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GLAUCOMA

Central Corneal Thickness and Intraocular Pressure of Adult Nigerians: An Assessment of Zaria Community

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Introduction: Central corneal thickness (CCT) is known to affect the accuracy of intraocular pressure (IOP) measurements by applanation tonometry.^[1] CCT of normotensive Nigerian adults has been found to decrease with increasing age.^[2] This study was conducted to provide data on CCT in our environment and relate it to IOP and age.

Methods: It was a cross-sectional study of the right eyes of two hundred and two consenting consecutive adult participants, who were able to cooperate with IOP and CCT assessment in an eye screening camp. Visual acuity was assessed using Snellen's Chart, and anterior and posterior segment ocular examinations were performed using pen torch, direct ophthalmoscope, slit lamp bio microscope, and +90D lens. IOP was measured with Perkins Applanation Tonometer (Mk2, Clement Clarke). Glaucoma was defined as IOP >21 mmHg with a vertical cup-to-disc ratio (VCDR) ≥0.5. Those with binocular difference in VCDR of >0.2 ± IOP >21 mmHg were considered glaucoma suspects. Those who had evidence of eye infection or inflammation, corneal scar or disease (pterygium, dystrophy, or ectasia), contact lens wear, and previous major ocular surgery were excluded. The data were analyzed using Analyse-it for Excel software.

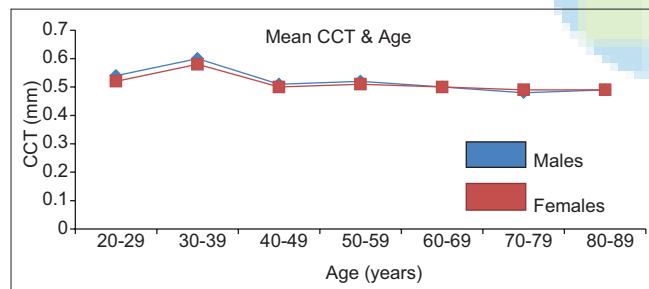


Figure 1: Mean central corneal thickness and age. Age/central corneal thickness Pearson's correlation: $r = -0.20$, $t = -3.97$, $P < 0.0001$

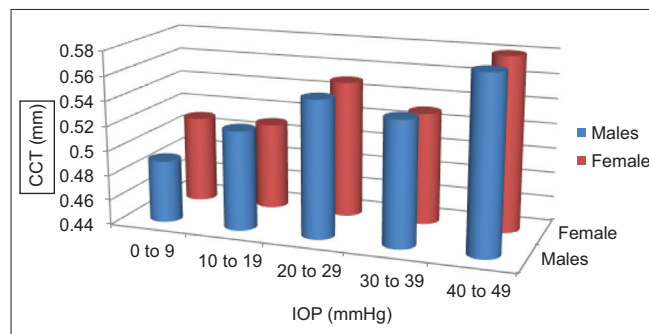


Figure 2: Mean central corneal thickness and intraocular pressure. The central corneal thickness/intraocular pressure Pearson's correlation $r = 0.16$, $P = 0.0206$

Results: The mean age of the participants was 46.2 ± 15 years. The age range was 18–80 years. The male:female ratio was 1:3. The mean CCT for 164 nonglaucomatous eyes was $526.90 \pm 35.3 \mu\text{m}$. There was no significant sex difference ($P = 0.8996$). The mean CCT for 38 eyes with glaucoma/glaucoma suspects was $523.10 \pm 41.3 \mu\text{m}$. The mean IOP was 16.8 ± 5.1 mmHg for nonglaucomatous eyes and 23.2 ± 4.8 mmHg for eyes with glaucoma/glaucoma suspects.

Discussion: Similar to what was documented in other parts of Nigeria (South-South and South-West),^[2-4] there was a negative correlation between CCT and age. In Iceland (Reykjavik Eye Study), no such relationship was documented but Foster *et al.* documented a decrease in CCT with age in Mongolians.^[5] There was a positive correlation between IOP and CCT in our study, but such relationship was not observed in other parts of Nigeria.^[2] Among Caucasians, in general, there is good agreement between clinic-based and population-based studies of an increase in IOP as CCT increases.^[6]

Conclusion: There was a negative correlation between age and CCT [Figure 1] but a positive correlation between CCT and IOP [Figure 2].

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Overcoming Barriers to Glaucoma Care in Nigeria

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Introduction: Glaucoma is a huge problem in Nigeria. It affects Africans on a scale unparalleled in most of the world. Africa is disproportionately affected by blindness with glaucoma accounting for 15% of blindness compared to 8% in the world.^[1] Reported prevalence of glaucoma in population-based studies within Sub-Saharan Africa ranges from 5.3% among South African blacks,^[2] to as high as 6.9% in Nigeria.^[3] Glaucoma in Nigerians is rapidly progressive, very aggressive, and it is often associated with very high intraocular pressures (IOPs). The high prevalence, early onset, and aggressive course of the disease present a high rate of glaucoma blindness. This is complicated by the

Abstracts

several barriers to glaucoma care in Nigeria. These include the gross lack of adequate facilities and equipment for diagnosis, management and follow-up, paucity of human resources, and socioeconomic, educational, and cultural/spiritual considerations.

Methods: PubMed and Medline search were carried out to review the barriers to glaucoma care in Nigeria and report possible ways to overcome these barriers based on evidence from literature.

Results: Ten publications which reported the prevalence, barriers to glaucoma care, and possible ways of overcoming them were reviewed. Barriers to glaucoma care generally occur at three levels which are barriers to understanding prevalence, barriers to diagnosis, and barriers to treatment.

Discussion: Nigeria has the highest prevalence of glaucoma in West Africa yet has very few human resources. The ratio of Ophthalmologists to population is about 1:500,000. Unfortunately, most of these ophthalmologists work in the cities and patients have to travel long distances to get care. Overcoming this barrier will entail training more ophthalmologists and other middle-level cadre staff. Medical management of glaucoma is impractical and rarely successful in Nigeria. The high cost of anti-glaucoma medications, the need for regular follow-up, and unavailability of the drugs worsen compliance which is an important factor in delaying glaucoma progression.^[4] Where medications are available, there is no guaranty on the authenticity and potency of the drugs at point of purchase largely because of incessant power outages which preclude the maintenance of cold chain. Poverty further worsens the problem of medical management. Trabeculectomy, however, has poorer success rates in Nigerians compared to Caucasians because of the aggressive healing in Africans.^[5,6] Despite this, it remains the most practical option for managing glaucoma in Nigeria. The regular use of antimetabolites for trabeculectomy can improve success rates. A major barrier, however, is the poor acceptance of surgical intervention.^[4,7] Few centers have laser machines for trabeculoplasties and glaucoma drainage devices are very expensive and not readily available. The regular use of antimetabolites for trabeculectomy can improve success rates. Improving the expertise of surgeons by organizing regular hands-on training will ultimately improve the management of glaucoma. Poor awareness of the disease constitutes a huge barrier to the successful management of the disease.^[8] Improving the awareness of the disease may help in earlier diagnosis and improved management in Nigeria. Another major barrier is the gross inadequacy of infrastructure and ophthalmic equipment in many centers.^[9] The diagnosis of glaucoma even among the few ophthalmologists is mainly based on disc findings and IOP. This

presents a peculiar problem because Africans have thinner corneas; therefore, some patients will be labeled normal based on a "normal IOP," especially in the absence of pachymetry. It is important to establish simple guidelines for diagnosis and management of glaucoma in low resource settings such as Nigeria. There must be a lot of emphasis on advocacy to encourage government, nongovernmental agencies, and philanthropists to invest in glaucoma care.

Conclusion: Overcoming the barriers to glaucoma care in Nigeria requires concerted efforts by everyone: Relevant government agencies, nongovernmental organizations, Ophthalmological Society of Nigeria, glaucoma specialists, and international collaborators.

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