

# Outside temperatures, sun exposure and gender may trigger glaucoma

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When it comes to whether or not you will develop exfoliation syndrome (ES) -- an eye condition that is a leading cause of secondary open-angle glaucoma and increased risk of cataract as well as cataract surgery complications -- age, gender and where you live does matter.

"Although many studies from around the world have reported on the burden of the disease, some aspects of the basic descriptive epidemiologic features, which may help shed light on the cause, are inconsistent," said Louis Pasquale, M.D., study co-author and director of Massachusetts Eye and Ear's [Glaucoma](#) Center of Excellence. "In this study we found that women are more vulnerable to this disease than men, that ES is not a disease of Norwegian descent, and that where you live does matter when it comes to developing the disease."

Researchers from the Mass. Eye and Ear, Harvard Medical School, Boston, Mass., Department of Medicine, Channing Laboratory, Brigham and Women's Hospital, Boston, Mass., Department of Ophthalmology and Visual Sciences, and University of Michigan, Ann Arbor, Mich., set out to find out how demographic and geographic risk factors are associated with ES. Their study, the "Demographic and Geographic Features of Exfoliation Glaucoma in two United States-Based Prospective Cohorts" are published in the January 2012 issue of *Ophthalmology*.

Researchers used data from 78,955 women in the Nurses' Health Study (NHS) and 41,191 men in the Health Professionals Follow-up Study

(HPFS) residing throughout the continental United States who were prospectively followed for 20 years or more and who provided lifetime residence information to examine the descriptive epidemiologic features of ES or exfoliation glaucoma suspect (EGS).

This study confirmed established associations with age and family history and exfoliation glaucoma or exfoliation glaucoma suspect (EG/EGS), as well as provided new data on associations with gender, eye color and ancestry.

"Importantly, those with a lifetime residential history of living in the middle tier and south tier of the United States was associated with 47% and 75% reduced risks, respectively, compared with living in the northern tier, and across the life span, residence at age 15 was the most strongly associated with risk, followed by current residence," the authors wrote.

The study showed an increased risk in females, but it was unclear as if gender-specific differences in the eye, such as axial length differences or [environmental factors](#) related to lifestyle, account for why women are more at risk for this disease.

Other findings include:

- A positive family history of glaucoma was associated with a more than doubling of risk.
- Neither Scandinavian decent nor Southern European ancestry was associated with risk when compared with the larger reference group of mainly other white persons in the study, which indicates that there may be strong environmental factors that may increase risk among populations in Scandinavian countries. Overall the study lacked adequate power to determine

whether incidence rates differed by minority groups.

- Iris (eye) color did not seem to be a risk factor.

"This large prospective cohort study demonstrates that there is a positive association between latitude and ES risk that is robust and not related to demographic features or other systemic covariates," Dr. Pasquale explained. "Another manuscript we published recently suggests that lower ambient temperature interacts with increased solar exposure to increase the [risk](#) of ES. This new work demonstrates a relation between increasing latitude and a condition with a strong predisposition to glaucoma. More work is needed to determine how environmental factors conspire to contribute to ES."

According to the National Eye Institute, ES is the major known cause of open-angle glaucoma, and is one of the leading causes of blindness. With the rapid aging of the U.S. population, the number of individuals affected by the disease will increase to more than three million by 2020.

Provided by Massachusetts Eye and Ear Infirmary

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