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Poster: The Physics of the Pupil: Age and Ethnicity Effects in Static Mesopic Conditions

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Purpose:
This study aimed to compare static pupillometry under mesopic conditions between European and African populations, given the limited data directly contrasting pupillary dimensions across ethnic groups. Characterizing pupil diameter is relevant in detecting ocular alterations, particularly in a multicultural context. While age-related pupillary changes are well documented in Caucasian and Asian populations, evidence in Africans is scarce. This work establishes initial reference values for the Senegalese population as a starting point for further studies.
Settings:
Data were collected at three locations: Caucasian participants at the Optometry Clinic of the Complutense University of Madrid; Afro-Europeans (AFE, African origin but lifelong residents in Europe) in the Lavapiés district of Madrid; and Africans (AFR) at Abass Ndao Hospital, Dakar. The study complied with the Declaration of Helsinki.
Methods:
Analytical cross-sectional observational study with 88 CAU, 129 AFR, and 78 AFE, aged 18–75 years. All provided written informed consent. Static pupillometry was measured with the Nidek HandyRef-K portable autorefractor-keratometer; five measurements per participant by the same examiner.
Results:
• Ethnic comparison: mean pupil diameters: CAU 4.67 ± 0.7 mm; AFR 5.11 ± 1.0 mm; AFE 4.44 ± 1.0 mm ($p < 0.001$).
• Age comparison: In CAU, no significant differences among young, adult, and >45 years groups ($p > 0.05$). Both AFR and AFE showed significant differences ($p < 0.05$), with younger participants having the largest diameters, followed by adults, and the smallest values in those >45 years.
Conclusions:
Africans showed larger pupil diameters compared to Caucasians and Afro-Europeans, between whom no significant differences were observed. Age had no effect in Caucasians, while both Africans and Afro-Europeans showed decreasing diameters with age. These findings provide reference data for Senegalese populations and support further cross-ethnic research.
Key words: Axial length, Race, Sex, Ocular Biometry, Africans, Caucasians
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Clasificación de temáticas : Monitoring