

Baltimore Eye Study - 1991



Objective

To evaluate the performance of selected screening techniques (individually and in various combinations) in correctly classifying glaucoma disease status

Methods

Design: Population-based survey

Sample Size: 5,308

Survey Groups:

- 2,395 Black participants
- 2,913 White participants

All patients were residents of east Baltimore, MD and received a screening examination

Outcome Measures:

Participants were classified as diseased or non-diseased based on a combination of:

- Tonometry
- Optic nerve assessment
- Measurements (height, weight, pulse, and blood pressure) & personal history

Results

Point 1: Important risk factors for glaucoma were identified, though none alone were adequate for screening or ruling out

- Black race, Older age, Family history, and higher IOP

Point 2: IOP alone is not a reasonable screening measure for glaucoma

- There was no value of IOP that provided a reasonable balance of sensitivity and specificity to classify glaucoma
- The crossover point of sensitivity and specificity occurred at the >18 mmHg cutoff with approximately 65% for both sensitivity and specificity.
- 50% of glaucoma cases had IOP < 20 mmHg

Point 3: Other factors such as optic nerve assessment and medical history were not predictive for glaucoma

- The point at which the sensitivity and specificity curves crossed occurred at the C:D > 0.5 cutoff with 48% sensitivity and 89% specificity, with no good balance of sensitivity and specificity.
- There is little additional gain in the precision of glaucoma classification when factors such as age, sex, race or a family history of glaucoma were considered (even with a multivariate predictive model)

TLDR: Techniques for glaucoma screenings including tonometry, optic nerve assessments, and medical history are limited and cannot adequately classify persons in terms of their disease status.