TITLE

Eye Care for Houston's Underserved Communities

AUTHORS

Daniel C. Brock[1,2*], Likhita Nandigam[1*], Mallika Tyagi[3], Amna M. Ali[3], Jay Jaber[1], Arman Yazdian[1], Tiffany Ramos[4], Ravi K. Chundru[5], Kathryn Rogers[5], Venus Gines[6], Claudia K. Tischler[1,2], Victoria Chen[1], Damien Kelly[7], Juliana Zapata[8], Monica Guerrero[4], Nelly Elorza[6], Dana Clark[1,5]

AFFILIATIONS

*Equal Contribution

[1]School of Medicine, Baylor College of Medicine, 1 Baylor Plz, Houston, TX 77030, USA.

[2]Medical Scientist Training Program, Baylor College of Medicine, 1 Baylor Plz, Houston, TX 77030, USA.

[3]McGovern Medical School, The University of Texas Health Science Center at Houston, 6431 Fannin St, Houston, TX 77030, USA.

[4]Prevent Blindness Texas, 2180 N Loop W #435, Houston, TX 77018, USA.

[5]Healthcare for the Homeless Houston, 1934 Caroline St, Houston, TX 77002, USA.

[6]Dia De La Mujer Latina, 6400 High Star Dr, Houston, TX 77074, USA.

[7]Open Gate Homeless Ministries, 1440 Harold St, Houston, TX 77006, USA.

[8]Casa Maria, 6101 Edgemoor Dr, Houston, TX 77081, USA.

BACKGROUND

Houston is a large and growing metropolitan area, with diverse communities and a current population of 2.3 million[1]. A substantial portion of Houston's population faces challenges in accessing vision care, and the resultant limitations in eyesight severely hinder their ability to fully participate in activities of daily living (ADLs)[2]. Among the spectrum of unmet health needs, difficulty in acquiring eyeglasses and eye care ranks as one of the most pervasive in populations experiencing housing instability[3]. Although several efforts exist to promote affordable healthcare and job opportunities for those with housing instability, the impact is limited if the intended population cannot read their medication bottles, use their phones, or read educational materials. Uncorrected visual impairment makes it difficult to navigate health systems and acquire health information, which only further compounds worsening ocular health[4]. Furthermore, underserved people are more likely to spend significant amounts of time outdoors in direct sunlight, which is a risk factor for developing cataracts[5,6].

STATEMENT OF NEED AND INTENDED POPULATION

The majority of patients who screen positive at visual screening fairs do not follow up for testing at a clinic, highlighting the need for more comprehensive on-site eye care at screening fairs[7]. Prior studies have found that medical-student-led vision screening events are highly effective in providing vision care to underserved communities with subsequent high levels of satisfaction reported with the donation of glasses[8–13]. The ophthalmology interest groups (OIGs) at Baylor College of Medicine (BCM) and McGovern Medical School have previously led successful vision screenings at several health fairs, with surveys revealing that 64% of patients identified "cost" as a barrier to receiving eye care (Supplemental Figure 1). Currently, our vision screening initiative is supported by a $500 Gold Humanism Service Project grant issued by BCM's Gold Humanism chapter, of which funds will be depleted by May 2024. Limited supply of glasses and lack of ophthalmic testing equipment increases the number of steps for patient follow-up and limits our potential long-term impact. **Through the Gold Student Summer Fellowship, we aim to further expand our progress by directly testing the vision and providing preventative solutions for Houston's underserved community.**

Our project aims to serve three major populations: those experiencing unstable housing, LGBTQ+ youth, and uninsured Latino/Hispanic populations. Our partnering institutions are as follows: the Houston Outreach Medicine

Education & Social Services (HOMES) Clinic is the only student-run clinic in Houston and a program of Healthcare for the Homeless-Houston (HHH)[14,15]. Open Gate Homeless Ministries provides dinners, clothing, and health screenings to a predominantly LGBTQ+ youth population[16]. Dia De La Mujer Latina (DML) and Casa Maria are community-engaged organizations that serve a predominantly Spanish-speaking Latino/Hispanic population. Demographics and visual acuity data from previous vision screenings can be found in Supplemental Figure 1. The collaborative efforts of these organizations in providing critical vision care services embodies humanism in medicine by emphasizing empathy, compassion, and patient-centered care.

IMPLEMENTATION PLAN AND PATIENT INTERACTION

Our initiative partners with Prevent Blindness Texas (PBT)[17], who provide vision screening machines that measure visual acuity. Our vision screening process is summarized in a flowchart on our publicly available website: https://toofastdan117.github.io/gold-humanism-vision/index.html. Student volunteers will directly engage with patients during the screenings. We begin the vision screening by having self-identified patients complete the PBT vision screening form (Supplemental Figure 2). For those requiring assistance, volunteers are available to read the form aloud in English and Spanish to aid in its completion. Next, we measure our patients' visual acuity using a vision screening machine operated by a trained student volunteer. If a patient has poor visual acuity, defined as worse than 20/40, a student volunteer will perform a comprehensive eye exam. Patients with any alarming physical exam findings, such as sudden loss of vision, are immediately provided directions to a hospital. For patients with myopia, or difficulty seeing far away objects, or risk factors for eye disease as determined by volunteers, we will provide referrals to practicing optometrists and ophthalmologists. We compiled a list of vision clinics, including programs that accept uninsured/underinsured individuals, also available on our website for patients to reference.

Eligibility for receiving reading glasses is determined if patients report hyperopia, or difficulty seeing near objects, or symptoms of presbyopia, an age-related gradual loss of the eye's ability to focus on close objects[18]. If eligibility criteria are met, patients are fitted with reading glasses using a vision test chart held 12-14 inches away from their eyes. After the patient expresses satisfaction with their reading glasses, we will donate them one pair of best-fitted glasses, one pair of sunglasses, and protective cases. We will measure our patients' visual acuity, demographic factors, and satisfaction with glasses and/or referrals. These metrics will be available in the final report with de-identified demographic information. In addition to addressing our patients' immediate vision challenges, our project promotes enduring solutions by encouraging patients to seek routine and long-term care at affordable vision clinics.

IRB STATUS

Our study is a service project that is not currently conducting research; we are not applying for an IRB.

SUSTAINABILITY AND FUTURE DIRECTIONS

To ensure sustainability and transparency for current and future students and patients, we created a website that documents how grant funding was received, information on various health fairs and their locations, and instructions to complete vision screenings and eye exams. The professional vision testing equipment purchased through this grant will be used by student volunteers throughout the duration of this fellowship and beyond. Additionally, by integrating members of BCM's and McGovern's OIG, we will ensure a steady flow of volunteers.

In the future, we hope to collaborate with corporate sponsors to provide large volumes of reading glasses and sunglasses for patients. This would further the sustainability of our efforts and allow us to purchase a wider range of ophthalmic testing equipment, such as an autorefractor. Our volunteer initiative is highly adaptable to include new health fairs, including those for refugees, Muslim Americans, and at-risk youth. These health fairs will be conducted through partnerships being built with The Alliance Houston and Texas Children's Health Plan. The

Alliance Houston aims to provide refugees with tools to be self-sufficient and improve their quality of life. The Texas Children's Health Plan promotes the Children's Health Insurance Program (CHIP) to vulnerable underinsured children and pregnant women. At the conclusion of this service fellowship, we will apply for an IRB and transition to a research project to document our findings, with guidance from our mentor Dr. Andrew Lee.

APPLICATION TO HUMANISISM IN MEDICINE

By establishing strong provider-patient relationships and leading with dignity and respect, this collaborative project addresses the physical need of comprehensive vision care with an aim to concurrently improve the psychological, social, and emotional well-being of Houston's underserved communities. Obtaining eyeglasses improves access to opportunities such as education and employment, with an overall goal of improving quality of life and confidence in fulfilling ADLs. Furthermore, conducting vision screenings and providing eyeglasses will significantly enhance our collaborators' health services, leveraging substantial human capital from volunteer groups and alleviating cost burdens for nonprofit organizations.

We will maintain our focus on compassionate patient care. We will prioritize cultural competence by having Spanish and English speakers available to navigate language and literacy barriers. Each conversation is unique; we will respect each patient's background and tailor the interaction specific to them. Before the interaction is over, we will address a long-term plan for vision care through a patient-centered discussion, creating action items that feel attainable to the patient. While working on this fellowship, we hope to inspire fellow medical student volunteers about the most common visual concerns for each underserved community that we work with in Houston. We hope to better understand the public health system, and how we can be at the forefront of linking previously unserved patients to long-term visual care. Our eventual goal is to become medical students and eventual ophthalmologists conscious of the non-medical barriers to visual care and understand our role in bridging the gap.

PROJECT TIMELINE AND BUDGET

We will be purchasing glasses with the following prescriptions: +1.0, +1.5, +2.0, +2.5, +3.0, +3.5, and +4.0, protective cases, and sunglasses. Through consulting our faculty mentors, we will also invest in two ophthalmoscopes and, if funds allow, a portable slit lamp. The latter ophthalmic equipment would be vital in primary screenings of serious and acute visual disorders and help link patients to timely and necessary visual care. During the 10-week grant period, we will be working with our current site partners. We aim to have monthly screenings with DML, Casa Maria, and OpenGate at their health fairs, aiming for a total of two vision screenings per site, with one summer health fair at HOMES Clinic.

The reading glasses are packaged with a protective case in a pack of 5 for $20.56 (with tax) and the sunglasses are sold in a pack of 10 for $25.98 (with tax) on Amazon. Ophthalmoscopes cost about $600 and we plan to purchase two for $1200 before tax. Portable slit lamps range from $600-$2000. Equipment will be stored in a secure locked cabinet at HOMES Clinic and utilized in future vision screenings.

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