

Implicit bias in US medicine: complex findings and incomplete conclusions

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Abstract

Purpose – *Implicit bias is the application of an unconscious attitude or belief; in the clinical setting, a provider's perception of a patient, based upon perceived race or ethnicity, is hypothesized to affect clinical decisions, provider-patient interactions and patient health. The purpose of this paper is to provide a brief synopsis of and critique the relevant works over the past 15 years while highlighting the strengths of this body of literature.*

Design/methodology/approach – *A MEDLINE search, from 2000 to 2015, using the terms "implicit bias," "unconscious bias" and "aversive racism" was performed. US-based studies investigating the effect of racial or ethnic implicit bias on the clinical encounter or patient outcomes were assessed. In total, 15 articles were eligible for review.*

Findings – *Despite well-reasoned hypotheses that racial/ethnic bias negatively affects patient care, this review found mixed results. Largely, studies showed that US-providers hold an anti-black implicit bias negatively affecting patient-provider communication and patient satisfaction. But studies have not shown that this bias consistently negatively affects diagnosis and treatment regimens of black patients in comparison to white patients. There is a significant dearth of implicit bias literature addressing the care of other patient groups of color.*

Originality/value – *This review of the recent literature challenges the black-white dichotomy of most implicit bias research in the USA and highlights the lack of patient-oriented outcome research in this field. Furthermore, it demonstrates that regardless of the effect of implicit bias on patient outcomes, focus on eliminating implicit bias is insufficient to improve the health of people of color.*

Keywords Literature review, Health inequalities, Health inequities, Health disparities, Aversive racism, Implicit bias, Structuralized racism, Unconscious bias

Paper type Literature review

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Introduction

The disproportionately poor health statuses and outcomes of people of color, in comparison to white people, in the USA have been documented for over two decades (Bach *et al.*, 1999; Chin *et al.*, 1998; Levine *et al.*, 2001; Satcher *et al.*, 2005; Institute of Medicine (US) Committee on Understanding and Eliminating Racial and Ethnic Disparities in Health Care *et al.*, 2003; United States Department of Health and Human Services, National Center for Health Statistics, 2007). In 2003, the Institute of Medicine, after reviewing volumes of evidence, published an extensive report documenting inequalities in the delivery of health care. In this report, the IOM attributed a portion of these disparities in health care to racial and/or ethnic discrimination, biases and stereotyping, and clinical uncertainty (Institute of Medicine (US) Committee on Understanding and Eliminating Racial and Ethnic Disparities in Health Care *et al.*, 2003). Many postulate that, at the individual clinician level, bias is not deliberate. Rather it is thought to be a largely unconscious process that results in stereotyping, biased decision-making and/or discriminatory behavior (Burgess *et al.*, 2004; Balsa and McGuire, 2003; Croskerry *et al.*, 2013).

While there is a breadth of literature on this difficult to study issue, few investigators have engaged in the particularly challenging work of directly examining patient outcomes in relation to unconscious racial/ethnic bias. And fewer studies have challenged the implication that addressing this bias will significantly improve the health statuses and outcomes of people of color

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in the USA. This review provides a brief synopsis of what the literature has described about the role of perceived patient race/ethnicity in the provider-patient relationship and critiques the literature while highlighting the strengths of this body of research.

Methods

A MEDLINE search using the terms “implicit bias,” “unconscious bias” and “aversive racism” was performed, searching for articles from the years 2000 to 2015. Correlative studies, based in the USA, investigating the effect of practitioners’ racial/ethnic implicit/unconscious bias on the clinical encounter or on patient outcomes were assessed. Studies were not excluded based upon methodology or design but ineligible studies examined students, or did not specifically evaluate clinician bias or assess patient-provider race/ethnicity concordance. In total, 15 articles were eligible for review. Study conclusions were considered in light of methodology relevance to the study question, and how conclusions related to studies of similar approach and the larger body of work in this area.

Definitions

Because the below words have different implications in different settings, for clarity and comprehension, it is important to define the terms used in this investigation.

“Race” is a social categorization of people with shared external characteristics and social history (Bhopal, 2014). In the USA, the federal racial categories used for the census are white; black or African-American; Asian; Native Hawaiian or Pacific Islander; and American Indian or Alaska Native (United States Office of Management and Budget, 1997; United States Census Bureau, 2013). Other countries have different racial categories. For example, the Brazilian Institute of Geography and Statistics uses the racial categories of *branco* (white), *pardo* (brown), *preto* (black), *amarelos* (yellow) and *indígena* (indigenous) for its census (Telles, 2004).

“Racism” is defined as “an organized system, based on an ideology of inferiority that categorizes, ranks, and differentially allocates desirable societal resources to socially defined “races” [...] racism [can] persist in institutional structures and policies in the absence of racial prejudice at the level of individuals” (Williams, 2004). Racism can be observed “as a pattern of deeply entrenched and culturally sanctioned beliefs, practices, and policies which, regardless of intent, serve to provide or defend the advantages of Whites and disadvantages to groups assigned to other racial or ethnic categories” (van Ryn *et al.*, 2011). These entrenched beliefs can be operationalized at an individual level and manifest in the clinical encounter.

“Ethnicity” is defined as “of or relating to a sizable group of people sharing a common and distinctive racial, national, religious, linguistic, or cultural heritage” (Houghton Mifflin Company, 2001). Usually ethnic groups are smaller (also called “minority”) groups residing within a society dominated by a larger population; often, ethnic groups are only labeled when they reside outside of their indigenous nation(s). In the USA, people who have heritage or are from Latin America are considered Hispanic or Latino (US Office of Management and Budget, 1997; US Census Bureau, 2010).

“Ethnocentrism” is the judging of other cultures using one’s own culture as the standard (Bhopal, 2014). It centers on confidence in the superiority of the values, beliefs and practices of one’s own culture or ethnicity. This assumption can operate consciously or unconsciously when judging other cultures.

“People of color” is used in the USA, since the 1990s, to describe anyone who is not white (Crosby, 2013). This term emphasizes the shared, though diverse, experiences of systemic racism of nonwhite people in the USA.

“Stereotyping” is a “categorization used to make judgments about the people one encounters” (LeLacheur, 2015). It is a mental framework formed from preconceptions about a person due to their group membership. It assumes members of a group are alike in certain ways. This framework influences what information will be mentally processed. In medicine, clinicians have to make diagnostic and treatment decisions with little time to process volumes of information about the various disease processes and the individual patient. One form of clinical thinking involves placing information in categories and relying on heuristics, or mental shortcuts, to make clinical decisions (Croskerry *et al.*, 2013). Under constraints of time, clinical uncertainty, and patient

volume, practitioners may use heuristics that include stereotypes to make clinical decisions (Burgess *et al.*, 2004; Burgess, 2010).

“Bias” is the application of an attitude or preconceived notion (stereotype) to form a preference toward or against something or someone. It is a preferential decision that can manifest in actual behavior. Bias is explicit when the holder of the bias is conscious or aware that he or she has this preference or partiality. “Implicit or unconscious bias” is the application of an unconscious attitude or belief of partiality that “is not readily apparent to the individual and can differ markedly from a person’s explicit and expressed beliefs” (Sabin *et al.*, 2009). A provider’s perceptions of a patient may reduce the multifaceted social world of the individual patient into less nuanced groupings using social categorizations. When the practitioner, without purposeful thought, places a patient in a social group and applies stereotypes of that social group to the individual patient, unconscious bias is at work. This bias may affect clinical decisions and provider-patient interactions. Implicit bias is more likely to factor into clinical encounters when practitioners are clinically uncertain, or under constraints of time or stress (Fiske, 1998; van Ryn, 2002; Balsa and McGuire, 2003; Burgess *et al.*, 2004, 2006; Burgess, 2010; van Ryn and Saha, 2011) and may lead to errors in medical decision making (Croskerry, 2009). Three terms have been used in the literature to describe this unintentional process: implicit bias, unconscious bias and aversive racism. But aversive racism is different from implicit or unconscious bias.

“Aversive racism” focuses on the dissonance of simultaneously expressing belief in racial egalitarianism and holding unconscious but negative feelings toward another race (Dovidio and Gaertner, 2000). The conceptual process is similar to unconscious or implicit bias. These three terms, implicit bias, unconscious bias and aversive racism, are frequently used synonymously but this paper will only use the term implicit bias (unless referring to other works) and only as it relates to race/ethnicity in the USA.

The “Implicit Association Test” (IAT) is an interactive computer-based test that measures the speed it takes a participant to match words or images related to a social group with a specific characteristic like “good” or “bad.” The sets of words and/or images may be stereotype-congruent or stereotype-dissonant. The participant taking the test must correctly match the words/images irrespective of held stereotypes (LeLacheur, 2015). The easier it is for the brain to merge the information, the faster the response. If the participant already links the social group with a particular characteristic it will take less time to respond than if they do not associate the characteristic with the social group. If the word/image on the screen is not connected with one of these characteristics, the conscious brain recognizes an invalid relationship, so the brain takes longer to make the correct match. This test intends to mimic unconscious snap judgments that bypass the conscious brain (Gladwell, 2005). Studies have used the IAT to examine a relationship of practitioner bias and action, including treatment decisions (Green *et al.*, 2007; Sabin and Greenwald 2012; Blair *et al.*, 2014) and communication behavior (Cooper *et al.*, 2012).

Use of clinical proxies

Much of the literature on implicit bias has not been on direct patient outcomes but rather used correlative endpoints, particularly patient satisfaction and provider communication conduct. Studies have established an association of physician communication behaviors with patients’ health outcomes (Stewart, 1995; Kaplan *et al.*, 1989). Communication behaviors include physician verbal and nonverbal actions, time spent with the patient, the amount and quality of information given to the patient, and the shared decision making, between a patient and clinician, about patient medical plans (Roter and Hall, 2006). Health outcomes include physiological outcomes as well as functional health outcomes. Function outcomes, or quality of life indicators, include limitations of activities, missed days of work and time until resolution of symptoms (Stewart, 1995; Kaplan *et al.*, 1989; Roter and Hall, 2006). Use of these clinical proxies may have allowed for simpler and less time-consuming study protocol development, particularly when most health settings lacked electronic medical records.

Review of the literature

While the hypothesis that racial/ethnic bias negatively affects patient care is reasonable, close examination of studies reveals a less than clear-cut narrative on how effects may manifest.

For example, greater patient-talk time is supposed to yield positive interactions with providers (Hahn, 2009) and providers with higher anti-black implicit bias dominate talk time in clinical encounters (Cooper *et al.*, 2012; Hagiwara *et al.*, 2013). But in one study, while doctors with more negative implicit bias talked more than other physicians, if black patients had a higher perception of past discrimination, their providers spoke less (Hagiwara *et al.*, 2013). This study complicates understanding of the clinical encounter, recognizing that patient and provider attitudes both affect the medical meeting.

Other studies have shown that providers are more likely to make a diagnosis depending upon the perceived race/ethnicity of patients, in only a minority of, rather than most or all, diagnoses (Green *et al.*, 2007; Lutfey *et al.*, 2009; Sabin and Greenwald, 2012; Haider *et al.*, 2015). So while clinician negative implicit bias against patients of color affects the clinical encounter, its effects are not uniform or foreseeable across encounters or diagnoses. Furthermore, the concrete impact of bias on patient health has been insufficiently explored (Aberegg and Terry, 2004).

Incomplete narrative

While implicit bias, unconscious bias or aversive racism have been discussed for decades in the medical literature, the discussion has largely focused on the discordant black-white patient-provider relationship. Little discussion has addressed other races or ethnicities, including Native American or indigenous populations, Arab or Persian groups, Latinx[1] peoples, or those of Asian descent; further, there is no literature attempting to address the potentially complex issue of provider perception of bi- or multiracial, or “ethnically ambiguous” patients. To be fair, most of the recent literature is reliant upon the validated IAT in which only assessment of racial biases about black people and white people are available. The other assessments related to race/ethnicity address associations regarding US or non-US origin, not necessarily negative bias. But in a world that is increasingly racially and ethnically diverse, it is important to consider how historical biases, prejudices, stigma and power-dynamics affect patients who cannot “check one box,” or who are not perceived as the race(s) or ethnicities with which they identify. Mainly including black and white people in the implicit bias conversation reinforces a false black-white dichotomy, and inappropriately discounts the complexity of racial/ethnic dynamics, tensions and power differentials.

Considering racial and ethnic concordance in the clinical setting

Many studies reviewed for this assessment did not examine implicit bias in racially/ethnically concordant vs discordant clinical relationships. Rather, they indicated that providers largely held negative implicit biases against black patients and positive biases toward white patients. One study acknowledged that while evaluating race/ethnicity concordance in patient-provider relationships is important, they did not have enough nonwhite providers to examine this issue (Lutfey *et al.*, 2009). Perhaps this was true for the other studies as well, but this was not stated. Still, in a 2009 investigation, Sabin *et al.* (2009) found that black providers did not hold negative implicit biases against black patients, nor did they hold pro-white implicit biases. And multiple studies have used the IAT to show that like the general, nonblack population, nonblack physicians have unconscious bias or preferences toward white patients over black patients (Sabin *et al.*, 2009; Green *et al.*, 2007; Penner *et al.*, 2010; Blair *et al.*, 2014; Nosek *et al.*, 2007) but black physicians do not (Sabin *et al.*, 2009; Nosek *et al.*, 2007). This would imply that black providers do not hold racial biases, at least with respect to black and white races, but this seems incongruent with the concept of “internalized racism.”

Internalized racism describes the phenomenon of pervasive and accepted racist stereotypes being believed and internalized by the stereotyped, minority group (Taylor *et al.*, 1991; Dressler, 1987; Jones, 2000). Black providers live in the same racialized, prejudiced, discriminatory and racist society as other providers; they too are trained in a medical system with racist power structures in place. A critical analyst of the 2009 Sabin study, and others with similar conclusions, must ask, how does a black clinician, professionally trained in a white dominant society and field, wherein racist stereotypes and views are ubiquitous (Feagin, 2010), escape negative implicit bias against the in-group? It may be that belonging to the in-group provides protection against negative implicit bias, despite internalized racism. Still, more research is needed to examine

the question: moving beyond trust, communication and medication adherence, do racially/ethnically concordant patient-provider relationships facilitate better tangible health outcomes for patients of color?

Implicit bias and patient outcomes

While more well-rounded data on race/ethnicity implicit bias is warranted, the current body of evidence is strong enough to assert that many providers hold an anti-black implicit bias. But the patient health consequences of this bias are not well defined. There are few studies examining more than patient satisfaction and patient-provider communication. And irrespective of studies that demonstrate the correlations between patient satisfaction and health outcomes, proxies do not tell a complete picture about patient health. As previously discussed, the relationship between implicit bias and provider actions in the clinical encounter is complex and not uniform.

Given the available data, it is reasonable to postulate that negative implicit bias decreases the quality of clinical communication and negatively impacts patient perception of care, which may affect care compliance ultimately affecting individual patient health. But there is not yet clear, reproducible and direct evidence that racial/ethnic implicit bias harms individual patient health. Due to the, as yet, unpredictable pattern of effect of providers' implicit bias on patient outcomes, the use of clinical proxies is probably not useful. In the few studies that did assess tangible provider actions or patient outcomes, investigators did not find the expected, rationally hypothesized outcomes: There was little association between provider bias and provider actions or patient outcomes. Importantly, save one study, all the investigations reviewed used hypothetical case vignettes to examine what providers might do rather than examining what providers actually do.

The only study found in this review that demonstrated clearly inappropriate care of people of color associated with practitioners' implicit bias used a clinical vignette to evaluate residents' ability to diagnose coronary artery disease (CAD) and decisions to treat with thrombolysis. Green *et al.* (2007) found that residents demonstrated pro-white and anti-black implicit bias but were more likely to recognize CAD as the cause of chest pain for black patients, in comparison to white patients. This finding is contrary to other data that suggest providers poorly identify CAD in patients of color (Lutfey *et al.*, 2009; Venkat *et al.*, 2003; Summers *et al.*, 1999; Raczynski *et al.*, 1994; Ghali *et al.*, 1993). Still, as physicians' anti-black implicit bias increased, they were less likely to provide medically indicated thrombolysis to black patients than to white patients. This is consistent with other studies' findings that black patients receive inadequate medical interventions (Popescu *et al.*, 2007; Sheifer *et al.*, 2004; Sonel *et al.*, 2005; Institute of Medicine (US) Committee on Understanding and Eliminating Racial and Ethnic Disparities in Health Care *et al.*, 2003). The 2007 Green study is only one of many exemplifying the difficulty predicting the effects of implicit bias: in 2009, Lutfey *et al.* (2009) showed that providers had less diagnostic certitude recognizing CAD in black patients. But, for unclear reasons, there was no demonstrable difference in diagnosing depression (Lutfey *et al.*, 2009). Findings like these indicate that more research is needed on what and how mitigating factors intervene in the implicit bias-patient outcome relationship.

In 2014, Blair *et al.* (2014) sought to determine if clinicians' unconscious bias about patients' race/ethnicity affects quantitatively measureable patient outcomes. Using actual patient encounters, not vignettes, they examined treatment intensification, medication adherence, blood pressure control and pharmacy refills for 4,794 black, Latinx and white patients in the USA. While these measures are all still proxies for tangible health outcomes, like patient mortality and ability to function, to clinicians these measures are more meaningful than patient satisfaction and quality of communication alone. Despite providers holding a pro-white implicit bias, the authors found no relationship between practitioner biases and the outcomes of interest.

Another study showed the opposite of the expected outcome of clinicians' pro-white bias: in 2008, Burgess *et al.* (2008) examined provider opioid prescribing behavior for chronic back pain in men. The participating providers largely identified as white and Asian-American/Pacific Islander. Implicit bias was not assessed but assumed given the racially discordant clinical relationships (Sabin *et al.*, 2009; Green *et al.*, 2007; Penner *et al.*, 2010; Blair *et al.*, 2014;

Nosek *et al.*, 2007). Black patients in the written scenarios received higher doses or stronger opioid prescriptions if “challenging” verbal behavior was ascribed to them in the vignette; white patients were marginally less likely to receive a higher dose or stronger opioid prescription if they demonstrated verbally “challenging” cues (Burgess *et al.*, 2008). Importantly, this finding seems counter to others, which demonstrate that providers, when biased against black patients, fail to equitably treat pain in comparison to white patients (Sabin and Greenwald, 2012; Shah *et al.*, 2015; Goyal *et al.*, 2015; Green *et al.*, 2003; Pletcher *et al.*, 2008). The authors recognize this aberrance, postulate that behavior mitigates race in the hypothetical clinical encounter, and call for studies examining the effects of race and bias on pain management in actual clinical settings.

Sabin *et al.* (2009) performed another vignette-based study, examining how providers’ implicit bias affects urinary tract infection (UTI), attention deficit and hyperactivity disorder (ADHD) and asthma treatment, and pain management for black and white pediatric patients. Stronger pro-white clinician biases were associated with inappropriate pain management of black children, but in all other areas care was equivalent (Sabin and Greenwald, 2012). Pain is subjective and manifests differently in different people, whereas UTI, ADHD and asthma have objective measures or guidelines for diagnosis and management. This finding supports researchers’ hypotheses that implicit bias more notably affects provider management and patient outcomes in times of clinical ambiguity (Balsa and McGuire, 2003; Croskerry, 2009; Burgess, 2010; Burgess *et al.*, 2006; van Ryn and Saha, 2011).

It is possible that because black patients voice more trust and satisfaction with racially concordant patient-provider interactions (Cooper *et al.*, 2003, 2012; Street *et al.*, 2008), implicit bias may be more indicative of cultural differences. That is to say, race/ethnicity may be proxies for cultural experiences and, in a racialized society, different life experiences and perspectives often result according to racial/ethnic group association (Institute of Medicine (US) Committee on Understanding and Eliminating Racial and Ethnic Disparities in Health Care, 2003). In 2011, Saha *et al.* (2011) examined whether patient perception of “cultural distance” between patients and providers had any effect on the quality of HIV/AIDS care and racial/ethnic disparities in patients receiving HIV/AIDS care. “Cultural distance” was defined as speech and language, reasoning, communication style and values, and was measured on a validated scale. In a mixed methods inquiry, the investigators studied patient receipt of anti-retroviral therapy, medication adherence, and viral load suppression. They found that cultural distance between patients and their providers was associated with less trust and decreased perception of care, and patients of color had less adherence and viral suppression than white counterparts. Still, adjusting for cultural difference did not account for the disparities observed across racial/ethnic categorizations.

Implicit bias in the racist structure

Findings like the ones described above lead a critical reader to ask, what other factors affect patient outcomes such that patients of color have worse health outcomes and statuses than their white counterparts? That is to say, even if provider implicit bias does not affect patient outcomes, people of color are still less healthy than white people (Mensah *et al.*, 2005). For example, despite finding no effect of bias on patient outcomes, one study found that black and Latinx patients had lower medication adherence and black people had worse hypertension control than white patients (Blair *et al.*, 2014).

Patients do not exist in the bubble of the clinical setting, rather they live in and their health is shaped by a larger context that is built on a racist US-history and around racist structures (Jones, 2000; Geronimus and Thompson, 2004; Powell, 2007; Smedley *et al.*, 2008). Oft cited examples like the Tuskegee “experiment,” the case of Ms Henrietta Lacks, and the coerced and forced sterilization of Latinas, Native American and black women are just tips of the proverbial iceberg (Hernandez, 1976; Gurr, 2012; Price and Darity, 2010). Long predating the Tuskegee Syphilis Study, black US slaves were forcibly used for medical experimentation by white physicians (West and Irvine, 2015; Kenny, 2010; Washington, 2006; Unknown Author, 1890). More recently in the USA, from 1989 to 1991, 900 mostly black and Latinx infants were experimentally vaccinated as part of a Centers for Disease Control and Prevention measles study without their guardians receiving informed consent (Cimons, 1996). There is historical merit in people of color’s distrust of

US medical providers, most of which have been and are white (Association of American Medical Colleges, 2010): traditionally, nonwhite people in the USA have not had reliable access to quality healthcare, and white scientists and clinicians purposely mistreated them or engaged in morally and ethically corrupt practices (Gamble, 1997; Kenny, 2010).

Outside of the directly medical purview, racist acts like the Indian Removal Act of 1830 and the Japanese-American internment from 1942 to 1945 still have far-reaching health impacts and permeate the collective memories of people of color. The lesson of distrust of institutional, largely white, figures has thus been passed down from experienced generations and relearned by newer generations in other contexts, like the penal and educational arenas (Carson, 2014; Aud *et al.*, 2010; Smedley *et al.*, 2008; Morenoff *et al.*, 2001). In 2014, the United Nations cited the USA for significant human rights abuses, among which people of color are disproportionately represented as survivors (Human Rights Committee, 2014). While white clinicians now may not overtly or purposely engage in malevolent or racist behavior when caring for nonwhite patients, people of color have an extensive and ongoing record of negative experiences with racist authority figures and institutions. These historical facts and collective memories hinder the development of trust that is necessary to a successful clinical relationship.

Additionally, interactions with healthcare providers are only a small portion of where racism, ethnocentrism and biases based upon race/ethnicity may surface in the lives of patients: in one study, only 25 percent of pharmacies in largely nonwhite neighborhoods carried sufficient medication supplies (Morrison *et al.*, 2000). Access to jobs affects ability to purchase health services (Darity and Mason, 1998; Pager, 2003; Adler and Newman, 2002). The built, residential environment dictates people's access to parks and playgrounds, and where they can shop for quality food (Wolch *et al.*, 2014; Smedley *et al.*, 2008). Residence quality and location affects children's risk of asthma and the frequency of their exacerbations (Akinbami *et al.*, 2009; Lin and Harris, 2009; Smedley *et al.*, 2008; Krieger and Higgins, 2003). Neighborhoods of color are more likely to be exposed to environmental toxins (Cole and Foster, 2001; Bullard *et al.*, 2007). Stress related to perceived racial/ethnic discrimination has negative physiologic affects on bodies of color (Chae *et al.*, 2014; Geronimus *et al.*, 2006) and so on. All of these issues are based in structural racism, which is defined as "[...] the ideologies, practices, processes and institutions that operate at the macro level to produce and reproduce differential access to power and to life opportunities along racial and ethnic lines" (Viruell-Fuentes *et al.*, 2012). That people of color have worse health outcomes and statuses than white people is not solely or even largely due to the patient-provider encounter or relationship (Feagin *et al.*, 2014; Viruell-Fuentes and Bennefield, 2012).

While implicit bias may play a role in racial/ethnic health disparities, influential institutional bodies must not focus on this area in an attempt to meaningfully improve the health of people of color. Advocates and institutions must recognize that teaching clinical professionals about racism/ethnocentrism and their role in potentially contributing to disparities are insufficient methods of combating a deeply rooted defect in our societal core. Until applicants of color are as likely to receive funding as white applicants from the National Institute of Health (Ginther *et al.*, 2011); until historically white health professional, public health and research-funding institutions have policy makers and administrators that accurately reflect the diverse US population; until people of color, like Dr Charles H. Garvin, who challenge racist/ethnocentric structures are accepted as valid contributors to disparity elimination, (Feagin and Bennefield, 2014; Gamble, 1997); and until structural racism is dismantled, implicit bias as a consequence of racism/ethnocentrism and health inequities along racial/ethnic lines will necessarily continue to exist.

Conclusion

It is clear that implicit bias about race/ethnicity exists in the minds of healthcare providers. Specifically, it has been shown that white providers have negative biases against black patients. When these racially/ethnically discordant provider-patient relationships occur, provider-patient communication and patient adherence suffers and black patients report less satisfaction with the care received. The literature, however, does not clearly and consistently indicate that racial/ethnic implicit bias yields tangible harm to patients of color. And there is a dearth of information on patients of other racial and ethnic groups, including Arabs and Persians, those of Asian descent,

Latinxes, Native Americans and those of bi- or multiracial backgrounds. Researchers in this field must inquire more broadly than the narrowly framed black-white discussion that has dominated the field for decades. Further, like Blair *et al.* (2014) researchers must engage in more challenging study methodologies to examine outcomes that are more directly relevant to patient health. Finally, investigators must report about racially/ethnically concordant provider-patient relationships and the health of these patients.

Ultimately, providers' racial/ethnic implicit bias is a byproduct of a racist system; such bias cannot be eliminated until the institution of racism is extinguished. It is unlikely that racial/ethnic implicit bias accounts for most of the health inequities that are present with respect to race and ethnicity: For example, black people and Latinxes have disproportionately more hypertension (Nwankwo *et al.*, 2013) and Native Americans have disproportionately more diabetes (Yracheta *et al.*, 2015) than white peers. These health problems are not caused by providers' biases so correcting such biases will not solve these problems. Yet, while implicit racial/ethnic bias is a small contributor to the health inequities in the USA, there is value to understanding its affect on the quality of the clinical encounter, its potential role in clinical decision making and as a symptom of structuralized racism. The ubiquity of implicit bias should encourage providers to view bias not as an individual failing but rather, as a symbol of the collective work yet to be done across societal sectors (Williams and Wyatt, 2015). Similar to how racism has been institutionalized, a multidisciplinary, coordinated, systematic public health effort involving various actors including the legal education, housing and employment sectors, is necessary to improve the health of people of color.

Note

1. In the Spanish language nouns are identified as masculine or feminine using an ending "o" or "a," respectively. Traditionally, the masculine identifier was used for plural words to encompass a mixed-gender group. "Latinx," a burgeoning-use term, is used to include people of Latin American descent whose gender identities are found on different points of the gender spectrum, including female, male, agender, nonbinary and gender non-conforming (Reichard, 2015).

References

- Aberegg, S.K. and Terry, P.B. (2004), "Medical decision-making and healthcare disparities: the physician's role", *Journal of Laboratory and Clinical Medicine*, Vol. 144 No. 1, pp. 11-17.
- Adler, N.E. and Newman, K. (2002), "Socioeconomic disparities in health; pathways and policies", *Health Affairs (Millwood)*, Vol. 21 No. 2, pp. 60-76.
- Akinbami, L.J., Moorman, J.E., Garbe, P.L. and Sondik, E.J. (2009), "Status of childhood asthma in the United States, 1980-2007", *Pediatrics*, Vol. 123 No. S3, pp. S131-45, doi: 10.1542/peds.2008-2233C.
- Association of American Medical Colleges (2010), *Diversity in the Physician Workforce: Facts & Figures 2010*, Association of American Medical Colleges, Washington, DC, p. 11.
- Aud, S., Fox, M.A. and KewalRamani, A. (2010), *Status and Trends in the Education of Racial and Ethnic Groups*, National Center for Educational Statistics, US Department of Education, Washington, DC, available at: <http://nces.ed.gov/pubs2010/2010015.pdf> (accessed September 15, 2015).
- Bach, P.B., Cramer, L.D., Warren, J.L. and Begg, C.B. (1999), "Racial difference in the treatment of early-stage lung cancer", *The New England Journal of Medicine*, Vol. 341 No. 16, pp. 1198-205.
- Balsa, A.I. and McGuire, T.G. (2003), "Prejudice, clinical uncertainty and stereotyping as sources of health disparities", *Journal of Health Economics*, Vol. 22 No. 2003, pp. 89-116.
- Bhopal, R.S. (2014), *Migration, Ethnicity, Race and Health in Multicultural Societies*, Oxford University Press, Oxford.
- Blair, I.V., Steiner, J.F., Hanratty, R., Price, D.W., Fairclough, D.L., Daughtery, S.L., Bronsert, M., Magid, D.J. and Havranek, E.P. (2014), "An investigation of associations between clinicians' ethnic or racial bias and hypertension treatment, medication adherence and blood pressure control", *Journal of General Internal Medicine*, Vol. 29 No. 7, pp. 987-96.
- Bullard, R.D., Mohai, P., Saha, R. and Wright, B. (2007), "Toxic wastes and races at twenty: 1987-2007", report prepared for the United Church of Christ Justice and Witness Ministries, Cleveland, OH.

- Burgess, D.J. (2010), "Are providers more likely to contribute to healthcare disparities under high levels of cognitive load? How features of the healthcare setting may lead to biases in medical decision making", *Medical Decision Making*, Vol. 30 No. 2, pp. 246-57.
- Burgess, D.J., Fu, S.S. and van Ryn, M. (2004), "Why do providers contribute to disparities and what can be done about it?", *Journal of General Internal Medicine*, Vol. 19 No. 11, pp. 1154-9.
- Burgess, D.J., van Ryn, M., Crowley-Matoka, M. and Malat, J. (2006), "Understanding the provider contribution to race/ethnicity disparities in pain treatment: insights from dual process models of stereotyping", *Pain Medicine*, Vol. 7 No. 2, pp. 119-34.
- Burgess, D.J., Crowley-Matoka, M., Phelan, S., Dovidio, J.F., Kerns, R., Roth, C., Saha, S. and van Ryn, M. (2008), "Patient race and physicians' decisions to prescribe opioids for chronic low back pain", *Social Science & Medicine*, Vol. 67 No. 11, pp. 1852-60.
- Carson, A.E. (2014), "Prisoners in 2013", US Department of Justice Office of Justice Programs Bureau of Justice Statistics, NCJ 247282, available at: www.bjs.gov/index.cfm?ty=pbdetail&iid=5109 (accessed February 11, 2017).
- Chae, D.H., Nuru-Jeter, A.M., Adeler, N.E., Brody, G.H., Lin, J., Blackburn, E.H. and Epel, E.S. (2014), "Discrimination, racial bias, and telomere length in African-American men", *American Journal of Preventive Medicine*, Vol. 46 No. 2, pp. 103-11.
- Chin, M.H., Zhang, J.X. and Merrell, K. (1998), "Diabetes in the African-America medicare population. Morbidity, quality of care, and resource utilization", *Diabetes Care*, Vol. 21 No. 7, pp. 1090-5.
- Cimons, M. (1996), "CDC says it erred in measles study", *Los Angeles Times*, June 17, available at: http://articles.latimes.com/1996-06-17/news/mn-15871_1_measles-vaccine (accessed November 21, 2015).
- Cole, L. and Foster, S. (2001), *From the Ground Up: Environmental Racism and the Rise of the Environmental Justice Movement*, New York University Press, New York City, NY, pp. 167-83.
- Cooper, L.A., Roter, D.L., Johnson, R.L., Ford, D.E., Steinwachs, D.M. and Powe, N.R. (2003), "Patient-centered communication, ratings of care, and concordance of patient and physician race", *Annals of Internal Medicine*, Vol. 139 No. 11, pp. 907-15.
- Cooper, L.A., Roter, D.L., Carson, K.A., Beach, M.C., Sabin, J.A., Greenwald, A.G. and Inui, T.S. (2012), "The associations of clinicians' implicit attitudes about race with medical visit communication and patient ratings of interpersonal care", *American Journal of Public Health*, Vol. 102 No. 5, pp. 979-87, doi: 10.2105/AJPH.2011.300558.
- Crosby, N.S. (2013), "People of color", in Cortés, C.E. (Ed.), *Multicultural America: A Multimedia Encyclopedia*, SAGE, Thousand Oaks, CA, pp. 1690-3.
- Croskerry, P. (2009), "A universal model of diagnostic reasoning", *Academic Medicine*, Vol. 84 No. 8, pp. 1022-8.
- Croskerry, P., Singhal, G. and Mamede, S. (2013), "Cognitive debiasing 1: origins of bias and theory of debiasing", *BMJ Quality and Safety*, Vol. 22 No. S2, pp. 58-64.
- Darity, W.A. Jr and Mason, P.L. (1998), "Evidence on discrimination in employment: codes of color, codes of gender", *Journal of Economic Perspectives*, Vol. 12 No. 2, pp. 63-90.
- Dovidio, E.F. and Gaertner, S.L. (2000), "Aversive racism and selection decisions 1989 and 1999", *Psychological Science*, Vol. 11 No. 4, pp. 315-19.
- Dressler, W. (1987), "The stress process in a southern black community: implications for prevention research", *Human Organization*, Vol. 46 No. 3, pp. 211-20.
- Feagin, J. and Bennefield, Z. (2014), "Systemic racism and US health care", *Social Science & Medicine*, Vol. 103, pp. 7-14, doi: 10.1016/j.socscimed.2013.09.006.
- Feagin, J.R. (2010), *Racist America*, rev. ed., Routledge, New York, NY.
- Fiske, S.T. (1998), *Stereotyping, Prejudice, and Discrimination*, 4th ed., Vol. 2, McGraw-Hill, Boston, MA.
- Gamble, V.N. (1997), "Under the shadow of Tuskegee: African Americans and health care", *American Journal of Public Health*, Vol. 87 No. 11, pp. 1773-8.
- Geronimus, A.T. and Thompson, J.P. (2004), "To denigrate, ignore, or disrupt: racial inequality in health and the impact of a policy-induced breakdown of African American communities", *Du Bois Review: Social Science Research on Race*, Vol. 1 No. 2, pp. 247-79.

- Geronimus, A.T., Hicken, M., Keene, D. and Bound, J. (2006), “‘Weathering’ and age patterns of allostatic load scores among black people and white people in the United States”, *American Journal of Public Health*, Vol. 96 No. 5, pp. 826-33, doi: 10.2105/AJPH.2004.060749.
- Ghali, J.K., Cooper, R.S., Kowatly, I. and Liao, Y. (1993), “Delay between onset of chest pain and arrival to the coronary care unit among minority and disadvantaged patients”, *Journal of the National Medical Association*, Vol. 85 No. 3, pp. 180-4.
- Ginther, D.K., Schaffer, W.T., Schnell, J., Masimore, B., Liu, F., Haak, L.L. and Kington, R. (2011), “Race, ethnicity, and NIH research awards”, *Science*, Vol. 333 No. 6045, pp. 1015-9.
- Gladwell, M. (2005), *Blink: The Power of Thinking without Thinking*, Little, Brown and Company, New York, NY.
- Goyal, M.K., Kupperman, N., Cleary, S.D., Teach, S.J. and Chamberlain, J.M. (2015), “Racial disparities in pain management of children with appendicitis in emergency departments”, *JAMA Pediatrics*, Vol. 169 No. 11, pp. 996-1002.
- Green, A.R., Carney, D.R., Pallin, D.J., Ngo, L.H., Raymond, K.L., Iezzoni, L.I. and Banaji, M.R. (2007), “Implicit bias among physicians and its prediction of thrombolysis decisions for black and white patients”, *Journal of General Internal Medicine*, Vol. 22 No. 9, pp. 1231-8.
- Green, C.R., Anderson, K.O., Baker, T.A., Campbell, L.C., Decker, S., Fillingim, R.B., Kalauokalani, D.A., Lasch, K.E., Myers, C., Tait, R.C., Todd, K.H. and Vallerand, A.H. (2003), “The unequal burden of pain: confronting racial and ethnic disparities in pain”, *Pain Medicine*, Vol. 4 No. 3, pp. 277-94.
- Gurr, B. (2012), “The failures and possibilities of a human rights approach to secure native American women’s reproductive justice”, *Societies Without Borders*, Vol. 7 No. 1, pp. 1-28.
- Hagiwara, N., Penner, L.A., Gonzalez, R., Eggly, S., Dovidio, J.F., Gaertner, S.L., West, T. and Albrecht, T.L. (2013), “Racial attitudes, physician-patient talk time ratio, and adherence in racially discordant medical interactions”, *Social Science & Medicine*, Vol. 87, pp. 123-31, doi: 10.1016/j.socscimed.2013.03.016.
- Hahn, S. (2009), “Patient-centered communication to assess and enhance patient adherence to glaucoma medication”, *Ophthalmology*, Vol. 116 No. S11, pp. S37-S42, doi: 10.1016/j.opthta.2009.06.023.
- Haider, A.H., Schneider, E.B., Sriram, N., Dossick, D.S., Scott, V.K., Swoboda, S.M., Losonczy, L., Haut, E.R., Efron, D.T., Pronovost, P.J., Lipsett, P.A., Cornwell, E.E. III, MacKenzie, E.J., Cooper, L.A. and Freischlag, J.A. (2015), “Unconscious race and social class bias among acute care surgical clinicians and clinical treatment decisions”, *JAMA Surgery*, Vol. 150 No. 5, pp. 457-64.
- Hernandez, A. (1976), “Chicanas and the issue of involuntary sterilization: reforms needed to protect informed consent”, *Chicana/o Latina/o Law Review*, Vol. 3 No. 3, pp. 1-35.
- Houghton Mifflin Company (2001), *American Heritage Dictionary*, Dell Pub, New York, NY.
- Human Rights Committee (2014), *Concluding Observations on the Fourth Periodic Report of the United States of America*, United Nations Human Rights, Office of the High Commissioner for Human Rights, available at: http://tbinternet.ohchr.org/_layouts/treatybodyexternal/Download.aspx?symbolno=CCPR%2fC%2fUSA%2fCO%2f4&Lang=en (accessed February 11, 2017).
- Institute of Medicine (US) Committee on Understanding and Eliminating Racial and Ethnic Disparities in Health Care (2003), in Smedley, B.D., Stith, A.Y. and Nelson, A.R. (Eds), *Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care*, National Academies Press, Washington, DC.
- Jones, C.P. (2000), “Levels of racism: a theoretic framework and a gardener’s tale”, *American Journal of Public Health*, Vol. 90 No. 8, pp. 1212-15.
- Kaplan, S.H., Greenfield, S. and Ware, J. (1989), “Assessing the effects of physician-patient interactions on the outcomes of chronic disease”, *Medical Care*, Vol. 27 No. 3, pp. S110-27.
- Kenny, S.C. (2010), “‘A dictate of both interest and mercy’? Slave hospitals in the Antebellum South”, *Journal of the History of Medicine and Allied Sciences*, Vol. 65 No. 1, pp. 1-47.
- Krieger, J. and Higgins, D.L. (2003), “Housing and health: time again for public health action”, *American Journal of Public Health*, Vol. 92 No. 9, pp. 758-68.
- LeLacheur, S. (2015), “The role of the health practitioner bias in health disparities: accepting it and addressing it”, in Smith, D.T. and Sabino, T.E. (Eds), *The Impact of Social Factors on Health: A Critical Reader for the Physician Assistant*, rev. 1st ed., Cognella Academic Publishing, San Diego, CA, pp. 133-46.

Levine, R.S., Foster, J.E., Fullilove, R.E., Fullilove, M.T., Briggs, N.C., Hull, P.C., Husaini, B.A. and Hennekens, C.H. (2001), "Black-white inequalities in mortality and life expectancy, 1933-1999: implications for healthy people 2010", *Public Health Reports*, Vol. 116 No. 5, pp. 474-83.

Lin, A.C. and Harris, D.R. (Eds) (2009), *The Colors of Poverty: Why Racial and Ethnic Disparities Persist*, Policy Brief, National Poverty Center, Ann Arbor, MI, available at: www.npc.umich.edu/publications/policy_briefs/brief16/PolicyBrief16.pdf (accessed November 17, 2015).

Lutfehy, K.E., Link, C.L., Grant, R.W., Marceau, L.D. and McKinlay, J.B. (2009), "Is certainty more important than diagnosis for understanding race and gender disparities?: an experiment using coronary heart disease and depression case vignettes", *Health Policy*, Vol. 89 No. 3, pp. 279-87, doi: 10.1016/j.healthpol.2008.06.007.

Mensah, G.A., Mokdad, A.H., Ford, E.S., Greenlund, K.J. and Croft, J.B. (2005), "State of disparities in cardiovascular health in the United States", *Circulation*, Vol. 111 No. 10, pp. 1233-41.

Morenoff, J., Sampson, R.J. and Raudenbush, S. (2001), "Neighborhood inequality, collective efficacy, and the spatial dynamics of urban violence", *Criminology*, Vol. 39 No. 3, pp. 517-58.

Morrison, R.S., Wallenstein, S., Natale, D.K., Senzel, R.S. and Huang, L.L. (2000), " 'We don't carry that' – failure of pharmacies in predominantly nonwhite neighborhoods to stock opioid analgesics", *New England Journal of Medicine*, Vol. 342 No. 14, pp. 1023-6.

Nosek, B.A., Smyth, F.L., Devos, T., Lindner, N.M., Ranganath, K.A., Smith, C.T. *et al.* (2007), "Pervasiveness and correlates of implicit attitudes and stereotypes", *European Review of Social Psychology*, Vol. 18, pp. 36-88.

Nwankwo, T., Yoon, S.S., Burt, V. and Gu, Q. (2013), *Hypertension Among Adults in the United States: National Health and Nutrition Examination Survey, 2011 – 2012*, NCHS.

Pager, D. (2003), "The mark of a criminal record", *American Journal of Sociology*, Vol. 108 No. 5, pp. 937-75.

Penner, L.A., Dovidio, J.F., West, T.V., Baertner, S.L., Albrecht, T.L., Dailey, R.K. and Markvoa, T. (2010), "Aversive racism and medical interactions with black patients: a field study", *Journal of Experimental Social Psychology*, Vol. 46 No. 2, pp. 436-40.

Pletcher, M.J., Kertesz, S.G., Kohn, M.A. and Gonzales, R. (2008), "Trends in opioid prescribing by race/ethnicity for patients seeking care in US emergency departments", *Journal of the American Medical Association*, Vol. 299 No. 1, pp. 70-8.

Popescu, I., Vaughan-Sarrazin, M.S. and Rosenthal, G.E. (2007), "Differences in mortality and use of revascularization in black and white patients with acute MI admitted to hospitals with and without revascularization services", *Journal of the American Medical Association*, Vol. 297 No. 22, pp. 2489-95.

Powell, J.A. (2007), "Structural racism: building upon the insights of John Calmore", *North Carolina Law Review*, Vol. 86, pp. 791-816, available at: <http://scholarship.law.berkeley.edu/facpubs/1637>

Price, G.N. and Darity, W.A. Jr (2010), "The economics of race and eugenic sterilization in North Carolina: 1958 – 1968", *Economics & Human Biology*, Vol. 8 No. 2, pp. 261-72.

Raczynski, J.M., Taylor, H., Cutter, G., Hardin, M., Rappaport, N. and Oberman, A. (1994), "Diagnoses, symptoms, and attribution of symptoms among black and white inpatients admitted for coronary heart disease", *American Journal of Public Health*, Vol. 84 No. 6, pp. 951-6.

Reichard, R. (2015), "Why we say latinx: trans & gender non-conforming people explain", *Latina*, August 29, available at: www.latina.com/lifestyle/our-issues/why-we-say-latinx-trans-gender-non-conforming-people-explain (accessed November 21, 2015).

Roter, D.L. and Hall, J.A. (2006), *Doctors Talking with Patients/Patients Talking with Doctors: Improving Communication in Medical Visits*, 2nd ed., Praeger Publishers, Westport, CT.

Sabin, J.A. and Greenwald, A.G. (2012), "The influence of implicit bias on treatment recommendations for 4 common pediatrics conditions: pain, urinary tract infection, attention deficit hyperactivity disorder, and asthma", *American Journal of Public Health*, Vol. 102 No. 5, pp. 988-96.

Sabin, J.A., Nosek, B.A., Greenwald, A.G. and Rivara, F.P. (2009), "Physicians' implicit and explicit attitudes about race by MD race, ethnicity, and gender", *Journal of Health Care for the Poor and Underserved*, Vol. 20 No. 3, pp. 896-913, doi: 10.1353/hpu.0.0185.

Saha, S., Sanders, D.S., Korthuis, P.T., Cohn, J.A., Sharp, V.L., Haidet, P., Moore, R.D. and Beach, M.C. (2011), "The role of cultural distance between patient and provider in explaining racial/ethnic disparities in HIV care", *Patient Education and Counseling*, Vol. 85 No. 3, pp. e278-e284.

Satcher, D., Fryer, G.E. Jr, McCann, J., Troutman, A., Woolf, S.H. and Rust, G. (2005), "What if we were equal? A comparison of the black-white mortality gap in 1960 and 2000", *Health Affairs (Millwood)*, Vol. 24 No. 2, pp. 459-64.

Shah, A.A., Zogg, C.K., Zafar, S.N., Schneider, E.B., Cooper, L.A., Chapital, A.B., Peterson, S.M., Havens, J.M., Thorpe, R.J. Jr, Roter, D.L., Castillo, R.C., Salim, A. and Haider, A.H. (2015), "Analgesic access for acute abdominal pain in the emergency department among racial/ethnic minority patients: a nationwide examination", *Medical Care*, Vol. 53 No. 12, pp. 1000-9.

Sheifer, S.E., Escarce, J.J. and Schulman, K.A. (2004), "Race and sex differences in the management of coronary artery disease", *American Heart Journal*, Vol. 139 No. 5, pp. 848-57.

Smedley, B., Jeffries, M., Adelman, L. and Cheng, J. (2008), "Race, racial inequality and health inequities: separating myth from fact. Unnatural causes", available at: www.unnaturalcauses.org/assets/uploads/file/Race_Racial_Inequality_Health.pdf (accessed November 21, 2015).

Sonel, A.F., Good, C.B., Mulgund, J., Roe, M.T., Gibler, W.B., Smith, S.C. Jr, Cohen, M.G., Pollack, C.V. Jr, Ohman, E.M. and Peterson, E.D., CRUSADE Investigators (2005), "Racial variations in treatment and outcomes of black and white patients with high-risk non-ST-elevation acute coronary syndromes: insights from CRUSADE (can rapid risk stratification of unstable angina patients suppress adverse outcomes with early implementation of the ACC/AHA guidelines?)", *Circulation*, Vol. 111 No. 10, pp. 1225-32.

Stewart, M.A. (1995), "Effective physician-patient communication and health outcomes: a review", *Canadian Medical Association Journal*, Vol. 152 No. 9, pp. 1423-33.

Street, R.L. Jr, O'Malley, K.J., Cooper, L.A. and Haidet, P. (2008), "Understanding concordance in patient-physician relationships: personal and ethnic dimensions of shared identity", *Annals of Family Medicine*, Vol. 6 No. 3, pp. 198-205.

Summers, R.L., Cooper, G.J., Carlton, F.B., Andrews, M.E. and Kolb, J.C. (1999), "Prevalence of atypical chest pain descriptions in a population from the southern United States", *American Journal of the Medical Sciences*, Vol. 318 No. 3, pp. 142-5.

Taylor, J., Henderson, D. and Jackson, B. (1991), "Evaluation of a holistic model of mental health symptoms in African American women", *The Journal of Black Psychology*, Vol. 18 No. 1, pp. 19-45.

Telles, E.E. (2004), *Race in Another America: The Significance of Skin Color in Brazil*, Princeton University Press, Princeton, NJ.

United States Census Bureau (2013), "Race", available at: www.census.gov/topics/population/race/about.html (accessed November 20, 2015).

United States Department of Health and Human Services, National Center for Health Statistics (2007), "Health, United States, 2006", US Department of Health and Human Services, Washington, DC.

United States Office of Management and Budget (1997), "Revisions to the standards for the classifications of federal data on race and ethnicity", available at: www.whitehouse.gov/omb/fedreg_1997standards (accessed November 20, 2015).

Unknown Author (1890), "Concerning negro sorcery in the United States", *Journal of American Folklore*, Vol. 3, p. 210.

US Census Bureau (2010), "Overview of race and Hispanic origin: 2010", available at: www.census.gov/prod/cen2010/briefs/c2010br-02.pdf (accessed February 24, 2017).

van Ryn, M. (2002), "Research on the provider contribution to race/ethnicity disparities in medical care", *Medical Care*, Vol. 40 No. S1, pp. 140-51.

van Ryn, M. and Saha, S. (2011), "Exploring unconscious bias in disparities research and medical education", *JAMA*, Vol. 306 No. 9, pp. 995-6.

van Ryn, M., Burgess, D.J., Dovidio, J.F., Phelan, S.M., Saha, S., Malat, J., Griffin, J.M., Fu, S.S. and Perry, S. (2011), "The impact of racism on clinical cognition, behavior, and clinical decision making", *Du Bois Review*, Vol. 8 No. 1, pp. 199-218.

Venkat, A., Hoekstra, J., Lindsell, C., Prall, D., Hollander, J.E., Pollack, C.V. Jr, Diercks, D., Kirk, J.D., Tiffany, B., Peacock, F., Storrow, A.B. and Gibler, W.B. (2003), "The impact of race on the acute management of chest pain", *Academic Emergency Medicine*, Vol. 10 No. 11, pp. 1199-208.

Viruell-Fuentes, E.A., Miranda, P.Y. and Abdulrahim, S. (2012), "More than culture: structural racism, intersectionality theory, and immigrant health", *Social Science & Medicine*, Vol. 75 No. 2012, pp. 2099-106.

Washington, H.A. (2006), *Medical Apartheid: The Dark History of Medical Experimentation on Black Americans from Colonial Times to the Present*, 1st ed., Doubleday, New York, NY.

West, M.J. and Irvine, L.M. (2015), "The eponymous Dr James Marion Sims MD, LLD (1813-1883)", *Journal of Medical Biography*, Vol. 23 No. 1, pp. 35-45.

Williams, D.R. (2004), "Racism and health", in Whitfield, K.E. (Ed.), *Closing the Gap: Improving the Health of Minority Elders in the New Millennium*, Gerontological Society of America, Washington, DC, pp. 69-80.

Williams, D.R. and Wyatt, R. (2015), "Racial bias in health care and health: challenges and opportunities", *JAMA*, Vol. 314 No. 6, pp. 555-6.

Wolch, J.R., Byrne, J. and Newell, J.P. (2014), "Urban green space, public health, and environmental justice: the challenge of making cities 'just green enough'", *Landscape and Urban Planning*, Vol. 125, pp. 234-44.

Yracheta, J.M., Lanaspá, M.A., Le, M.T., Abdeblmalak, M.F., Alfonso, J., Sánchez-Lozada, L.G. and Johnson, R.J. (2015), "Diabetes and kidney disease in American Indians: potential role of sugar-sweetened beverages", *Mayo Clinic Proceedings*, Vol. 90 No. 6, pp. 813-23.

Further reading

Gee, G.C. and Ford, C.L. (2011), "Structural racism and health inequalities", *Du Bois Review: Social Science Research on Race*, Vol. 8 No. 1, pp. 115-32.

King, R.C. and Stanfield, W.D. (1997), *A Dictionary of Genetics*, 5th ed., Oxford University Press, New York, NY.

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