

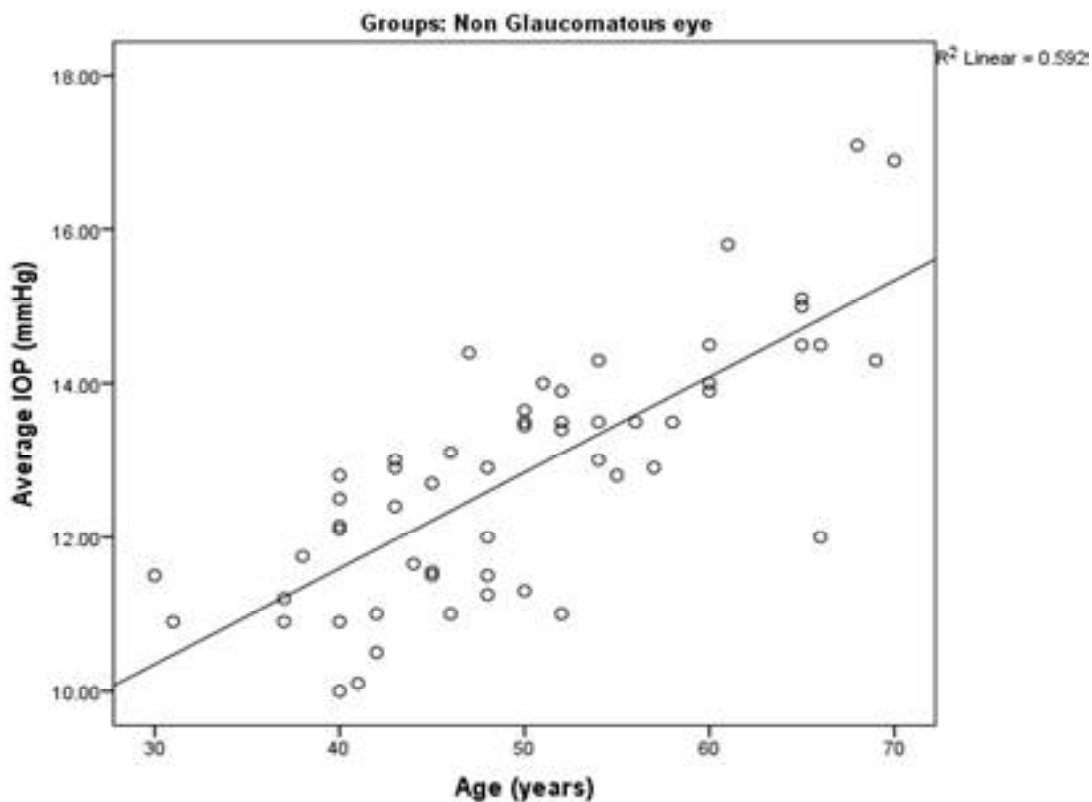
- worldwide in 2010 and 2020. *Br J Ophthalmol*; 2006. 90:262–267
4. Abduls MM, Sivasubramaniam S, Murthy GVS, Gilbert C, Abubakar T, & Ezelum CH. Causes of blindness and visual impairment in Nigeria: The Nigerian National Blindness and Visual Impairment Survey. *Invest Ophthalmol* 2009; *Vis Sci.*, 50(9), 4114-4120.
  5. Olawoye O & Tarella S. Spectrum of glaucoma presentation in a Nigerian tertiary hospital. *Nigerian Journal of Ophthalmology* 2014; 22 (1): 11-15.
  6. Allingham RR, Liu Y & Rhee D.J. The genetics of primary open angle glaucoma: A Review. *Exp Eye Res* 2009; 88: 837–844.
  7. Monemi S, Spaeth G & DaSilva A. Identification of a novel adult-onset primary open-angle glaucoma (POAG) gene on 5q22.1. *Hum Mol Genet* 2005; 14:725–733.
  8. Nazir S, Mukhtar M, Shahnawaz M, Farooqi S, Fatima N, Mehmood R & Sheikh N A. Novel single nucleotide polymorphism in exon 3 of MYOC enhances the risk of glaucoma. *PLoS One*. 2018; 13: e01951572018.
  9. Fan BJ & Wiggs JL. Glaucoma: Genes, Phenotypes, and New Directions for Therapy. *J Clin Invest* 2010; 120: 3064–3072.
  10. Fingert JH. Primary Open-Angle Glaucoma Genes. *Eye (Lond)* 2011; 25: 587–595.
  11. Lwanga SK, Lemeshow S & WHO. Sample Size Determination in Health Studies: A Practical Manual. Geneva: World Health Organization 1991; 10-28.
  12. Challa P, Herndon LW, Hauser MA, Broomer BW, Pericak-Vance MA, Ababio-Danso B & Allingham RR. Prevalence of Myocilin Mutations in Adults with Primary Open-angle Glaucoma in Ghana, West Africa. *Journal of Glaucoma* 2002; 5: 416-420.
  13. Fingert JH, Elise-Héon E, Liebmann J M, Yamamoto T, Craig JE, Rait J, Kazuhide Kawase K, Hoh S, Yvonne M, Buys Y M, Joanne-Dickinson J, Robin R, Hockey RR, Donna Williams-Lyn D, Trope G, Kitazawa Y, Robert Ritch R, Mackey DA, Wallace L, Alward M, Sheffield VC & Stone EM. Analysis of myocilin mutations in 1703 glaucoma patients from five different populations. *Human Molecular Genetics* 1999; 8: 899-905.
  14. Stone EM, Aldave AJ & Drack AV. Recommendations for genetic testing of inherited eye diseases: report of the American Academy of Ophthalmology task force on genetic testing. *Ophthalmology* 2012; 119:2408–2410.
- ### Factors Affecting Intraocular Pressure in Normal Subjects and Glaucoma Patients: Evidence from Abakaliki
- Ireka OJ<sup>1</sup>, Ogbonnaya CE<sup>1</sup>, Obinna Arinze C<sup>1</sup>, Aniemeka DO<sup>1</sup>, Ginger-Eke HA<sup>1</sup>, Ezisi CN<sup>1</sup>, Chuka-Okosa CM<sup>2</sup>
- <sup>1</sup>Department of Ophthalmology, Alex Ekwueme Federal University Teaching Abakaliki, Ebonyi, Nigeria  
<sup>2</sup>Department of Ophthalmology, University of Nigeria Teaching Hospital Ituku Ozalla, Enugu, Nigeria
- Corresponding author:** Onyekachi Jane Ireka, Email: onyireka@gmail.com; +234 806 4094 382
- Background:** Intraocular pressure (IOP) is affected by factors like age, gender, body mass index (BMI), and blood pressure among others.<sup>1,2</sup> Studies have investigated the relationship between IOP and age, gender, BMI, and refractive error.<sup>3-5</sup> There has been conflicting results as some studies have reported a correlation between IOP and age, gender, BMI, and refractive error<sup>3,5</sup> while results from other studies found no such association.<sup>4,6</sup> Therefore, the aim of this study was to determine the relationship between IOP and age, gender, body mass index and refractive status in the primary open angle glaucoma (POAG) and non-glaucomatous eyes.
- Patients and Methods:** A case-controlled study involving consecutive newly diagnosed POAG and non-glaucomatous patients conducted in the eye clinic of Alex Ekwueme Federal University Teaching Hospital, Abakaliki.

Demographic data included age, gender, and occupation. Height and weight were measured using a Standing Scale with calibrated metal rule. BMI was calculated as  $\text{Weight (kg)} / [\text{Height(m)}]^2$ . IOP was measured with Perkins hand-held applanation tonometer. Correlation and regression analysis was used to determine the relationship between IOP and age, gender, BMI and refractive status.

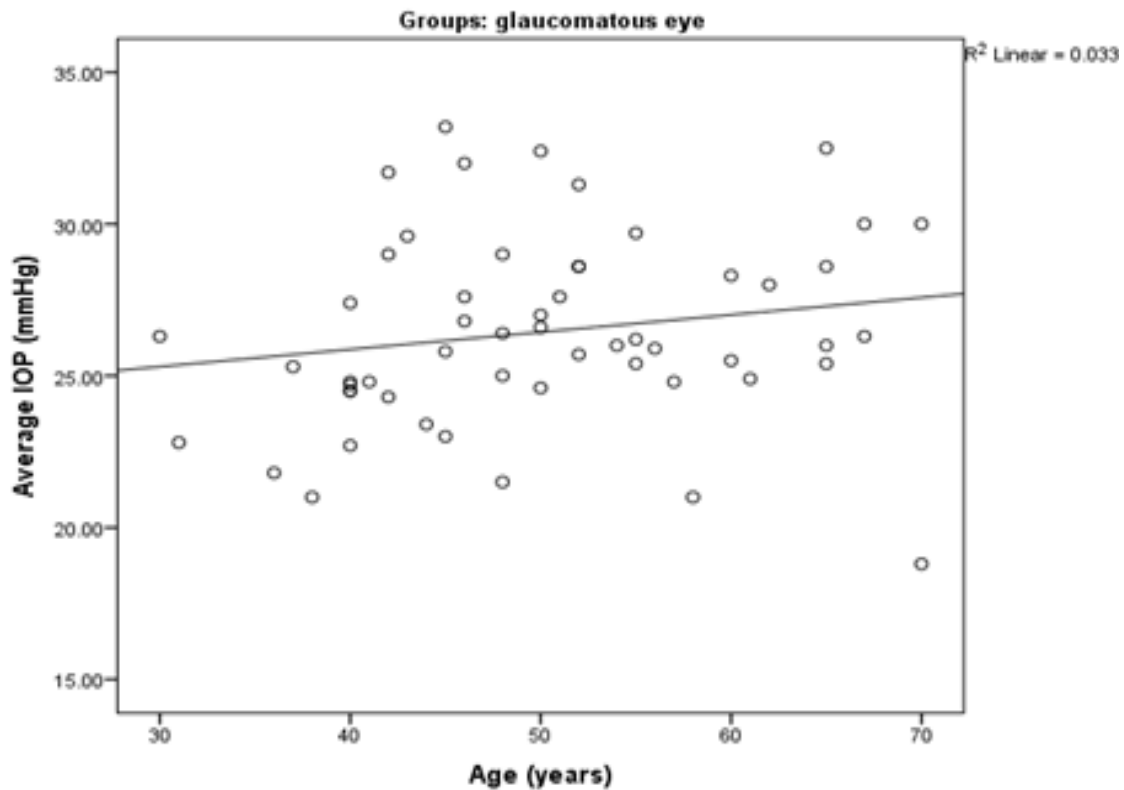
**Results:** There was a direct relationship between age and IOP in non-glaucomatous subjects (Figure 1) which was statistically significant ( $p < 0.001$ ;  $r = 0.8$ ). Intraocular pressure also increased with increasing age in POAG (Figure 2) but this was not statistically significant ( $p = 0.18$ ;  $r = 0.3$ ). There was no statistically significant difference between mean IOP in males and females among both POAG and non-glaucoma patients, with  $p = 0.72$  and  $p = 0.50$  respectively. BMI had a linear

relationship with intraocular pressure which was statistically significant in POAG ( $p = 0.01$ ;  $r$  value = 0.3) but showed no such relationship in non-glaucomatous patients ( $p = 0.38$ ;  $r$  value = 0.1). The relationship between mean IOP and refractive status was not statistically significant in non-glaucomatous ( $p = 0.19$ ;  $r = 0.2$ ) and POAG patients ( $p = 0.5$ ;  $r = 0.09$ ) respectively. **Conclusion:** IOP has linear correlation with increasing age in both non-glaucomatous patients and POAG. A statistically significant relationship was found between IOP and BMI in POAG but not in non-glaucomatous eyes. There was no relationship between either the gender or refractive status and IOP in non-glaucoma and POAG subjects respectively.

**Keywords:** IOP, Age, Gender, BMI, Refractive error



**Figure 1:** Mean IOP with age in years in non-glaucoma subjects



**Figure 2:** Mean IOP with age in years in POAG subjects

**References**

1. Tomoyose E, Higa A, Sakai H, Sawaguchi S, Iwase A. Intraocular pressure and related systemic and ocular biometric factors in a population-based study in Japan: The Kumejima Study. *Am J Ophthalmol.* 2010; 150(2):279-86
2. Kawase K, Tomidokoro A, Araie M, Iwase A, Yamamoto T. Ocular and Systemic Factors Related to Intraocular Pressure in Japanese Adults: The Tajimi Study. *Br J Ophthalmol.* 2008 Sep; 92(9):1175-9.
3. Huma Z, Zamir I, Mohammad AN, Ayyaz HA, Mazhar I. Relationship between Intraocular Pressure and Body Mass Index. *Pak Armed Forces Med J.* 2014; 64 (3):391-394.
4. Pedro-Egbe CN, Awoyesuku AE, Nathaniel2 GI, Komolafe RO. The Relationship between Body Mass Index and Intra-ocular Pressure in Port Harcourt Nigeria. *British Journal of Medicine & Medical Research,* 2013; 3(3): 589-595,
5. Jeelani M, Taklikar RH, Taklikar A, Itagi V, Bennal AS. Variations of intraocular pressure with age and gender. *Natl J Physiol Pharm Pharmacol.* 2014; 4:57-60.
6. Yassin SA, Al-Tamimi ER. Age, gender and refractive error association with intraocular pressure in healthy Saudi participants: A cross-sectional study. *Saudi Journal of Ophthalmology.* 2016; 30: 44-48

**Minimally Invasive Glaucoma Surgery (MIGS): Economically Viable in Sub-Saharan Africa**

*Adunola Ogunro, Victor Umeh, Olufemi Oderinlo, Ogugua Okonkwo, Adekunle Hassan*

*Eye Foundation Hospital Group*

**Corresponding author:** Adunola Ogunro, **Email:** adunolaogunro@gmail.com