The Effect of Medical Student-Run Vision Screening Programs on Ophthalmic Education and Recognition of Visual Impairment in Harlem, New York

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Introduction

Undetected ocular disease and visual degeneration pose significant long-term health detriments in the United States, especially in the advent of an increasingly aging population. In New York state, greater than half of the population has some form of eye disease ranging from refractive errors to age-related macular degeneration (prevalence of 0.23 and 0.02 respectively) [1]. For many, however, eye care falls outside of standard medical insurance coverage, leading to lapses in care and exacerbations of pre-existing conditions. Community screening programs provide an opportunity for members to receive information that may guide their health decisions and priorities. It also allows for osteopathic medical students to gain further exposure to ophthalmology and optometry.

In this study, the three-year results of a community-based free vision screening program in Harlem-New York City, NY, were presented as well as an assessment of additional training programs in advancing ophthalmic education for osteopathic medical students.

Methods and Materials

This study was approved by Touro College’s Health Sciences Institutional Review Board for the Protection of Human Subjects (HSIRB #1728). Free vision screenings were held at Touro College of Osteopathic Medicine biannually in conjunct with the Fall into Health and Spring into Health fairs from September 2015 to November 2017. All medical student volunteers received an hour training session in conjunction with OOPTC (Otolaryngology and Ophthalmology Touro Interest Club). The training consisted of patient intake, testing setup, and referral protocols. Pre- and post-training surveys were also given at the training to assess student comfort with performing a vision screening (Table 1). All protocols have previously been reviewed by an ophthalmologist and medical advisory committee (Figure 2).

Referral was recommended if any of the following criteria were met:

- Two or more positive answers to risk factor questions, such as no past history of ocular exams
- Visual acuity that tested greater than 20/40
- Any abnormalities in Amssler grid or Ishihara plates.

Referred participants were given contact information for further follow-up and acute care resources. Guidelines for acute ocular crises were also established, in which emergency services would be called to assess the status of the participant. Referral to off-site services was further reinforced on an on-site physician reviewing grossly abnormal findings.

Results

20 medical student volunteers participated in the training: 5 second year students and 15 first year students. Pre-training surveys showed general unease and discomfort with the ophthalmic exam and vision screening. When asked to assess their confidence in performing a screening, 18 students (90%) chose “very uncomfortable” and “very unlikely” and 2 students (10%) chose “somewhat uncomfortable” and “somewhat unlikely”. In comparison, for post-test surveys, there were 20 (100%) responses of “very comfortable” and “very likely” in regard to vision screening.

In the study period, 193 participants were screened, with 116 (60%) that met referral criteria and were instructed for definitive care/follow-up with an ophthalmologist. Of the total screened, 54 participants (27%) indicated use of some kind of corrective device such as glasses or contact lenses. In the population, all 116 had some degree of refraction error with 7 (6%) having a concurrent color vision abnormality and 11 (9%) having a concurrent abnormality on Amssler grid testing for macular degeneration. Demographic data for participants are detailed in Table 2.

Discussion

Many medical schools do not have an extensive ocular/ophthalmology curriculum, instead relying solely on coverage either in HENT in a physical diagnosis/clinical systems class or during clinical rotations [3] [4]. As evidenced in the pre-and post-training surveys, relying on such singular instances to serve as the sole background does not result in high confidence or likelihood of quality performance. Furthermore, studies of the cognitive load and tri-icurriculum theories also support this need and value of additional opportunities for subject exposure [5] [6]. Post-training results indicate that such endeavors are useful in solidifying and reinforcing skills outside of an examination atmosphere. In the vision screenings that were performed, refractive errors were the most common eye disease noted, which parallels statewide data [1]. There were no significant differences between the race or gender, with demographics roughly approximating the racial distribution in Harlem.

As evidenced in these screenings, visual impairment and disease is common in the Harlem community, which can be further extrapolated to the greater area of Manhattan. Despite the close proximity to 3 medical schools, high prevalence of ocular diseases in underserved, immigrant communities of Harlem suggests that greater efforts are needed to improve the eye health of underserved communities, thus also requiring these additional support of these screenings.

Conclusion

With early detection, many ocular diseases can be effectively treated, thus avoiding costly care in the future and/or in limitations of quality of life. Vision screenings allow for this early detection and helps to inform patients of their care options. Especially in underserved or marginalized communities, both medical students and community members benefit from vision screenings. Medical students are afforded more opportunities to practice while community members are given much needed care in ocular health. The Touro vision screenings utilize these ideas to serve the Harlem community. Despite the limitations and possibilities of errors, the use of trained screeners may increase the number and proportion of individuals receiving eye care who may not originally have had the motivation or knowledge to seek it out.

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References


Figures

Figure 1: The Harlem community is a heterogeneous population that mimics the metropolitan nature of New York City. Within its boundaries, several large immigrant communities call this area home, including but not limited to communities from Puerto Rico, Dominican Republic, and various West African countries such as Senegal, Côte d’Ivoire, Ghana, and Mali. [2]

Figure 2: Generalized schematic flowchart used to train medical student volunteers utilizing the ocular health questionnaire to engage the participants in discussion. The colored bar (right) was one of the many testing modules.