Articles

Health Care Outcome Disparities:
A Cause to Infuse Health Care Curriculum

Akili Nkechi Smith-Washington, BS
Member, Ishango Institute
4023 Fernwood Drive
Houston, TX 77021
Tel: (713) 213-5456
Email: answashington@gmail.com

Michael A. Washington, PhD
Director, Ishango Institute
4023 Fernwood Drive
Houston, TX 77021
Tel: (713) 213-5456
Email: m.a.washington8385@hotmail.com

Author Note

Abstract

This article explores the manifestation of healthcare outcome disparities based on racial, gender, and socio-economic factors. A recent examination of healthcare outcome disparities illuminates the consequences of a long and painful history of discrimination against minority populations in the United States. This article advocates the construction of interdisciplinary research teams that harnesses expertise from multiple areas outside of STEM (Science, Technology, Engineering, and Math) fields and that can craft solutions to address the social impact of medical advances. Such teams can infuse new perspectives and awareness of the broader consequences of medical research at all levels of academia. Healthcare outcome disparities represent a complex concern with no easy solutions. However, integration of this subject matter into the curriculum at every level of training for healthcare professionals may inspire a diverse response from a wide range of insights and interests to ameliorate these persistent issues. The literature reviewed for this article postulates that interdisciplinary research teams (including patients and community members) may foster innovative paradigm shifts creating breakthroughs in clinical methods (e.g., treatment procedures for a variety of ailments).

Keywords: healthcare disparities, curriculum, racial, gender, socioeconomic demographics, interdisciplinarity

Introduction

This article focuses on the criticality of building awareness of health disparities, their implications, and critical mitigations or interventions in the educational venues for healthcare professionals at all levels. The track record of healthcare in this country regarding ethnic, gender, and socio-economic demographics represents a case study of injuries from neglectful ignorance at best and monstrous disregard for the sanctity of human life at its worst. These medical disparities have their roots in the fabric of this country from the eighteenth century onward.

A recent book by Harriet Washington includes numerous accounts of the malevolent treatment of African Americans (viz., healthcare in the United States). She opens her book by contrasting two competing perspectives on Dr. James Marion Sims, considered a pioneer in the field of obstetrics and gynecology, who also serially mutilated the bodies of enslaved Black women. Washington (2006) recounts the brutal and tortuous genesis of the gynecological discipline:

> Betsy's [an enslaved woman depicted in portraits of Dr. Sims as a subject of his experimentation] voice has been silenced by history, but as one reads Sims's biographers and his own memoirs, a haughty, self-absorbed researcher emerges, a man who bought black woman slaves and addicted them to morphine in order to perform dozens of exquisitely painful, distressingly intimate vaginal surgeries. Not until he had experimented with his surgeries on Betsy and her fellow slaves for years did Sims essay to cure white women (Washington, 2006, p. 2).

The variety of disparities in healthcare outcomes based on racial/gender and socioeconomic factors appear across the spectrum of illnesses experienced in the human family. The general postures of society, whether governmental, educational, medical, industrial, or theological have conceived and perpetuated these disparities. Ameliorating these inequities necessitates recognition of their existence, revision of the practices that foster their perpetuation, and individual and communal engagement in continuous improvement aimed toward more balanced healthcare outcomes. It is critical that both the overall reduction in illnesses for all populations and an improvement in the likelihood that clinical research and treatments are grounded in the potentially impactful and unique demographic variables that affect healthcare outcomes.

The mistrust that remains a pervasive element of the psyche in many sectors of African American community exists from the vast and considerable legacy of "Medical Apartheid" well-articulated by Harriet Washington and forward through the relative recency of the Tuskegee Experiments. Since the turn of the 21st century, governmental efforts appear to have increased regarding the study and documentation of healthcare and treatment outcome disparities. Studies reviewed for this article articulate the increased effort by the U.S. government to document these disparities (Arday et al., 2000). identified a variety of inaccuracies in healthcare databases regarding the information on race and ethnicity critical to assessing outcome disparities. Their article discusses incremental efforts, from 1978 to the present, to minimize information gaps. These authors note the following regarding a presidentially focused effort:

> In February 1998, President Clinton committed the Nation to eliminate the disparities in six areas of health status experienced by racial and ethnic minority populations: (1) infant mortality, (2) cancer screening and management, 3) cardiovascular disease, 4) diabetes,

5) human immunodeficiency virus infection/acquired immunodeficiency syndrome, and 6) immunizations (US Department of Health and Human Services, 1999) (Arday et al., 2000, p. 109).

The unfortunate reality of disparities in healthcare treatment outcomes exists throughout the human life cycle from pediatrics to post-mortem. It is well established that there are numerous inaccuracies in the forensic sciences impacting aspects of identification related to African Americans and other ethnic groups, (Washington, 2018). A recent article contextualizes the manifestations of disparities in the outcomes of the readings of arterial oxygen saturation in African American patients versus white patients. Valbuena et al. (2022) articulate the troubling results as follows:

Compared to White patients, critically ill Black patients receiving mechanical ventilatory support had increased risk of occult hypoxemia defined as low SaO_2 despite a pulse oximetry reading within ranges of 92% to 96%. Similarly, higher odds of occult hypoxemia amongst Black patients were noted even at higher SaO_2 levels. Bland-Altman plots similarly demonstrated racial differences in bias, precision, and (consequently) root mean square error--all worse in Black patients. There was no evidence of such diminished detection of occult hypoxemia in Hispanic and Asian patients compared with White patients (Valbuena et al., 2022, p. 974).

Extrapolating the potential delay in seeking medical attention related to COVID-19 infection based on inaccurate pulse oximeter readings has catastrophic implications for African Americans in particular. In many ways, this apparent design flaw represents the fundamental lack of acknowledgment of the diversity of patients in medical device design and engineering.

This contemporary example illustrates the persistent manifestation of disparate outcomes. The intent of this discourse revolves around the need to: a) acknowledge the ubiquitous presence of these disparities at all levels of clinical research and practice, b) to study these manifestations in an integrative or interdisciplinary manner, c) determine the root causes, mitigations, and d) integrate the subject matter into the mainstream of curriculum for healthcare professionals at all levels and disciplines of education. As outlined herein, the manifestations and causes for these disparities frame the quintessential application of interdisciplinary mental modeling and mixed methodological approaches.

Herein, the authors advocate an increase in interdisciplinary research, the infusion of awareness of the disparities in clinical treatment outcomes in the general curriculum for every level of clinical education, and a focus on the proliferation of clinical methods focused on improving outcomes. An interdisciplinary approach integrates the mix of quantitative and qualitative data utilized to understand and define root causes. Moreover, these disparities are rooted in complex human cultural contexts in addition to nominally scientific and clinical data; hence a singular analytical approach or research methodology has limitations.

Ultimately this notion of interdisciplinarity research flows from an epistemological orientation: how do we know something and what is the best process to gain that knowledge? As will be discussed later, a way of knowing is rooted in cultural, social, and colloquial habits. These habits impact what is seen or perceived and, by extension, what can be understood

and gleaned from the process of research. Repko & Szostak (2017) frame a definition of interdisciplinary research as follows:

> Interdisciplinarity involves a set of practices: asking research questions that do not necessarily constrain theories, methods, or phenomena; drawing upon diverse theories and methods; drawing connections among diverse phenomena; evaluating the insights of scholars from different disciplines in the context of disciplinary perspective; and integrating the insights of those disciplinary scholars in order to achieve a holistic understanding (Repko & Szostak, 2017, p. 9).

Razzaq et al. (2013) quote the following from the National Academy of Sciences:

> Interdisciplinary research (IDR) is a mode of research by teams or individuals that integrates information, data, techniques, tools, perspectives, concepts, and/or theories from two or more disciplines or bodies of specialized knowledge to advance fundamental understanding or to solve problems whose solutions are beyond the scope of a single discipline or area of research practice (Razzaq et al., 2013, p. 153).

Torraco et al opine that an integrative process facilitates an elevated research agenda by including paradigms outside of the current standard unilateral literature review methods. In recognition of the limitations of randomized control trial (RCT) methods to excavate the sources of healthcare disparities, this article parallels the conclusion that a more inclusive search mitigates those blind spots.

Finally, in looking at the complexity of racial and socioeconomic factors in terms of health outcome disparities, many assumptions, values, and interpretations have to be challenged. Lau et al., (2016) caution researchers in terms of assumed equivalency of efficacy of interventions:

> Researchers also cannot assume that interventions will have equivalent effects on symptoms and functional impairment outcomes across ethnic groups. For example, the impairment associated with depression symptoms appears to differ between Latinos and Whites (Huang, Chung, Kroenke, & Spitzer, 2006) and less improvement in impairment has been observed in African Americans receiving CBT [cognitive behavioral therapy] compared to other groups (Miranda et al. 2003). A combined quantitative and qualitative approach may help identify the relevant dimensions of symptoms and impairment that are meaningful to ethnic minorities in clinical trials (Lau et al., 2016, p. 408).

The propensity for researchers and clinicians to postulate that treatment methods and outcomes based primarily on data from a myopic demographic view, that is, white and male, must be mitigated by treatment methods that incorporate a diverse, equitable, and inclusive frame of reference. Incorporating diverse and inclusive frames of reference can provide a source of disruptive and innovative insights increasing the likelihood of improved outcomes. The educational and training curriculum necessarily, as a matter of life and death, incorporate these diverse views.

This article approaches the subject by sharing some background perspectives and the case for change. A discussion section follows to elaborate on the implications garnered from a variety of perspectives. The section outlines five themes that articulate the basis for the insights herein.

Lastly, we reiterate the advocacy for the infusion of awareness of these and other disparities into the general curriculum for every level of clinical education. Further, there must be a focus on increasing interdisciplinary research to create new or enhanced clinical methods directed at improving outcomes.

Background and Case for Change

Healthcare disparities in the U.S. supervene from oncogenic practices entrenched in the history of cultural, ethical, and socioeconomic systems of this country. The litany of examples, ranging from simple ignorance to calculated subjugation, underscore the brutal consequences borne by marginalized populations vis a vis disparate healthcare outcomes over time. While these problems are certainly not unique to the U.S., this article focuses on the retarding domestic effects of these systems. Washington (2006) quotes Dr. Martin Luther King Jr. as follows in regard to healthcare disparities:

> *"Of all the forms of inequality, injustice in healthcare is the most shocking and the most inhumane." In 1965 Martin Luther King Jr. spoke these words in Montgomery Alabama, at the end of the Selma to Montgomery March...*

(Washington, 2006, p. 3).

Healthcare disparities are present in nearly every area of the healthcare delivery system. Along the continuum from the various healthcare institutions (e.g., hospitals, medical schools, insurance companies, research institutions, clinics, etc.) to individual patient attitudes, habits, and practices, there are a plethora of independent and confounding variables that impact these disparities.

Valdovinos et al. (2020) tackle the thorny issue of affordable access to healthcare and the implications for treatment outcomes. These researchers endeavored to study the impact of expanding Medicaid eligibility through the Affordable Care Act and the attenuated outcomes related to acute myocardial infarction (AMI). These researchers looked at two states, California and Florida between 2010 and 2015. California, a state that expanded Medicaid, was compared with Florida, a state which did not expand Medicaid. They set the context as follows, describing the outcome for AMI generally:

> Despite advances in care for acute myocardial infarction (AMI), or heart attack, racial and ethnic minorities have experienced decreased access to care and worse outcomes than white patients after AMI [1–10]. These racial inequities exist across the entire spectrum of care after AMI, from access to care, to acute treatments, to long-term outcomes. African American patients with AMI are less likely than white patients to be admitted to hospitals that perform invasive procedures to treat AMI (e.g., percutaneous coronary intervention (PCI)), [5] and less likely than white patients to be transferred to receive these procedures [6, 11] (Valdovinos et al., 2020, p. 2).

These researchers outline a context that thematically resonates with a variety of healthcare disparities in terms of outcomes across different disease categories. Moreover, reflecting on the six areas of focus articulated by the Clinton administration, the narrative looks at four of the six.

There is a range of concerns regarding the root of healthcare disparities in terms of outcomes and treatment efficacy. To name a few: a) access to affordable healthcare providers

and institutions; b) effective communication, translation of the focus and responsibilities of treatment regiments, multilateral cultural attitudes, habits, practices, values, and interpretive lenses; c) research methods and theoretical models that are narrowly focused (e.g., with regard to DEI (diversity, equity, and inclusion), with regard to RCT, etc.); d) disparities in educational attainment and perspectives; e) issues of mistrust, clinicians educational attention to healthcare disparities and implications; and other concerns.

An important outcome of the work of Valdovinos et al. (2020), related to some improvement as a function of improved access (viz the Affordable Care Act) but these improvements are limited in scope. The authors note as follows:

Our study found that Medicaid expansion was associated with a decrease in racial disparities in transfers to PCI-capable hospitals for patients who initially presented to non-PCI hospitals and rates of PCI after AMI. Our results did not identify an association between the Medicaid expansion and changes in racial disparities for the overall likelihood of admission to PCI hospitals, 30-day readmissions, or in-hospital mortality (Valdovinos et al., 2020, p. 10).

However, the authors confirm that other confounding variables exist that impede mitigation of healthcare disparities in their specific case and generally:

Additionally, as other studies have demonstrated, not all types of insurance are treated equally [28]; because both being uninsured and having Medicaid insurance (versus private insurance) are associated with decreased access to care and rates of PCI for AMI, the expansion of Medicaid alone may not be sufficient to address racial disparities in care and outcomes after AMI. Finally, while access to care is fundamental to improving outcomes after AMI, years of literature have demonstrated persistent racial disparities in treatment and outcomes after AMI even among individuals with the same type of insurance. This suggests that structural racism is a factor that must be directly addressed if eliminating decades-long racial inequities in access, treatment and outcomes after AMI is to be achieved (Valdovinos et al., 2020, p. 12).

As this discourse progresses, more specificity about some of the other factors needing to be considered come to the forefront. For example, systemic thinking is required, which connects with the concept of interdisciplinary approaches to mitigate this problem. Innovation in this space will flow from humility in regard to dogmatic paradigms toward a vacillation between other ways of knowing, divergent and convergent discourse, in a manner advocated by Thomas Kuhns in *The Structure of Scientific Revolutions*. Humility or more open-minded considerations of cultural habits and practices of various demographic groups (e.g. gender, socioeconomic, ethnic, and racial) and the potential impact on healthcare outcomes, that is clinical research/ practice and potentially improved healthcare outcomes.

One set of researchers noted the extra resources required in terms of labor, sourcing of patients for clinical trials, methodological complexities, and financial costs, as impediments to expanding the scope of clinical trials and other treatment modalities to be more inclusive. Clearly, the cost of not addressing these hurdles proves staggering on its own, particularly in light of the medical burden endured by patients who remain left behind as a consequence. Such an opinion eschews the moral imperative that should form the basis of medical research. It is not

simply about the financial costs, it is about the lives saved and medical burdens lessened. This complaint allegorizes the introduction of the lunar space mission by President Kennedy

President Kennedy asked the nation to embark on a journey to the moon. Was it expensive? Yes. Was it challenging? Yes. Did it have a quantifiable return on investment with a high bond rating? No! He based his rationale on national interest. What can be more in the interest of the nation than equitably and equally caring for the citizenry without regard for racial and socioeconomic standing? What more powerful life-affirming stand could the nation take? His remarks contextualize the importance of eliminating healthcare disparities in terms of quality of life and economic prosperity. Space.com (2011) quotes President Kennedy's perspective on the level of interdisciplinary and systemic thinking required:

This decision demands a major national commitment of scientific and technical manpower, material and facilities, and the possibility of their diversion from other important activities where they are already thinly spread. It means a degree of dedication, organization and discipline which have not always characterized our research and development efforts. ... New objectives and new money cannot solve these problems. They could in fact, aggravate them further--unless every scientist, every engineer, every serviceman, every technician, contractor, and civil servant gives his personal pledge that this nation will move forward, with the full speed of freedom, in the exciting adventure of space (Space.com, 2011).

President Kennedy garnered support for the lunar mission even with a beneficial-but-esoteric outcome for the American public. Although the advocacy for investment in interdisciplinary research application reflects this example, what differentiates the two is the result certainty: the outcome of investing in new research methods is easily quantifiable. In spite of this knowledge, however, resistance to improvement remains.

In closing the dialogue for the case for change and the foundation of the advocacy for impacting clinical training to incorporate awareness of the issues associated with disparities in healthcare outcomes, two researchers frame the context for the dialogue: Bao et al (2007) and Stevens & Shi (2002). In the discussion section of this article, the authors relay first-hand experiences that align with the scholarly literature. Further, citations relaying insights from podcasts and documentaries substantiate this perspective.

Bao et al. (2007), discuss the contrast in cancer screening "between" versus "within" physician differences based on racial/ethnic/socioeconomic status and how those biases manifest when patients are cared for by different physicians than their white counterparts or with higher SES (socioeconomic status). The "within physician" differences manifest when patients are cared for by the same physician as their white counterparts but receive different care. This perspective illustrates some of the variables related to the approach and interactions with patients regarding cancer screening. Additionally, it illuminates some of the complications associated with patient and physician cultural and socio-economic paradigms as they impact disparities. The researchers used surveys from trials conducted by the "Communication in Medical Care" research series in Southern California. The impact of physician attitude had bearing:

... physicians may perceive minority or low-SES patients to be less interested in cancer screening and/or less likely to adhere to screening (van Ryn and Burke 2000) and thus may be more likely to forgo discussing cancer screening in the first place. ... Finally, patient

preferences and physician attitudes and perceptions may interact to reinforce each other over time (Bao et al., 2007, p. 953).

As noted earlier, at every stage of life, these healthcare disparities are present. Stevens & Shi (2002) conducted research relating to health disparities in the quality of primary care for children. Their research indicated a lack of attention to the quality of primary care quality for children. They conducted inquiries via structured telephone interviews utilizing the "Primary Care Assessment Tool." The sample population came from a school district in San Bernardino County, California. They reviewed the "cardinal features of primary care quality" and found the following:

After controlling for family demographics, socioeconomic status, and health system characteristics, minority children experienced poorer quality of primary care across most domains of care compared with white children. Asian Americans reported the lowest quality of care across most domains, but particularly in first-contact utilization, interpersonal relationship, and comprehensiveness of services received. (Stevens & Shi, 2002, p. 573).

Overall, historical inequality in healthcare affects a wide range of groups across the divisions and intersections of race, gender, and socioeconomic identifiers. Contemporary manifestations of these inequities reflect the insidious effects of the medical burden endured by these communities and their exclusion from research inquiry. The expansion of curriculum across healthcare educational disciplines will build awareness of disparities, and their implications and frame a sturdy foundation for critical mitigations (in terms of healthcare disparities).

Discussion

This article review outlined five primary elements flowing from the aforementioned references for this discussion. However, there are additional elements and intricacies beyond the taxonomy noted. The primary themes outlined in this article are:

a) Access to affordable healthcare providers and institutions,

b) Cultural factors (e.g., effective communication, translation of the focus and responsibilities of treatment regiments, multilateral cultural attitudes, habits, practices, values, and interpretive lenses)

c) Research methods and theoretical models that are narrowly focused (e.g., with regard to DEI, with regard to RCT, etc.),

d) Healthcare professional awareness of cultural dimensions,

e) Issues of mistrust, clinicians' educational attention to healthcare disparities and implications, and other concerns.

Access to Affordable Healthcare

Two studies reviewed contextualize the impact of access to healthcare. The studies indicate persistent disparities in healthcare outcomes. Valdovinos et al. (2020) focused on the impact of access to healthcare in regard to the treatment of acute myocardial infarction. Lynch et al. (2015) focused on patterns of multimorbidity in the context of patients with type 2 diabetes. Valdovinos et al. (2020) demonstrated improvement in outcomes based on accessibility to

healthcare insurance. Recall, Valdovinos et al. (2020) compared two states, California and Florida. California is representative of a state that expanded the ACA. Florida is representative of a state that did not expand the Affordable Care Act. Two points about the impact of access to affordable healthcare insurance are striking. First, there was some improvement in treatment based on a narrow element, but the net impact overall was negligible. Moreover, the researchers found that there was variability in treatment even with patients with private insurance coverage.

Turning to Lynch et al., (2015), these authors interestingly point to challenges in multimorbidity in the context of patients with type 2 diabetes. One of the sample populations was patients in the Veterans Administration healthcare system. The researchers came to a common conclusion (viz healthcare disparities):

Among individuals with diabetes, traditionally disadvantaged groups, including non-Hispanic blacks and rural patients, appear to bear the greatest burden and risk of multimorbidity. Significantly greater odds with increasing number of comorbidities were seen by race/ethnicity, rural residence, and geographic region (Lynch et al., 2015 p. 27).

Importantly, the patient base had similar access to healthcare and thus offers an important point of research relative to other factors and variables that account for disparities. They noted the following:

There are important advantages in showing the pattern of multimorbidity in a very large population of patients who have similar access to healthcare, such as in the VA healthcare system. The paradigm shift in the focus of care toward patients rather than their disease, combined with provisions from the Affordable Care Act that increase access to healthcare across the broader U.S. population, should enhance the ability of various healthcare systems to improve the management of multimorbidity. However, the shifting demographic toward racial/ethnic minorities who bear a heavier burden and higher risk of chronic disease, with poorer control, calls for greater focus on comprehensive patient-focused interventions that empower patients for greater self-management (Lynch et al., 2015, p 30).

This study along with the AMI study indicate a far more complex issue in terms of mitigating healthcare disparities than access to affordable healthcare might otherwise provide. Increased access is a critical element of the eventual algorithm.

Cultural Factors

Cultural factors impact the communication and interpretation of healthcare information and treatment plans. These complex factors can also impact trust and therefore disclosure. From the aspect of dimensions of diversity, many constructs can be used to articulate these complexities. A common metaphor is that of an iceberg. Above the waterline, one can see more obvious elements of diversity (in both patients and healthcare providers). Above the waterline are elements like racial dimensions, gender dimensions, generational dimensions, and so forth. Below the waterline are less obvious elements like nationality, religious or spiritual beliefs, educational background, communication styles, cultural traditions, and so forth. Elements of power and cultural implications of power dynamics play a role. Again, this is a multimodal dynamic between patients, healthcare providers, and insurance providers; in short, a systemic context.

Revisiting the cancer screening study, the researchers noted the following in terms of screening disparities:

However, disparities in cancer screening utilization exist even among people with a usual source of care or who regularly visit their physicians (for example, McMahon et al. 1999; also see Table 2). Studies have examined patient reported barriers to cancer screening and found that a greater proportion of minority and low-SES persons cite "lack of awareness" and "not recommended by a doctor" as the main barriers (Finney, Nelson, and Meissner 2004), suggesting that racial/ethnic and SES disparities in physician–patient communication regarding cancer screening may have contributed to disparities in screening rates (Bao et al., 2007, p. 952).

In particular, examining educational levels, Bao et al. (2007)) found three important insights related to cultural dynamics:

First, patients with low education may have had less exposure to various health topics including cancer screening from sources other than one's health care providers and are thus less likely to initiate discussion with their physicians about cancer screening. ... Second, deficits in comprehension and cognitive abilities and in health literacy in particular associated with lower education may have put these patients at a disadvantage when it comes to cancer screening (IOM 2004). The decision about cancer screening necessarily involves tradeoffs between future benefits and current costs, which is likely an important element of physician–patient discussion. ... Third, physicians may hold stereotypes of low-education patients (e.g., "low-education patients are less interested in screening"), and interact with their low-education patients in a different way, forgoing opportunities of discussing cancer screening during a clinical encounter (Bao et al., 2007, p. 965).

In reviewing methodologies for conducting healthcare research, Lau et al., (2016) note some of the limitations of RCT's (randomized control trial) in regard to real world application, particularly in a mental health context. Regarding language, a critical cultural dimension, they note as follows:

It is imperative that trials provide assessment and treatment in the appropriate language(s) and dialect(s) spoken by the ethnic group under study. However, a metanalytic review of 76 studies evaluating interventions culturally adapted for ethnic minorities revealed that 40% of the studies included only native English speakers (Griner & Smith, 2006). Of those trials including non-native English speakers, 25% provided treatment only in English (Lau et al., 2016, p. 405).

Lastly, Song et al. (2014) clearly described the point herein articulating the relevance of cultural diversity and healthcare outcomes and approaches. Their study sought to articulate the relationship between patient-provider communication and social-cultural factors related to prostate cancer treatment. The ultimate conclusion was that race was not the controlling factor in terms of differences in patient quality of care between African American and Caucasian men. The view of race as a cultural construct was acknowledged by the researchers. Furthermore, and uniquely, these researchers parsed various attributes within various dimensions of diversity outside of race and found that positive communication in terms of patient-provider was associated with high school education or higher, greater religious beliefs, physician trust, and less perceived racism.

The authors concede and even support the conclusion that inclusive behavior, infused with respect, empathic and active listening, along with concurrent axiological or values frames should produce positive outcomes. This does not mitigate the impact of race as a social construct. The likelihood of having lower socioeconomic status, educational levels, and higher levels of perceived racism do fall out along racial lines. For example, even in their results, the researchers found a higher level of perceived racism among African Americans versus their Caucasian counterparts. Now, fold in higher levels of education, and like Bao et al. (2007), improved outcomes are anticipated.

Communication is an undisputed element of cultural paradigms, and communication dynamics play out in both racial and ethnic frames of reference. Nobles, Goddard, and Cavil (1985) define culture's prime characteristic as that it frames the basis for interpreting reality. Further, culture is the medium wherein the nine areas of human activity, outlined by Fuller (1971) are expressed as actions and reactions to white supremacy as a cultural paradigm (e.g. education, politics, economics, etc.). Nobles, Goddard, and Cavil (1985) define culture as follows:

> When culture is defined as a scientific construct it becomes by definition, "the process which gives people a general design for living and patterns for interpreting reality." As such nothing human happens outside of culture. Culture is the medium of human functioning (Nobles, Goddard, and Cavil,1985, p.5).

Cultural paradigms act as a superstructure in which research, analysis, clinical practice, and healthcare education all exist and frame meaning. Culture outlines what values get primacy; and what epistemology is preferred. The United States represents a multicultural society that requires a compound lens to integrate perspectives. No single discipline has the analytical dexterity to frame all the things that subsume human activity and fundamentally necessitates an interdisciplinary modality

Collins (1998) as well as other authors (Ore, 2008); Gans, 2005)) speak to what can be framed vis a vis race and socio-economic constructs. The analysis by Song et al. (2014) is admirable but falls short in terms of dealing with the complexities of cultural differences regarding race, gender, and socio-economic dynamics. These authors help outline an interpretive lens for analysis, but the analysis falls short of root cause identification. In fact, Gans (2005) asks and answers the question of the persistence of racial constructs and hierarchy as a function of reinforcing the "country's socioeconomic pecking order." Yet the question of why that pecking order exists, seemingly universally, as witnessed by Trask (1999), remains unanswered. Pecking order is a euphemism for power dynamics. In the physician-patient paradigm, all the pressures and implications of social power dynamics manifest between these two parties. While communication can generally be enhanced by polite and even engaging dialogue, the dynamic of effective physician-patient communication rests on navigating those differences.

> Within unjust power relations, groups remain unequal in the powers of self-definition and self-determination. Race, class, gender, and other markers of power intersect to produce social institutions that, in turn, construct groups that become defined by these characteristics (Collins, 1998, p. 204).

Furthermore, the focus of that pecking order, aimed generally at indigenous people of color around the world, leaves much for contemplation. Thus, the root cause of structural injustice-

particularly that based on race, class and gender-represents a uniquely controversial and thorny subject, in the context of healthcare as in other elements of human interaction.

Research Methods

Research methodology in the context of healthcare fundamentally anchors in the randomized control trials. It is acknowledged that this methodology is powerful and has broad application. The intent herein revolves around augmentation of current approaches rather than refutation. The authors have first-hand perspective in terms of the intention of some pharmaceutical corporations to include more ethnic minorities in clinical trials based on documented differences in the efficacy of some pharmaceuticals based on race, gender, or other demographic. Clearly, this task is quite challenging based on numerical representation, study, budget, and timing among other factors. To reference President Kennedy, the payoff is measured in the forward advance of humanity.

Lau et al. (2016) articulated at least four challenges with including ethnic minorities in RCT. They are paraphrased as:

- Specialized organization for building sampling protocols, participant interactions, and recruitment efforts

- Potential adverse impact on RCT results in terms of useful analytics

- Socio-economic impact (e.g. "SES is a confounding variable with minority status")

- The potential to fortify "deficit views" of underrepresented groups viz "multiethnic" RCTs

Lau et al. (2016) point to the promise of integrating additional methodologies into the research process in addition to significant patient input and consideration in methodology and design.

A major critique leveled against the use of RCTs as the gold standard for validating treatments for ethnic minorities involves their relevance to the exigencies of "real-world" clinical practice and the broader socioecological context of service delivery. Ethnic minorities have less access to mental health care and the care they do receive is less likely to reflect current best-practices. (USDHHS, 2001); (Lau et al., 2016, p.409).

This is an example of the intention to augment rather than refute an "open trial" with Latinx adults related to Culturally Competent Relaxation Interventions. This was a mental health treatment protocol. The researchers took an allocentric view and used culturally appropriate guided imagery linked to interpersonal connection rather than forcing the "canonical solitary, peaceful imagery."

Lastly, Lau et al. (2016) offer community-based participatory research (CBPR) as a methodological frame to augment hypothesis-driven research. CBPR is posited to drive discovery orientation. They see the benefits as follows:

CBPR involves collaboration between multiple stakeholders to identify community problems and resources, set research agendas, develop measurement tools, implement study results, and build capacity to for sustaining change (Israel, Eng, Schultz, Parker, & Satcher, 2005). Influenced by principles of action research, CBPR seeks to critically examine

dynamics of power and privilege in the research partnership, give voice to individuals' lived experiences, dismantle traditional hierarchies of knowledge, and promote community ownership of the research endeavor (Wallerstein & Duran, 2006); (Lau et al., 2016, p.410).

This perspective on methodology integrates quantitative and qualitative ways of knowing. It is in essence grounded in "action research" designed to add texture and meaning to research outcomes. Additionally, this approach impacts the effects of power dynamics and engenders trust. As discussed earlier, putting the interest or cultural proclivities at the center of clinical practice in addition to RCT and other methodologies can positively impact healthcare outcomes.

Healthcare Professional Awareness of Cultural Dimensions

Navigating across cultural differences presents a daunting challenge under the best of circumstances. Having a conscious perspective of both personal and interpersonal elements of dimensions of diversity is a starting point. From the starting point, the healthcare professional embarks on an educational focus to engage difference in the service of mitigating disparities in healthcare outcomes across racial, ethnic, and socio-economic differences. Bao et al. (2007), articulate several points of concern in this space. In describing some of the challenges with cancer screening, they point to physicians' lack of appreciation for the dimensions of diversity represented by the patients they serve-as noted earlier.

These researchers also point to the lack of awareness of physicians serving "different racial/ ethnic or socioeconomic backgrounds" in terms of physician communication and interaction.

Physicians treating patients of different racial/ethnic, or SES backgrounds may differ in their training in physician-patient communication and preventive care. There is evidence that physicians who treat black patients are less likely to be board-certified and more likely to see themselves as unable to provide high-quality health care (Bach et al. 2004). Also, physicians serving in low-income, minority communities are more likely to be graduates of foreign medical schools and less likely to be board certified (Mitchell and Cromwell 1980; Perloff, Kletke, and Neckerman 1986; Bellochs and Carter 1990; Fosset et al. 1990; Mitchell 1991). Ashford et al. (2000) found that inner-city physicians were not as knowledgeable about national guidelines for preventive care as physicians in general. Disparities in the quality of training and knowledge of prevention are likely to result in less frequent discussion of cancer screening among physicians treating patients of racial/ethnic minority and/or low-SES (Bao et al., 2007, p. 953).

This is a very strong observation and correlates well with other researchers' conclusions (e.g., good communication article). The main point centers on awareness and insurance of understanding of key elements associated with inclusive and equitable engagement between healthcare professionals and patients.

Issues of Trust

Many of the issues of disparities in outcomes combined with the issues of navigating cultural differences, and not the least, historical issues of "Medical Apartheid" combine to create a more or less intense feeling of mistrust. The construct articulated by Maister et al. (2004) regarding trust provides a powerful lens for reviewing the subject in the healthcare context. These authors describe trust as the sum of credibility, reliability, and intimacy divided by self-interest. Credibility is the sense that what you articulate has veracity. Reliability is the

sense of keeping one's word. Intimacy is the sense of familiarity. Self-interest speaks to the idea of working for the greater good.

In terms of the healthcare interaction across the dimensions of diversity, there are and continue to be concerns related to trust. Based on the brief literature review, concerns about credibility, intimacy, and self-interest (connected to the trust equation noted above) seem to manifest most. An elementary example related to credibility is the oximeter issue discussed earlier in this article. Many people depended upon an accurate reading of blood oxygen levels to determine the need for more acute care. For a person of color to have an inaccurate reading as a function of the design of the medical device represents a failure of the system, either benign or otherwise, it is neglect. The oximeter is a contemporary example.

This article has provided a broad discussion of the issue of intimacy between the healthcare community and people of different racial/ethnic and socio-economic backgrounds as well as gender. The hallmark of this issue lies in cultural competency and a sense of cultural humility on the part of the researcher. Song et al. (2014) noted that when patients and physicians share a common racial background, patients rated their visits as more participatory. To be clear, other factors play into the notion of intimacy. Those factors have been articulated as dimensions of diversity (e.g., education, gender, generational, etc.).

Self-interest is the last consideration. This issue revolves around the tension among and between the healthcare professional, the healthcare institution, the pharmaceutical company, and or medical device company. This concern transcends many racial/ethnic, socioeconomic, or gender boundaries. The profit motive, the prestige motive, and the ego-centric motive are all elements of self-interest that impact the level of trust. Here there is a thin barrier of ethical standards that must be fortified in the interest of the common good--the patient. A clear element of mitigation in the context of healthcare disparities is awareness, transformed into understanding and empathy, fused with action research. This combination of items ought to inform curriculum and educational experiences across the spectrum of healthcare mechanisms.

The NIH among other institutions is recognizing at an increasing level the importance of leveraging awareness of disparities in healthcare outcomes. As the country seems poised to take a new direction regarding diversity, equity, and inclusion, due consideration must be given to the mitigation of healthcare disparities. Specifically, the nation is becoming more diverse along a number of demographic axes. Fundamentally, race, gender, and socioeconomic factors can impact healthcare outcomes.

Implications and Conclusions

The legacy of healthcare disparities pervades both historic and contemporary contexts at all levels of the healthcare system and the reach and impact of these disparities cannot be underestimated. Although there is pain on all sides of these issues, enduring the short-term growing pains leads to long-term victories across multiple fronts that address many of these hang-ups: study costs, increasing study participant diversity, communications, research team composition, expanding the scope of outcomes being studied, etc. Many of these hurdles are being addressed as recognition for the need for interdisciplinary research permeates all STEM fields. As time has moved on, even within STEM fields, there is increasing recognition for the need for interdisciplinary research. Today, on a research team, one can find a software

engineer, a mathematician, and a physician working to solve the same problem. As we become more conscious of the benefits of intra-disciplinary collaboration, we hope to see similar understanding for the importance of inter-disciplinary collaboration: It must be kept in mind that the consequences of this research and its conclusions will be endured by other human beings, particularly those doomed to dwell within the lower socioeconomic castes. Cross-pollination with fields within social sciences and humanities facilitates more complete exploration of research questions and includes more investigation of what happens outside of the clinic.

Failure to diversity perspectives within the research team led us to a place that limits the scope of research questions to be explored. This debilitates researchers' and clinicians' ability to create a fulsome view of problems being studied and creates redundant solutions to complex clinical issues that do not exercise any meaningful improvement to the overall condition of the population; and even less so for those already underserved members of society. The source of this quandary links to historic disdain for those deemed less socially valuable and erroneously presumed separation of clinical outcomes and life outside of the doctor's office.

Without these considerations well upstream of the educational curriculum during the research and clinical practice which informs the curriculum, healthcare professionals broadly will lack awareness and sensitivity to practice across differences. The authors' experience with the manifestations of the current ideological zeitgeist ranges across the commercial and academic research spaces in STEM, social science, and humanities genres of study. In all spaces, minority groups were rarely adequately represented on any level of the study construction. When the topic of disparities is broached, discussions are often superficial and presented as a charcuterie board of topics rather than a robust meaningful exploration of cause and effect. The social or structural determinants of these disparities is therefore not covered in a way that leaves students learning about these disparities without appropriate context. This leaves the curriculum without mention of the cultural implications of practicing across differences.

Special Attribution

The above photograph is that of former President Bill Clinton greeting a survivor of the Tuskegee Syphilis Study. It is the 1997 artistry of Sharon Farmer. A White House photograph, it is in the public domain per: https://commons.wikimedia.org/wiki/File:President_Bill_Clinton_greets_a_survivor_of_the_Tuskegee_Syphilis_Study_on_African-American_men.jpg

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