

Remote screening of diabetic retinopathy through a community-wide teleophthalmology program in Mumbai

Dear Editor,

In 2021, India had 74.2 million individuals with diabetes mellitus (DM), predicted to increase to 124.9 million by 2045.^[1] Diabetic retinopathy (DR) can lead to debilitating vision loss if left untreated, and successful management depends on access to routine screenings and timely treatment. Both the increasing prevalence of DM and the disparities in access to ocular care plaguing India represent a looming public health emergency.^[2]

The Kamala Sundaram Foundation (KSF) partnered with the Municipal Corporation of Greater Mumbai (MCGM) to establish the "Screening through Tele Ophthalmology for Prevention of Blindness." Seventeen MCGM dispensaries across Mumbai were targeted to provide free DR screenings to underserved DM individuals. Patients with DM visiting these MCGM dispensaries were screened, and technicians used a smartphone-based camera to obtain fundus images, which were relayed remotely to ophthalmologists on standby. If DR was detected or if an image was deemed ungradable, the patient was scheduled for an ophthalmology follow-up appointment.

We screened a total of 504 DM patients in 2021 (average age: 55.3; standard deviation [SD]: 10.2). Of these patients, 22 (4.3%) were diagnosed with DR, 428 (85.0%) had no DR, and 54 (10.7%) had ungradable images taken. The DR patients on average had 161.91 mg/dL (SD: 54.75) fasting blood glucose and a diagnosis of DM 9.53 years ago (SD: 5.75). The non-DR patients had 155.07 mg/dL (SD: 55.97) and a diagnosis of DM 5.99 years ago (SD: 4.89).

Teleophthalmology represents a promising avenue in improving access to diabetes-related eye care in India, especially in rural areas. The KSF plans to collaborate with the state government to establish DR screenings in government-run primary health centers in rural areas of India, where there is a shortage of ophthalmologists.^[3] Teleophthalmology centers would obviate the need for an ophthalmologist to travel long distances for DR screenings. Instead, technicians and/or trained health care workers can electronically relay fundus images from remote areas. In these rural centers, we also envision installing an AI-based system that can autonomously detect DR and connect such patients with an ophthalmologist, obviating the need for ophthalmologists to be on standby remotely for fundus image grading. An AI-based system would further increase our capacity to alleviate the burden of avoidable blindness that plagues India.

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Conflicts of interest

There are no conflicts of interest.

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