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Title: The effect of ethnicity on the association between macular pigment distribution and foveal anatomy in healthy individuals

Abstract (1483 characters. Max 1500 characters)

Purpose: Macular pigment distribution may be associated with foveal anatomy. We explored the effect of ethnicity on this relationship.

Methods: Macular pigment optical density (MPOD) was measured using heterochromatic flicker photometry in 76 white, 80 South Asian and 70 black volunteers aged 18 to 39. MPOD spatial profiles were classified as exponential, ring-like or central dip. Foveal pit morphology measurements including inner retinal thickness (IRT) and foveal width (FW) were taken from Spectralis OCT scans. Mean spherical error and age was controlled for in analyses.

Results: MPOD profiles were associated with ethnicity ($P=0.009$): 58% with ring profiles were South Asian and 43% with dip profiles were black. Integrated MPOD up to 1.8° ($MPOD_{INT}$) was higher in ring (0.96 ± 0.26) and dip (1.00 ± 0.32) compared to exponential profiles (0.66 ± 0.21 ; $F(2) = 45.9$, $P < 0.0005$). Although white subjects had thicker IRT at 0° ($130 \pm 21\mu\text{m}$) than South Asian ($123 \pm 16\mu\text{m}$) and blacks ($116 \pm 141\mu\text{m}$; $F(2)=12.4$, $P < 0.0005$), and FW was narrower in whites ($2282 \pm 225\mu\text{m}$) than South Asian ($2474 \pm 260\mu\text{m}$) and blacks ($2449 \pm 284\mu\text{m}$; $F(2)=12.6$, $P < 0.0005$), foveal anatomy showed no difference between profiles ($P > 0.05$). $MPOD_{INT}$ was positively correlated to IRT at 0° only in blacks ($r = 0.35$, $P = 0.003$), but not related to FW in any ethnic group.

Conclusions: Ethnicity plays an important role in variations observed between MPOD profiles. While foveal morphology presented different characteristics across ethnic groups, this did not explain variations in MPOD distribution. Ethnicity is a covariate that should not be overlooked when investigating relationships between MPOD and foveal anatomy.

Disclosures: None