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Literature Review: The Roots and Clinical Effects of Racial Bias in Medicine

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In a growing society, healthcare has become an essential part of a country's development, standard of living, and life expectancy. The past decade has seen unprecedented growth in both scientific and medical discoveries, leading to improved treatment plans and innovative treatments, yet there are some aspects of healthcare that remain stunted. Discrimination, particularly on the basis of race, is still prevalent and ingrained in the American healthcare system, leading to worsened patient outcomes for people of color and a discomfort with seeking medical care that disproportionately affects those in marginalized groups. This bias continues even into the education of healthcare providers, which perpetuates the cycle of prejudice in the medical field.

While the intersection of racism in the medical field varies greatly and maintains its prevalence among different races, this dissertation focuses mainly on discrimination of black patients in the American healthcare system. For further information on the effects of racial bias, both abroad and among a wider variety of races, valuable resources can be found below the works cited in this review.

The sources analyzed in this review are analytical and scientific, with little to no use of primary anecdotal evidence. While such an emotional topic as racism and how it affects patient care relies heavily on personal experience, these sources have confounded the feelings of many patients nationally and adapted them into a well-reviewed analysis of how those feelings reflect nationwide opinions. Furthermore, it includes historical papers detailing the foundations of the medical field and how it was developed in hand with racism.

The following sections include definitions of terminology surrounding the issue, information on the history that led to modern-day biases, the ways in which these biases are seen by patients, and how it affects their care. This demonstrates the link between past practices and the discriminatory actions in the medical system currently. Furthermore, it establishes evidence that there *are* effects felt by patients of color as well as offers information on possible solutions to help better their treatment.

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Terminology

This review serves as an inquiry into the literature surrounding the attitudes, research, and effects of racial bias in healthcare settings. It is first necessary to delineate the scope of this review by defining some key terms and points of interest for this paper. These include diversity, discrimination, including macro- and microaggressions, and different types of racism. To begin, diversity refers to the inclusion of healthcare professionals, trainees, educators, researchers, and patients of varied race, ethnicity, gender, disability, social class, socioeconomic status, sexual orientation, gender identity, primary spoken language, and geographic region (1). Moreover, discrimination, specifically in healthcare, refers to negative actions or a lack of consideration being given to an individual or a group that occurs because of a preconceived and unjustified opinion (1). Individuals do not necessarily need to be members of these groups to experience discrimination against that group, if they have perceived membership by the oppressor. Dictionary.com defines oppressor as "a person or group that exercises authority or power over another in a harsh and burdensome way." In this way, the oppressor must be the person who benefits from the system of prejudice in place, which in this case may be white or white-presenting people. Some common reasons for discrimination toward an individual may be because of the individual's race, ethnicity, gender, disability, social class, socioeconomic status, sexual orientation, gender identity, primary spoken language, or location of residence. There is an inverse relationship between discrimination in healthcare and diversity in healthcare, meaning that the more diverse the medical staff is, the greater the quality of care for patients in marginalized groups. This review will be mainly focusing on the effects of discrimination to *patients* of color, as opposed to the higher barrier of entry for people of color seeking a profession in the healthcare field. However, as evidence shows that discrimination of marginalized patients is lowered with higher rates of diversity in the healthcare field, it is clearly important to consider that aspect as well (1). While it considers the tangential effects of the workers' racial backgrounds, this paper focuses predominantly on the clinical ramifications of discrimination in the medical field on patients receiving care.

Within discrimination, there are two main classifications of actions: macroaggressions and microaggressions. Microaggressions are overt and more radical forms of racism that are rooted within society or within the medical system. An example would be theoretical laws that require testing of potential medical treatments on white patients but not those of color, preventing the full effects of medicine from being seen on a wider range of patients. Macroaggressions have been largely eliminated compared to decades earlier in history, with laws such as Title VII of the Civil Rights Act and the passing of the Americans with Disabilities Act in 1990, which prohibit unequal treatment based on race, sex, and disability (1). While protective legislation such as this has decreased the overt discrimination associated with macroaggressions, microaggressions have increased in response. Microaggressions are short, everyday insults or remarks that can be difficult to identify due to their barely perceptible nature. Nonetheless, they convey a negative message to a person because of their affiliation with a marginalized group. Due to the nature of microaggressions, they tend to be easier to perform, harder to identify, and subsequently more difficult to punish.

Microaggressions have been associated with damaging the victim's mental health through summaries of nationwide surveys and interviews of patients. The takeaway from these interviews is that microaggressions tend to cause lower self-esteem, worsened self-care, increased susceptibility to substance abuse, depression, suicidal ideations, anxiety, and more (1). Recent studies have even shown that regular exposure to microaggressions is associated with a higher incidence of hypertension, increased frequency of hospital admission, and more severe diabetes-related stress (1). As microaggressions are delivered predominantly to patients of color, this results in marginalized groups of people receiving a disproportionately negative healthcare experience and adverse effects on their health. Furthermore, while macroaggressions are much more overt, seen predominantly in legislature and other tangible aspects of society, microaggressions are typically delivered in one-on-one scenarios, making them even more difficult to identify and stop. The main differentiator of microaggressions is that they are more social in nature and thus harder to provide evidence for their occurrence.

Furthermore, according to the National Museum of African American History and Culture, there is individual racism, interpersonal racism, institutional racism, and structural racism (3). Individual racism is most directly related to the biases which we hold or rather our personal beliefs in the superiority of one's race over another. Interpersonal racism is an expression of these biases between individuals, institutional racism is shown in the policies and procedures of an organization, and structural racism is the total effect of these agents across systems and between institutions. These are all forms of racism that build a foundation for the discrimination being discussed in this review, and in order to promote health equity across races, it is required to address both individual and interpersonal racism while dismantling the institutional and structural racism that is built into the crevices of our society. Further examples and definitions from the National Museum of African American History and Culture are summarized in the next table (3).

Term	**Individual Racism**	**Interpersonal Racism**	**Institutional Racism**	**Structural Racism**
Definition	"The beliefs, attitudes, and actions of <u>individuals</u> that support or perpetuate racism in conscious and unconscious ways" (3).	Occurs between individuals, including public displays of racism, such as slurs or prejudicial actions.	Occurs in organizations, seen in the form of race-based policies and practices that offer an unfair advantage to white people over Person of Color (POC).	"The overarching system of racial bias across institutions and society" (3).
Example	A white person tells a racist joke.	A white person uses a racial slur against a POC.	Schools with the highest percentages of students of color tend to have the least funding.	Pop culture portrays POC as criminals by depicting them as such in roles.

Lack of African American Physicians

Although this paper focuses more on the clinical ramifications of racial bias toward patients of color, the reasons the majority of hospital staff are white must also be addressed. Much of the racism rooted in today's society is remaining from decades of discrimination in the United States on a greater legislative basis. This means institutional racism in the form of governmental practices, which inadvertently place POC at a disadvantage to white citizens. One example of this is schools' dependence on local property taxes, which provides affluent (more commonly majority white) communities with greater access to education than impoverished communities, which house majority POC. This can be traced back to the dawn of slavery, preventing African Americans from garnering the same education as their white counterparts; however, this review will begin with the Flexner Report in 1910. Abraham Flexner was a member of the Hopkins Circle, a group created to place a foundation of science-based medical training in the United States. He evaluated medical schools in the United States and Canada from the point of view of a teacher and subsequently destroyed the reputation and potential funding opportunities to those schools whose education he deemed inadequate (4). Among the majority of these schools were medical schools for African American students, and the community is still recovering from the result of this report. This report significantly slowed the inclusion of African American physicians in the American medical system while creating a narrative that African American physicians are less qualified and able to succeed than their white counterparts (4).

Concordant care is a patient sharing a common attribute, such as race, gender, or ethnicity, with their provider. Evidence strongly supports the conclusion that race-concordant patient-physician relationships correlate with improved communication, longer patient visits, greater adherence to medical protocols, and higher patient satisfaction scores (1). Therefore, the lasting effects of racism in the United States from things such as the aforementioned Fletcher report show a clear effect on patients of color, as they are not able to receive this race-concordant care that has proven positive effects on a frequent basis. Even more, underrepresented minority physicians are more likely to serve in areas with a physician shortage and serve underserved populations, such as those in low-income areas and minorities (1). With fewer minority physicians, there is less outreach to these individuals; thus, the effect of racism is clear through its ramifications on patients.

Historical Racism in Medicine

As with much of the racism that is ingrained in American culture, the roots of medical racial bias can be traced to slavery, most notably with the perfection of the surgical technique for vesicovaginal fistula, or VVF. VVF affected many women in the 19th century, resulting from obstructed labor that caused a tear from the bladder to the vagina (5). This left many women incontinent with a continuous leak of urine, forcing many victims to social outcasting and, later, suicide. The field of gynecology did not exist in the early 1800s when this issue was most prominent, and the examination of female organs was considered disgusting for doctors, who were majority men at the time. In performing pelvic examinations, doctors looked women in the eyes, not even being able to acceptably look at the vagina during their evaluation (5). Even in medical schools, obstetrics was taught with dummies, and doctors generally did not see live birth until they were in charge of delivering a baby themselves (5).

Dr. J Marion Sims, the American surgeon deemed the father of gynecology, perfected the first usable surgical technique of VVF in 1849, after forcing enslaved women for four years to undergo experimental surgeries. Using a speculum made from a pewter spoon, at age 27, he used a total of seven enslaved women with VVF in his experiments, all without anesthetics, as Sims was not aware of the developments made in this area of medicine (5). The first woman was Lucy, who underwent an hour-long invasive operation with 12 local doctors gawking at her. The operation failed, and she became ill with fever from blood poisoning, recovering after a matter of two to three months. A second victim, Anarcha, was operated on a total of 13 times until a cure was found. After this, all of the enslaved women's conditions were corrected, and they were sent back to where they lived. It is important to note that all of these operations were done with the permission of the "owner" and not the patient, and when white women came to Sims for the procedure on their own accord, not a single one was able to endure the pain and finish the operation (5).

Even today, there is a medical school named after Sims and statues celebrating him in New York and South Carolina, with many deeming him the "father of gynecology." It was normal in this time period to force enslaved peoples to undergo experimental procedures, and it was valuable in order to find a cure for the condition. However, significant medical breakthroughs were being made in this period *without* the exploitation of enslaved people, and Sim's use of involuntary procedures was not a common practice (5). To this day, the stigmatization of female anatomy is present in the medical field, with complete vaginal anatomy not being taught in textbooks. While medical students are commonly taught about the pleasure sensors of male genitalia and how to treat issues associated with them, such as erectile dysfunction with Viagra, there is little focus on clitoral anatomy and how female pleasure centers operate. This leaves a large gap in knowledge that can contribute to incidents of clitoral atrophy and other related illnesses being left untreated. Furthermore, a 2013 study published in the *Journal of Obstetrics and Gynaecology* examined 59 gynecology and anatomy textbooks for information on the dimensions of vulval constituent parts, and *none* of them gave measurements for all vulval structures (6). Of those that contained measurements for one or some of them, the ranges were much narrower than recent studies suggest. The result of this knowledge gap is exemplified in a survey of 433 Australian general practitioners, wherein only 75% said they were confident in assessing genital appearance, which is a basic part of women's health (7).

Subsequently, this history of forced procedures has continued into a stereotype that black people (especially women) are not as susceptible to pain. This leaves the reader with the questions of how black people, and women, can trust a system that praises a man who tortured women and trust providers with a skewed image of their anatomy and physiology. With this, it is important to note the intersectionality between gender and race in medical bias, as women of color have a multitude of stereotypes and issues to deal with. However, the scope of this paper does not include a lengthy analysis of this intersection, and for further discussion on the topic of gender bias in the medical field, one should read the directed papers following the works cited.

Yet another example of historical discrimination comes from the Tuskegee airmen, a group of primarily African American military pilots and airmen who fought in World War II. In 1932, the United States Public Health Service (USPHS) in hand with the Tuskegee Institute began a study recording the natural history and prevalence of the STD syphilis (8). Involving 600 black men, 399 with syphilis and 201 without, researchers told the participants that they were being treated for "bad blood" in exchange for free meals and burial insurance. This term was used to describe a variety of illnesses, from syphilis to anemia and fatigue, so the participants' informed consent on the project was not collected, as the true nature of the study was not disclosed (8). By 1943, penicillin was used as an effective treatment of syphilis and was widely available, yet participants were neither told about this treatment nor offered it, allowing the patients to suffer from a disease that had an effective and available cure. In 1972, this study was exposed, and the Assistant Secretary for Health and Scientific Affairs concluded that it was "ethically unjustified," thus ending the study in October 1972, more than 29 years after the discovery of a cure (8).

Since then, the Tuskegee Health Benefit Program was established to ensure medical accessibility for affected participants and their families, which continues to this day. In 1974, the participants won $10 million in a class-action lawsuit, and a Presidential Apology was issued by Bill Clinton in 1977 (8). Despite these reparations, hundreds of black men suffered at the hands of induced ignorance by their doctors, something that never would have been done to white people at the time, who also suffered from syphilis but were never included in the study. The history of mistreatment of African Americans is rooted deeply in American medical culture and contributes greatly to a sense of distrust of black people in the medical system. This has many ramifications in how they obtain their medical care and their treatment, which is detailed in the following section describing the lasting results of this discrimination in today's world.

Modern-Day Clinical Ramifications

Physicians holding an implicit bias against minorities have proven to create detrimental effects in their care. A recent study in *Proceedings of the National Academy of Sciences* of the United States demonstrates the connection between incorrect beliefs of biological differences between races and racial bias in both pain assessment and treatment recommendations (9). Medical students and residents in the study agreed that African Americans' nerve endings are less sensitive to pain than that of white people, and their skin thicker, despite these facts being unfounded. The medical professionals who incorrectly made these assumptions rate African American patients' pain lower than that of white people, therefore resulting in less accurate treatment recommendations.

Yet another even more concrete example is in glomerular filtration rate measurements, used to measure how much blood biological filters in one's kidneys clean every minute based on their body size. The so-called race corrected estimated glomerular filtration rate measurements are based on the unscientifically supported belief that African Americans have higher creatinine levels and more muscle (10). These facts being unsupported may result in a higher reported estimated glomerular filtration rate, which is interpreted as being the healthier renal function for African Americans, but in reality it is not. This can lead to a patient not identifying a possibly harmful renal issue and being falsely led to believe they are healthy, resulting in delayed treatment. Subsequently, in a medical artificial intelligence program, which considered past healthcare costs in predicting the clinical risk of certain patients, a larger majority of white people had greater rates of spending on healthcare and thus were determined to be higher-risk patients than African Americans (10). This leads to a possible underreporting of healthcare risks faced by the African American community.

Although bias is present in all areas of healthcare, one specialty it is especially dominant in is dermatology. There is an underrepresentation of darker skin tones in dermatologic texts, general medical texts, and scientific literature. This compromises the clinical tools of trainees with patients of color, as most of dermatology is identifying dermatologic issues by how they look on the skin. A 2006 study found that coverage of dark skin in images in major dermatology resources ranged from 4% to 18%, and it was excused as "harder to capture" in images (11). However, a 2020 study found the same thing, with up to 18% of images containing darker skin tones, even with the advancements in technology (11).

Within textbooks, this bias runs deeper with the associations being made between certain diseases and race. White skin is presented with more common skin conditions, such as acne and eczema, whereas darker skin is used overwhelmingly to show sexually transmitted infections. This demonstrates an implicit bias in the image selections of publications, which can be translated into the doctors learning from them and, subsequently, their patients. Even in non-dermatological fields, a 2018 study of general medical texts found that under 5% of images included dark skin tones, and only 18% of images in the *New England Journal of Medicine* included non-white skin tones from 1992 to 2017 (11). With the COVID-19 pandemic, many more medical students are relying on pictures as opposed to more hands-on training, and this will lead to even more of a bias toward lighter skin in treatment. This creates a hesitancy in clinicians to diagnose darker skin tones and thus a compromise of patient care for patients of color, which can be seen greatly in the treatment of melanoma.

Although people with more melanin in their skin develop melanoma at a 20–30 fold lower incidence than non-Hispanic whites, it represents one of the largest disparities in survival for any cancer (12). Data from the National Center for Health Statistics suggests that for every three black men or women diagnosed with melanoma in the United States, one dies of the disease, whereas for non-Hispanic white men and women with melanoma, roughly one in seven and one in 11 die from the disease (12). A study conducted in 2006 calculated a two- to threefold greater risk of mortality among black patients with melanoma, and a 2016 study found similar results, pointing to "a serious disparity . . . in melanoma diagnosis and outcome for white patients compared with minorities" (12). Moreover, initial studies conducted establishing a strong association between UV exposure and melanoma completely excluded participants with darker skin types (12). Even with a correlation between increased melanin and sun protection, acral lentiginous melanoma (ALM), which is not affected by sun, makes up a proportionately higher percent of melanoma cases in darker-skinned individuals. Thus, the Eurocentric emphasis on solely wearing sunscreen may overshadow ALM risk, as well as lead people of color into an incorrect assumption that they are free of melanoma risk and do not need to seek treatment, leading to later diagnoses (12).

These disparities do not just relate to melanoma, but the American Cancer Society's *Cancer Facts and Figures for African Americans 2019–2021* concluded that black patients face a survival gap for *most* cancers, which results much less from biological differences than from socioeconomic and racial disparities that result in unequal access to work, income, education, housing, healthy food, high-quality healthcare, and an overall unequal standard of living (12). With this, black patients are significantly more likely to be diagnosed with later-stage melanomas than their white counterparts (12). It is clear that racial bias in medicine stems from the very basis of medical students' education into affecting black patients' mental and physical health. Substantial evidence that supports this conclusion is found in study after study and points to the necessity for immediate work toward a solution.

Solutions

While the issues of racism in healthcare are rooted in the implicit, subconscious bias of every person involved as well as in the history of the industry, there are ways to improve these effects on patients of color. One skill for healthcare professionals to develop is focusing on the *person behind the patient*. Instead of relying on preconceived notions based on factors such as race, the provider should foster a communication with the patient wherein they can learn about them as a person, their behaviors, and other factors that may affect their care. It is also beneficial for physicians to undergo training to recognize their own implicit biases so that they are able to pinpoint and stop them as they happen. However, providing professionals with too much race-based training may lead to strengthening their stigmatization of certain characteristics without promoting healthcare outcome improvements. It is important to balance recognizing differences associated with race with the idea of patients as multifaceted identities. The objective is not to be color-blind, but instead to not be blinded by color, and acknowledge its effects in hand with other aspects of the patient's identity.

Furthermore, it is essential to teach future students to provide equal care to all races, starting with including a wider variety of images of people with darker skin tones in medical textbooks. Maline Mukwende, a medical student at St. George's University of London, worked with the school to create a guide titled *Mind the Gap*, which compared images of cutaneous and systemic diseases side by side on both dark and light skin tones (Kaundinya Kundu). On the patient side, the Skin of Color Society works on recruiting, retaining, and training more board-certified dermatologists of color. They also sponsor "Find a Doctor," which is aimed at improving patients' access to board-certified dermatologists who specialize in skin color (12). This starts from the source and will lead to future physicians being more comfortable and familiar with diagnosing patients of color, something found to be essential to their comfort and even their mortality.

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