The influence of central corneal thickness on intraocular pressure measured by goldmann applanation tonometry among selected Ethiopian communities.

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Abstract:

Estimates of intraocular pressure (IOP) are influenced directly by the central corneal thickness (CCT). We assume and apply a single value for CCT (520 μm) in applanation tonometry estimates, although there is compelling evidence that CCT varies between individuals.

OBJECTIVE: To determine the influence of CCT and other factors on IOP among Ethiopians.

METHODS: A cross sectional study was conducted among 300 sampled individuals from June to July 2006. The CCT was measured using OcuScan® RxP Ophthalmic Ultrasound and readings of IOP were made with Goldmann applanation tonometer. The data was analyzed using SPSS version 12 and S-Plus 2000 of statistical packages. RESULTS: Out of 300 individuals, 184 (61.3%) were males. The mean age was 42.57 years (SD±16.71), mean IOP 13.39 mm Hg (SD±2.81), and mean CCT 518.68 μm (SD±32.92). There was statistically significant relationship between CCT and IOP (r=0.199, P<0.001) and a borderline statistically significant detectable change of CCT with age (r=0.012, P=0.057) with a downward trend of at least 0.001 mm decrease in CCT/decade starting from age 30 years but with pronounced change from 50 years onward. For every 30 μm difference in CCT from the mean in either way, there was an approximately 1.1 mm Hg difference in the estimated IOP from the mean IOP (13.40 mm Hg). No significant relationship was found between IOP and age, sex or ethnicity (P>0.05).

CONCLUSION: The CCT of Ethiopians is thin and hence can result in underestimation of IOP measured by GAT.