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COMMENTARY

Preserving Vision in the COVID-19 Pandemic: Focus on Health Equity

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Abstract: The coronavirus 19 (COVID-19) pandemic has overwhelmed our healthcare systems and caused the deaths of tens of thousands of Americans. Black and Hispanic individuals comprise a disproportionate number of those deaths, primarily because of pre-existing health conditions such as hypertension, obesity, and asthma. Health inequities that underlie these disparities also exist within ophthalmology around the world, and more ophthalmologists should advocate for healthcare reform that advances health equity. Immediate actions to reduce health disparities in ophthalmology during the pandemic include taking time to ensure all ophthalmology leadership and industry is diversified with people reflecting the fabric of their countries, embracing telemedicine to increase access to medical care, and advocating for legislation that will increase health insurance coverage during this unprecedented time. Longitudinal actions include recognizing structural racism as a root cause of health inequity and actively rejecting it through addressing modifiable risk factors, increasing cultural competency training, promoting diversity in the workforce, and global leadership.

Keywords: COVID-19, coronavirus, health equity, health disparities

The severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) and the resulting coronavirus 19 infection (COVID-19) brought the world to a near-standstill. Thousands of American lives have been lost, and New York City was the first epicenter of this crisis, reporting almost one-third of US deaths. Identified risk factors for COVID-19 include both modifiable and unmodifiable factors, such as age, female sex, environmental factors, pre-existing comorbidities, and inherited genetic predisposition.[1] Early studies suggested that people of African descent may be protected from SARS-CoV-2 infection. Low rates of COVID-19 in African nations is thought to be due in part to a protective effect of genetic variations in the ACE2 receptor, a critical entry point for SARS-CoV-2, due to malaria.[2] Moreover, the S19P polymorphism in the ACE2 receptor, is common in African people and may confer a partial protective effect.[3] However, recent reports revealed that African-Americans and Hispanics have higher rates of morbidity and mortality. African-Americans make up only 22% of the NYC population but account for 28% of the city's COVID-related deaths. Hispanic residents are 29% of the city's population but represent 34% of deaths.[4] The disproportionate number of fatalities is linked to higher rates of comorbidities such as obesity, hypertension and asthma, especially among African-Americans. Those living below the median household income are also more heavily impacted, illustrating the strong link between poverty and health.[4] This pandemic has highlighted the need to urgently address not only

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health disparities but also health inequities, which are differences in populations that are avoidable and rooted in continued social injustice. In New York City there are over 110 different languages spoken with people from all over the world. These inequities impact vision health and will be amplified by COVID-19, and similar disparities will be seen in major cities worldwide. Therefore, ophthalmologists need to be a part of the conversation.

Racial and ethnic disparities in vision health in the United States are well established. Significantly higher prevalence of diabetic retinopathy, glaucoma, cataract, and overall visual impairment in African-American and Hispanic patients has been consistently demonstrated.[5] More specifically, primary open-angle glaucoma is six times more prevalent in African-Americans than age-matched Whites, and African-Americans exhibit more severe and intervention-resistant disease and higher rates of blindness.[6] Though genetic variations are under investigation, comorbidities, glaucoma awareness, disparities in access to cataract surgery and social determinants of health are also contributing to these rates. A nationwide examination of 42 million beneficiaries of Medicare, a federal program that subsidizes healthcare services or people over 65, demonstrated greater prevalence of low vision in African-Americans and Hispanics than Whites.[7] Recipients of Medicaid, a federal and state program that provides healthcare coverage for low-income individuals and families, were diagnosed with visual impairment three times more frequently than non-recipients.[7] Furthermore, after adjusting for co-morbidities, low vision was significantly associated with hip fracture and affective disorders such as depression and anxiety.[7] This demonstrates how vision impairment can negatively contribute to overall wellbeing in economically disadvantaged people. A nationwide study used ocular hospitalizations among Medicare beneficiaries as a surrogate marker for advanced eye disease and lack of timely access to eye care to determine the effects of social determinants of health on overall eye health. Ocular hospitalizations were significantly associated with high air pollution, communities with severe housing problems, communities with a high number of single-parent households, and high rates of diabetes, violent crime deaths, and drug poisoning related deaths.[8] It should also be noted that poor air quality is also associated with higher rates of COVID-19.[9] This may contribute to the higher rates of COVID-19 in the Bronx, New York, which is home to the "Asthma Alley", where four major highways and several disposal sites create some of the worst air pollution rates found in the US.[10] The somber relationship between socioeconomic status, race, vision loss, and reduced quality of life can no longer be tolerated or ignored.

Vision health disparities are by no means an American problem. Despite the rapidly-improving nature of ophthalmological interventions, vision loss remains the third most common impairment worldwide. A recent cross-sectional study that included 190 countries and territories demonstrated a strong association between both moderate and severe vision impairment and blindness and low socioeconomic status.[11] Analysis of data from the Global Study on Aging and Adult Health revealed that, in lower- and middle-income countries, older age, lower educational attainment, greater disability, having more medical comorbidities, and poorer memory were significantly associated with near and distance vision impairment.[12] Eye care inequities worldwide are multifactorial, and access to care remains a substantial issue in many countries. Indeed, several countries with the highest rates of blindness also have the fewest ophthalmologists. However, utilization of eye care services is still low among those who have access, and lack of education or low health literacy may explain these findings.[13–15] We must learn from the experiences of countries who were already hit hard by COVID-19 to create a global culture in which increased access to eye care and increased health literacy about ocular diseases are prioritized.

The COVID-19 pandemic is stoking a fire that has long been burning, and those who were already at greatest risk for vision loss are in even graver danger in the US and globally. The cessation of all elective surgeries by the American Academy of Ophthalmology on March 8, 2020 likely resulted in a sharp increase in the number of cases of blindness in the US and can potentially spread worldwide.[16,17] Ophthalmologists have therefore encountered new dilemmas about how to protect themselves and their patients during urgent and emergent procedures and the potential medical liability that may result from providing care given how little is known about the virus.[16] As offices remain closed and follow-up appointments get rescheduled, patients are missing crucial eye exams. Intraocular pressure evaluation and gonioscopy to examine the trabecular meshwork are important parts of glaucoma evaluation that can only be performed with an in-office visit, and this exam is vital to addressing disparities in glaucoma. Unemployment is skyrocketing, and patients who are struggling financially may forego refilling not

only eye medications but also those necessary to manage comorbid conditions. Access to care is more uncertain for the uninsured and those who already had decreased access to care globally. COVID-19 is ravaging African-American and Hispanic communities because of health inequities, and its ripple effects will further cripple these communities if we do not address them head-on. We therefore suggest a focus on health equity, and we recommend immediate and longitudinal actions to preserve the vision and health of vulnerable populations.

Immediate Actions

The most immediate concern for ophthalmologists is how to continue to provide care during these unprecedented times. Some providers' offices remained open at the height of the pandemic for urgent cases and adjusted their patient screening protocols to prevent in-office COVID-19 transmission, and the issue of safety protocols to reduce transmission applies to an even broader audience now that reopening is well underway. The American Academy of Ophthalmology released recommended patient care protocols that include mouth and nose protection with an N95 mask, eye protection with goggles or a shield, and the use of breath and slit lamp shields.[18] The mechanism of ocular transmission of SARS-CoV-2 remains unclear, and there seems to be a low, though not impossible, risk of virus spread through tears.[19] However, several studies have demonstrated that it is still transmissible through the tear film and through aerosol contact with the conjunctiva.[20–23] Further, the virus can survive and replicate in the conjunctiva even when no signs of conjunctivitis are visible.[23,24] Therefore, all providers, especially ophthalmologists, optometrists, and technicians, should be using strict hand hygiene, employing goggles or face shields for eye protection, thoroughly disinfecting and sterilizing all shared equipment, and using as many disposable materials as possible. People at risk, including immunocompromised patients, those in spaces with poor ventilation for long periods of time, people living in close communities, and those with or at risk of ocular surface disease should also be advised to utilize eye protection.[23] There has also been an expansion of telehealth services within ophthalmology as a result of the pandemic. Ophthalmologists should embrace telemedicine whenever possible to remotely assess new signs and symptoms, triage patients, and screen and educate patients for early signs of COVID-19 infection. This mode of connecting with patients may relieve some hurdles to eye care services utilization. Telemedicine also allows ophthalmologists to monitor and educate patients about chronic conditions and reinforce medication adherence. Information technology education and flexibility will be necessary for elderly patients to participate effectively on HIPAA-compliant platforms.

In addition to visits with appropriate precautions and adopting telemedicine, ophthalmologists should be vocal about legislation that will affect their patients' overall wellbeing. In the United States, Congress passed the Families First Coronavirus Response Act (FFCRA), which mandates testing coverage and eliminates cost-sharing associated with testing, and the Coronavirus Aid, Relief, and Economic Security (CARES) Act, which requires all private plans to cover testing and any vaccines that will eventually become available.[25] However, no continued access to affordable care has been ensured, and expanded access to Medicaid and Affordable Care Act marketplace plans has not been guaranteed for the newly unemployed.[25] Though some have suggested a temporary public health insurance program such as the Disaster Relief Medicaid Program that was offered in New York after the 9/11 terrorist attacks, no such program has been approved.[25] In addition to advocating for continued coverage, we need to advocate for increased Medicaid reimbursement in order to increase access for patients to healthcare practitioners. Given that vision health is often inextricably linked to overall health and the demographics of the patients hit hardest by COVID-19, ophthalmologists need to advocate for immediate healthcare reform, additional stimulus from the government to cover wage loss, and mental health and food services to ease the burden on patients.

Globally, as many countries begin to get a handle on the pandemic and brace for a potential second wave, it is imperative that ophthalmologists learn from the trials and tribulations of others across the world who have already made strides in providing care and preventing transmission. Several studies have been published that detail the early missteps of several countries, including the United States, regarding testing and infection control measures.[26–31] We know that failure to implement early lockdown, lack of testing, and inadequate medical equipment crippled our first response to COVID-19. Extensive testing, contact tracing, social distancing, and adequate personal protective equipment are necessary to prevent further transmission and prevent overwhelming our health systems. As we brace ourselves for a potential second wave, it is imperative

that we tackle the steep learning curve together to prioritize eye health and overall wellbeing of our patients.

Longitudinal Actions

Healthcare inequities in the United States cannot be tackled without addressing the structural racism to which they are inextricably linked. Structural racism refers to the way in which historically rooted inequitable systems in our country, such as housing, education, criminal justice, and healthcare, work synergistically to reinforce discriminatory beliefs and resource allocation, and, ultimately, increase the risk of adverse health outcomes.[32] An oft-used example of structural racism is residential segregation of African-Americans, and one's zip code is tightly linked to incidence of chronic disease, health outcomes, and access to the healthcare system.[32] Structural racism underlies health inequity seen within ophthalmology, and ophthalmologists need to become more comfortable naming it as a root cause so we can actively work against it. We must prioritize cultural competence among healthcare workers in order to serve patients more effectively, and we must also support efforts to increase diversity in the workforce. All current and future physicians should be educated about structural racism in order to recognize the challenges that underserved patients face. Furthermore, we must encourage, support, and eliminate barriers against Black and other underrepresented medical students who desire to practice ophthalmology. Workforce diversity is correlated with better delivery of care to minority populations and improved cultural awareness in healthcare.

Globally, ophthalmologists cannot turn a blind eye to healthcare inequity if any improvements in vision health will be realized. There is limited data available about factors that facilitate or impede access to services geared toward vision and eye health, especially among high-risk minority populations.[5] The time to ramp up these efforts is now so that we can learn what challenges we need to overcome and what successes we need to expand. We also need to commit to addressing modifiable risk factors, such as improved screening, education, and awareness about eye conditions in all communities. Engaging with community stakeholders to promote interventions that are most likely to be successful is also crucial. Further, ophthalmologists must collaborate with governmental organizations and allied groups to create programs that effectively target the needs of various communities. Efforts aimed at educating patients about eye diseases, increasing screening, and providing interventions are important now more than ever. However, there is no one-size-fits-all solution, and solutions "tailor-made for individual countries and delivered in-country" are key.[33] We need to better relate to communities in order to support them. We must take an active role in shaping the system within which we practice in order to ensure that this system is geared toward optimal health for all.

Disclosure

Daniel Laroche reports being on speaker bureaus for Aerie and Bausch and Lomb, and being a consultant for Ivantis and Sight Sciences, during the conduct of the study. The authors report no other possible conflicts of interest in this work.

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