



Future Clinician Leaders College

Compendium of White Papers 2021: Equity in Medicine

Developing the Healthcare Leaders of Tomorrow

Compendium of White Papers 2021

Program Co-Directors:

Kristina Natt och Dag, Ph.D.MA

Roy E Strowd, M.D., M.Ed., M.S.

Program Manager:

Ayesha Andrews

Note: This compendium of white papers contains the final leadership & advocacy projects for students enrolled in the Future Clinician Leaders College Program 2020-2021.

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INTRODUCTION

By Roy Strowd & Kristina Natt och Dag

Healthcare has been challenged in unprecedented ways in 2021. The COVID-19 pandemic has presented new challenges and potentiated century-old inequities in the delivery of care within the United States. These inequities are deeply rooted in structural and systemic factors that influence social, political, economic, educational, and healthcare systems. Achieving equity in healthcare requires awareness of the disparities that exist, actions that reduce and eliminate barriers to social and economic resources, investment in advocacy, community leadership, and educational solutions, and creation of a culturally aware and diverse professional workforce.

The future of healthcare will require professionals who are competent, resilient, culturally aware, community engaged and who possess the skills necessary to achieve diversity and inclusivity in healthcare. Preparing and training this next generation of clinician leaders has never been more important. The demand for clinician leadership both inside hospitals and health clinics as well as in society at large continues to grow.

As a state, North Carolina has not been immune to inequities in healthcare. Ethnic and racial minorities have had the highest number of cases and deaths from SARS-CoV-2.¹ In the first 3 months of the COVID-19 pandemic, access to testing was not evenly distributed in the state and within racial-ethnic groups, medically-underserved rural communities have faced some of the highest test-positivity rates in the state.² Robeson county, which has one of the highest percentages of persons in poverty, also has reported the highest rates of COVID-19 cases and lowest vaccination rates.³ These data, while timely, are not new as consistent disparities in care have been recognized in North Carolina for decades.⁴⁻⁶ Gaps in care continue to exist for patients in the state.^{7,8} There are major physician shortages and major challenges to accessing care;^{9,10} higher than the national average maternal mortality;^{11,12} and geographic disparities that have contributed to social determinants disproportionately effecting western Appalachia and eastern farmlands in the state.^{13,14} At the same time, North Carolina has arguably all of the ingredients to achieve significant advances in health equity and care delivery. Healthcare technology organizations, innovation hubs, and advocacy groups have a strong presence in the state. Data systems exist to track healthcare outcomes. North Carolina is home to

innumerable nationally-recognized programs that are training medical students, physician assistants, nurses, nurse anesthetists, pharmacists, and other allied health professionals for our communities.

The Future Clinician Leaders College (FCLC) responds to the need to develop passionate, resilient, competent interprofessional healthcare professionals across North Carolina. Leadership development is considered broadly. FCLC is not just training the C-suite leaders of the future but ensuring that each individual healthcare professional has the tools to contribute positively to solving tomorrow's healthcare challenges. The program helps students build their own leader identity – appreciating their purpose in medicine, their strengths as a person and professional, and how they can use this to care for patients and their peers.

The program is built on a pillar of self-awareness. Research shows that self-awareness is crucial to building a sustainable platform for effective leadership and is fundamental to developing confidence and self-worth as a leader.¹⁵⁻¹⁷ The FCLC program challenges students to take a deeply introspective look at their own personal leadership journey, act in alignment with his/her core values as a leader, and link leadership development to patient care.

The program introduces four “P’s” of clinician leadership: leading Patients to change in the clinic, leading Peers as mentors in the classroom, leading Providers in interprofessional healthcare teams, and leading Policy change as healthcare advocates. Leadership among patients, peers, and providers is immediately important to the day-to-day practice for most trainees. For future practice, it is also critical to develop socially responsible and societally engaged healthcare advocates. Advocacy and engagement is a spark best ignited early in healthcare training. To fulfil this mission, the FCLC syllabus includes project-based learning where students work across institutions and across health professions to tackle a challenge facing healthcare today. For the 2021 cohort, this challenge broadly consisted of equity in medicine which each group discussed, interpreted, and identified a focus research question. The whitepapers in this compendium summarize each small groups work. Given the importance and timeliness of equitable distribution and

uptake of COVID-19 vaccination, three of the groups tackled challenges related to vaccine equity. The other two groups focused on aspects of creating a culturally aware and diverse professional workforce for all. One group tackled pipeline programs and how North Carolina supports and develops early interest and access to healthcare professions. The other dissected LGBTQ+ training curricula and proposes standards and solutions for teaching inclusivity with this patient population.

Each white paper is the result of an interprofessional collaboration between students from multiple healthcare disciplines and locations across North Carolina. Each group selected a specific topic within the broader problem of equity in healthcare. Each group addresses the following four aspects in their white paper: (1) statement

of the problem, (2) background and significance, (3) impact on North Carolina, and (4) proposed solutions.

On a personal note, this past year has also been among the most challenging that we personally have experienced. Healthcare faces an exodus of providers who are burnt out from decades of administrative burdens and lost autonomy, and now facing dissolution in the realities of a politicized public health crisis. These students have been our recharge. The opportunity to work with the FCLC students (who are already clearly phenomes) has been amongst the most rewarding and energizing parts of our year. We need strong leaders to tackle the challenges we face in healthcare. It is clear that we are in great hands with these rising stars. Be on the lookout for these future clinical leaders.

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CHAPTER 1 – INCREASING DIVERSITY OF FUTURE WORKFORCE

Representing North Carolina: Establishing Pipeline Programs to Diversify Healthcare Professionals in the Tar Heel State

By Amy Gallagher, Julianne Peters, Tichelle Porch, Denisse Cristina Porrás Fimbres, Kara Tarpey and Briana Williams



Problem Statement

Health disparities in the United States stem from social determinants of health, which the CDC defines as “conditions in the places where people live, learn, work, and play that affect a wide range of health and quality-of-life-risks and outcomes” (“Social Determinants,” 2021). One such example of this is affordable, accessible, and safe housing, which is becoming scarcer in the United States and specifically, in North Carolina. In a report published by the North Carolina Coalition to End Homelessness (NCCEH), it was found that while Black individuals made up 19% of the state’s population, Black individuals comprised 37% of the state’s homeless population (“Evaluating Racial Disparities,” 2019). Another example is racial differences in the prevalence of cardiovascular disease in North Carolina. A report from the CDC found that between 2015 and 2017, out of 1000 Black and 1000 White Medicare beneficiaries, 57.7 of Black individuals were hospitalized for heart disease, while 46.1 of White individuals were hospitalized for heart disease (“Interactive Atlas,” 2021). This disparity can be a result of a multitude of social determinants of health, including but not limited to food access, healthcare access, safe housing, and socioeconomic status. Other health disparities are prevalent in other diseases, such as diabetes, pulmonary disease, cancer, obesity, and HIV/AIDS. When we evaluate the outcomes of these conditions, the disparities are often exacerbated by a lack of healthcare providers who reflect the populations they serve.

For decades, there has been a resounding call to increase the diversity of the healthcare workforce by the Institute of Medicine, the US Department of Health and Human Services, and other prominent institutions. While the overall US population is exceptionally diverse, its body of healthcare professionals is not. Stephenson-Hunter et al. found that “while Blacks/African Americans and Hispanics/Latinos comprise 13.4 percent and 18.1 percent of the US population, respectively, together they constitute only 8.5 percent of the physician workforce” (2019). Additionally, a 2017 survey by the National Council of State Boards of Nursing found that the majority of registered nurses are White/Caucasian (80.8%), although minorities account for more than a third of the U.S population (Smiley et al., 2018). Furthermore, Greene et al., found that minorities, particularly African-Americans, are underrepresented among multiple healthcare professions, including physicians, registered nurses, dentists, pharmacists, and allied health professionals.

Within North Carolina, there has been a slow increase in the percent of minority health care workers in the state. A report on healthcare workforce diversity in North Carolina found that there is under-representation among respiratory therapists, registered nurses, primary care physicians, registered nurses, dentists, pharmacists, surgeons, nurse practitioners, and dental hygienists (McGee & Fraher, 2012). This mismatch in the healthcare workforce can perpetuate healthcare disparities by contributing to patient-provider mistrust, communication barriers, and implicit bias, adding to existing socioeconomic disadvantages of underrepresented groups (Hisam et al., 2016; Stephenson-Hunter et al., 2019). Clayborne et al. (2020) recommended that increasing the diversity within the healthcare workforce can help to reduce the “prevalence and effects of implicit bias in our health care organizations”.

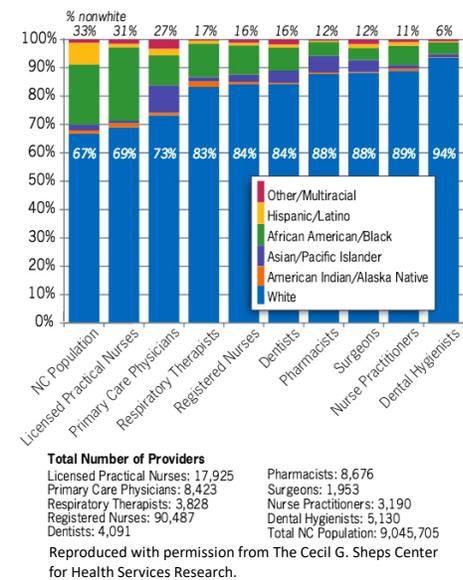
Studies show that increased diversity of healthcare providers improves minority patient outcomes and increases access to healthcare services in minority-concentrated regions, contributing to societal health as a whole (Pomeranz & Horvath, 2017). A closer look finds that provider-patient race concordance leads to increased patient receptiveness to recommended health behavior modifications and treatments, along with increased physician ratings (Mason et al., 2017; Saha & Beach, 2020).

Given the importance of healthcare workforce diversity, the main objective of the present paper is to examine the current healthcare pipeline programs available in North Carolina that are aimed at mentoring underserved areas within our community. A diverse workforce will greatly improve patient care through enhancing communication skills, tackling implicit bias, and establishing trust amongst underserved populations. Pipeline programs are in place to expose young students to various healthcare fields, which ultimately allows the recruitment of a more diverse healthcare force. Providing mentorship to these young students is meant to bridge the gap between our clinicians and the communities they serve. Recruiting future clinicians from rural and underserved backgrounds diversifies our professional population that accurately reflects the communities they serve.

Background and Introduction

A growing body of literature suggests that a diverse healthcare professional population helps to address “implicit bias, cultural mistrust, and poor communication on health equity and outcomes,” effectively benefitting overall societal health (Clayborne et al., 2021). Diversity in the healthcare workforce as it relates to race, geographic location, and socioeconomic status, among other factors, is not only important for providing excellent patient care, but also enhances healthcare providers' clinical learning, development of cultural competence, and interpersonal skills. In the last fifty years, numerous efforts have attempted to address the lack of diversity within healthcare. In 1972, the federally funded Area Health Education Centers (AHEC) Program was developed by Congress to remedy supply, retention and quality of healthcare providers in underserved areas across the US. (National AHEC Organization, 2021). Twenty years later the AAMC initiated a national initiative to increase medical minority student enrollment to 3000 by the year 2000 (Smith, 2009). In 1996, the AAMC, Robert Wood Johnson Foundation, and the W.K. Kellogg Foundation started the Health Professions Partnership Initiative (HPPI), which aimed to connect health professional schools with local colleges and public school systems to develop programming that would prepare, attract, and support underrepresented students in pursuing healthcare careers (Smith, 2009).

Figure 1. Diversity of North Carolina's Population Compared to Diversity of Selected Health Professions, 2009



Finally, in the past decade, highly localized state or academically supported grassroots pipeline programs in healthcare professions have emerged in order to address the disparities between providers and the populations they serve. Starting as early as middle school, individuals are exposed to various professions and given opportunities to connect with clinicians in their field of interest. Additionally, these programs provide mentorship, financial assistance, and incentives to work in areas of need. Scholarship programs like the National Health Service Corps have provided financial support for nurses, social workers, physicians, and dentists who are committed to serving in health professional shortage areas throughout the US. Within medicine, pipeline programs like the Summer Medical and Dental Education Program (SMDEP) at Duke University in Durham, NC were created to increase the representation of underrepresented minorities in medicine by providing them with resources and mentorship that facilitate matriculation into the program. While the rich diversity of North Carolina makes it an incredible state to practice in, the lack of diversity in its healthcare workforce suggests additional work is needed in developing, recruiting and retaining clinicians who are able to respond to the unique needs and cultures of its various areas. Examining the success of existing pipeline programs in North Carolina will allow future clinicians to develop or strengthen the process of recruiting a diverse healthcare force that accurately reflects the North Carolina population.

Findings and Impact

One successful pipeline program in North Carolina is the Propelling Adolescents Towards Careers in Healthcare (PATCH) program. The PATCH program was created by three medical students who were former teachers in Title I schools. While teaching, they saw the systemic barriers that minority students faced daily, such as low socioeconomic statuses. Their students had very little access to the necessary educational and professional opportunities that were needed to pursue future careers within the healthcare field. Therefore, the former teachers created Propelling Adolescents Towards Careers in Healthcare (PATCH), a pipeline program that provides underserved high school students in Charlotte, NC, with equal opportunities to pursue careers in healthcare. Not only does this program offer equal opportunities to pursue healthcare careers, but it also produces more diversity within the healthcare workforce and reduces health disparities in the urban communities of Charlotte as well (Brownrigg et al., 2020). The vision of the PATCH Program is to bridge the gap and provide education on medical careers for students within these Title I schools. The creators of PATCH want to prepare their students academically and provide mentorships throughout the program so their students have all the help they need to succeed. Their goal is for medical professional residents to be long-term mentors for these students outside of the PATCH program as well.

The PATCH program is an eight-week course that meets on Saturdays from 8:00am – 2:30pm. The curriculum consists of four different segments: exploration, application, inspiration, and research. These segments involve hospital shadowing, interactive workshops with hands-on experience, motivational speakers with Q&A, and lastly student-driven research projects that investigate medical issues within the Charlotte-Mecklenburg area (Brownrigg et al., 2020). In addition to the exposure of healthcare careers, this program offers students ACT preparation workshops and test taking strategies, assistance with writing college acceptance essays, and even help with financial aid applications. This program aims for the success of its students. For the high school students to be eligible for the program, they must attend a Title I school within the Charlotte Mecklenburg School District (CMS) or qualify for the National School Lunch program. The application process consists of an essay expressing their interest in the PATCH program and the healthcare field, school transcripts, and a teacher evaluation.

Since 2015 there have been over 150 students who have fully completed the program. Post-program surveys revealed that 95% of the students who finished the program planned to attend college to pursue a career within the healthcare field, and 98% of students said they would like to return to their own communities to improve resources and opportunities for healthcare (Brownrigg et al., 2020). The article also stated that all students who have participated in the PATCH program believe they are more prepared and certain in their desire to pursue

careers within the healthcare field (Brownrigg et al., 2020). The first group of students to complete the program were expected to graduate this year, 2021, and are pursuing careers within the healthcare field. The creators believe the program has positively impacted North Carolina, especially in the Charlotte-Mecklenburg area, however they feel like they have not met their goal just yet. They would like to continue exposing more students to as many different types of healthcare careers as possible to help bridge the gap and provide equal opportunities for all.

Another pipeline program, offered by the University of North Carolina at Chapel Hill and funded by the NC Area Health Education Centers (AHEC) statewide grant, is the Health Affairs Partnership Pipeline Initiative (HAPPI). The HAPPI curriculum systematically introduces select high school students to a wide variety of healthcare career paths ("Community", 2021). Nursing, pharmacy, public health, allied health sciences, and social work are among the professions showcased via networking events, preparatory seminars, resource sharing, and mentoring.

Primarily an in-person summer series, HAPPI's healthcare career information portal also inspires and guides enrollees from afar (Wynn & Phillips, 2019). HAPPI's ultimate goal is "to increase retention of underrepresented minority students at UNC Chapel Hill in health careers" ("What is HAPPI?", 2021). What sets HAPPI apart is its inclusion of lesser-known allied health sciences (e.g. clinical laboratory science, radiologic science, speech and hearing sciences) in addition to traditional medicine and nursing tracts through extensive collaborative efforts. As a result of HAPPI, underrepresented students have been exposed to various healthcare professions through many events (Mitchell, 2014). For example, in 2012, students were exposed to panel presentations on research and clinical experiences, met with guidance and career counselors, attended college advising sessions about health career options, received textbook funding for their healthcare professional schools, among other opportunities (Mitchell, 2014). Thanks to HAPPI, underrepresented students are pursuing specialized healthcare roles that they were not aware of prior to the program.

Proposed Solutions

With the success of programs such as PATCH and HAPPI, North Carolina medical systems should consider funding additional programs to reach a greater number of students and provide them with sufficient resources. With the recent increase in utilization of virtual meetings, there is an opportunity to reach a higher number of students. Without the limitations of physical space or funding for food and travel, large medical systems can effectively meet with as many students as interested. Additionally, these programs can recruit mentors from various healthcare fields, and utilize smaller breakouts to facilitate relationships between students and healthcare professionals.

Large-scale, online programs can offer professional development workshops, participation in lectures on topics of interest, panels with clinicians from various fields, or even breakout networking sessions. A variety of formats should be used to retain interest, and students should be given the opportunity to participate as much as possible. These virtual programs can be supplemented with in-person programs that meet in various areas of the state. By utilizing an online format, students in more rural areas or students without a means of transportation can participate in programs designed to engage them with the healthcare field.

On a smaller level, individual healthcare professional programs should consider pursuing their own pipeline programs to engage students who are interested in a specific field. Pre-existing resources such as free physical space, learning materials, and admissions information can be utilized, minimizing the cost of running such programs. Additionally, current students can be given the opportunity to serve as mentors to high-school and college students interested in entering the field. This format benefits all involved; schools can recruit more diverse cohorts of students, current students are able to build mentorship skills, and prospective students are able to benefit from gaining valuable insight into a field, as well as having an established mentor who is able to offer guidance as they work towards a career in healthcare.

Ideally, programs offered by individual schools should be in-person, and students should be provided lodging in order to mitigate cost as a limiting factor for participation. An effort should be made to match prospective students with a mentor of a similar, self-identified background (i.e., race, ethnicity, religion, LGBTQ+

identity, (dis)ability, hometown, etc.). These programs can include tours of the school, participation in mock lectures and labs, Q&A sessions with students and professors, and professional development workshops, among other things. By establishing smaller, more specialized pipeline programs, students can explore their interest in specific fields over a multi-day experience, as well as establish meaningful relationships with clinicians, professors, and current students.

Conclusion

While progress is being made in recruiting a more diverse field of healthcare professionals in North Carolina, there is still much work to be done to ensure that the healthcare field accurately reflects the population it serves. Health disparities continue to exist throughout the state, stemming from social determinants of health including housing, access to food, and long-standing racial inequities, among others. To address the health outcomes that occur as a result, there needs to be a long-term effort to recruit a more diverse healthcare field.

In summary, exposing students of diverse and underrepresented backgrounds has been shown to greatly influence the increase of minority and diverse healthcare professionals. Providing grade-school level students the opportunity to receive mentorship focused on a vast variety of healthcare fields will increase the recruitment and retention of diverse healthcare professionals. Programs such as PATCH and HAPPI, have made tremendous strides to enhance the quality of care in North Carolina by recruiting a diverse workforce that accurately reflects the surrounding communities. Along with providing these students with mentorship, these programs also help bridge the gap between students of lower socioeconomic status, allowing them to also have access to these programs. While great efforts have been made to increase diversity within the healthcare fields, there are still ways to continue excelling in this area. Overall, through the current pipeline programs available in North Carolina, and through the programs to come in the future, the diversity of healthcare professionals will continue to improve.

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Closing the Gap: Establishing a Standardized LGBTQ+ Health Curriculum in North Carolina Medical Schools

By Kristen Dodenhoff, Erin Figgins, James Parker, Heather Pol, Doug Teasdall, and Diya Uthappa



Introduction

A recent study of medical students, residents, and fellows found that 83% of the survey respondents felt comfortable taking a sexual history from all patients, but only 65% of these respondents felt comfortable taking the same history for LGBTQ+ patients.¹ Another study surveying a group of physicians found that only 51% felt that they were competent enough to provide care to their LGBTQ+ patients.² An even more recent study found that 7% of physicians expressed discomfort treating gay patients, 22% treating transgender patients, and 13% treating HIV-positive patients.³ These statistics are concerning, and it is the duty of healthcare providers to ensure that trainees are well-educated regarding LGBTQ+ issues in order to feel prepared to treat their patients.

Although there have been studies that focus on providers' lack of awareness regarding the delivery of healthcare to sexual and gender minorities, there have not been significant curricular changes that emphasize how to provide care nor address healthcare disparities that are specific to the LGBTQ+ community. In 2015, a survey of medical school deans showed that the median time spent on LGBTQ+ education was about 2 hours.⁴ In 2020, the median for medical students had only increased to 5 hours. Across other health professions disciplines, the amount of training remains modest, with a median of 2.1² hours for nursing students, and 3.68 hours of coursework for dental students.⁵ Lack of training and awareness of LGBTQ+ health issues may contribute to an environment of mistrust between patients and their healthcare providers.⁴ As future health professionals, we aim to create welcoming environments for all individuals. With enhanced communication strategies from LGBTQ+ education programs, providers can gain competence and comfort in guiding their patient encounters and optimizing patient-centered care.

In this white paper, we outline the need for and impact of a universal curriculum that focuses on the health and education of LGBTQ+ patients in North Carolina health professions training programs. We argue that such a curriculum should be developed and incorporated into professional healthcare education in the state.

Background

When seeking health care, individuals may often encounter barriers to care. These barriers can be magnified by social stigma, cost, inequality, lack of access, and discrimination. For LGBTQ+ individuals, obstacles to care can be further compounded by discrimination or perceived judgement by health care providers. People who identify as LGBTQ+ have similar health concerns as the rest of the population, but they also have unique health issues that affect them disproportionately.

One tragic example is the HIV/AIDS crisis in the late 1980s and early 1990s that continues to this day. From its discovery, this disease has been shrouded in homophobia and discrimination. It was initially called GRID, or gay related immunodeficiency disease.⁶ The Department of Health and Human Services announced the discovery of the virus in 1984, but it was another year before President Ronald Reagan uttered the phrase HIV/AIDS in public.⁶ This disease devastated the LGBTQ+ community, facilitated by silence from leadership. By 1995, 1 in 9 gay men in the United States had been diagnosed with AIDS and 1 in 15 had died.⁷ Ten percent of men who identified as gay between the ages of 25-44 had died.⁷ Even to this day, inadequate funding and opposition to common sense solutions has made it difficult for adequate public health solutions to be implemented despite huge advancements in the prevention and treatment of HIV/AIDS. Continued stigma faced by members of the LGBTQ+ community, including from health care providers, combined with discrimination, social, and economic inequality have all contributed to the continued prevalence of HIV/AIDS and other sexually transmitted infections in the LGBTQ+ community.⁸

Beyond infectious disease, LGBTQ+ health care has become even more nuanced with growing recognition of non-binary gender identities and our increased understanding of the importance of gender affirming care for non-binary and transgender individuals. It is incumbent on physicians and medical education to keep pace with the health demands of LGBTQ+ patients as our understanding and acceptance of all forms of gender identities and sexual orientations grows. For this reason, we believe that it is essential to ensure that there is consistent, correct, and compassionate LGBTQ+ healthcare education embedded within medical school curricula.

Disparities in Care and Outcomes in LGBTQ+ Patients

Equal access to healthcare for all genders, races, religions, and ethnicities is a fundamental right. Evidence supporting the regular denial of healthcare or discrimination to the LGBTQ+ community is startling. This is exacerbated by the existence of a substantial network of sociology and healthcare data indicating that LGBTQ+ patients are at increased risk for physical and mental health problems. A report by the National Center for Transgender Equality (NCTE) and the National Gay and Lesbian Task Force found that 19% of surveyed respondents had been refused medical care, 28% postponed medical care when they were sick or injured due to discrimination, and 28% were victims of harassment in medical settings with 2% being victims of violence in a doctor's office.⁹ These stark numbers should be disturbing to the medical community and represent a very significant barrier to care within the LGBTQ+ community.

Fear of Mistreatment and Its Impact

The delay of healthcare secondary to fear of mistreatment, discrimination, or harassment provokes worse healthcare outcomes and further generates an ill-perceived relationship between healthcare and the LGBTQ+ community. Life threatening diseases like suicide and HIV/AIDS affects the LGBTQ+ community disproportionately higher than the national population. An astonishing 41% of surveyed transgender or gender non-conforming respondents reported attempting suicide compared to the 1.6% national average.⁹ This staggering statistic is further complicated by the 24% of those respondents reporting mistreatment by doctor's offices or hospitals and 11% feeling discriminated against in mental health clinics.⁹ LGBTQ+ Americans are also infected with HIV nearly four times the national average at 2.64% compared to 0.6% in the general population.⁹ With preventive medicine like cognitive behavioral therapy as an effective mediation strategy for suicide and pre-exposure prophylaxis (PrEP) mitigating the harmful consequences of HIV, it is imperative that all members of our community feel respected, welcomed, and confident in the ability of healthcare providers to treat their diseases.

The injustice the LGBTQ+ community is encountering in healthcare must be addressed. No individual should feel scared, threatened, or discriminated against when entering a medical office or institution. Attempts to correct these issues could be fixed at the national, congressional, or state level, but we believe the most successful method will be through education of medical providers. The establishment of a North Carolina statewide curriculum on obtaining a history, conducting a physical exam, developing a diagnosis, and creating a treatment plan for LGBTQ+ patients could have the greatest impact on eliminating healthcare gaps within this community. This education will equip future generations of providers with the skills, attitudes, and behaviors to optimally care for patients from the LGBTQ+ community. With their knowledge, providers can work to eliminate healthcare disparities in LGBTQ+ patients.

In summary, the human rights issues plaguing the LGBTQ+ community are despairing. It is the duty of healthcare professionals to uphold the rights of all individuals and provide equal and exceptional treatment to all patients. As future healthcare professionals, we believe that a critical first step in addressing these healthcare barriers and injustices can be addressed at the educational level.

Findings & Impact

Numerous studies indicate that lack of knowledge and training accounts for discrepancies in care to LGBTQ+ populations. Medical learners report being less comfortable with taking a sexual history and discussing safe sexual practices with LGBTQ+ patients than with other patients.¹ Students report "inadequate training" as the most common barrier to taking such a history. In support of this, 67% of medical students ranked their LGBTQ+ curriculum as "fair or worse."

So what is happening in North Carolina's medical schools today? Below, we explore the current state of LGBTQ+ health care education at several institutions in North Carolina.

Wake Forest School of Medicine

Regarding LGBTQ+ patient education, the Wake Forest School of Medicine's department of Inclusion and Diversity offers a student run certification program, Safe Zone in Medicine.¹¹ This is an elective program that MD and PA students can choose to participate in. Safe Zone in Medicine aims at increasing participants' understanding of LGBTQ+ identities and healthcare-related issues. The program hopes to enhance confidence in caring for patients,

mentoring students, and communicating with colleagues from the LGBTQ+ community. The curriculum of the program consists of an introductory workshop providing an overview of LGBTQ+ terminology, health disparities, and issues facing the LGBTQ+ community.¹¹ A three-night deeper dive training is also available covering intersex health, transgender patients, and the coming out process. Upon completion of the program, a rainbow caduceus is given to the participants. In addition to the Safe Zone program, there is a longitudinal course on ethics, with specific focus on social determinants of health (SDOHs). In the longitudinal clinical skills course, students spend time learning about collecting a comprehensive and inclusive sexual history from patients, but there is limited specific curricular time dedicated to learning about LGBTQ+ individuals.

University of North Carolina at Chapel Hill - School of Medicine

The MD program at UNC's School of Medicine has created the Medical Student Pride Alliance (MSPA) with a goal of educating students on issues faced by LGBTQ+ patients seeking healthcare. The organization is composed of students, faculty, and administrators of UNC's School of Medicine. Their mission is to foster a safe environment for LGBTQ+ identifying students and allies within the school, contribute to the recruitment of underrepresented students and LGBTQ+ identifiers in medicine, and to provide LGBTQ+ health and health disparities faced by the LGBTQ+ community to the student body. Pre-clinical and clinical educational opportunities emphasize how to be an LGBTQ+ ally, living as an LGBTQ+ physician, the physiological endocrinology of transitioning, and how to counsel patients on safe sex practices.

Duke University - School of Medicine

Within the Duke University School of Medicine, Duke Med Pride serves as a student-led organization that focuses on creating an inclusive community for both sexual/gender diverse students and allies. Composed of LGBTQIA+ students, allied students, and faculty members, this group strives to increase visibility of sexual and gender minority students within the School of Medicine. Additionally, their mission centers around improving access to education regarding health issues faced by LGBTQIA+ patients during clinical training, and fostering a more inclusive and equitable environment for sexual and gender minority students throughout their education. This organization has been actively involved in recruitment and admission of LGBTQIA+ identifying applicants in an effort to increase representation of this population within the School of Medicine. Furthermore, educational opportunities provided for both medical professional students and prospective undergraduate students focus specifically on how to best serve LGBTQIA+ patients and provide safe, equitable healthcare for members of this community. Additionally, Duke's Cultural Determinants of Health Disparities course, an integrated part of the first year medical and physical therapy student curricula, offers a brief look into LGBTQ+ specific health care through a single session dedicated to gender-affirming care.

Campbell University - School of Osteopathic Medicine

Similar to the medical programs at Duke University and University of North Carolina, Campbell University School of Osteopathic Medicine (CUSOM) has a student-led organization that represents LGBTQIA+ students and allies named "Campbell Med Pride (CMP)". CMP's goals are to provide a safe space for LGBTQIA+ students in addition to educating non-LGBTQIA+ students on its community's specific health concerns. The organization holds events that promote diversity, inclusion, and awareness, such as informational events dedicated to the recognition of

World Social Justice Day. They also host voluntary interactive lectures to help medical students become more comfortable with the unique health issues that affect LGBTQIA+ patients. Along with this organization, the formal curriculum of CUSOM dedicates time to discuss LGBTQIA+ health awareness in the final 4 weeks of their second-year didactics. The content of the curriculum encourages medical students to gain confidence when discussing sexual history with their patients and to become more comfortable asking questions about gender identity, sexual preference, previous sexual encounters, and previous or current types of sexual contact.

Eastern Carolina University - Brody School of Medicine

The Brody School of Medicine recently redesigned its curriculum with the emphasis that meets the following goals: “reflects the ever-changing practice of medicine, meets the desire for early career exploration, and incorporates effective learning strategies for today’s medical students.”¹² Despite this change, there is a limited focus related to the healthcare of individuals in the LGBTQIA+ community. For first-year students, there is a longitudinal ethics course, while for second-year students there are 4 hours of didactic focusing on sexual health, transgender health, sex and disability, and sexual health interviewing.¹² To LGBTQIA+ healthcare, the Brody Sexual and Gender Diversity Organization (SDGO) works to provide an environment to embrace inclusiveness and to promote the importance of education related to LGBTQIA+ issues. The emphasis of SDGO is toward future physicians and medical professionals. Another resource offered is The Dr. Jesse R. Peele LGBTQ Center at ECU. The center works to provide intercultural learning to improve the understanding and acceptance of individuals in the LGBTQIA+ community.¹³ Some of the educational programs and events include National Coming Out Day, Transgender Day of Remembrance, World AIDS Day, Bisexual Awareness Week, Asexual Awareness Week, and Transgender Day of Visibility.¹³

Summary of Findings

We believe that lack of training is a critical driver of distrust between LGBTQ+ patients and their healthcare providers. In North Carolina as in other states, trainees must emerge confident in their abilities to care for all communities. Failing to do so will perpetuate healthcare discrepancies within the LGBTQ+ community. Unless acted upon, distrust will grow and could further lead to decreased utilization of care and deepen health risk. Lack of trust perpetuates delay of care, worsens medical conditions, and impedes the provider’s relationship with these patients. Currently, no state or national guidance has been established for medical schools to enact LGBTQ+ training into their curriculum. This must change. Establishing guidelines, consensus, standards, or policies that demand action by statewide health training programs is needed.

Solutions & Conclusion

Based on the current LGBTQ+ curriculum at medical schools in North Carolina as described above, much of the education is student-led with institutional support. Not all programs are compulsory and exposure in most programs varies from student-to-student over the course of training.

Student-led curricula are impactful. The University of Washington is an excellent example of the impact of student-led curriculum in disseminating information about LGBTQ+ health care (Table 1).¹⁴ This program consists of pre-clinical LGBTQ+ content, with 3 online modules, 2 elective courses on LGBTQ+ health, 24 hours of LGBTQ+ advocacy work or community service, as well as a scholarly project on LGBTQ+ related topics.¹⁴ In the clinical

years, students completed a 4-week clinical rotation at designated LGBTQ+ health sites, as well as an additional 12 hours of longitudinal service work.¹⁴ They also engage a community partner to help with the preclinical online modules. Although the efficacy of this model has not been statistically evaluated, UWSOM students identified a need in the community and a gap in their education and addressed it with this program.¹³

Table 1: Key LGBTQ+ Curriculum Models at Medical Schools¹⁰

University of Louisville School of Medicine	Baylor College of Medicine	Columbia University Vagelos College of Physicians and Surgeons	University of Washington School of Medicine
<ul style="list-style-type: none"> • Community physicians, public health professionals, and LGBTQ+ individuals instruct a 1-h learning session (certificate program) • Offered during lunch • No additional funding (volunteers) • eQuality - a free online module with material on communication, gender-affirming care, preventative care, sensitive physical exams, and SDOH • 50.5 hours of required LGBTQ+ health curriculum for first, second, and clinical years • Hosting a community forum on transgender healthcare 	<ul style="list-style-type: none"> • 1-h lecture on LGBTQ+ as a SDOH • LGBTQ+ incorporated into curriculum via small group discussions 	<ul style="list-style-type: none"> • 2-h LGBTQ+ curriculum for clinical medical students through the topic of cultural humility • 1-h lecture, 1-h panel with LGBTQ+ individuals, and pre-session readings 	<ul style="list-style-type: none"> • Pre-clinical online modules (3) • Elective courses (2) • LGBTQ+ advocacy or community service opportunities • Opportunity to select LGBTQ+ healthcare as a scholarly project • 4 week designated LGBTQ+ clinical rotation

It is essential for institutions to also take ownership and responsibility for LGBTQ+ health curriculum. The University of Louisville has a robust LGBTQ+ health curriculum, with about 50 hours of instruction throughout the preclinical and clinical years, nearly ten times the median for medical schools in the US.¹⁰ Their curriculum is delivered through an online toolkit and includes information on communication, gender affirming care, preventative care, and SDOHs. This eQuality Toolkit is available for free online and could be a standardized way for medical schools in North Carolina to incorporate more in depth LGBTQ+ curriculum and increase LGBTQ+ curricular time.¹⁵

Current curriculum recommendations encourage the incorporation of both a didactic and clinical skills portion with standardized patient or role playing.¹⁰ We believe that using a standardized patient is more likely to be a meaningful learning opportunity than student role playing. While some components of this curriculum could certainly be done using online modules, as was done by UWSOM, the clinical skills portion of the learning is essential, as it can provide a model for future interactions with LGBTQ+ patients.¹⁰

Medical schools in North Carolina could also consider a day dedicated to a workshop for LGBTQ+ health consisting of a panel as well as standardized patient encounters. This could come in the form of a statewide medical school educational event sponsored by the North Carolina Medical Society (NCMS). Even small amounts of time spent on LGBTQ+ health care increase student confidence and knowledge of LGBTQ+ health, as shown by the experience at Baylor School of Medicine, which implemented a SDOH workshop for first year medical students. Following the workshop, students had increased self confidence in using LGBTQ+ terminology and identifying health risks in this population.¹⁰

Presenting the topic of LGBTQ+ healthcare under the larger umbrella of SDOH has been shown to be an effective means by which LGBTQ+ curriculum can be incorporated into medical school curriculum.¹⁰ This strategy has been employed by both the University of Louisville and Baylor School of Medicine, but in terms of sheer curricular time, the University of Louisville has employed a more substantial longitudinal curriculum (Table 1).

The University of Louisville provides a particularly helpful illustration of the ways that this curriculum can be incorporated, and we believe their model is worth emulating. Given the extent of student involvement in current efforts to grow LGBTQ+ curriculum, any effort to institute or revamp existing LGBTQ+ curriculum must be done with ample student feedback, and ideally some input from LGBTQ+ organizations or other community stakeholders. Medical schools in North Carolina have shown an interest in incorporating LGBTQ+ health into their curriculum, but we challenge the medical schools of North Carolina to dedicate more curricular time to this important issue and to address the health discrepancies faced by LGBTQ+ individuals specifically within their curricula. Our recommendations are summarized in Table 2.

Table 2: Proposed Recommendations for Addressing LGBTQ+ Curricula in North Carolina Medical Schools

Recommendations:
1. Require all medical schools in North Carolina to incorporate LGBTQ+ health and health disparities into their official curriculum, not just as an elective.
2. Utilize the free eQuality Toolkit for LGBTQ+ training.
3. Incorporate a standardized LGBTQ+ patient in didactic and clinical skills curriculum.
4. Categorize LGBTQ+ status as a SDOH.

While we have outlined an important first step in exploring the expansion of LGBTQ+ curriculum in the state of North Carolina, we feel that it would be most beneficial if representatives from the various schools of medicine came together to generate a consensus agreement or standard for LGBTQ+ curricular outcomes within the state. This would minimize regional discrepancies and could place North Carolina as a leader in LGBTQ+ health education.

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CHAPTER 2 – VACCINE HESITANCY IN NORTH CAROLINA

Impact of Historical Barriers on Current COVID-19 Vaccination Rates in Rural Counties

By Lauren Alexander, Amber Gautam, Brennen Guzik, LeVon James, Carly Olszewski and Sharon Thomson



Introduction

Recent data released by the United States (US) Census Bureau from the 2013-2017 American Community Survey showed that in 50 of the counties in North Carolina (NC), 50-99.9% of the population lives in rural areas. In 14 counties, 100% of the population lives in rural areas, and in 36 counties, 50% of the population lives in urban areas.¹ Effectively, nearly 30% of the total population of NC lives in rural counties, and the poverty rate in these areas is 19% compared to 15% in urban areas. The poverty rates among children (age <18 years) and seniors (age ≥65) are remarkably higher in rural areas compared to urban areas as shown in figure 1.¹ Halifax, Robeson, Scotland, Tyrell, and Watauga counties had the highest poverty rates in the state.

Reproduced with permission from the US Census Bureau.

Rural		Urban
28.0%	Percent of Total Population	72.0%
43.9	Median Age	39.1
67.2%	Born in North Carolina	53.0%
19.1%	Bachelor's Degree or Higher	34.2%
51.6%	Civilian Employed (16 and Over)	59.1%
18.8%	Total Poverty Rate	15.1%
27.0%	Children (Under 18) Poverty Rate	21.0%
10.7%	Seniors (65 and Over) Poverty Rate	8.4%
13.1%	Uninsured Rate	11.6%
\$42,113	Median Household Income	\$48,887
45.7%	Percent of Households without Broadband	30.5%

Figure 1: Data from the 2013-2017 American Community Survey released by the US Census Bureau consistently highlights the lower education rates, lower employment rates, higher poverty rates, lack of resources such as healthcare insurance, stable household income, and internet coverage, in rural counties compared to urban counties.¹

When evaluating the vaccination rates of NC in comparison to the US national average, NC has historically demonstrated better immunization rates. In 2014, 69% of NC residents over the age of 65 received their yearly influenza vaccine, compared to the national average of 61%.² As of July 30, 2021, 58% and 50% of the total US population have received at least one dose of the COVID-19 vaccine and are fully vaccinated, respectively.³ In NC, 50% and 47% of the population are vaccinated with at least one dose and fully vaccinated, respectively.⁴ These differences in immunization status become increasingly evident when the NC population is stratified by rural versus urban residence. In Robeson County, one of the most impoverished counties in NC, only 30% of the population has received at least one dose of the COVID-19 vaccine and a meager 27% of the population has been fully vaccinated (figure 2).⁴

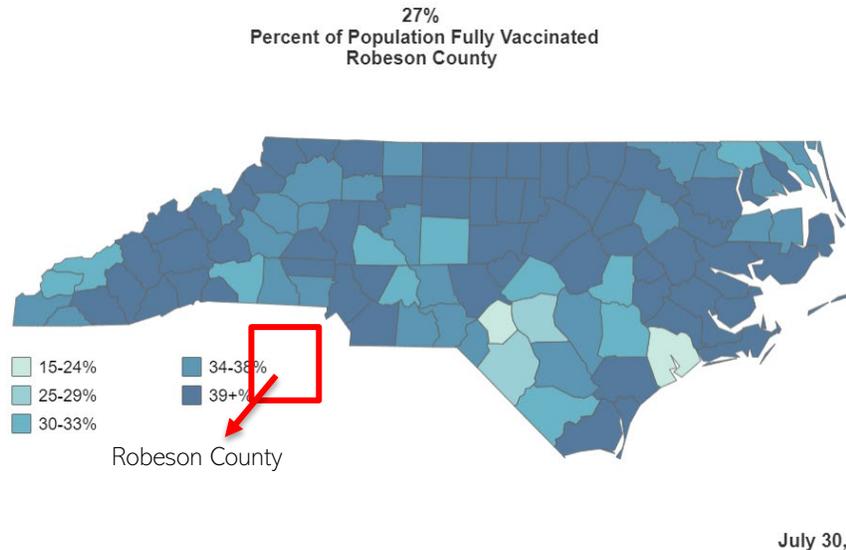


Figure 2: Only 27% of the population in Robeson County has completed the vaccination series for COVID-19.⁴
Reproduced with permission from the NC Department of Health and Human Services.

When interpreting NC vaccination rates and responses, it is important to consider the diversity in the state. Within Robeson County, multiple factors must be considered in order to develop specific strategies for increasing vaccination. In this white paper, we will use Robeson County as a test case to understand these unique barriers. We aim to: (1) describe historical barriers to vaccine hesitancy in NC, (2) explain the direct impact of these barriers on current COVID-19 vaccine hesitancy in rural Robeson County, and (3) offer culturally-sensitive, population-specific solutions to minimize, and ideally eliminate, barriers to vaccination in rural NC. Given that historical barriers to care are pervasive in NC, our proposed solutions may serve as a framework for other resource-poor communities in NC or elsewhere to improve current infrastructure or build new systems to tackle unmet medical needs.

Background

Vaccination rates in response to the COVID-19 pandemic greatly differ among rural and urban counties, with rural populations being the least vaccinated.⁴ In Robeson county, which as described above has one of the highest poverty rates in NC, COVID-19 vaccination rates are substantially lower than other counties.⁴ As part of the goal to better understand the specific barriers to vaccination in rural Robeson county, this paper will also evaluate historical drivers of vaccine hesitancy broadly in NC, and address potential solutions for improving vaccination disparities in rural populations. Several factors contribute to disparities in vaccination rates observed within rural counties of NC

including: (1) mistrust of the healthcare system, (2) misinformation and anti-vaccine rhetoric, (3) cultural observances, and (4) political affiliations.

A root cause of vaccination disparity is avoidance or delay in healthcare. This pattern of behavior has been recognized among rural Americans in particular.⁵ Delays in care and avoidance, including delayed vaccination, are associated with poorer health outcomes.⁵ A major contributor to avoidance of healthcare is not only living in rural residence, but lacking a regular provider, having less trust in physicians, and poorer provider rapport.⁵ In rural settings, there are often existing healthcare worker shortages, which further exacerbates the disconnect between healthcare workers and the patients they see. This creates obstacles to building provider rapport that could repair trust and engage patients in preventive care such as vaccinations.

Mistrust of the Healthcare System

Mistrust of medical systems has long been a part of American history in the form of unequal access to health care, the segregation of medical facilities, and the exclusion of African Americans from medical education.⁶ Medical advancements have occurred at the expense of minority populations including the Marion Sims mistreatment of black women for gynecological advancements, the 20th century sterilization of Puerto Ricans, Native Americans and African American women under eugenic laws, and the “Tuskegee Study of Untreated Syphilis in the Negro Male”—a study beginning in 1942 in which syphilis treatment was withheld from African American men for nearly 30 years.⁶ It has been shown that Native Americans in the United States have higher rates of medical mistrust and lower satisfaction with healthcare even when it comes to life-saving treatment for diseases with poor prognosis, similar to what is anticipated for COVID-19.⁷ It is critical to address health perceptions and attitudes when mistrust in the healthcare system is strong enough for patients to be hesitant to accept proven and life-saving therapeutics.

Misinformation and Anti-Vaccine Rhetoric

Due to a unique environment where access to and understanding of scientific information has become politicized, many media and social media avenues have become rife with misinformation. A robust anti-vaccine rhetoric has emerged as “vaccine-hesitant” and “vaccine-resistant” groups who are characterized differently from “anti-vaxxers” of previous eras. According to a recent report by the Kaiser Family Foundation, rural residents are most likely to be vaccine-resistant and say they will “definitely not” get the vaccine if given a choice, and among this group, misinformation is impacting their strong stance.⁸ The data show that even incentives and messaging claiming that vaccines are 100% effective at preventing hospitalization and death from COVID-19 or that the vaccine technology has been in the works for 20 years by scientists would not sway this group. More facts about vaccine efficacy are not driving decision-making factor.⁸ On the contrary, rural residents are more likely to think that news has exaggerated the severity of COVID-19 and that vaccines are a personal choice that do not affect others, which suggests misinformation embedded in false logic, mistrust, and more deeply-rooted history.⁸

Cultural Norms

In 2020, when the COVID-19 vaccine became available, the government gave indigenous communities the option of either receiving the vaccine through the state or through indigenous health systems. Due to historical maltreatment by healthcare professionals and cultural beliefs, most individuals chose to receive their vaccine through indigenous health systems. In Massachusetts and Oklahoma, vaccination supplies were distributed in a hierarchical order, first to tribal members, then to teachers, and finally, to non-tribal civilians.⁹ The reluctance to steer away from indigenous-supported medical systems may indicate a deeper mistrust of public health systems and highlights the importance of cultural notions and familiarity in medical decision-making among these

individuals. Immunization among Native American individuals is driven by a collective mentality and duty to others as opposed to individual rights and freedoms. Francys Crevier, a Native American woman, remarked “the language you hear throughout Indian country is to be a good relative. ‘Do this for the grandmas, do this for the ceremony, do this for the language, because our people are precious.’ We already lost a lot. We can’t afford to lose more.”⁹ This is in stark contrast to the rhetoric prominent in Southern states such as North Carolina, South Carolina, and Tennessee, protesting strict masking and vaccination guidelines that cites the infringement of individual freedoms. There is contrast between individualistic and collective motivations which form the foundation of cultural norms and practices. But both drivers are at play in propagating or attenuating hesitancy toward vaccination and solutions will need to acknowledge and embrace these differences.

“...be a good relative...because our people are precious. We already lost a lot. We can't afford to lose more.”

Political Affiliations

According to the CDC, the last recorded pandemic involved the influenza virus which wreaked havoc for 21 years before a vaccine was invented and distributed in the 1940s. Much like COVID-19, the president at the time of the original outbreak, Woodrow Wilson, underestimated the impact this virus would have on economy and American health, even remaining silent as he suffered from the flu. Woodrow Wilson, a representative of the Democratic party, responded similarly to Donald Trump, a representative of the Republican party, despite the massive loss of American lives.¹⁰ This historical perspective is invaluable in demonstrating that the federal response to a pandemic is not consistently correlated with one political affiliation or another. Rather, it exemplifies a critical opportunity for national leadership to propagate evidence-based information and inspire safe practices which prioritize human life above economic growth.

Findings and Impact

Data from the US Census Bureau Household Pulse Survey show that Robeson County is one of the most COVID-19 vaccine-hesitant counties in NC.¹¹ In NC, there is a correlation between certain population groups and vaccine hesitancy. According to this survey, Black, American Indian, Hispanic, and multiracial groups were more likely to be vaccine-hesitant. Additionally, vaccine hesitancy is increased in adults who did not obtain a high school diploma.¹¹ This underscores the importance of education in empowering adults to seek information from evidence-based sources such as peer-reviewed journals or CDC-approved websites. Educational achievement is correlated with other socioeconomic factors such as low median household income, poor living conditions, and suboptimal access to health care, which may concurrently affect vaccine enthusiasm.¹² The survey revealed that reasons for COVID-19 vaccine hesitancy include significant concerns about adverse effects, and general distrust of the vaccine and government administrations facilitating vaccine distribution and implementation. Respondents strongly desired to be informed of the long-term effects of the vaccine on fully-vaccinated individuals.

Robeson County is home to a diverse population, including 40% American Indian.¹³ When assessing the demographic character of Pembroke, a town in Robeson county, the overwhelming majority identify as American Indian (56%), followed by Black (21%), and White (17%).¹⁴ The American Indian population, specifically the Lumbee Indians, are a group of “miscellaneous” Indians who joined together to form a tribe nearly 200 years ago; however, they are not nationally recognized by the government.¹⁵ As a result, they do not receive an abundance of government benefits, including resources such as land and health care resources which are typically allotted to federally-recognized tribes. This forms the basis for distrust of the national government and federally-funded institutions such as public hospitals.

Tammy Maynor, a Tribal Administrator for the Lumbee Tribe, stated “there is...some level of distrust and concern about the vaccine amongst our community.” Given this deep-seated vaccine hesitancy, it is not surprising that Robeson County has the second highest number of COVID-19 cases per capita and has the highest poverty rate in the state. Dr. Joseph Bell, a pediatrician in the town of Pembroke, noted that a significant contributor to vaccine hesitancy he sees in his clinic is due to a belief that the government is not always working in the best interest of its people. In his experience, he has encountered the most resistance to immunizations from conservative Christians. He indicated that some parents, fueled by misinformation, will cite side effects such as infertility, developmental delays, and the insertion of computer chips, as their reasoning for vaccine refusal. Dr. Bell acknowledged his unique position, as a physician, to positively influence individual perceptions about the COVID-19 vaccine in rural communities because he is relied upon and trusted by community members. He further emphasized the role of the church pastor in educating county residents with evidence-based information and influencing medical decision-making, as he is a highly respected figure in many rural communities.

“My people [indigenous] have been used and manipulated by the government since the beginning. Why would we suddenly trust them telling us we need some vaccine now?”

While community leaders and healthcare professionals play an important role in dispelling myths and propagating evidence-based information, working-class community members such as Nancy Fields, the director of the “Museum of the Southeast American Indian” and curator at “University of North Carolina at Pembroke (UNCP),” play an important role by identifying drivers of vaccine hesitancy. From her perspective, political beliefs and affiliations are the greatest drivers of hesitancy. Historically, the county had voted Democratic for four consecutive elections. However, the Trump administration’s campaign platforms and messages resonated with this community and shifted the county to a Republican majority. Fields believes that vaccine hesitancy has notably increased due to the former administration’s messaging around mistrust of scientific support for the COVID-19 vaccine and promotion of economics over human health including a 15% increase in median household income from \$19,489 to \$22,321.¹⁶ Furthermore, UNCP is the only undergraduate and graduate institution in the area and thereby carries the responsibility of educating individuals pursuing a bachelor’s degree within this voting county. Institutional bias—including political affiliations demonstrated by educators, honored guest speakers, and administration—undoubtedly impacts the information accessible to and retained by students and trainees and may in turn propagate vaccine hesitancy.

Solution

While there are many factors that have historically propagated vaccine hesitancy, the conglomeration of our research findings and anecdotal evidence from residents of Robeson County all point to care avoidance as a principal reason for extraordinarily low immunization status. Care avoidance manifests in different ways; however, we propose that its root causes include general mistrust of the healthcare system, misinformation and anti-vaccine rhetoric, cultural norms, and political affiliations. Unfortunately, these factors continue to curb vaccination rates in rural counties of NC, especially Robeson County. Persistent vaccination hesitancy—even amidst a global pandemic—speaks to the powerful, deeply-rooted, conscious, and subconscious biases harbored by individuals who have previously been affected by barriers to care. Transparent communication, trust-building initiatives, and political activation are necessary to curb vaccine hesitancy. However, there is unlikely to be a universal solution that can be successfully implemented across the state. In analyzing the barriers to COVID-19 vaccination within

Robeson County, vaccine adoption is limited by a lack of information from trustworthy, culturally-accepted sources. We posit that the key to eliminating care avoidance and improving vaccine acceptance among underserved populations such as in Robeson County involves utilization of multiple trusted information sources, including community-engaged leaders within diverse societal strata of healthcare and academia, politics, and civilian life.

Healthcare & Academia: Medical Providers & Educators

Solutions for addressing vaccine hesitancy have been well-studied. Information sources have been shown to affect awareness and understanding of vaccination, and they may ultimately affect decisions to vaccinate. A randomized controlled trial on vaccine hesitancy found that 39% of parents identified the internet as a trustworthy source of information, and 14% identified the news or media as such.¹⁷ Web-based modalities are thus replacing traditional written educational materials including brochures and posters. It is also important to consider 'who' is delivering the information. A previous study on HPV vaccination in NC found that receiving information from healthcare providers was associated with increased vaccination rates among adolescent females.¹⁸ Conversely, hearing of HPV vaccination from academic institutions was not associated with increased adoption and vaccination rates; however, this may have been limited by a low number of parents recalling that schools provided vaccine information.¹⁸

As they currently exist, medical providers and academic leaders may not be an effective source to respond to care avoidance in Robeson County. Frayed governmental relations precipitated by lack of federal recognition and global cynicism regarding political factions within rural Robeson County, and especially the Lumbee tribe, translates to distrust of such medical facilities and mandates.

As the government has refused to officially recognize the Lumbee tribe and withheld necessary resources, anecdotal evidence from Robeson County medical professionals purports that tribal members oppose anyone viewed to have greater "power" or "authority" over them. Furthermore, due to poor access to healthcare in rural counties, Lumbee tribe members typically only seek care when disease processes have progressed to severe, and perhaps, irreversible states. In these situations, healthcare professionals, often employed at federally-funded institutions, are forced to recommend definitive treatment options including pharmacologic and operative interventions, as well as preventative health screenings. While this may be medically-necessary, the lack of shared decision-making and autonomy encountered in dire, emergent clinical situations, can be perceived by tribe members as an extension of the disrespect and discrimination historically demonstrated and propagated by the federal government. Providers in Robeson County and other communities will benefit from education on these historical mistreatments and efforts to repair the patient-physician dynamic to achieve sustainable progress.

Politics: Tribal Leaders

Solutions focusing on physicians and academic educators to serve as information sources applies poorly to Robeson County as (1) lower education level and lower socioeconomic status may limit access to these individuals, and (2) a large portion of the community turns to alternate sources of authority. The Lumbee tribe, for instance, annually elects community members (Table 1) to serve as leaders on an array of committees including: (1) Health and Human Services, (2) Education, Culture, and Public Relations, (3) Federal Recognition, and (4) Finance, among others.¹⁹

Anonymous anecdotal data from medical professionals of Robeson County suggest that community members would be most receptive to adoption of vaccination recommendations if endorsed by tribal committee leaders.

Conflicting COVID-19 guidance early in the pandemic from government-affiliated educators (such as those surrounding mask guidelines), may have deepened the tribe's collective mistrust.

Addressing vaccination hesitancy in the context of this historical lens emphasizes the importance of partnering with tribe-elected committee officials to liaise with administrators of government-run programs (i.e., vaccination campaigns) in order to ensure maximal advocacy of minority groups and improved access to healthcare resources.

Civilian Life: Parent Social Networks

In addition to tribal leaders, parents' social networks could be valuable for messaging broadly throughout Lumbee culture. Communicating through parents' social networks has been previously identified as a strong predictor of vaccine acceptance.¹⁷ In a Pakistani study, trusted community members attended informational meetings to discuss immunization rates, costs, and benefits of childhood vaccines, and they were encouraged to spread positive messages throughout their community. A year later, a follow-up survey showed a significant increase in the uptake of diphtheria pertussis tetanus vaccination in the study group compared to controls.²¹

The solution to decreasing vaccine hesitancy in Robeson County may benefit from partnering with tribe-elected committee officials, religious figures, and well-accepted members of small communities to serve as primary information sources, rather than schools, physicians, or even media. Within the recent months, the Lumbee tribe has begun advertising free COVID-19 testing on their website, which may reflect initial stages of such developments.²⁰

Conclusion

Vaccination hesitancy, measured by increases in COVID-19 cases and decreases in percent of fully-immunized individuals, was markedly higher in rural counties of NC in comparison to urban counties. Robeson county, a highly-impooverished, resource-poor, minority-rich, vaccine-naïve area, served as the epicenter of our analysis on factors that contribute to persistent vaccine hesitancy. Mistrust of the healthcare system, misinformation and anti-vaccine rhetoric, cultural norms, and political affiliations have served as the impetus for deeply-rooted refusal of immunizations. Anecdotal evidence from tribal leadership, healthcare professionals, and civilians from Robeson County resoundingly echo the impact of historical drivers of vaccine hesitancy in propagating current anti-vaccine behaviors, even amidst the global COVID-19 pandemic. We see that success in combatting vaccine hesitancy in Robeson county will center on engaging respected officials such as the Lumbee tribe committee members and religious leaders who will effectively, (1) advocate for federal support in improving accessibility to healthcare without interference from unfamiliar health professionals, (2) serve as trusted sources of evidence-based information who dispel anti-vaccine rhetoric, (3) redefine cultural norms and observances in a conscientious, culturally-sensitive manner, and (4) be an equal and liaise with government officials as county-elected representatives of the people. Lessons learned from Robeson County could be invaluable in attenuating vaccine hesitancy in Halifax, Scotland, Tyrell, Watauga or other counties which are similarly minority-rich and resource-poor. North Carolina needs to narrow the gap in vaccination disparities between rural and urban locales.

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Appendix

Table 1: List of Lumbee Tribe Committees and Elected Officials¹⁹

2021 COMMITTEES		
1. CONSTITUTION AND ORDINANCES	4. FEDERAL RECOGNITION	8. Ethics
Wendy Moore - Chair	Dewey J McNeill - Chair	Corbin Eddings - Chair
Ted Woodell - Vice Chair	Sharon Hunt - Vice Chair	Ricky Burnett - Vice Chair
Carvicous Barfield - Secretary	Ricky Burnett - Secretary	Sharon Hunt - Secretary
Gerald Goolsby	Carvicous Barfield	Gerald Goolsby
Harold Smith	Gerald Goolsby	Harold Smith
Pam Hunt	Harold Smith	Pam Hunt
Terry Hunt	Pam Hunt	Ted Woodell
Carrington Locklear	Wendy Moore	Wendy Moore
Larry Chavis	Larry Chavis	Carrington Locklear
Richard Jones	Richard Jones	Larry Chavis
Reginald Oxendine	Yvonne Dial	Richard Jones
Yvonne Dial	Alvin Mercer	Reginald Oxendine
Alvin Mercer	Corbin Eddings	Dewey J McNeill
Corbin Eddings	Terry Hunt	Marshil Locklear
Dewey J McNeill	Marshil Locklear	Terry Hunt
Marshil Locklear		Shelley Strickland
Chocajuana Oxendine	5. FINANCE	9. HOUSING
Shelley Strickland	Pam Hunt - Chair	Terry Hunt - Chair
Annie Taylor	Sharon Hunt - Vice Chair	Alvin Mercer - Vice Chair
Ricky Burnett	Harold Smith - Secretary	Pam Hunt - Secretary
2. ECONOMIC DEVELOPMENT	Carvicous Barfield	Dewey J McNeill
Gerald Goolsby - Chair	Gerald Goolsby	Annie Taylor
Ricky Burnett - Vice Chair	Ted Woodell	Carrington Locklear
Dewey J McNeill - Secretary	Wendy Moore	Corbin Eddings
Sharon Hunt	Larry Chavis	Marshil Locklear
Harold Smith	Richard Jones	Sharon Hunt
Pam Hunt	Marshil Locklear	Ted Woodell
Ted Woodell	Corbin Eddings	Harold Smith
Wendy Moore	Dewey J McNeill	Gerald Goolsby
Larry Chavis	Annie Taylor	Reginald Oxendine
Richard Jones	Ricky Burnett	Wendy Moore
Alvin Mercer	Terry Hunt	Richard Jones
Corbin Eddings	6. HEALTH AND HUMAN SERVICES	Yvonne Dial
Terry Hunt	Marshil Locklear - Chair	Shelley Strickland
Marshil Locklear	Wendy Moore - Vice Chair	Ricky Burnett
Shelley Strickland	Dewey J McNeill - Secretary	Larry Chavis
3. EDUCATION, CULTURE, AND PR	Sharon Hunt	10. LNTP
Yvonne Dial - Chair	Gerald Goolsby	Ricky Burnett - Chair
Corbin Eddings - Vice Chair	Harold Smith	Corbin Eddings - Vice Chair
Carvicous Barfield - Secretary	Pam Hunt	Sharon Hunt - Secretary
Gerald Goolsby	Richard Jones	All 21 Tribal Council Members
Harold Smith	Yvonne Dial	
Pam Hunt	Corbin Eddings	
Ted Woodell	Ricky Burnett	
Wendy Moore	Terry Hunt	
Richard Jones	7. Agriculture/Natural Resources	
Reginald Oxendine	Ted Woodell - Chair	
Dewey J McNeill	Wendy Moore - Vice Chair	
Chocajuana Oxendine	Chocajuana Oxendine - Secretary	
Ricky Burnett	Carvicous Barfield	
Terry Hunt	Gerald Goolsby	
Alvin Mercer	Harold Smith	
Marshil Locklear	Pam Hunt	
	Carrington Locklear	
	Richard Jones	
	Yvonne Dial	
	Alvin Mercer	
	Corbin Eddings	
	Marshil Locklear	
	Ricky Burnett	
	Terry Hunt	

Vaccine Inequity in North Carolina: Understanding the Root Causes

By Laura E. Lavette, Mimi Smith, Adaugo Iwuala, Caroline Coggins, Cody Phen, Shashank Rajkumar



Introduction

Recent disparities in the distribution of COVID-19 vaccines highlight how social determinants of health (SDOH) play an important role in vaccination status and ultimately health outcomes. In April 2021 during the early stages of vaccine distribution, only 17% of North Carolina’s African American population had received the COVID-19 vaccine, although African Americans make up 23% of the total state population. This difference was even more prominent in areas such as Durham County, where 38% of the county’s population is African American; however, only 25% of African Americans had been vaccinated. Similarly, 6.7% of the Hispanic population in North Carolina had received at least one dose, while this group makes up nearly 10% of the population. These numbers are in stark contrast to those of Whites, who make up about 72% of North Carolina’s population and accounted for 70% of vaccinated individuals.¹ Although vaccination rates have become more representative of the true population since April, these early disparities resulted in disparities in COVID-19 related morbidity and mortality and are emblematic of larger systemic issues in healthcare.

While close monitoring of distribution and concerted efforts in the COVID-19 vaccine rollout have helped to uncover discrepancies in distribution to minority populations, these disparities are not unprecedented. Data from the National Immunization Survey shows that the gap between non-Hispanic White and non-Hispanic Black childhood vaccination status (i.e., measles, HPV, and pertussis) is widening, not

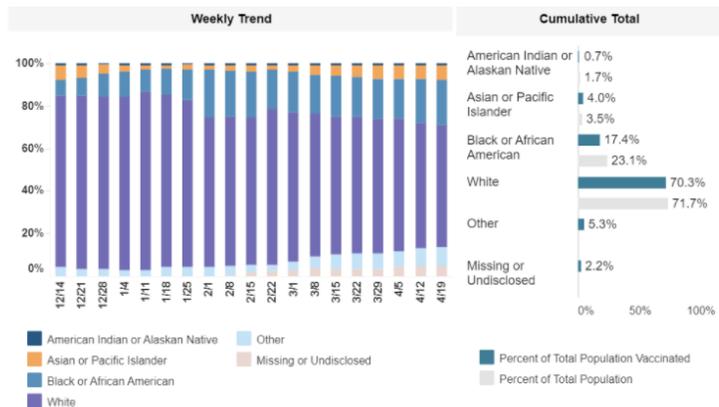


Figure 1. Percent of North Carolinians vaccinated with at least one COVID-19 dose by race. Reproduced with permission from The NC Department of Health and Human Services.¹

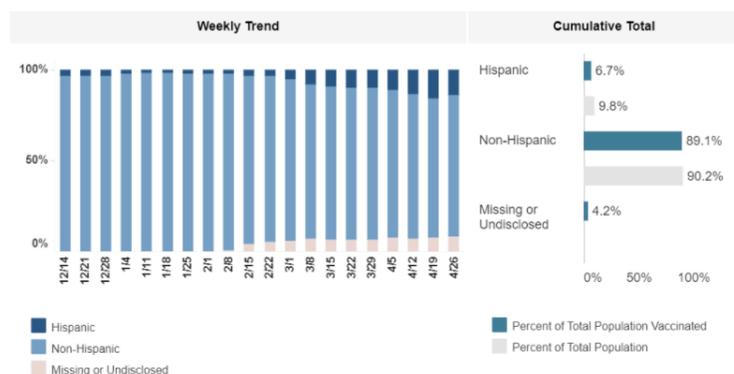


Figure 2. Percent of North Carolinians vaccinated with at least one COVID-19 dose by ethnicity. Reproduced with permission from The NC Department of Health and Human Services.¹

narrowing.²⁻³ Studies continue to link vaccination status to SDOH, suggesting that solutions will require addressing deeply rooted policies, social structures, and political systems in the United States.

Understanding discrepancies in vaccination status requires defining the concepts of disparity and inequity. Disparities in vaccination indicate a difference in the number of vaccines distributed to White versus non-White populations. Vaccine inequity refers to *why* the disparity might exist; in other words, a result of injustices and biases in policies and systems.⁴⁻⁶ To understand disparities in COVID-19 vaccination status based on race and use this information to combat disparities broadly, we must delve into systemic barriers that have become apparent during the COVID-19 vaccine distribution. In this white paper, we aim to achieve three goals: (1) describe how SDOH drive inequity in vaccine distribution; (2) explain the direct impact this has on the state of North Carolina; and (3) offer potential solutions to minimize SDOH and achieve equitable distribution of public health interventions, such as the COVID-19 vaccine.

Background & Significance

Vaccine inequity is a multifactorial problem and is driven by at least three major SDOH: access to care, language barriers, and mistrust of the healthcare system.

I. Access & Transportation

Access to care is a key factor in ensuring equitable distribution of public health interventions. Lack of transportation can hinder one's access to adequate healthcare, including vaccination. Difficulty accessing transportation can result in rescheduled or missed appointments, delayed care, and poor medication compliance.⁷ Racial disparities are often exacerbated by transportation barriers, with only 66.8% of American Indians in North Carolina living within 10 minutes of a hospital.⁸ Additionally, studies have shown that 50% of trips made by African Americans for medical or dental care take at least 30 minutes; for their White counterparts, only 25% of trips require more than 30 minutes.⁹

Individuals in rural areas may experience structural barriers to accessing reliable transportation, which further impedes patients from seeking preventative care.¹⁰ Studies have confirmed that patients who must travel farther to medical facilities are more likely to delay or forgo care, highlighting the importance of addressing transportation barriers.⁸ The two-dosage requirement for the Moderna and Pfizer vaccines and other childhood vaccines increases the stress of finding reliable transportation. Furthermore, access to free vaccination is often compromised by systemic challenges, such as underinvestment in healthcare providers and services in disadvantaged communities.¹¹ Together, these issues highlight the need to re-think current accessibility of public health interventions such as vaccinations and necessary screenings.

II. Language Barriers

Language barriers act as another driver of health disparities. Patients who cannot effectively communicate often face significant injustices in obtaining parity in their care. Though some hospitals and clinics have attempted to overcome these issues by mandating the use of interpreters, this leads to increased communication time, lengthier visits, and can contribute to less information being shared between the provider and the patient.¹² Language barriers also discourage patients from asking clarifying questions, as they can be unsure how to ask, when it might be appropriate, or worry they might be bothering a busy provider.¹³ These barriers have important consequences, including a lack of closed-loop communication and inadequate patient education and understanding (i.e., instructions prior to surgery, updated medication regimens, or importance of follow-up).¹⁴⁻¹⁵

Additionally, language barriers play a role in vaccination status, with non-native speaking populations less likely to receive appropriate vaccines. This theme is seen widely, with 20% of pediatricians in Germany attributing inadequate vaccination to language barriers.¹⁶ Additional studies have shown a strong correlation between English proficiency and the receipt of the HPV vaccine in Vietnamese-American women and West Australian students.¹⁷⁻¹⁸

More timely reports on the COVID-19 vaccination point to language barriers as a hurdle to wide and equal distribution of the vaccine for several reasons. First, local governments have provided limited vaccine information in languages other than English. Second, online registration system requires completion of multiple pages of documentation and navigation of various browsers adding hurdles for non-English speaking residents.¹⁹⁻²¹ In order to effectively combat inequities in vaccine distribution, consideration of language barriers is essential.

III. Mistrust

It is imperative to discuss trust within the healthcare system to fully understand disparities in vaccine distribution. Only 14% of African Americans and 34% of Latinx Americans believe the COVID-19 vaccines are safe.²² Similarly, only a small portion of these populations believe the vaccines are effective for their specific racial or ethnic groups.²² This skepticism highlights underlying challenges with trust in the healthcare system.

Inadequate representation in research is a major contributor to medical mistrust. In 230 U.S.-based viral and bacterial vaccine trials from 2011-2018, African American and Latinx populations were underrepresented in both pediatric and adult trials, while White populations were overrepresented compared to the general population.²³ This sets a false standard that safety evaluation by subgroup is not needed, leading to gaps in medical knowledge and teaching for diverse patient populations.

Vaccination involves trust on multiple levels: the product, the provider, and the policymaker.²⁴ Interviews and focus groups involving White and African American urban and rural populations in Maryland found that trust in pharmaceutical companies, the healthcare industry, and the government were the main drivers behind participants' trust in influenza vaccines.²⁵ A survey of 1,643 participants across the United States revealed that African Americans reported racial fairness and frequency of discrimination as having a significantly greater impact on their attitudes and understanding of vaccines when compared to their White counterparts, who were more trusting.²⁶ Importantly, medical mistrust can lead to vaccine hesitancy. Those with increased mistrust are more likely to avoid preventive or primary care.²⁷⁻²⁸ Vaccine hesitancy must be addressed with specific strategies that fit the context and need of each community.²⁹

Impact on North Carolina

Vaccine disparities are especially prevalent in North Carolina due to the state's significant rural population, increasing diversity, and damaged relationships between health systems and their communities. These characteristics make the state especially susceptible to inequities in vaccination status and health outcomes.

In 2019, 40% of the state's population lived in a rural county. The majority of North Carolina's rural counties are composed of more than 50% African Americans, with the highest being Bertie, Hertford and Edgecombe counties.³⁰ In fact, North Carolina's COVID-19 vaccine tracking system indicates that vaccination rates in Hertford and Edgecombe counties still significantly lag behind North Carolina's average. These statistics shed light onto how minority groups may have more difficulty obtaining quality care based solely on where they live and their limited access to transportation and healthcare resources.

Additionally, North Carolina is an increasingly diverse state and has experienced significant growth in its immigrant and non-native populations. It is estimated that by 2030, 41% of North Carolinians will be people of color. In fact, Hispanic, Asian, and multiracial children have accounted for nearly 100% of growth in North Carolina's pediatric population since 2010.³¹ Although the state's population is becoming increasingly diverse, this is not reflected in the makeup of the healthcare workforce and may contribute to inequity and biases within the medical system.

Finally, the history of medicine and research in North Carolina has brewed mistrust in the healthcare system. For example, The Northfield Laboratory PolyHeme trials conducted at Duke University Hospital were performed with the community's consent, yet with very few representatives from minority groups. Once it was determined that the PolyHeme trials resulted in worse patient outcomes, trust between minority communities and larger healthcare systems was hindered.³² Historical examples such as the PolyHeme trials show how trust may be systematically undermined over the course of decades.

Proposed solutions

As we have discussed three major hurdles to equitable vaccine distribution, we will address each of these barriers and offer reasonable, timely solutions to promote vaccine equity.

I. Access & Transportation

There are many solutions that can be implemented to alleviate the burden of transportation, some that have already been trialed in the state of North Carolina during the COVID-19 pandemic. Mobile vaccination clinics can serve residents who are unable to leave their homes or are geographically far from the closest healthcare center. The University of North Carolina has piloted these efforts by using Federal CARES Act funding to deliver vaccines to rural populations.³³ Healthcare centers can also partner with local community gathering centers, such as town halls, churches, or recreation centers, to bring resources to more central locations for residents. For example, in Wilson County, patients seeking COVID-19 vaccines can receive the Moderna vaccine at Kairos Church Ministries in addition to traditional healthcare centers.³⁴ Expanding these efforts is key to reducing transportation barriers that lead to compromised access to care and vaccination.

Another way we can address physical barriers to accessing care is more routine implementation of telehealth. Telehealth mitigates barriers such as finding or affording transportation and eliminates travel time for working individuals. Telehealth has been shown to be comparable to in-person clinical assessments. Specifically, physical therapy telehealth examinations of rotator cuff pathology were found to be diagnostically equivalent (with 45% accuracy) to the more traditional examinations performed in clinic.³⁵ Telehealth provides an effective and efficient alternative for those who are unable to consistently show up to screening and follow-up appointments.

II. Language Barriers

We must continue to work towards bridging the gap between languages to promote clearer communication. Increasing the availability of interpreting devices (iPads, telephone service, in-person interpreters, etc.) in all hospitals, outpatient clinics, and rural healthcare centers may help to lessen the language burden when interpreters are not available. Additionally, all documents, including medication instructions, consent forms, and informational handouts, should be available in different languages. This could be achieved through a central online portal that

includes common documents in a variety of languages, one that can be quickly printed and distributed in both inpatient and outpatient settings.

Language should also be a consideration when scheduling appointments and allotting time to patients. By blocking out an additional ten to fifteen minutes for non-English speaking patients, providers might feel less pressure to move quickly or take short-cuts. This would also provide a built-in barrier for potential technical difficulties or wait times associated with translating services. Beyond the aforementioned strategies, acknowledging the existence of language barriers and making purposeful moves towards mitigating them is the first step.

III. Mistrust

Vaccine acceptance is complex and involves trust in multiple players, including the product, provider, and policy-maker.³⁰ Increasing accountability of those who sell and distribute the product requires citizens and healthcare workers to do their research, stay up-to-date on new products and leading treatments, and have an honest relationship with manufacturers. Providers must hold themselves accountable by not only understanding the risks and benefits of vaccinations, but also acknowledging the many reasons for patient hesitance.⁸ Policy-makers should prioritize the people of the community, advocate for their care, and promote healthy decisions, such as getting vaccinated or staying home when sick. Working with leaders and trusted figures within local communities to create promotional content is another effective strategy to encourage vaccination.

As students in healthcare, we have the power to influence the healthcare system by adopting a patient-centered approach to care. We can make a purposeful effort in educating ourselves on the culture and history of the communities we serve. Cultural competency courses or supplemental educational seminars may increase provider awareness and help to counteract negative stigmas. This will in turn allow us to remain informed as we communicate with patients, answer questions, and clarify misconceptions. To truly make an impact on the healthcare system, we can advocate for patients that are commonly marginalized and try to remain aware of our own biases and unfounded assumptions.

Conclusions

We have addressed three significant drivers of vaccine inequity: limited access to care, language barriers, and mistrust in the healthcare system. Discrepancies in COVID-19 vaccine distribution have helped to shed light onto deeply rooted systemic issues that affect health outcomes across the country.

During our clinical rotations and internships, we can be leaders of change and educate others on (1) potential benefits of telehealth for increasing access to care, (2) the importance of taking the time to clearly communicate to non-English speakers, and (3) the role of transparency and cultural competency in developing trusting patient-provider relationships. We hope that by tackling access, language, and mistrust, we can more effectively work towards an equitable healthcare system that provides quality care to all populations in our state and ultimately our nation.

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Access and Distribution of COVID-19 Vaccine Resources Among Black Communities: The Importance of Trust

By Hunnain Siddiqui, Kira Panzer, Logan Oyler, Mariah Leroux, Michaela Kaltner, & Wesley Maughon



Introduction

The year 2020 brought to the forefront of America's mind the presence of institutional racism that has existed across the nation for centuries. With the murders of George Floyd, Breonna Taylor, Ahmaud Arbery, and countless other victims, the inequities present in our social justice system have been put on full display for the world to see and given rise to social movements. The reinvigoration of this social injustice movement has reminded us of the mistrust of institutions, including the U.S. healthcare system, that often exists within Black communities.¹ As a pandemic that disproportionately affects Black Americans persists, this institutional distrust has extended to concerns regarding the developmental process of the COVID-19 vaccine. Specifically, many Black Americans have raised concerns regarding the vaccine's efficacy and adverse effect profile, equitable resource distribution, and recommendations from individual healthcare providers and public health agencies alike.¹

As healthcare providers, the task that we now face is in ensuring that historically marginalized populations are able to receive safe and effective vaccines that are equitably delivered to end the COVID-19 pandemic. In order to ensure nondiscriminatory practices, we must first analyze the historical context in which institutional distrust of healthcare has originated in Black communities. In this white paper, we will explore the historical context that delineates healthcare provider and public health mistrust within Black communities, compile a list of relevant vaccine-related information and resources for distribution, review successful strategies to improve vaccination among marginalized populations, and propose how these findings could be leveraged for future pandemics or challenges with healthcare injustice and inequity.

Background & Significance

Vaccination of Black populations in the U.S. remains a significant priority in national and local vaccination efforts, as Black Americans have contracted and died from COVID-19 at disproportionately higher rates than most non-Black populations across the country, particularly in the early stages of the pandemic in the U.S.² However, a recent

Genetic Literacy Project poll revealed that "45% of Black men and 41% of Black women are more likely than any other group to 'wait and see' how the COVID-19 vaccine works for others" before taking it. Half of Black men and women (45% and 53% respectively) say they trust the healthcare system "only some" or "almost none,"³ highlighting the contextual complexity of vaccine hesitancy among this population.

It is well-documented that historical and present-day examples of racial maltreatment have contributed to a culture of mistrust of the healthcare system among Black populations, including unanesthetized experimentation on enslaved Black women by James Sims, "the father of modern gynecology," in the 1840s,⁴ as well as the 1932-1972 Tuskegee Experiment, wherein syphilis treatment was withheld from patients without their knowledge or consent, resulting in the death of 128 Black men.⁵ Regrettably, far-reaching racial inequalities persist in medicine still as an extension of socioeconomic disparities and implicit biases of healthcare providers. For example, infant mortality of Black babies is twice the national average,⁶ and Black patients are less likely to receive pain medications than other racial groups, reportedly due to the unsubstantiated perception of racial differences in pain tolerance.⁷

These medical atrocities and racial injustices have resulted from a combination of deception, a lack of transparency, and inadequate representation of Black Americans and people of color within federal agencies and public health organizations. It is thus unsurprising that there has been hesitancy regarding the COVID-vaccine among many Black Americans. Despite the fact that racial and ethnic minorities have disproportionately been affected by the pandemic,⁸ many Black Americans view the national goal to achieve swift, widespread vaccination with a sense of hesitancy, skepticism, and even mistrust.⁹ This stems from the racial inequities embedded within governmental institutions and the evolution of medicine.¹⁰

Findings and Impact on North Carolina

In North Carolina, as in the rest of the United States, the Black population has been disproportionately affected by the COVID-19 pandemic. Though only 22% of the population of North Carolina is Black,¹² 25% of those who have died from COVID-19 are Black or African American.¹⁴ This disparity highlights the need for resources and infrastructure around vaccination for the Black community in North Carolina, not only to combat the disparities in access, but also to combat the mistrust in the healthcare system that has arisen from historical and ongoing inequality and maltreatment. For example, in one study in which 2.4 million North Carolinian adults reported that they were hesitant to get the COVID-19 vaccine, Black respondents were much more likely than white respondents to self-report as vaccine hesitant (39% vs. 26%).¹⁶ This same survey stated that "older, more educated, or higher income adults were more likely to report [inclination to] vaccination. This statement, along with the 936,000 (39%) citizens that are hesitant to the vaccination highlight the systemic problems present at both individual and socioeconomic levels, as well as the widespread skepticism born out of the vaccine's rapid development.

The COVID vaccine was one of the most rapidly developed and disseminated vaccines in history, with the first dose available to qualified groups in December 2020 after only 11 months of development. Anecdotally, its rapid development is viewed by some patients, and most providers, as an exemplification of scientific capability as the extensively researched messenger RNA vaccine was finally brought to fruition. Other patients view the expedited development process as a risky undertaking with potential for unforeseen consequences. This fear, coupled with

existing distrust, and a vaccine sanctified with emergency use authorization from the FDA rather than full approval has left many with the “wait and see” mentality previously mentioned. A successful vaccine is only as effective as its acceptance among a given population. A study of 948 participants, 59.6% of whom were Black, from nine counties across NC done from August 2020 to December 2020 showed vaccine hesitancy of 74%.¹³ It has been almost nine months since the vaccination was first available and six months since it was available to all adults in the US. However, vaccination rates in July 2021 show only 47% of the population being fully vaccinated and 50% of the population having received one dose, according to NCDHHS. Demographics show that while the Black population (the second largest category by race) in NC accounts for 22% of the total, only 18% have received at least one dose. This is contrasted with the non-Latino white population which accounts for 72% of the NC population, of which 65% have received at least one dose by July 2021.

Trust, or a lack thereof, can make all the difference in a patient's perception of the vaccine. Imagine a scenario in which a patient analyzes the vaccine's preclinical data and observes a high rate of efficacy in spite of the speed in which it was developed and feels compelled to be vaccinated as a result. We can presume that this patient views the vaccine's success within a schema shaped by inherent trust that the very system in which the vaccine was created is one designed to benefit the patient. Alternatively, imagine a patient who perceives the status quo as a barrier to their well-being. That is, imagine that the patient perceives the establishment that facilitated the vaccine's rapid development as a threat. Furthermore, consider the fact that the status quo was founded upon marginalizing people of color. Objectively, each patient reviews the same preclinical data; yet, their subjective perceptions are influenced by their individual level of fundamental trust for the healthcare system and the establishment as a whole. Perhaps then progressing towards a fair and just society in which the safety and well-being of all individuals are valued is the key to establishing the foundational trust necessary to enhance perceptions of the vaccine. Unfortunately, statewide vaccination data reveal that several barriers to trust still exist.

Vaccine hesitancy and mistrust within Black populations is reflected in aggregate across North Carolina and as of June 15, 2021, a total of 4,633,480 people residing in North Carolina have received at least one dose of the COVID-19 vaccine, which is 44% of the population of the state.^{12,17} Of these 4,633,480 people, only 791,741 (17%) have been reported as Black or African American, though there are 2.3 million Black or African American Residents (that 22% mentioned above) in NC.¹⁷ To put these numbers in perspective, 41% of the White population of North Carolina has received at least one dose of the COVID-19 vaccine (close to the 44% of the total population), while only 33% of the Black population has received at least one dose.¹⁷ Through both structural inequality and mistrust resulting from historical maltreatment, the Black community in North Carolina is put at disproportionate risk during the COVID-19 pandemic, and a multi-pronged approach is needed to remedy this disparity.

These numbers and percentages (which only represent NC) of patients may be hard to fathom, but on a patient-to-patient level it may be easier to understand. In January of 2021, we as students associated with medical hospitals were offered our COVID vaccinations, which we accepted with enthusiasm. We trusted that those who developed the vaccine knew much more about virology and pharmacology than we perhaps ever will. We trusted

that the Emergency Use Authorization protocol set in place by the FDA was mandated in a way that was safe and effective and followed data from clinical trials. With that mentality, we and our peers received our vaccines, tried to stay up to date on developing information, and began trying to persuade others to get their vaccinations as well to “flatten the curve” and end the pandemic.

While this mentality may represent the writers, most healthcare professionals and 47% of the NC population, the other 53% convey a different mentality. In April 2021, an elderly female patient with a history of a stroke and emphysema secondary to smoking came to the clinic for a routine visit. When asked if she had received her COVID vaccine yet or if she planned to get it, her response echoed the inverse of all the things we trust and take for granted: “I don’t know what is in that shot or what it might do to me one day and if I get sick, I will deal with that when it comes.” The potential for serious pulmonary problems or even death (real and plausible to us) was not tangible to her, but the history of government sanctioned atrocities paired with unknowns was. While providers may brush this mentality off as ignorant or outdated, it represents real fear, real distrust, and millions of real people just like this patient.

Solutions for North Carolina

As with the rest of the nation, North Carolina faces tremendous hurdles to building trust, decreasing vaccine hesitancy, and increasing vaccination rates, particularly among Black and marginalized populations. Vaccine hesitancy among Black populations in particular is a complex, multifaceted issue rooted in mistrust of healthcare institutions on a macro-scale, and, in turn, mistrust of healthcare providers. As such, interventions oriented toward establishing the trust necessary to increase vaccination rates can be divided into those implemented on a patient-level versus a population-level, respectively.

To build trust among Black patients, healthcare providers must seek to establish rapport with each patient on an individual basis through engaging in effective interpersonal communication. Just like the aforementioned patient, each individual has specific fears and hesitations. Despite the fact that effective patient-provider relationships are crucial to patient care, healthcare providers tend to fail in establishing positive connections among patients of color. According to a systematic review assessing implicit racial bias among healthcare professionals conducted by Hall et al., patient-provider interactions involving people of color are often characterized by condescending communication styles, fewer requests for patient input about treatment decisions, less frequently demonstrated positive emotions, and less patient-centered care overall.¹⁰ It is essential for healthcare providers to be mindful of these tendencies. Maintaining empathy and authenticity, practicing active listening, assessing body language, and creating a safe environment that is free of judgement are critical, while also taking care to avoid verbal dominance and condescending behaviors. Furthermore, in order to genuinely express the empathy needed to establish a meaningful rapport, providers must understand the historical context in which institutional distrust of healthcare exists, as well as the notion that value systems are not objective. That is, many Black Americans are expected to operate within the value system that is subjectively deemed customary by their white counterparts. As it relates to the COVID-19 pandemic, this includes understanding, acknowledging, and validating Black Americans’ vaccine hesitancy within the framework of centuries-long medical exploitation while also providing consistent, reaffirming, evidence-based messaging regarding the health benefits of the vaccine.

In addition to interpersonal relationships at the patient-provider level, population-based public health strategies show potential in facilitating trust on a larger scale. One far-reaching example of a successful vaccine strategy grew out of Western North Carolina following the onset of the pandemic, with a collaborative effort from major hospitals, nursing facilities, MAHEC, and other healthcare resources. Together, a vast network of information and resource sharing has been occurring in Buncombe and Henderson counties, which has culminated in the My Reason WNC Campaign, a “regionally crafted [and] locally branded” campaign that delivers information to hard-to-reach communities that are “positive [and] evidence based.” The campaign also created a toolkit that was made available for any institution of community organization to utilize to spread information and counter misinformation. Internal studies by the campaign report that 39% of respondents to their surveys report that the campaign changed their perspective on the vaccine.¹⁵ Although the article by the NC Medical Journal did not specifically state achievements for Black communities, it did discuss the campaign's efforts to partner with community leaders and organizers to reach marginalized communities. This campaign, which has taken place in two counties, is showing a path forward not for only North Carolina, but nationwide. Resources and information need to be shared, and although the task ahead is large, to be successful it must be approached with a grassroots mindset.

The following table outlines other resources that may be used to address various aspects of vaccine hesitancy in the Black community. While some address a broader audience, all are a wealth of information designed for patient education. Two resources address concerns specifically held by the Black community: mistrust of the American healthcare system and questions about vaccines related to fertility and pregnancy.

Table 1: Patient Educational Resources

Source	Information shared	Available languages	Link
North Carolina Department of Health and Human Services	Vaccine locations, vaccine information and FAQs, communications toolkit, etc.	English, Spanish	https://covid19.ncdhhs.gov/vaccines
CDC	Vaccine EUA Fact Sheets	English	https://www.cdc.gov/vaccines/covid-19/eua/index.html
American College of Obstetricians and Gynecologists (ACOG)	Patient resource page with FAQs about COVID-19 and vaccines in pregnancy	English, Spanish, Simplified Chinese, Arabic	https://www.acog.org/womens-health/covid-19?_ga=2.22781243.1429041878.1606766172-1227270672.1556718826

Kaiser Family Foundation and Black Coalition Against COVID	"Between Us, About Us": video discussion between W. Kamau Bell and Black healthcare providers about COVID vaccines	English	https://www.youtube.com/watch?v=qp6S4C6zG_M
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Conclusion

As discussed, COVID-19 vaccine hesitancy among Black individuals is a complex issue consisting of unjust history, institutional racism, and medical misinformation. Offering a universal recommendation to such an intricate issue is likely to prove ineffective. Instead, healthcare providers are encouraged to take the time to evaluate and address each individual's underlying concerns on a case-by-case basis. Important aspects of this patient-centered model include maintaining a sense of empathy and authenticity when offering COVID-19 vaccine information, remaining well-versed on up-to-date COVID-19 vaccination information (e.g. timing, mRNA vs. DNA, vaccine effectiveness, etc.) and establishing partnerships with community leaders.

In order to effectively disseminate COVID-19 vaccine information to vaccine-hesitant individuals, it is essential that healthcare providers first establish trust and rapport with each patient. Maintaining a sense of empathy through understanding the historical context in which medical mistrust originated is also key. Although a bit trite, this quote by famous Chinese philosopher Confucius rings as true as ever for providers today: "study the past if you would define the future." It is vitally important to recognize and fully comprehend the root of vaccine hesitancy in the Black community in order to address concerns adequately and increase vaccination rates among this population that has been made particularly vulnerable to the COVID-19 pandemic as a result of systemic racism. Armed with this knowledge, along with accurate and culturally sensitive answers to the specific concerns of this community, providers across the state of North Carolina and beyond can work together to address this issue at the individual and population levels. Approaching vaccine hesitancy from this perspective will benefit not only the Black community but will invariably benefit our society as a whole by bringing the pandemic to a quicker end.

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