Understanding the higher glaucoma frequency in the BuckEYE Clinic

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Purpose

The US prevalence of glaucoma is 2.56% among those ages 40 and older. We performed a retrospective chart review to characterize glaucoma frequency and severity in the BuckEYE Clinic to understand associations between social determinants of health (SDOH) and glaucoma status.

Methods

We reviewed the electronic medical record of adult patients seen in the bimonthly BuckEYE Clinic, a comprehensive eye clinic for uninsured adults in Central Ohio, between 9/28/2010 and 1/14/2020. Data collected included: demographics, medical history, clinical ophthalmic exam findings, and ocular and vision-related diagnoses. For patients with glaucoma, two reviewers independently interpreted the presenting Humphrey visual field (HVF) to stage each eye. If a discrepancy existed in staging, a third reviewer interpreted the HVF. Fischer's exact test with correspondence analysis was used to test for association and visualize similar patterns of count.

Results

In our study period, 577 adult patients presented to the BuckEYE Clinic. 196 (34%) had a glaucoma diagnosis. Of these, 86 were identified with borderline glaucoma or glaucoma suspect status and 110 had a confirmed glaucoma diagnosis, including 51 with primary open angle glaucoma, 9 with primary angle

closure glaucoma, and 50 with other types of glaucoma. 65 patients had accessible HVFs, and staging of the worse eye revealed 5 (8%) with mild glaucoma, 13 (20%) with moderate glaucoma, and 47 (72%) with severe glaucoma. All patients (100%) were uninsured. There was no significant difference in stage of glaucoma of the worse eye by sex ($p = 0.33$), ethnicity ($p = 0.16$), race ($p = 0.31$), or language ($p = 0.48$). Mean age was statistically different between patients with mild and severe glaucoma in the worse eye ($p = 0.02$), but not between moderate and severe glaucoma ($p = 0.11$).

Conclusions

The overall frequency of glaucoma and glaucoma suspect in the BuckEYE Clinic is 34%, with a frequency of confirmed glaucoma of 19%, which is over 7 times greater than the national average. The majority with glaucoma in this population had severe stage on presentation (72%). One explanation may be the impact of SDOH on glaucoma. We found no difference in stage of glaucoma in the worse eye based on sex, ethnicity, race, or language. Additional research in how other SDOH relate to glaucoma in this population may provide insight into how to better address the vision related needs in underserved populations.

Layman Abstract (optional): Provide a 50-200 word description of your work that non-scientists can understand. Describe the big picture and the implications of your findings, not the study itself and the associated details.

The US prevalence of glaucoma is 2.56% for those over the age of 40 years. Preliminary data from the BuckEYE Clinic indicates a 34% frequency of all forms of glaucoma. This high frequency is similar with two published reports in two different Michigan populations that Dr. Sayoko Moroi has been part of. This surprising increase in three different populations over the national prevalence needs to be investigated. Glaucoma is a leading cause of irreversible blindness with known disparities of worse outcomes in certain patient populations. Our hypothesis is that social determinants of health (SDOH) underly the increased risk for glaucoma in the BuckEYE clinic population. The overall frequency of glaucoma and glaucoma suspect in the BuckEYE Clinic is 34%, with a frequency of confirmed glaucoma of 19%, which is over 7 times greater than the national average. The majority with glaucoma in this population had severe stage on presentation (72%). One explanation for this increased frequency of glaucoma may be the impact of SDOH on glaucoma. Additional research in how other SDOH relate to glaucoma in this population may provide insight into how to better address the vision related needs in underserved populations.