Ophthalmic Health Disparities in Glaucoma

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Goals

DISEASE DEFINITION  POPULATION HEALTH  BARRIERS TO ACCESS  STRATEGIES TO ADDRESS ACCESS DISPARITIES
Glaucoma

Definition:
- POAG: Chronic progressive optic neuropathy with progressive retinal ganglion cell death and visual field loss.
- NTG: Variant of POAG with normal intraocular pressure.
- NAG: Occlusion of the trabecular meshwork by the peripheral iris, obstructing aqueous outflow, that occurs in an anatomically predisposed eye.

Disease findings and spectrum (AAO-PPP POAG):
- Clinical findings:
  - Adult onset
  - Open anterior chamber angles
  - Evidence of optic nerve damage on optic disc/RNFL structure or VF abnormality
  - Absence of other known explanations
Glaucoma

- **Spectrum:**²
  - Mild – Optic disc/RNFL abnormalities of glaucoma, no VF abnormalities
  - Moderate – Optic disc/RNFL abnormalities, VF abnormalities in one hemifield, not <5° of fixation
  - Severe - Optic disc/RNFL abnormalities, VF abnormalities in both hemifields, and/or <5° of fixation
  - Indeterminate – Optic disc/RNFL abnormalities and unable to perform adequate VF/not yet performed
Glaucoma

Risk factors for development of glaucoma:
- Older age, elevated IOP
- Among those with ocular hypertension: older age, thinner central corneal thickness, higher cup/disc ratio, and higher pattern standard deviation on Humphrey Visual Field
- Family history (siblings > parents > children), Black American race, Hispanic/Latino race
- Asian Americans at higher risk for open angle glaucoma, narrow angle glaucoma (NAG), and normal tension glaucoma (NTG) compared to non-Hispanic whites

Risk factors for progression:
- Older age, higher baseline IOP, thinner central corneal thickness, and potentially diabetes
Disease Management

Management goals (AAO-PPP POAG):²

- IOP control
  - Medications
  - Laser
  - Surgery
- Stable optic nerve/retinal nerve fiber layer status
- Stable visual fields
Population Health & Glaucoma

- Prevalence
  - **World:**
    - Second leading cause of blindness worldwide\(^7\)
    - Blinding disease estimated to affect 5.9 million with OAG and 5.3 million with angle-closure glaucoma in 2020\(^7\)
  - **United States:**
    - Estimated prevalence of POAG among those \(\geq 40\)-years was 1.9% in 2010 (NEI)\(^8\), similar to other estimates at 2.1% (2.9 million) in 2008\(^9\)
    - Prevalence was highest in non-Hispanic blacks. 55% of patients unaware of diagnosis (NHANES)\(^9\)
    - POAG prevalence estimated to increase to 7.32 million by 2050 (AAO)\(^10\)
    - Differences among study populations from 1991 to 2016, prevalence ranged from 2.1% to 25.5% for general glaucoma and 1.86% to 13.8% for POAG (CDC)\(^11\)

- Healthy People 2020 set goal to reduce visual impairment due to POAG by 10% from 2010 to 2020\(^12\)
Population Health & Glaucoma

- High risk groups:
  - Black Americans
    - POAG is three times more prevalent versus Whites\textsuperscript{13}
    - Begins at an earlier age and are six times more likely to suffer blindness due to POAG versus Whites\textsuperscript{14}
    - Lower rate of treatment for glaucoma compared to Whites\textsuperscript{15}
  - Latinos have similar rates as Black Americans\textsuperscript{5}
  - Asian Americans have 50% higher hazard risk versus Whites for POAG; significantly higher rates of NTG and NAG, with differences among Asian ethnicities\textsuperscript{16}
  - Currently the largest demographic group is non-Hispanic white women\textsuperscript{8,10}
    - By 2050 Hispanic/Latino men will be the largest demographic group and Hispanics/Latinos will account for 50% of all POAG diagnoses (AAO)\textsuperscript{10}
Screening for glaucoma:

- Screening reserved for high-risk groups (AAO-PPP POAG)²
  - Older adults, family history of glaucoma, Black Americans, and Hispanics/Latinos

- Screening for high-risk groups cost-effective²,¹⁷

- Centers for Medicare and Medicaid Services approves annual glaucoma screening examination for those at high risk with any of the following: diabetes, positive family history, Black Americans ≥ 50 years old, and Hispanics/Latinos ≥ 65 years old¹⁸
Challenges/Barriers to Access

- Younger age\(^{19,20}\)
- Poor healthcare knowledge, lower education/literacy\(^{21,22,23}\)
- Race
  - Latino ethnicity\(^{22,24}\), Black American race\(^{24}\), Asian-Pacific Islander versus Whites\(^{22}\)
- Less severe disease diagnosis and less severe disease stage\(^{20,25,26}\)
- Lack of usual place of care or primary provider\(^{21}\)
- Lack of transportation or distance to clinic\(^{21,25,27}\)
- Difficulty navigating the medical system
  - Wait times\(^{24,26}\), medication problems\(^{19,26}\), scheduling difficulties\(^{22,28}\)
Barriers to topical therapies

- Almost half of patients discontinue topical ocular hypotensive therapy at 6 months\textsuperscript{29}

- Cost has been estimated to reduce access to medications for 25% to 41% of patients\textsuperscript{30,31}

- With monitoring in place, 45% of patients are receiving less than 75% of recommended drops\textsuperscript{32}

- Average cost per medication [2013 dollars] for topical IOP drops was $282 for generics and $1166 for brand names\textsuperscript{33}

- IOP medication costs account for 24-61% of all glaucoma treatment-related expenses\textsuperscript{34}
Patient Perspectives

- 56% of older Black Americans report trusting their eye care provider as a barrier \(^{35}\)

- Feelings about glaucoma \(^{36}\)
  - “Fright ... I had no symptoms”

- 30% of patients report adherence barriers “My eyes get redder and redder and I got more frustrated” \(^{36}\)

- 19% of patients report personal support systems barriers \(^{36}\)
  - “Most of my family except my wife probably don’t even understand about it...”
Social Determinants of Health

o Knowledge about glaucoma associated with having insurance, higher income, and higher education\(^{37}\)

o SES positively correlated with knowledge of risk factors, pathophysiology, and consequences of glaucoma, as well as treatments\(^{38}\)

o Poor health literacy associated with less education, lower income, and Medicare/Medicaid insurance\(^{39}\)
  o Poor compliance, lower disease understanding, and worse disease presentation and progression
Strategies to Improve Access

- Minimize barriers to care
  - Transportation, cost, insurance, primary care status, and a community-centered approach\(^{27,34}\)

- Health Education and Literacy
  - Potential to double the odds of attending eye exams\(^{40}\) and drive increased follow-up in clinic\(^{31}\)
  - Education may be even more important than transportation or access to care\(^{29}\)
Review for PCP

- Glaucoma is a chronic, progressive, blinding eye disease that is asymptomatic until late in the disease process\(^1,2\)

- Risk factors for glaucoma are older age, elevated intraocular pressure, a family history, Black American race, Hispanic/Latino race, type 2 diabetes, myopia, and lower systolic and diastolic blood pressure\(^3,4,5\)

- Glaucoma examinations by ophthalmologists are covered by Medicare and Medicaid for beneficiaries with diabetes, a family history of glaucoma, Black Americans 50 years and older, and Hispanic Americans 65 years and older\(^1\)

- Consider referring patients with risk factors for a comprehensive eye examination with an ophthalmologist
Take home points

- Glaucoma is a chronic, progressive, and insidious eye disease that causes irreversible loss of sight.

- Risk factors for developing glaucoma include age, intraocular pressure, race/ethnicity, and family history.

- Black American and Hispanic/Latino individuals are more likely to develop glaucoma, may present earlier, and are more likely to suffer blindness due to glaucoma.

- The estimated prevalence of POAG in the US is near 2%, which is expected to increase dramatically with demographic changes. Around half of those with glaucoma are undiagnosed.

- Annual screening for high risk groups is recommended (Older adults, family history of glaucoma, Black Americans, and Hispanics/Latinos).

- Common barriers to accessing care include cost, insurance, transportation, healthcare knowledge, race/ethnicity, lower SES, and younger age.
Bibliography


