

Glaucoma, Ocular Hypertension, and Visual Impairment in Adult Latinos

How data from the LALES can help you identify patients at risk.

BY VIKAS CHOPRA, MD, AND ROHIT VARMA, MD, MPH

Approximately 66.8 million people worldwide have open-angle glaucoma (OAG),¹ one of the leading causes of blindness in the US and worldwide.² Population-based epidemiologic studies such as the Beaver Dam Eye Study, the Baltimore Eye Survey, and the Barbados Eye Study have reported significant racial and ethnic differences in the prevalence and severity of glaucoma.³⁻⁶ For example, glaucoma is four times more common and appears to cause a greater degree of visual loss at an earlier age among blacks than among non-Hispanic whites in the US. It is, therefore, important to obtain racial- and ethnic-specific data to understand the potential differences in the burden (prevalence/incidence) of disease, the underlying biology of the disease, patterns of health-seeking behaviors, and access to healthcare.

Individuals who are born into or descended from Spanish-speaking communities, regardless of race, are considered Latinos (Hispanics, Hispanic Americans, and Latino Americans). Although the overall population is heterogeneous, two-thirds of the Latinos in the US are Mexican Americans. Data from the Census 2000 reveal that Latinos currently compose 12% (35 million) of the US population, constitute the largest minority group, and are the fastest-growing segment of the population.⁷⁻⁹ The US Census Bureau projects that 25% of the US population will be of Hispanic origin by 2020. Determining the burden and biology of

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the leading causes of blindness and visual impairment among Latinos is therefore important.

THE STUDY POPULATION

The Los Angeles Latino Eye Study (LALES)¹⁰ is a large, population-based survey designed to estimate the prevalence of ocular disease, associated risk factors, quality of life, and access to healthcare among noninstitutionalized, self-identified Latinos who are 40 years of age or older in La Puente, California. The study's sample of Mexican Americans reflects the largest Latino group in the US. To encourage individuals to participate, we used culturally tailored recruitment methodology and procedures in conjunction with community outreach. The design of the LALES called for bilingual staff members at every level of the investigation, including the interviewers, ophthalmic technicians, and ophthalmologists.

All participants in the LALES underwent a complete ophthalmic examination with visual acuity measurements, refraction, Goldmann applanation tonometry, ultrasound pachymetry, a detailed slit-lamp examina-

tion, and visual field testing using the Humphrey Automated Field Analyzer (Swedish Interactive Threshold Algorithm Standard 24-2; Carl Zeiss Meditec, Inc., Dublin, CA). After their eyes were dilated, participants also underwent posterior segment examinations that included stereo optic disc photography. In the LALES, the diagnosis of glaucoma was based on optic disc and visual field criteria independent of IOP level.

OUTCOMES

Of the 7,789 eligible participants, 6,357 (82%) completed an in-home interview and the office-based clinical examination. The high level of participation was comparable with other population-based studies.

We recently reported a 4.74% prevalence of OAG in Latinos with a predominantly Mexican ancestry, which is comparable to that in African Americans and is significantly higher than in non-Hispanic whites.¹¹ In the LALES, the mean IOP among Latinos with OAG was 17.3 mm Hg, with 82% of affected individuals having IOP measurements of less than or equal to 21 mm Hg.

These data reaffirm that using IOP measurements of 21 mm Hg or higher to identify glaucomatous eyes is a poor screening method and is likely to underestimate the presence of OAG significantly. The patients diagnosed with glaucoma in our study¹¹ had mean vertical and horizontal cup-to-disc ratios of 0.7 ± 0.1 and 0.7 ± 0.1 , respectively, and the mean deviation of the visual field was -9.8 ± 9.1 dB. Forty-seven percent of participants had bilateral OAG.

The Ocular Hypertension Treatment Study has shown that central corneal thickness (CCT) can influence the measurement of IOP. The factor therefore merits consideration when using IOP to identify the prevalence of OAG among different racial and ethnic groups.¹²⁻¹⁴ We found that Latinos had lower mean CCT values than previously reported in white individuals but higher values than in blacks and Asians.¹⁵

The mean CCT in the LALES cohort was 568 ± 42 μ m in the ocular hypertensive group versus 545 ± 38 μ m in the OAG group. Furthermore, older Latinos had thinner corneas compared with younger ones. Because CCT is known to affect IOP measurements¹⁵ and may be an

RESULTS FROM THE LALES

Data from the Los Angeles Latino Eye Study (LALES) reinforce the importance of targeting Latinos at risk for open-angle glaucoma (OAG) with culturally appropriate screening programs and public health messages.¹ Here is what we have learned from this study so far:

- OAG was 16 times more prevalent among older (80+ years) than younger (40 to 49 years) Latinos (Figure 1);
- Latinos with OAG had greater degrees of visual impairment than non-OAG participants (6.6% vs 1.1%);
- 3.6% of Latinos had ocular hypertension (OHT), which was defined as an IOP higher than 21 mm Hg with an absence of optic disc damage and abnormal visual field results;
- 42% of Latinos had bilateral OHT;
- OHT was three times more prevalent among older (> 80 years) than younger Latinos (40 to 49 years);
- the risk of visual impairment among Latino adults (40 to 49 years old; 0.3% to 0.9% increased dramatically with age (> 80 years; 9.0% to 27.8%); and
- female Latinos had higher rates of visual impairment

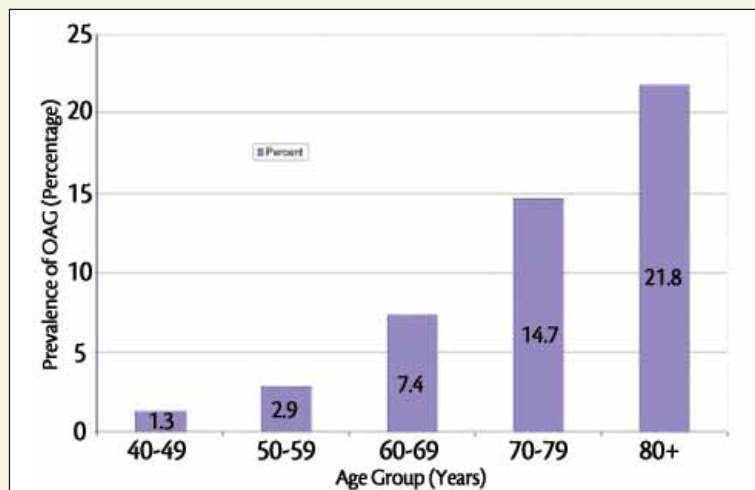


Figure 1. This graph shows the age-specific prevalence of OAG among participants in the LALES.

than males but were equally likely to become blind overall.²

1. Globe DR, Schoua-Glusberg A, Paz S, et al. Using focus groups to develop a culturally sensitive methodology for epidemiological surveys in a Latino population: findings from the Los Angeles Latino Eye Study (LALES). *Ethn Dis.* 2002;12:259-266.
2. Varma R, Ying-Lai M, Klein R, et al. Prevalence and risk indicators of visual impairment and blindness in Latinos: The Los Angeles Latino Eye Study. *Ophthalmology.* 2004;111:1132-1140.

independent risk factor for OAG,¹⁶ screening programs for Latinos should include central pachymetry.

A particularly worrisome observation from the LALES was the high proportion of previously undiagnosed OAG (75%) and ocular hypertension (75%) among study participants. These statistics and the high prevalence of OAG among older Latinos suggest that this population could benefit from screening programs targeted toward high-risk individuals. Such programs may be more efficient and cost-effective than generalized screening, may improve the chances of early diagnosis, and may identify early treatment opportunities (*Results From the LALES*).

The relatively high occurrence of OAG among Latinos may have an enormous impact on public health, because—as mentioned earlier—this ethnic group is the largest and fastest growing minority in the US. Various published reports of cross-sectional data from the LALES suggest that the early identification and treatment of OAG, cataracts, and other vision-threatening ocular and systemic conditions may reduce the risk of visual impairment in Latino and other population groups.¹⁷

“Data from the LALES suggest that the early identification and treatment of OAG ... may reduce the risk of visual impairment [among] Latinos.”

CONCLUSION

Longitudinal data from the half-completed LALES-2 follow-up study should provide data about the incidence of OAG and comorbid conditions in adult Latinos. The study should also provide a more robust assessment of risk factors and indicators associated with the development of OAG in this population group.

The best methods for evaluating glaucoma in the Latino community include screening older individuals using culturally sensitive techniques. This type of targeted screening of high-risk individuals would likely minimize the burden of disease and reduce visual impairment in this growing minority group. □

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Vikas Chopra, MD, is Assistant Professor at the Doheny Eye Institute, Department of Ophthalmology, Keck School of Medicine, University of Southern California, Los Angeles. He acknowledged no financial interest in the products or companies mentioned herein. Dr. Chopra may be reached at (323) 442-6428; vchopra@usc.edu.



Rohit Varma, MD, MPH, is the principal investigator for the LALES, Director of Glaucoma Service at the Doheny Eye Institute, and Professor in the Departments of Ophthalmology and Preventive Medicine, Keck School of Medicine, University of Southern California, Los Angeles. Dr. Varma is a Research to Prevent Blindness Sybil B. Harrington Scholar. He acknowledged no financial interest in the products or companies mentioned herein. Dr. Varma may be reached at (323) 442-6411; rvarma@usc.edu.



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