

To Compare Corneal Sensitivity in Type 2 Diabetics to Controls at University of Port Harcourt Teaching Hospital, Nigeria.

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**Introduction:** The cornea is the most densely innervated tissue in the body<sup>[1]</sup>. Its innervations provide protective and trophic functions for corneal repair in relation to disease, trauma, or surgery<sup>[1]</sup>. The cornea is about 300-600 times more sensitive than the skin<sup>[2]</sup> and is supplied by the long ciliary nerves which are derived from the trigeminal nerve<sup>[3]</sup>. Corneal lesions can be found in approximately one-half of asymptomatic patients with diabetes mellitus and were first reported over thirty years ago<sup>[4]</sup>. Symptomatic diabetic corneal complications are usually heralded by subclinical abnormalities such as decreased corneal sensitivity<sup>[5]</sup>. Several studies<sup>[6,7,8]</sup> on Caucasians and Africans have highlighted a significant difference in the sensitivity between diabetics and diabetic-free control.

**Aim:** To compare the corneal sensitivity of diabetics with controls using the Cochet –Bonnet aesthesiometer.

**Methods:** This is a hospital-based case control study. The study involved consecutive recruitment of diabetics as they presented to the Endocrinology Clinic of University of Port Harcourt Teaching Hospital (UPTH). Controls were recruited simultaneously; there was no bias in subject selection. Study proforma was used to access

demographic information and disease-related variables including past medical history, alcohol history, drug history, use of topical medications and past ocular surgeries. The Cochet- Bonnet aesthesiometer was used to measure corneal sensitivity on all study subjects. Data was analyzed using the Statistical Package for Social Sciences (SPSS) Version 20.0 and p value of d"0.05 was taken as statistically significant.

**Results:** The study population consisted of 120 Type 2 diabetics (46 males and 74 females) attending the Endocrinology Clinic, UPTH and a similar number of age and sex-matched diabetic-free control. The mean age of the study subjects was 55.6 ±10.5 years for diabetics and 54.5 ±10.1 years for control (t- test 1.601, p-value 0.111). Of the 80 subjects with corneal sensitivity level of 60 mm, about one-thirds were diabetic (37.5%; 30) compared to 62.5% (n= 60) of healthy controls. This difference was statistically significant (X<sup>2</sup>= 5.00, df=1, p-value 0.025). The mean corneal sensitivity in diabetics was 52.4 ±6.7, and for controls 55.5 ±4.9. This was statistically significant (p-value <0.05). In the diabetic group, the mean corneal sensitivity in the right eye was 52.4 ±6.7 compared to 51.1 ±9.0 in the left eye. This was however not statistically significant (p=0.781).

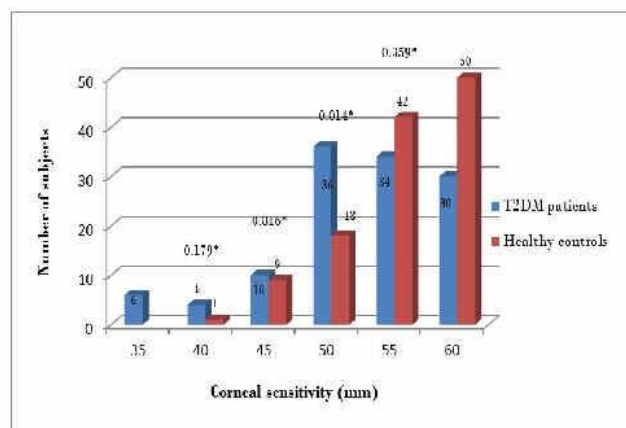


Fig. 1: Frequency of study subjects at different levels of corneal sensitivity

**Table 1:** Corneal sensitivity in different age groups of study subjects

Variables/Age grps	<40	40-49	50-59	60-69	>70	Total
<b>N in diabetics</b>	6	29	38	31	16	120
<b>N in control</b>	5	35	44	27	9	120
<b>Corneal sensitivity (RE)</b>						
<b>Diabetics</b>	57.5±2.7	52.8±5.6	51.2±7.9	53.7±5.9	50.0±6.7	<b>52.4±6.7</b>
<b>Controls</b>	57.0±4.5	55.3±4.2	55.8±4.7	54.3±6.2	57.2±3.6	<b>55.5±4.9</b>

Key \* represents the p-values using non parametric chi-square test

Discussion: There is a statistically significant reduction in the corneal sensitivity of diabetics when compared with age and sex-matched controls in this study. This is similar to previous studies<sup>[6,7]</sup> on Caucasians and further validates findings by Adeoti *et al*<sup>[8]</sup> in Nigeria but differs from findings by O'Donnell<sup>[9]</sup>. This difference may be as a result of smaller sample size (40 diabetic subjects) in his study compared to 120 diabetic subjects in this study. Similar to findings by Schwartz<sup>[7]</sup> the two corneas tended to be symmetrically involved in both diabetics and controls in this study.

Conclusion: There was a statistically significant reduction in corneal sensitivity of type 2 diabetics compared to age and sex-matched controls in Port Harcourt, and there was no statistically significant difference in sensitivity between the right and left eyes in both groups.

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