Abstract 29

REAL-TIME DIAGNOSIS OF DIABETIC RETINOPATHY BY A HANDHELD RETINAL CAMERA, ARTIFICIAL INTELLIGENCE AND SIMULTANEOUS SPECIALIST CONFIRMATION: CLOSING THE GAP

Oral

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Purpose:

To report on the clinical use of a portable handheld retinal camera with an embedded artificial intelligence (AI) platform, and an instantaneous notification system for the screening of diabetic retinopathy (DR) in an underserved rural area.

Methods:

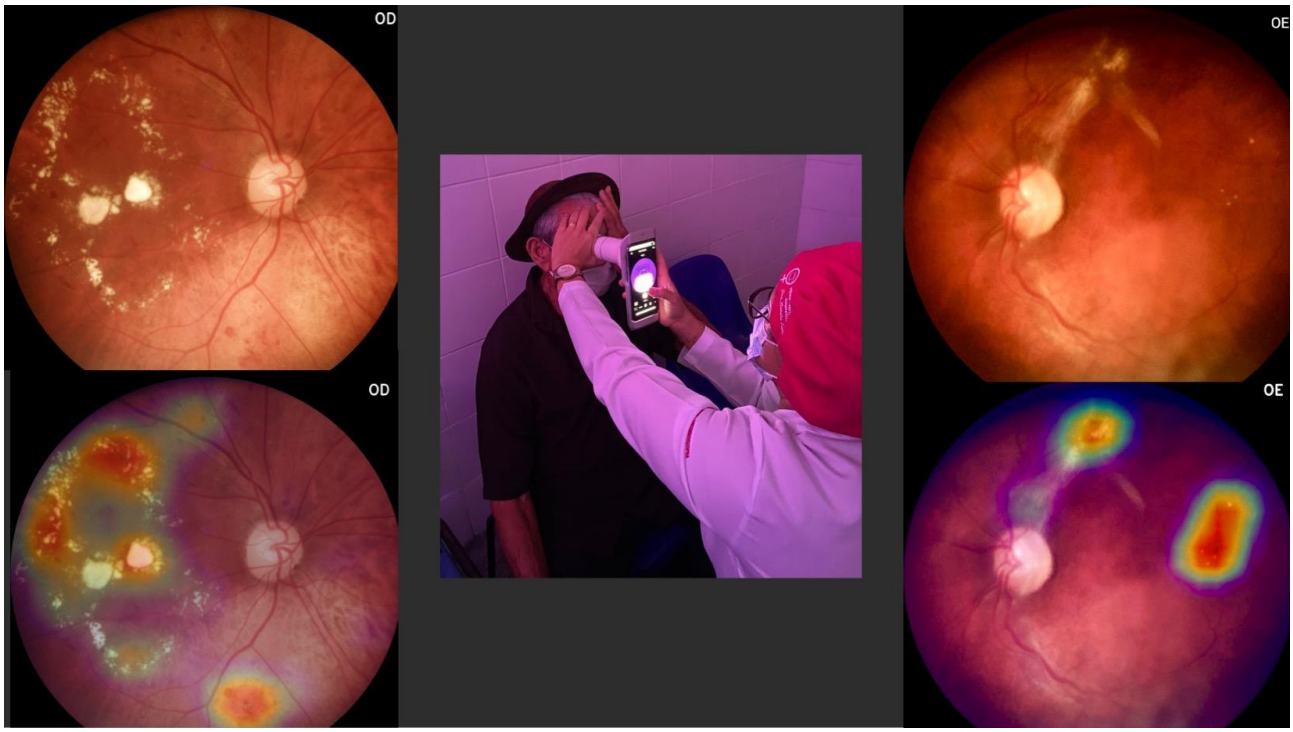
740 diabetic individuals (total diabetic population of the city) were invited by various advertising strategies. A handheld retinal camera, with its embedded AI system designed to detect retinal changes, was used. Immediate and automatic push notifications were remotely sent to retina specialists whenever significant abnormal findings were detected by AI. Physicians would classify images as referable or non-referable in real time. Referral criteria were more than mild DR, glaucoma or cataract suspects, and those with poor image quality. All altered exams were later reviewed to check for false negatives. All referred patients were scheduled for complete ophthalmic work-up and treatment.

Results:

A total of 400 patients were screened, accounting for 54% of the known diabetic population. The AI screening indicated that 111 individuals met the referral criteria: 57 with more than mild DR or poor-quality images, 45 with suspected cataract and 5 with suspected glaucoma. All altered exams were checked by a retina specialist in real time, and the subject was informed instantaneously by the technician after remote physician feedback. Retina specialist review confirmed there were no false negatives. After further analysis, 30 out of 57 referred were sent for treatment of any form of DR.

Conclusions:

This technology, using AI validated in real-time by telemedicine, was effective in screening for DR in an underserved area with an enormous gap in ophthalmological care. Only one fourth of the individuals were referred for review, thus saving time for the patient and the physicians.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