
TO THE EDITOR: Nannini et al examined the relationship between African ancestry, as estimated from 5000 autosomal single nucleotide polymorphisms using a Bayesian factor analysis, and intraocular pressure in a population of 3541 Hispanics from Los Angeles.1 They expressed the hope that an understanding of the relationship between genetic ancestry and intraocular pressure in Latinos may help to elucidate racial differences and identify public health strategies to prevent and forestall the development of glaucoma. As they note, West Coast Latinos have a rather modest contribution of African ancestry, because they come overwhelmingly from Mexico and Central America, which raises questions about whether this is really the best population in which to explore such a question. Indeed, Table 1 confirms that the estimated proportion of African ancestry is 0.031 with a standard deviation of 0.041. This suggests that virtually nobody in the dataset should have an estimated proportion of African ancestry greater than about 0.11, providing a very restricted range of exposure.

This is an especially serious concern because the effect reported in Table 2 is from a multivariable linear regression model with an estimated slope parameter $\beta = 0.035$ for a 1-unit change in African Ancestry. A 1-unit change is the effect of comparing people with ancestry proportions of 0.00 and 1.00. This is a problematic scaling to use in the regression model because the largest change in the actual dataset is only about one-tenth as large as this contrast. This is an elementary error in the application and interpretation of the regression model: extrapolation far outside the range of the observed data.

Worse still, the outcome is intraocular pressure, the distribution of which is shown in the authors’ Figure 1. This outcome variable is reported to have a mean of 14.6 mmHg and a standard deviation of 2.8 mm Hg (Table 1). The regression coefficient can be interpreted as the effect on the outcome mean of changing a person by one whole unit of African ancestry. In this case, the authors report that this change in the outcome is 0.035 mmHg, which is about 1 one-hundredth of 1 standard deviation. This cannot possibly be in any way clinically or substantively meaningful. The authors refer to this result as a “modest” effect, which seems quite an understatement. It therefore seems impossible that this trivial relationship could help to identify public health strategies to prevent and forestall the development of glaucoma.

JAY S. KAUFMAN, PhD
Department of Epidemiology, Biostatistics and Occupational Health, McGill University, Montreal, Quebec, Canada

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Correspondence:
Jay S. Kaufman, PhD, Department of Epidemiology, Biostatistics, and Occupational Health, McGill University, 1020 Pine Avenue West, Montreal, Quebec H3A 1A2, Canada. E-mail: jay.kaufman@mcgill.ca.

References