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Addressing Inequities: The Role of Medical Education on Maternal Mortality

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ABSTRACT

The United States is facing a worsening maternal mortality crisis that is disproportionately affecting Black women, who are significantly more likely than their White counterparts to die due to pregnancy-related causes. Despite technological and medical advances being made in healthcare, the historical inequalities embedded in the U.S. healthcare system persist, contributing to the unequal health outcomes seen in Black mothers. The purpose of this thesis is to examine the role of healthcare institutions in addressing these disparities. Specifically, this project considers the ways in which diversity-centered education and interventions can mitigate racial inequities seen in maternal health today. This is a qualitative study that utilized an extensive review of the current literature and expert interviews, to study the efficacy of diversity, equity, and inclusion (DEI) initiatives in medical education and healthcare institutions. Findings revealed that the current maternal mortality crisis is closely intertwined with systemic racism, insufficient training on social determinants of health, and biases within healthcare practices and medical education. This study showcases the urgency for medical education programs to integrate comprehensive DEI training across their curricula. When reviewing the most recent literature and conducting expert interviews, recurring themes on effective strategies to combat the maternal mortality crisis continued to arise. These include bias training and interventions, community-based participatory research and diversification of the healthcare workforce. This study contributes to the current discussion on maternal mortality by demonstrating the need for diversity to be systematically taught across medical education programs if racial disparity health outcomes are to be addressed. The U.S. has recently acknowledged that racism is a public health threat and recognizes that it is the root cause of many health disparities. Thus, without appropriate diversity training programs and initiatives

being incorporated into medical education, healthcare institutions will effectively be upholding and protecting the race-based inequities seen throughout the United States healthcare system, resulting in more generations of Black women and children being affected by this crisis.

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Chapter 1

Introduction

Despite significant technological and medical advancements in healthcare, the maternal mortality and morbidity crisis in the United States is only worsening. In the U.S., Black women are at least three times more likely to die due to pregnancy related complications than White women (Njoku et al., 2023). While some of these deaths are attributed to pregnancy related complications, the deeper issue lies in the historical inequalities upon which the U.S. healthcare system was built. Data has shown a staggering increase in the maternal mortality rate in the U.S. In 2000, the maternal mortality rate was 18.8 deaths per 100,000 births, and this gradually increased to 23.8 deaths per 100,000 births in 2014, a 26.6% increase (MacDorman et al., 2016). Racial disparities in maternal health persist and are disproportionately affecting women of color at an alarming rate, with African American women being the most impacted.

As most of these deaths are preventable, the purpose of this project is to examine the initiatives healthcare institutions are implementing to address this crisis. The need to collect, synthesize, and examine the recent data on initiatives being implemented by healthcare institutions to combat institutional racism in the healthcare industry is critical. Through careful integration of the current literature on maternal health outcomes and the efficacy of educational interventions, as well as interviews with healthcare professionals, this study seeks to reveal the urgency of placing a greater emphasis on diversity-based education within the healthcare system. Furthermore, it offers a more comprehensive understanding of the problem more broadly by

revealing gaps in knowledge. The findings gathered allow the project to propose informed solutions that address the inequities in maternal healthcare through diversity-centered approaches to healthcare education. Ultimately, this project seeks to contribute to a broader conversation about improving maternal health outcomes, starting with the healthcare students and professionals who will eventually be providing care to the affected patient population: Black women.

Context of the Crisis:

The United States began to compile data measuring the rates of maternal mortality beginning in the early 1900s. In 1993, the nationally reported ratio was 619 deaths per 100,000 live births (Declercq and Zephyrin, 2020). Since the early 1900s, the United States has had a higher maternal mortality rate than other countries in the Global North. For instance, in 1927 England and Wales had a rate of 411 deaths per 100,000 live births, and Italy had a rate of 264 deaths per 100,000 live births (Gunja et al., 2024). This trend has persisted as the U.S. continues to have the highest rate of maternal death compared to any other high-income nation (Gunja et al., 2024). As of 2024, the U.S. has had a ratio of 22.3 deaths per 100,000 live births, and this rate more than doubles when looking at numbers associated with Black women, where the rate is at 49.5 per 100,000 live births. Compared to other high-income countries such as the United Kingdom with a ratio of 5.5 deaths per 100,000 live births and Australia with 3.5 deaths per 100,000 live births (Commonwealth Fund, 2024). Since the early 1900s when the nation began collecting data on maternal mortality, stark disparities existed among Black mothers. In 1915, the maternal mortality ratio for Black mothers was 1,065 per 100,000 live births, compared to White

women which was 601 per 100,000 live births, almost a two-fold increase in deaths (Declercq and Zephyrin, 2020).

Healthcare in the United States: An Institution of Racism

Since the Jim Crow era (1875-1968), racism has been stealthily intertwined in the structuring of the healthcare system. Thus, the U.S. healthcare system can be distinguished as a structurally racist institution. Structural racism operates through law and policy which inequitably treats minorities, creating more barriers to higher levels of care (Yearby et al., 2022).

The Hospital Survey and Construction Act, commonly known as the Hill-Burton Act, was enacted in 1946 to address shortages in hospital beds in underserved areas and resulted in 10,748 construction projects for healthcare facilities (Encyclopedia of Alabama, n.d.). Although this appeared to be a promising step toward addressing health inequities, policy resulted in this act disproportionately affecting minorities. The Hill-Burton Act contained a separate-but-equal provision, which stated that discrimination based on race was acceptable if "equitable provision on the basis of need for facilities and services of like quality for each such group" (Largent, 2018). Essentially, this allowed federal funds to be used for segregated services if each racial group received facilities that were similar in quality.

Forgotten Names: The Historical Exploitation of Black Women in Medicine

The embedded racism within the healthcare system has allowed doctors and institutions to profit from the exploitation of Black women, commodifying their bodies while disregarding their wellbeing. The maternal mortality crisis seen today is merely a culmination of the ethical

failures that Black women have been subjected to for centuries. As a result, the healthcare needs of Black women are frequently minimized or dismissed, leading to significant racial disparities in treatment and outcomes.

Modern reproductive medicine in the United States originates in the exploitation of Black slaves in the 1800s (Bock, 2022). Dr. J. Marion Sims, also known as the "Father of Gynecology," has been highly lauded within the medical field. Dr. Sims became known for the publication and promotion of the repair of vesicovaginal fistulas, an opening between the wall of the vagina and the bladder (Spettel and White, 2011). However, the way in which Dr. Sims was able to develop these procedures was mostly overlooked. Dr. Sims primarily worked on enslaved women, whom he purchased and kept on his property. Some of these women underwent thirty operations without any anesthesia. Despite the public opinion of Dr. Sims changing due to these findings, a report found that the urological and medical profession seemed quite reluctant to address Dr. Sim's controversial history. For example, medical texts remained overwhelmingly evasive when it came to addressing Dr. Sims's background and the darker history that these procedures came from. Specifically, the editions of *Campbell-Walsh Urology,* from the first edition published in 1954- to the ninth edition published in (give date), reference Dr. Sims' contribution to women's reproductive health but fail to mention who his subjects were or his controversial history more broadly (Spettel and White, 2011). Neglecting to address who Dr. Sims experimented on, how he obtained these enslaved women, and how they were relentlessly subjected to immensely painful procedures, some as many as thirty procedures without any anesthesia, only keeps medical professionals uninformed about the ethical implications of these practices and further obscures the injustices faced by marginalized groups throughout medical

history. Despite the unethical experimentation Dr. Sims conducted on nonconsenting Black women, his statue still stands on Alabama Capitol grounds.

Anarcha, Betsy, and Lucy were three of the enslaved women that Dr. Sims subjected to medical experimentation. These women lived with a painful condition that caused them to lose control of their bladders and bowels after childbirth (Boomer, 2024) Their slaveowners allowed Dr. Sims to lease the women for the duration of their treatment, as their pain decreased their productivity and their slaveowners wanted them to earn the same money they used to. Lucy was restrained on the operating table so her involuntary movements would not affect the procedure. No anesthesia was used for any of the enslaved women that Dr. Sims experimented on. It is important to note that even after Sims had developed the proper technique, no White patient was willing to endure the pain of the procedures without anesthesia (Spettel and White, 2011). Seale Harris, Dr. Sims' biographer, also references the fact that Black women have a higher pain tolerance, writing, "Sims's (sic) experiments brought them physical pain, it is true, but they bore it with amazing patience and fortitude – a grim stoicism which may have been part of their racial endowment. (Spettel and White, 2011)". This myth has been perpetuated for centuries, and heavily influences the way healthcare providers treat their patients. One study found that physicians were more likely to underestimate the pain of Black patients (47%) compared to Nonblack patients (35%) (Hoffman et al., 2016).

The initial experiments done on Lucy, Betsy, and Anarcha were unable to alleviate their pain, and thus were considered failures. However, Dr. Sims continued to experiment on them for another five years. After Anarcha's 30th operation, Dr. Sims refined the procedure so that Anarcha was able to fully heal. Anarcha, Betsy, and Lucy all returned to their slave owners after undergoing countless procedures and experimentation without consent.

Anarcha, Lucy, and Betsey are not the only women that the U.S. healthcare institution has utterly failed, exploited, and sought to erase from history. Jane Elkins, an African American woman killed her enslaver in the mid 1800s and was indicted for murder. Her punishment was death by hanging; however, even after her death her body was commodified and exploited by White men as members of a medical fraternity snatched her body from her grave. It was used as a medical school cadaver and for other research purposes (Varga et al., 2022). Body snatching is a historic practice that has been documented dating back to the 18th century. Scientists and surgeons would snatch Black bodies from graves to use as cadavers in medical schools across the United States. These practices continued over one-hundred years later, such as in 1985, when 12-year-old Tree Africa and 14-year-old Delisha Africa were killed during the MOVE bombing, when the Philadelphia police department dropped a bomb on a rowhome located in West Philadelphia. The bodies of these young girls were given to the University of Pennsylvania Museum of Archaeology and Anthropology, stored in a cardboard box, and used by anthropologist Alan Mann as teaching materials. Their family never consented to the use of their bones for educational purposes, and their bodies were not returned to their family until thirty-six years later in 2021, after public protests (Crimmins, 2021). Black women were not only used as clinical material for the development of gynecological practices in the United States, but the prevailing body of medical knowledge is also rooted in grave robbing, nonconsensual experimentation, and the wider exploitation of marginalized communities.

It is crucial to understand that the current maternal mortality crisis seen across the United States is rooted in the amalgamation of abuse, injustice, and exploitation that Black women have gone through for centuries. Dr. Shalon Irving, an epidemiologist with the Centers for Disease Control and Prevention (CDC) who dedicated her life to understanding the impacts of structural

racism on health disparities, died three weeks after giving birth due to healthcare providers not taking her concerns seriously. On January 24, 2017, Dr. Irving suffered cardiac arrest only a few hours after returning from a healthcare visit. During this visit, she pleaded with her providers to help as she was suffering from severe hypertension. Her symptoms included swelling in the legs, decreased urine output, rapid weight gain, and severe headaches. Her complaints were routinely dismissed and ultimately went unaddressed, leading to her tragic death only six weeks after giving birth to her daughter (Purnell et al., 2022). Dr. Irving was highly educated and incredibly successful in her profession, illustrating that the maternal mortality crisis does not discriminate by socioeconomic status or level of education. Studies have shown that a Black mother with a college education is at sixty percent greater risk for maternal death than a White or Hispanic women with less than a high school education (Declercq and Zephyrin, 2020). This crisis affects all Black women across the United States, highlighting a pervasive issue that transcends class boundaries.

If medical education does not take an active role in ensuring that these stories are heard and that these women are recognized for their contributions to the medical field— whether consensual or nonconsensual —the history of exploitation will continue to go unaddressed and ultimately perpetuated. The injustices that Anarcha, Betsy, Lucy, Jane Elkin, Tree Africa, Delisha Africa, and countless others whose names have been erased from history were forced to endure should be at the very least acknowledged by medical institutions and future healthcare providers. It is essential for these providers to understand the darker history of the U.S. healthcare system, an understanding that will allow them to grasp the social determinants of health and the importance of equitable care. Awareness of this topic can lead to healthcare

providers understanding their own biases, and increase their sensitivity when working with marginalized populations, which would contribute towards decreasing maternal mortality rates.

Personal Biases: Explicit vs. Implicit Bias:

For a patient to receive the highest level of care, their relationship with their healthcare provider is of great importance regarding the outcome of care. A patient and physician relationship should be built upon a foundation of trust while simultaneously being respectful and professional. This trust is essential for patients to receive optimal care and for physicians to provide the best treatment options. With years of rigorous academic and medical training, the expectation is that doctors be completely objective and always offer their opinion from a neutral standpoint. However, healthcare providers are human beings with personal opinions and biases, like everyone else.

Implicit bias includes the subconscious feelings, attitudes, prejudices and stereotypes individuals have developed due to prior influences and imprints throughout their lives. Individuals with implicit bias are unaware of how these subconscious perceptions affect their decision making. When an individual is aware of their prejudices towards a group of people and allows these attitudes to affect their behavior, it becomes explicit bias.

One example of an area in which physicians may be unaware of the implicit bias they have towards patients pertains to depictions of skin infections among different ethnicities (Khan and Mian, 2020). Within medical education, representations of race and skin tone in textbooks are highly biased. A study examining medical education textbook material found that, out of 4146 images from Atlas Human Anatomy, Bates' Guide to Physical Examination and History

Taking, Clinically Oriented Anatomy, and Gray's Anatomy for students, the skin tones represented were 74.5% light, 21% medium, and 4.5% dark (Louie and Wilkes, 2018). The overrepresentation of light skin tones in texts used in medical education is one way that implicit bias can affect those training in the healthcare field, as they are only taught how to diagnose and treat certain diseases with the way they present in lighter skin tones. If medical schools are not actively working to diversify the curriculum, the biases that occur within the healthcare system will become further exacerbated.

Chapter 2

Methodology

This project is a qualitative study that focuses on how the maternal mortality crisis in the United States is linked to the racism deeply entrenched within healthcare, specifically within medical schools and their curricula.

This study emerged from an extensive review of the current literature focusing on maternal mortality, medical school curricula, DEI (Diversity, Equity, and Inclusion) initiatives in medical education, and the presence of historical racism in healthcare. A vast majority of the articles were published after 2016, giving this study a very recent analysis of the maternal mortality crisis based on current literature. PubMed served as the primary database utilized to source relevant studies. The main keywords used when sourcing studies include health and diversity, racial biases, implicit bias, explicit bias, maternal mortality, Black women mental health, Black children health, racism, women reproductive health, and health and diversity. Following this review, I conducted in-depth interviews with experts in the field of maternal mortality, all of whom are leaders in various sectors such as research, medical education, community-based organizations and perinatal mental health. These conversations provided valuable insights into the root causes of the crisis and potential solutions, furthering this project's unique contribution towards the understanding of how systemic racism in medical education contributes towards maternal health disparities. Each interview had tailored questions based on the relevant field of work of each participant.

Dr. Meredith Matone, one of the experts interviewed for this project, serves as the director of PolicyLab at the Children's Hospital of Philadelphia (CHOP) and is an Associate

Professor of Pediatrics at the Perelman School of Medicine. PolicyLab at CHOP conducts interdisciplinary research aimed at informing policy changes for optimal well-being in children. Dr. Matone has various research interests including maternal health, young child health, and family well-being. She has authored numerous publications addressing the maternal health crisis, contributing significantly to the field. My meeting with Dr. Matone focused on themes of systemic crises that contribute to the maternal mortality rates such as mental health, poverty, domestic abuse, and substance abuse. I also inquired about cultivating more ethical relationships between communities and research institutions. Some questions from the interview include:

1. How do you approach fostering collaboration between community organizations and larger institutions such as medical schools?
2. What policies or programs have you found to be particularly effective in improving outcomes for mothers and infants?

I also spoke with Karen Pollack, the Executive Vice President of Programs and Operations at Maternity Care Coalition (MCC). In 1980, a group of health and social justice activists came together to form this critical coalition. Their mission is to improve the health outcomes and wellbeing of pregnant women and parenting families. They offer various resources for mothers and parenting families such as home visits, childcare, community and parenting education, community doula and lactation, and more. Pollack joined MCC in 2000, and with over two decades of advocacy work has acquired incredible insight on how the maternal mortality crisis has transformed over the years, the initiatives that were effective and non-effective, and the challenges that persist. The MCC does not provide medical resources, and instead focuses on healthcare from an outside perspective, understanding the environmental influences that surround mothers and how they impact birth outcomes. Pollack stated that the

healthcare system must address institutional racism and how the medical field is contributing to racial disparities in health. When asked about the biggest challenges the MCC faced with respect to providing resources and advocacy for those in need, Pollack stated that three of the biggest stressors include: housing insecurity, financial insecurity, and racism. These factors are all systemic issues that portray the need for maternal health to be viewed through a holistic lens, as there are a variety of causes that have led not only to the maternal mortality crisis, but also other health disparities. Some questions from the interview include:

1. Do you think that places in medical education such as hospitals or medical schools have properly trained their students and staff to address and support the specific needs of women of color?
2. Since the Maternal Care Coalition began in 1980, what are the changes you have seen with maternal morbidity and mortality not only in mothers but infants throughout the past 40 years?
3. What changes or improvements in healthcare systems do you think would have the greatest impact on women of color?

The next participant was Dr. Amanda Roman, who specializes in obstetrics and gynecology and serves as the Associate Professor of Maternal-Fetal medicine at the Sidney Kimmel College of Medicine, located in Philadelphia, Pennsylvania. Dr. Roman also holds a Master's of Public Health and has written several papers on maternal health, with a focus on preterm birth. Speaking with Dr. Roman allowed this study to acquire a deeper perspective on the maternal mortality crisis from a healthcare provider's perspective. Her insight was particularly unique due to her journey of practicing medicine in the United States. Dr. Roman completed her medical education at the National University of Colombia and shared the

adversities she faced when she migrated to America and had to redo rigorous medical training processes to practice medicine in the U.S., facing similar challenges that many marginalized medical students face today.

Dr. Paigean Jones, a licensed psychotherapist and certified perinatal mental health provider who works via telehealth across Georgia, Alabama, and Texas. was also interviewed as part of this study. Dr. Jones is an expert on maternal health, as it is the focus of her studies. She received her PhD in Social Work at Howard University, writing a dissertation titled "*Nothing Without Intension: A Phenomenological Study on Black Women's Experience with Mindfulness During the Perinatal Period"*. Her research focuses on addressing the critical mental health facets within marginalized communities. She has published several papers that discuss a variety of disparities faced by Black women such as Black women's experiences pertaining to the gender pay gap, the relationship between mental health and beauty standards, and stress reduction treatment for traumatic stress in African American women. Her value to the maternal health disparity goes far beyond academia as she also engages in community efforts such as taking part in the Georgia Perinatal Mental Health Taskforce, providing programmatic and policy solutions for the perinatal mental health crisis across the state of Georgia.

Lastly, I spoke to Dr. Tonya Wright, an obstetrician and gynecologist in Hershey, Pennsylvania. She received her medical degree from the Pennsylvania State University College of Medicine in 2011 and serves as the Assistant Professor for the Department of Obstetrics and Gynecology at Pennsylvania State University College of Medicine. Dr. Wright currently serves on the Pennsylvania Department of Health's Maternal Mortality Review Committee (MMRC).

With over a decade of experience in women's health, Dr. Wright was able to speak to the diversity education and training she received as an OB-GYN, and the barriers she has faced in pursuing a career in medicine as a Black woman.

The experts interviewed for this thesis are specialists in significantly different fields, a factor that allows this study to offer unique perspectives and understandings on how the historical racism in the U.S. healthcare system contributes to the maternal mortality crisis seen today.

Chapter 3

Results

Current Medical School Curriculum:

In the United States, medical schools typically split training into two phases: preclinical and clinical. According to the Association of American Medical Colleges (AAMC), the preclinical years include science training, where students are learning about basic medical concepts, diseases, diagnoses, treatment concepts, and the structures and functions of the body. The following two years include the clinical portion of training, where students complete clinical rotations and experience hands-on patient care in various medical specialties. Although the curriculum varies slightly by school, this is a general breakdown that most adhere to. The medical school curriculum is extremely rigorous and based on hard sciences, but are medical schools adequately preparing their students for real-world interactions with a diverse patient population?

As of July 2024, 12 states have passed laws restricting DEI efforts in some way (Balch, 2024). According to the Chronicle of Higher Education, since August 2024 states such as Alabama, Florida, Idaho, Indiana, Iowa, Kansas, North Carolina, North Dakota, Tennessee, Texas, Utah, and Wyoming have passed laws that have restricted DEI efforts in education in various ways, including defunding DEI offices on campuses and prohibiting a student or employee from engaging in diversity training (Gretzinger, 2024). Opponents to DEI initiatives in higher education do not take the changing U.S. population into consideration as it becomes more diverse over time, and physicians must be adequately equipped to care for patients from various cultural backgrounds, each of which will have their own specific needs. Luckily, not all states are

banning DEI initiatives. Representative Joyce Beatty from District 3 in Ohio introduced House Resolution 1180, affirming the importance of DEI training in medical curricula. The resolution was introduced in April of 2024, stating: "…equipping medical students with the knowledge, skills, behaviors, and attitudes that promote diversity, equity, and inclusion will positively impact patients, students, healthcare organizations, and society generally by improving the clinical learning environment, health care quality, health outcomes, and patient satisfaction…(Gretzinger, 2024)". Attempting to eliminate DEI efforts in higher education protects and perpetuates the racism that the United States healthcare system was built upon. House Resolution 1180 is an important step in advancing the quality and inclusivity of medical education. DEI in higher education will only benefit the growing diverse population in the United States and will lead to better health outcomes.

According to the fact sheet "Medical Schools Educate to Improve Everyone's Health," written by the AAMC, "At its core, medical schools' efforts to incorporate diversity, equity, and inclusion (DEI) into medical education and their curricula are about helping future doctors better understand the specific issues that each patient is facing to provide better medical care…" (AAMC, 2024). However, if medical institutions are not taking the appropriate steps to ensure that diversity is thoroughly integrated across the curriculum, the goal of improving healthcare outcomes for all patients may not be fully realized. This can result in disparities in care, such as the maternal mortality crisis that we are currently witnessing. A curriculum that does not educate students on how social determinants of health impact their patients could result in physicians

who are not fully competent in caring for a diverse patient population and could perpetuate stereotypes and biases that will ultimately have negative impacts on clinical decision-making.

Dr. Tonya Wright, a Penn State College of Medicine alumni, shared in her interview that throughout her medical training, topics on diversity and the historical roots of racism in medicine, were rarely if ever, addressed (Wright, 2024). As an obstetrician-gynecologist, Dr. Wright was unaware of the gynecological practices that were created through the exploitation of Black women such as Anarcha, Betsy, and Lucy, only learning about these injustices years into becoming a practicing physician. She stated that these topics were never brought up throughout her training as an OB-GYN and she had to educate herself on these topics (Wright, 2024).

While many medical schools have implemented DEI offices, it is essential to question whether this effort is sufficient to address the pervasive issues of gendered racism seen in healthcare today. It is crucial to understand whether diversity is truly incorporated into medical education; it should not be perceived as a supplemental topic to be covered briefly within a few lectures. For any change to be seen, diversity must be present throughout the entirety of the curriculum influencing the training that these students receive and allowing students to engage with these critical issues.

Investigating Impact: Are DEI Efforts in Medical Schools Effectively Advancing Equity?

According to a 2022 report by the AAMC, 101 medical schools have elected to complete the AAMC Diversity, Inclusion, Culture, & Equity (DICE) Inventory, a product designed for professionals in academic medicine to improve the diversity and inclusion within their institutions. Of these 101 schools, 89% of them report that DEI is prioritized in their school's

mission, vision, or value statement (AAMC, 2022). However, only one-third of schools have performance incentives for the school and its departments to achieve DEI goals and 43.6% have promotion and tenure policies that reward faculty scholarship and service related to DEI (AAMC, 2022).

Although this seems like a promising step in the right direction, it is important to assess whether these schools are truly making an active effort to increase the representation of marginalized communities, are fostering an environment that supports all students, and are educating their students on the historical racism in the United States healthcare industry and how its effects have manifested into modern-day racial health disparities, such as the maternal mortality crisis.

Simply having performance incentives and policies in place does not guarantee meaningful promise is being made. A thorough evaluation must be done to determine if these initiatives are translating into tangible outcomes.

A study examining changes in medical school admissions statements from 2013 to 2021 found that medical schools who changed their mission statement to add diversity or equity language only had underrepresented students increase by 0.4% per year (Campbell et al., 2023). Despite changing mission statements and advocating for better DEI, the representation of minority groups increased by less than 1% per year at these institutions (Campbell et al., 2023). Thus, it is critical to evaluate the efficacy of such initiatives and implement more impactful strategies to improve diversity in medical school admissions. It is also important to ask whether

increasing the number of underrepresented students in medical schools is an adequate way to address the deep-rooted racism that persists within the United States healthcare system?

It is essential to investigate DEI within medical school curricula. The Sidney Kimmel Medical College offers what they refer to as Humanities Selectives, which allow students to engage in the arts and humanities in order to provide students with a more holistic medical education. A course on Racism and Medicine: Why it Matters is offered to students. According to the course description, this class explores the historical foundations of race and racism in the U.S. medicine and gives students an understanding of structural racism. However, this is not a mandatory course for students to take. Dr. Jones recommends that diversity training should be integrated throughout the entirety of medical school education, instead of being offered as an optional elective that some students can choose to take (Jones, 2024). Although the SKMC is taking steps in the right direction by offering courses centered on race in the medical field, an optional course will most likely not result in sufficient change. For more long-lasting change, extensive work must be done to the curriculum, and this study offers suggestions for improvement in later sections.

The Penn State College of Medicine curriculum offers a course titled Humanities in Context. According to the course description, "Humanities in Context seeks to develop students' humanistic sensitivity, which includes ethical sensitivity, narrative disposition, critical consciousness and navigating complexity and uncertainty…(MD Curriculum, n.d.)" Dr. Tonya Wright, a Penn State College of Medicine alumna, noticed that racial health disparities were not extensively incorporated into the program's curriculum (Wright, 2024). While there was some discussion on social determinants of health, she noted a lack of comprehensive coverage on the overall impacts of race, structural racism, and implicit bias. As an Assistant Professor in the

Department of Obstetrics and Gynecology at Penn State College of Medicine, she uses her position to discuss the maternal mortality crisis and how racial biases influence discrepancies between populations with medical students on their OB-GYN rotation during their orientation. However, this plays into the idea of a "minority tax" where there is an extra burden of responsibility being placed on minority faculty to uphold diversity in academic medicine (Campbell and Rodriguez, 2019). When academic institutions are not responsible for teaching students about racial disparities, more responsibility is placed on minority faculty like Dr. Wright, who may not be able to create enough change without greater institutional support.

Embracing Diversity in Healthcare:

One way to mitigate the maternal mortality crisis in the United States would be through the diversification of the healthcare workforce. Currently, 5% of the physician workforce is made up of Black individuals, despite making up around 13% of the U.S. population (Njoku et al., 2023). This number becomes even lower when looking at Black female physicians, which only make up 2% of physicians overall (Njoku et al., 2023). According to the AAMC, between 2023 and 2024 Black students comprised 10% of all matriculants, an increase from 2016-2017 where Black students comprised 8.4% of matriculants (Boyle, 2023). The underrepresentation of Black physicians in the workforce has an impact on the maternal mortality crisis as studies have supported the racial concordance hypothesis, defined as minority patients who share the same race and ethnicity with their provider have better health outcomes (Moore et al., 2022).

So why is there such a severe underrepresentation of Black men and women in medicine? It is widely known that medical school admission is a highly selective process, with 52,577

applicants in the 2023 cycle and 22,712 students matriculating, according to the AAMC. In the 2023 application cycle, the number of Black applicants declined by 4.3% from previous years, matriculants declined by 0.1% and total enrollment rose by 5.1% (AAMC, 2023). To diversify the physician workforce, it is important to look at the barriers that Black men and women face in pursuing careers in medicine.

In a study conducted in 2023 that interviewed Black medical students to understand the factors that influenced their matriculation and persistence with pursuing a career as a physician, researchers found that the main barriers could be broken down into five key factors: exposure, resources, diversity, support, and emotional resources (Mincey et al., 2023). Exposure was related to growing up without being exposed to someone in medicine. This leads to applicants having to work harder to find the information they need when it comes to applying to medical school. Underrepresentation of Black physicians in medicine reinforces the underrepresentation of Black students pursuing a career in medicine, creating a cyclical pattern that is difficult to break. These findings have been consistent with other studies, which found that 59% of medical students reported not having enough faculty members who were members of racial or ethnic minority groups at their medical school (Nwokolo et al., 2021). The same study found that if participants perceived having enough faculty members who identified as a racial or ethnic minority group at their institution, their odds of graduating within 4 years were 1.602 times higher than those who did not (Nwokolo et al., 2021). While diversifying the student body at medical schools is an important step, it is equally vital for these institutions to provide support, mentorship, and encouragement to their underrepresented students.

In each interview conducted for this project, participants were asked whether medical schools are making progress toward embracing diversity, to which they all stated yes. Dr.

Roman, the Associate Professor of Maternal and Fetal medicine at the Sidney Kimmel Medical College (SKMC), made a noteworthy comment stating, “If you have multicultural patients, you need multicultural staff” (Roman, 2024). Dr. Roman also emphasized the importance of personalized medicine, where the healthcare provider does not need to know every single fact about medicine but must be willing to have empathy and understanding for the patient, and truly care for the patient’s wellbeing (Roman, 2024).

When asked about the biggest barriers to increasing diversity in medical schools, Dr. Roman highlighted that through overt and covert signals, society often conveys to underrepresented students that a career in healthcare is unattainable for them (Roman, 2024). These messages are transmitted through the various factors that were previously mentioned, such as the lack of representation, exposure, and resources that marginalized students face when it comes to pursuing a career in healthcare. Dr. Roman, Dr. Wright, and Dr. Matone advocate for pipeline programs to be implemented to increase the representation of minority students in the healthcare workforce. This outreach would demonstrate to young students from marginalized and minoritized backgrounds that a career in healthcare is attainable. Xavier University in Louisiana offers a diverse undergraduate premedical program and has been ranked first in the nation for African American matriculation to medical school, demonstrating the importance that having a diverse student body has on underrepresented students (Vick et al., 2018).

Diversifying the student body at medical schools is certainly a step in the right direction, but medical schools need to ensure that their underrepresented students have the support, mentorship, and encouragement that they need from the staff and faculty at these institutions. In the AAMC’s Diversity in Medicine Facts in Figures 2019 report, medical school faculty are predominately White (63.9%) and male (58.6%) (AAMC, 2019). The lack of diversity in

academic medicine contributes to feelings of isolation for underrepresented students. By fostering a diverse faculty and inclusive environment, medical schools can create a supportive atmosphere that motivates and empowers all students to pursue their aspirations, particularly in a system that has been structured to exclude, silence, and exploit minorities.

Barriers and Biases in Medical Institutions:

Every individual has their unique biases, thoughts, beliefs, and perspectives that allow them to navigate their everyday life. It would be impossible to train healthcare workers to eradicate all their own biases, as every healthcare worker is a human being too. However, when in a position of power, where one has a significant effect on the outcome of someone's life, health, mental and physical wellbeing, it should be important to understand one's own biases, whether they are explicit or implicit.

The barriers that marginalized groups face in their journey to medical school are incredibly difficult and can often deter students from their aspiration of becoming a physician. However, whether it is retaking a class, taking the MCAT more than once, or working twice as hard due to the barriers one faces, individuals who show persistence and resilience are breaking their way into this predominately White field. Yet, what about aspects beyond their control, where despite countless hours of hard work biases exclude them from their lifelong dream?

Studies have shown that a large sample of physicians demonstrate implicit White preference and have linked these preferences with clinical decisions that are detrimental to Black patients (Capers et al., 2017). Although physicians are regularly out in their field making important clinical decisions that can drastically affect the trajectory of one's life, it is important

to have a broader perspective on exactly where the racial biases start in the medical school hierarchy. Specifically, more research needs to be conducted on the implicit and explicit biases of medical school admissions officers and how that affects their decision making, as they hold the responsibility of shaping the future generation of physicians.

A study done on the Ohio State University College of Medicine (OSUCOM) admissions committee found that all members displayed significant levels of implicit White preference, with White men having the largest bias measures (Capers et al., 2017). A key finding in this study is that the self-reported explicit White preference was trivial and almost at 0 for all groups of test takers even though the implicit White preference was statistically significant. Another noteworthy discovery is that African Americans who took the same test had minimal to no overall racial bias.

If a medical school wants to increase the diversity of the student body, it should begin by reviewing the staff on the admissions committee and ensuring that biases are not standing in the way of admitting a more diverse group of students. Efforts to diversify the physician workforce must start with a holistic review that looks at medical school professors, faculty, and admissions committee members and identifies the underlying reasons for any disparities, and subsequently implements strategies for improvement.

For example, if all medical schools mandated that their admissions committee members undergo the same assessment to measure their implicit and explicit biases, it would enable these members to recognize biases they were unaware of. This self-awareness could allow admissions committee members to reflect on their past decision-making processes and acknowledge if they unknowingly preferred one student over another based-on race. Additionally, implementing mandatory training and education programs would provide committee members with a deeper

understanding of how these biases not only impact medical students, but also the far-reaching consequences such as how these biases influence the care and treatment they give to one patient over another.

One example of an institution educating its staff about racial biases, whether explicit or implicit, is Thomas Jefferson University Hospital (TJUH). During our interview, Dr. Roman reflected on the importance of mandatory training for all employees, which includes health-related issues such as additional education on hypertension and infection spreading throughout the hospital, but also educating staff on racial biases, both explicit and implicit (Roman, 2024). According to Dr. Roman, every year all employees at TJUH receive a lecture on implicit bias. TJUH sets an example that other institutions can follow to strengthen their commitment towards equitable healthcare for marginalized groups and improving patient outcomes. Dr. Lopez believes that these initiatives are imperative to create lasting change, especially relating to the maternal mortality crisis.

Overall, diversifying the healthcare workforce is not a challenge that only underrepresented students have to face. Institutional change needs to be made in medical schools across the country to acknowledge the barriers they have set that hinder more diverse students from matriculating to their schools. Medical schools must ensure that their faculty members are

properly equipped with the knowledge and resources needed to support and encourage the success of all students throughout their educational journey.

Microaggressions in Medicine:

Although many medical schools claim DEI is central to their mission, the microaggressions that minority students face throughout their time in higher education demonstrate otherwise. Despite a desire to increase the number of underrepresented students, schools are not investing the necessary resources when it comes to ensuring that their institutions create a suitable environment for minority students to truly thrive, succeed, and grow.

Racial microaggressions are defined as "subtle statements and behaviors that unconsciously communicate denigrating messages to people of color." (Ackerman-Barger et al., 2020). Microaggressions typically stem from unconscious biases, resulting in the perpetrator being unaware of the harmful impacts of their words or actions. Although the term is labeled as "micro", the impacts of racial microaggressions are profound.

Studies that have investigated the impact of microaggressions on students of color in higher education found that these exchanges typically leave students feeling, "…out of place and invisible, feeling that professors had lowered expectations of them and tended to draw negative conclusions about them." (Ackerman-Barger et al., 2020). Despite overwhelming negative emotions, students who have experienced microaggressions are also more vulnerable to cognitive impairment and at a higher risk of anxiety, which could threaten their academic performance.

These emotions are difficult for any individual to navigate, especially students who are undergoing chronic stress and pressure from the rigors of medical education.

If medical schools are truly as committed to the DEI initiatives as they claim, they must create a more inclusive environment for their students. In one study, students felt that curriculum reform was needed and must place a greater emphasis on social determinants of health and promoting health inequity (Ackerman-Barger et al., 2020). Students also shared that classroom discussions should include open conversations about race, ethnicity, and racism. Although diversification of the student body is taking a step in the right direction, institutions must not stop there.

Mistrust in Medicine: A Barrier to Equity

According to the AAMC, the definition of underrepresented in medicine (UIM) is "…racial and ethnic populations that are underrepresented in the medical profession relative to their numbers in the general population." (Unique Populations, n.d.) However, the underrepresentation of African Americans in medicine extends far beyond medical students or the healthcare workforce. For instance, African Americans are also less likely to participate in medical research (Scharff et al., 2010). A significant aspect of this problem is the history of exploitation and unethical treatment of African Americans in medical research, a practice that the U.S. healthcare system is rooted in and built upon. As previously mentioned, the exploitation of Black women in medicine such as Anarcha, Betsy, and Lucy was not an isolated incident. This has occurred for centuries, and the patterns are present today in more modern figures, such as in

the case of Dr. Shalon Irving who received inadequate healthcare due to her race, ultimately causing her unjust death.

If medical institutions aim to reduce the maternal mortality rate, they must critically evaluate the mistrust that marginalized communities hold towards medical providers, researchers, and institutions. Mistrust can be defined as "…the sense of unease or suspicion toward someone or something that is predicated either on the notion that the provider or healthcare entity may not act in the patient's best interest, and they may actively work against the patient." (Griffith et al., 2021). The amount of mistrust that an individual cultivates towards healthcare infrastructures can originate from various sources such as personal experiences, historical injustices, and systemic inequalities that one witnesses throughout their lifetime.

In our interview conducted for this thesis, Dr. Roman from Thomas Jefferson University stated that mistrust is a significant factor she sees throughout her work in healthcare (Roman, 2024). Dr. Roman emphasized that many underrepresented patients, specifically members of the African American population, often hesitate to seek medical assistance or to fully engage with healthcare systems due to deep-rooted mistrust (Roman, 2024). These patients often disregard medical advice, which, in her experience, has contributed to some of the poorest outcomes she has observed in maternal and infant health (Roman, 2024). Dr. Roman also shared anecdotes of Black patients asking nurses of the same race if they trusted the doctors at the hospital, highlighting the role mistrust plays in shaping patient outcomes (Roman, 2024).

Based on the historical legacy of corrupt practices that the Black population was subjected to, it would be illogical to assume that every Black mother that walks through a hospital door has complete and unwavering trust towards their providers. When a patient is unable to fully trust their provider, it could cause them to withhold information, or to disregard a

physician's advice altogether, as seen with Dr. Roman's experiences, all of which is critical information that could drastically alter the wellbeing of not only the mother, but the baby as well. During a period of vulnerability, it can be extremely challenging for a patient who suspects that a healthcare institution or provider has ulterior motives and does not prioritize their well-being to fully trust their care and take their advice into full consideration. Research has shown that African Americans are reluctant when it comes to providing information about themselves, in case that information is used against them (Scharff, 2010).

It is irresponsible to place the entire burden of mistrust solely on the patient. Medical schools must train physicians to approach patient mistrust from the patient's perspective, recognizing its root causes such as the historical legacy of racism in healthcare. One way that medical schools and institutions could decrease the deeply ingrained mistrust that the Black population has towards healthcare infrastructure would be to implement community-based participatory research models (CBPR). CPBR is defined by the National Institute on Minority Health and Health Disparities as "...collaborative interventions that involve scientific researchers and community members to address diseases and conditions disproportionately affecting populations experiencing health disparities" (NIMHHD, 2024). Fostering a relationship between researchers and communities would allow for the development of community-specific interventions, ultimately leading to better health outcomes. As Dr. Matone, a maternal health researcher at the Children's Hospital of Philadelphia, stated, "We are not doing research on people, we're doing research for people" (Matone, 2024). This collaboration would build trust

and communication between research institutions and community members, a step forward in combatting the decades of mistrust community members may hold toward medical institutions.

The underrepresentation of African American in medical research has drastic effects on the population, as studies have shown that genetic disparities associated with race can affect response to treatment or the disease process (Iyizoba et al., 2022). In 2019, the Food and Drug Administration (FDA) released data on the demographic participation in oncology drug approval trials. Results showed that White patients represented 76.3% of participants while Black patients represented only 18.3% (Iyizoba et al., 2022). The significant disparity in research participation might indicate that the Black population is not adequately benefiting from advances in healthcare. The lack of representation of the Black population in research trials can also stem from the underrepresentation of minorities in medical academia.

Minorities conducting medical research in academia, such as PhD candidates, face similar barriers to that of Black students when matriculating into medical school such as: the lack of a committed role model, inadequate mentoring, insufficient preparation, low expectations, and unfamiliarity with scientific culture and idioms (Odedina and Stern, 2021). Studies have shown that scientists from underrepresented minority groups tend to receive less funding than their White counterparts. For example, there is a 45% gap in funding by the National Institutes of Health (NIH) between Black and White investigators between 2014 and 2016 in the U.S. (Odedina and Stern, 2021). An increase in minority researchers in academia could result in more representation of minorities in research trials, as evidence has shown that minority scientists tend

to focus their scholarship on research projects that address the needs of their communities (Odedina and Stern, 2021).

Karen Pollack, the Executive Vice President of Programs and Operations at the Maternity Care Coalition advocates for incorporating community-based rotations into healthcare education to address the mistrust often felt by marginalized communities. This strategy would provide mutual benefits between both the patient and the provider, allowing students to gain valuable real-world experience in working with minority populations, which could influence the way they practice medicine with minority patients in the future while fostering connections with the communities they serve. If healthcare institutions took the initiative to build a consistent and trusting relationship with the communities around them, over time the preconception that these institutions are suspicious and untrustworthy can transform into a relationship where patients feel safe and properly cared for. This can create a lasting impact within an individual or a community, as they develop trusting relationships with other healthcare providers and researchers, leading to better health outcomes and a stronger connection with their providers.

Turning Feedback into Action:

There is no simple solution when it comes to mitigating the centuries of racism embedded within healthcare and medicine. Its deep roots have branched out to nearly every aspect of the system, from the underrepresentation of minoritized and marginalized students, the microaggressions these students face, biases in admissions officers and medical textbooks depicting skin conditions, mistrust in research, and more. In conjunction, each of these issues can be seen as central to the "cause" for racial disparities in healthcare seen today, including the

maternal mortality crisis. Although tackling this conflict is a daunting task, education on racism and racial biases must be integrated within medical curricula if these inequalities will be combatted.

The Icahn School of Medicine of Mount Sinai, located in New York, is a great example of an institution that listened to its students, learned, and initiated institutional changes to recognize the racism entrenched in medicine and address biases in all areas of their school. The institution-wide transformation began when underrepresented medical students came together and advocated for change within their school, showing faculty the inequities they have faced in their learning environment. These students asked their school to undertake an external review of the medical school by experts in diversity and inclusion, to which the school complied. The school concluded that a fundamental change must be initiated if the institution were to be equitable, antiracist, and antibiased in their learning and work environments. In 2015, the school launched the Racism and Bias initiative (RBI), which aimed to address and undo racism and bias in all areas of the medical school while addressing the historical racism and bias in medicine (Hess et al., 2020).

To undergo an institution-wide change, the Icahn School of Medicine moved through four phases: preparing for change, creating a climate for transformational change, engaging, and enabling the school, and implementing and sustaining change. Phase one, preparing for change, is when the school undertook an external review by experts in DEI. This allowed the school to outline goals such as: creating a comprehensive education about racism and bias for all students and faculty, comprehensive curriculum review, and ensuring that resources are provided to support these initiatives. As part of the curriculum review, the school reviewed lecture slides from every course in the curriculum and removed language that presented inaccurate and

unscientific definitions of race as genetic or physiological. Phase 2, or creating a climate for transformational change, required individuals to recognize the true state of racism and bias throughout the school. Encouraging everyone to recognize and reflect on these issues fosters a collective awareness that is crucial for progress towards future goals of a more inclusive environment. The study recognized that this change created a shift in people's perceptions of reality and motivated more people to implement change. Phase three, engaging and enabling the school, involved changes being made on a consistent level. For example, questions about equity and inclusion were brought up at every medical education committee meeting, which helped educate faculty and staff on a consistent basis. They also implemented changes such as anonymous reporting for racial bias in clinical settings and ensuring that change was being tracked to measure the efficacy of certain initiatives. Lastly, phase four, implementing and sustaining change, is an ongoing process which aims to ensure that change lasts. This includes receiving feedback, making corrections, applying new methods, and changing priorities. The Icahn School of Medicine serves as an exemplary model for other institutions and medical schools in addressing the subtle yet pervasive racism and biases that exist within these environments.

What is most notable about Racism and Bias initiatives at Mount Sinai is the dedication in implementing large-scale transformative change. Although most medical schools include diversity within their mission statements or are implementing DEI offices, these can be seen as token efforts to appear as though substantial changes are being made within the institution. Often, these schools do not dedicate adequate time, resources, or trained faculty to create meaningful progress. Although most schools claim to embrace diversity, a clear and dedicated plan is not being implemented at all or on a scalable level. Establishing a DEI office and

accepting more minority students is not enough to address the racial disparities and overlooks the implications that racism has played in medical education and healthcare. Without initiating change on a large scale, the effects of racism will continue to haunt marginalized communities and impact future generations.

Solutions:

To effectively combat the maternal mortality crisis, medical institutions must recognize the influence they hold. If medical education continues to overlook the historical racism in which the U.S. healthcare system was built upon, it will uphold a legacy of exploitation and mistreatment that has impacted marginalized communities for generations. Without educational reform, not only in medical schools but in all healthcare and research institutions, racial disparities will persist.

Educational reform within medical institutions must happen on an individual and institutional level before any effective change will be seen on a policy level. This can occur through various changes such as implicit association testing, like the study done on Ohio State University College of Medicine’s admissions committee (Capers et al., 2017). When individuals become aware of their own biases, it allows for a change to be made within themselves, and with proper education and interventions, this individual change can have reverberations that lead to wider institutional change among all faculty, staff, and students.

Karen Pollack from the Maternity Care Coalition recommends that medical students undergo community-based rotations as part of their clinical training. Bringing medical students into a community setting would allow them to experience patient care in an environment where

they can better understand the unique social, cultural, and economic factors that impact a patient's health. This would mutually benefit the provider and the patient, allowing the patient to receive direct care while giving the provider invaluable experiences that will shape their practice of medicine in the future.

A common theme throughout all the interviews conducted for this project was the urgency for collaborative research to be conducted. With the deep-rooted mistrust marginalized communities hold towards healthcare, a community based participatory research (CBPR) approach would give opportunities to community members and organizations to find solutions to community-specific problems while cooperating with large institutions, such as medical schools and research institutions. In 2020, the National Institute of Health (NIH) gave $41.7 billion in funding, and only 7% when into social determinants of health research (Fleming et al., 2022). Investing additional funds and other resources into CPBR projects would result in better outcomes for populations being researched and would enhance research quality, as it would create specific solutions and interventions that truly benefit the community. Health systems such as the Children's Hospital of Philadelphia are funding community-engaged research pilot grants in order to promote health equity in the Philadelphia area. To receive a grant for a project, the academic faculty member must have a community member as their joint Principal Investigator. Dr. Maton advises this program at CHOP and advocates for its necessity, given that creating true community engaged research, from the beginnings of decision making to analyzing the data, will foster a trusting relationship between health system and communities.

Reflecting on over two decades of work in maternal health, Karen Pollack discussed the changes the Maternity Care Coalition has made to address maternal health in the most efficient way. She noted that the biggest change was a switch from focusing solely on birth outcomes, to

focusing on infants and healthy mothers. Focusing on the dyad of the mother and infant, as their health outcomes are often intertwined. This further emphasizes that the maternal mortality crisis not only affects marginalized women, but their children and families creating generational health disparities.

Chapter 4

Discussion

Mental health effects on Black Women:

The maternal mortality crisis has been plaguing the United States for centuries and is notorious for creating poor health outcomes and higher mortality rates among marginalized populations, such as African Americans. However, the long-term health effects that chronic racism imposes on Black mothers, such as stress overload and maternal mental health conditions, are often overlooked.

According to the Maternal Mental Health Leadership Alliance (MMHLA), mental health conditions are the leading cause of maternal deaths following the first year of pregnancy (MMHLA, 2023). There are a variety of factors that cause maternal mental health conditions, such as biological changes a woman undergoes during pregnancy and the postpartum period. However, when focusing on the maternal mental health of Black women, systemic issues can exacerbate maternal mental health conditions. It is important to understand that when a Black woman is facing mental health challenges due to systemic issues, there is no escape. A change of environment to a predominately White area, a higher education, or even a higher paying job and a higher socioeconomic status is not enough to keep Black women from experiencing discrimination in healthcare. Women who reported experiencing racial discrimination were more likely to be older and have higher education and socioeconomic status than women who did not report experiencing racial discrimination (Condon et al., 2022). However, it is important to note that being of an older age and having a higher education and socioeconomic status may make filing reports slightly less daunting. This aligns with the remark that Dr. Jones made, stating that

when a Black woman gains closer proximity to Whiteness, whether it is through education or socioeconomic status, it makes her more vulnerable to racial discrimination (Jones, 2024).

A study conducted in 2021 found that Black women who faced more racially discriminatory experiences showed a greater response in brain regions that are associated with threat vigilance and regulation of a threat response, revealing a moderate level of post-traumatic stress disorder symptoms (Fani et al., 2021). A Black woman experiencing chronic racism causes the stress-response system to remain active in anticipation of future threats. Adults with depression who reported experiences of racial discrimination also have a lower volume of total brain matter (Fani et al., 2021). Recent studies have shown that there is a possible neurobiological pathway of relevance to racism-related stress (Fani et al., 2021). There is no doubt that the mental health challenges a parent struggles with are not isolated, as their impacts on the parent affect the entire family and can have harmful intergenerational consequences. Studies have found a strong association between maternal psychological distress and poor parent-child relationship quality in Black mothers who experience higher levels of racial discrimination (Condon et al., 2022). Maternal mental health struggles contribute to an increased amount of parenting stress, described as the negative psychological response to the obligations of being a parent (Condon et al., 2022).

Dr. Jones states that the mental health stigma among Black women must change to see a difference in maternal mental health struggles (Jones, 2024). For example, Black mothers are less likely than White mothers to accept prescription medication and mental health counseling but were more likely to accept spiritual counseling for postpartum depression treatment (Bodnar-Deren et al., 2017). Reasons for this trend can be attributed to the historical mistrust towards healthcare systems among minority groups, lack of access to treatment, and high rates of stigma.

It is essential to recognize that the racial discrimination that a mother endures during the perinatal period does not only affect them while they are in the hospital or healthcare facility but also creates detrimental impacts that permeate other aspects of her life.

Infant and Pediatric Health Outcomes:

Examining the health outcomes of minority infants and children allows one to fully grasp the severity of the crisis and how it deprives innocent children from living a healthy life, which can cause complications later into adulthood. Racism within healthcare affects Black, Latinx, and Indigenous communities, contributing to children within these populations having worse health outcomes in relation to Type I diabetes, asthma, and mental health disorders (Fanta et al., 2021).

The racial disparities in health outcomes one faces begins in infancy. Infant mortality is defined by the CDC as, "the death of an infant before his or her first birthday" (CDC, 2024). In 2022, the infant mortality rate was 5.6 per 1000 live births (CDC, 2024). However, this rate doubles when looking at non-Hispanic Black infants, with a rate of 10.9 deaths per 1000 births. Black and Latinx premature infants also have higher chances of readmission and death after initial discharge from the Neonatal Intensive Care Unit (NICU) (Fanta et al., 2021). It is important to understand the social determinants of health such as healthcare access, health literacy, and financial barriers that have led to the disparities witnessed across the US today.

With respect to asthma, Black children are twice as likely to have asthma and more likely to die due to asthma when compared to White children. Causes of the disproportionate rate of asthma in Black children is linked to redlining, which began in the 1930s. Redlining is defined

as, "...a government-sponsored system of segregation whereby predominantly Black and immigrant neighborhoods were categorized as hazardous and undesirable to lenders," causing disinvestment in these communities and environmental hazards (Fanta et al., 2021). Today, there is significant correlation between emergency department visits for asthma in areas that were affected by redlining (Fanta et al., 2021). White children are also 3.6 times more likely to utilize an insulin pump to treat Type I diabetes when compared to Black children, mainly due to caregiver perceptions of cost (Fanta et al., 2021).

Data shows that Black children are much less likely to have clinically recognized mental health conditions; however, this can be attributed to the lack of studies done on Black children regarding mental health (Bommersbach et al., 2023). The majority of studies have found that Black children and adolescents self-report higher levels of depression and anxiety when compared their White counterparts (Bommbersbach et al., 2023). African American children, ranging from 6 to 18 years of age, who experienced racial discrimination were 2.5 times more likely than White children who did not experience racial discrimination to have anxiety (Walker et al., 2022). When these experiences are internalized, they can develop into more adverse conditions later in life. Specifically, when African American children are exposed to more racial discrimination, depression symptoms may increase over time (Walker et al., 2022).

Thus, the impacts of systemic racism within healthcare also disproportionately affect the health outcomes of minority infants and children, particularly within Black, Latinx, and Indigenous communities. These disparities manifest as higher incidences of Type I diabetes, asthma, and mental health disorders, as previously stated (Fanta et al., 2021). The main causes of these disparities are linked to social determinants such as financial barriers to accessing care, health literacy, and discriminatory practices such as redlining (Fanta et al., 2021). It is important

to understand that the systemic challenges one faces occur as early as birth and last throughout a lifetime, manifesting in physical and mental health disorders.

Future Studies:

Due to the historical mistrust of marginalized communities towards healthcare and research institutions, significant gaps in knowledge exist, which can be studied to enhance our understanding of the maternal mortality crisis. As this study specifically focused on Black women, more research can be conducted regarding Latinx and Indigenous populations who also see high rates of maternal and infant mortality. Indigenous women are approximately three times more likely than White women to die of pregnancy-related causes (Kozhimannil et al., 2020).

Further research can be done in rural areas as well, given that the current body of literature focuses on urban areas, which have a more diverse population. However, proper data must be gathered from rural areas to understand how the crisis is affecting different parts of the nation. Often, rural areas face a higher number of barriers when it comes to receiving proper healthcare due to financial barriers and lack of access, especially when compared to urban communities (James et al., 2017). As the entire nation becomes more diverse, this applies to rural areas as well, creating a need for more studies to be conducted on racial disparities within rural communities.

There is also a wide range of school-specific studies that can be conducted to further understand the initiatives medical schools are taking to educate students about the historical racism in medicine and the implications it has on populations today. A thorough examination of medical school curricula can be conducted to understand if and how medical schools are

educating students on racial discrimination, bias, and exploitation that infiltrate modern medicine and its history. Like the study on the Icahn School of Medicine, other programs can have their curricula examined by having external researchers review their materials, such as lecture slides, textbooks, and assessment tools. This analysis could identify gaps and strengths in the way topics such as race, racial bias, implicit and explicit bias, and historical exploitation in medicine are presented to students. By conducting school-specific studies, researchers can propose specific solutions to increase the efficacy of school curricula and training programs, ensuring that future physicians are equipped with proper knowledge to understand the scope of racial disparities, such as the maternal mortality crisis.

These school-specific studies could also branch out to include the examination of faculty and staff biases through implicit association tests, like the one conducted on the Ohio State University College of Medicine admissions committee (Capers et al., 2017). This would allow for more individual change, as people would be made aware of their biases towards certain students or applicants due to their race and encourage them to make institutional changes through interventions such as bias training. Lastly, to mitigate the stressors that underrepresented medical students face, they can choose to undergo mental health screenings throughout their time in medical school to mitigate the various mental health challenges they face, such as feelings of isolation. Schools can also create anonymous surveys for students to report incidences of racial bias or discrimination, allowing specific data to be collected without fear of repercussions. This would provide administrators and researchers with the information necessary to identify trends and integrate effective solutions based on data collection. This would also allow students to feel that their voices are heard by administration and faculty.

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Academic Vita

Setareh Atighechi

EDUCATION

The Pennsylvania State University-Abington **Abington, PA**
Intended Degree: B.S. in Biology: *December 2024*

- Awards: Dean's List (Fall 2021-Present), Bunton-Waller Merit Award, Hallowell Scholarship, Honors Program, Achieve Scholar, Schreyers Honors College

WORK EXPERIENCE

Diversity Scholars Summer Research Program **Philadelphia, PA**
Diversity Scholar *June 2024-August 2024*

- Conducted research on Alveolar Type II Cell Renewal in Emphysema in the Center for Inflammation and Lung Research at the Lewis Katz School of Medicine
- Performed lab techniques such as autoclaving, Western Blots, PCR, and mice sacrifice
- Presented research findings at a symposium

American Medical Response **Philadelphia, PA**
Emergency Medical Technician (EMT) *May 2023-January 2024*

- Provided EMS to diverse patient populations and communicate with compassion and empathy
- Checked function of emergency equipment daily
- Stabilize patients for transportation to hospitals, care centers, and residences
- Collaborate with other EMTs and paramedics to provide patients with care

Penn State; Office of Diversity, Equity and Inclusion **Abington, PA**
Peer Mentor *May 2022-May 2024*

- Project management in organizing the summer residential week-long program in terms of classes, programs, and more. Also assist with organizing the 3-week Zoom educational program including lesson plans.
- Conduct weekly meetings with mentees to ensure they are academically, professionally, and socially evolving throughout their college career.

Abington Township Public Library **Abington, PA**
Volunteer *March 2024-Present*

- Create customized lesson plans to meet the needs of students, for reading comprehension, proper pronunciation, writing skills, grammar, and vocabulary
- Provide personalized tutor sessions for individuals and accommodate to various learning styles

LEADERSHIP EXPERIENCE

Sister2Sister **Abington, PA**
President *September 2021-May 2023*

- Administer an organization aimed at creating a sisterhood between women of color on campus with 170+ members.
- Organizing events that support women on campus academically, socially, and professionally.
- Oversee an executive board.
- Frequently communicate with staff and faculty, complete paperwork, and recruit members.