allows researchers to clarify potential pathways, measure outcomes, and explore interventions. However, the impact of addressing a single dimension of racism will be diminished by the system of racial oppression, which interacts across sectors and domains of racism. Tying together interconnected data on health and racism will be critical for health disparities researchers moving forward. Some emerging topics lend themselves to this multidimensional, crosscutting research, allowing investigators to better understand and address the systemic nature of racism. Priority topics include studying the effects of racism throughout the

life course, understanding the potential intergenerational effects of racism, and determining the impact of racism on white people.

Understanding Racism Across the Life Course

Life course research aims to examine how early exposures, such as lead poisoning in utero or adversity in early childhood, can impact health in adulthood. This perspective can incorporate early context, sensitivity and latency periods, the accumulation of risk over time, and etiologic origins of disease (40). When examining racism as an exposure, understanding how individuals encounter racism across the life course is one example of a crosscutting issue in need of more research (39, 40, 128). A life course approach can begin to unpack how exposures to interpersonal, cultural, and structural racism may evolve and relate to each other across developmental stages, as individuals interact with their neighborhoods and educational systems and with health care systems (106). A recent study, for example, documented a relationship between early childhood lead exposure and adult incarceration (108). It is likely that multiple mechanisms of racism could have combined, additively and interactively over time, to undergird this association (78). Life course approaches are also important for determining how and when it is most opportune to intervene on racism. The Great Smoky Mountains Study found that providing additional income to Native American households led to a reduction in adolescent risk behaviors, but only among those who were the youngest when the income supplements began and who thus had the longest period of exposure (28). A life course approach can identify key periods of increased risk as well as opportunities for intervention and resilience.

Intergenerational Transmission of Racism's Effects

An extension of the life course perspective is a focus on the impact of intergenerational transmission of the effects of racism, from parent to offspring. Though still in its infancy, research on the intergenerational transmission of racism could enhance and clarify observational research that posits that descendants of survivors of mass and targeted trauma experience grief and other mental, behavioral, and somatic symptoms akin to what might be expected if the trauma was witnessed directly (15). Long-term adverse health impacts linked to Jim Crow laws illustrate the long reach of institutional racism (62). Studies of children of Holocaust survivors and multiple generations of Native Americans suggest a link between these racialized traumatic experiences and the well-being of future generations (119). Possible pathways include the effects of parenting and community norms, the transfer of resources (i.e., wealth, land), and, potentially, heritable and nonheritable epigenetic changes caused by external stressors (126). Differential DNA methylation is one type of epigenetic difference that has been found among adult children of Holocaust survivors, which may affect gene expression at the methylated loci (119). Concerted new research efforts are needed to provide a more nuanced understanding of how racialized experiences are embodied for future generations.

Racism and the Health of Whites

There is growing scientific interest in how the system of racism can have both positive and negative effects on the health of whites (77). Whites, as a whole, have better health than do the historically oppressed groups in the United States, but they are less healthy than whites in other advanced economies. Inadequate attention has been given to delineating how racism could simultaneously advantage whites compared with other racial groups in the United States while creating conditions

that are inimical to the health of all groups, including disadvantaging large segments of the white population and imposing ceilings that prevent many middle-class whites from attaining the level of good health seen in other wealthy countries (77). For example, racial animus toward blacks has led to white opposition to a broad range of social programs, including the Affordable Care Act, which would benefit a large proportion of whites (116). In addition, while research on internalized racism has focused heavily on its potential negative health effects on members of racial and ethnic minority groups, whites also have high levels of internalized racism (that is, internalized racial superiority) that could affect how whites respond to economic adversity and perhaps contribute to increasing rates of "deaths of despair" among low-SES whites (77, 105). Research on self-reported discrimination and health has also observed negative effects of such experiences among whites (69). It is not clear that all whites are equally vulnerable. One study found that discrimination adversely affected only whites who were male and who belonged to ethnic subgroups with a history of discrimination (Polish, Irish, Italian, or Jewish) (53). Another study found that discrimination based on class helped to explain SES differences in allostatic load in a sample of white adolescents (37). Concerted attention should be given to the myriad ways in which various aspects of racism can have positive and negative effects on the health of whites and particular subgroups of whites.

CONCLUSIONS

The study of contemporary racism and its impact on health is complex, as manifestations of structural, cultural, and interpersonal racism adapt to changes in technology, cultural norms, and political events. This body of research illustrates the myriad ways in which the larger social environment can get under the skin to drive health and inequities in health. As the quality and quantity of research continues to increase in this area, there is an acute need for increased attention to identifying the optimal interventions to reduce and eliminate the negative effects of racism on health. Understanding and effectively addressing how racism affects health is critical to improving population health and to making progress in reducing large and often intractable racial inequities in health.

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