Usability comparison of a retinal screener between experienced and non-experienced user

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PURPOSE

- Undiagnosed diabetic retinopathy (DR) in earlier stages of disease is common since patients tend to decline the dilated fundus exam due to timely and visual inconveniences.
- Teleretinal screening can be successful should the retinal screener be simple enough for any non-ophthalmic personnel to capture clinically acceptable images.
- This pilot study compares the image quality captured on a retinal screener by a non-experienced operator with an experienced operator.

METHODS

- 12 undilated eyes from 7 subjects, (2 subjects diseased, 5 subjects healthy) were captured on the VELARA™ 200 (ZEISS, Dublin, CA) camera by an experienced user and a non-experienced user.
- A non-experienced user underwent a 10-minute training session before starting the study. Both users imaged the subjects and followed the step-by-step capture workflow provided by the system.
- An experienced clinician graded the images on a 1-5 scale (Figure 1).

CONCLUSIONS

- Results from this pilot study suggest that a non-experienced user was able to get similar image quality compared to the experienced user.
- This may be an effective way to do teleretinal screening in primary care in undilated eyes.
- The screener is not a replacement for a dilated eye exam as the retinal periphery is not captured. However, this may be an effective way to screen for early stages of DR and increase ophthalmic referrals to minimize the progression of DR.

RESULTS

Out of the total 12 images each captured by both users, 11 images captured by the experienced user were graded as clinically acceptable and 10 images captured by the non-experienced user were graded as clinically acceptable. Figure 1 shows examples of clinically acceptable and unacceptable images captured by both users. The mean and standard deviation of image quality captured by the experienced user and non-experienced user were 3.4±0.6 and 3.3±0.9 respectively.

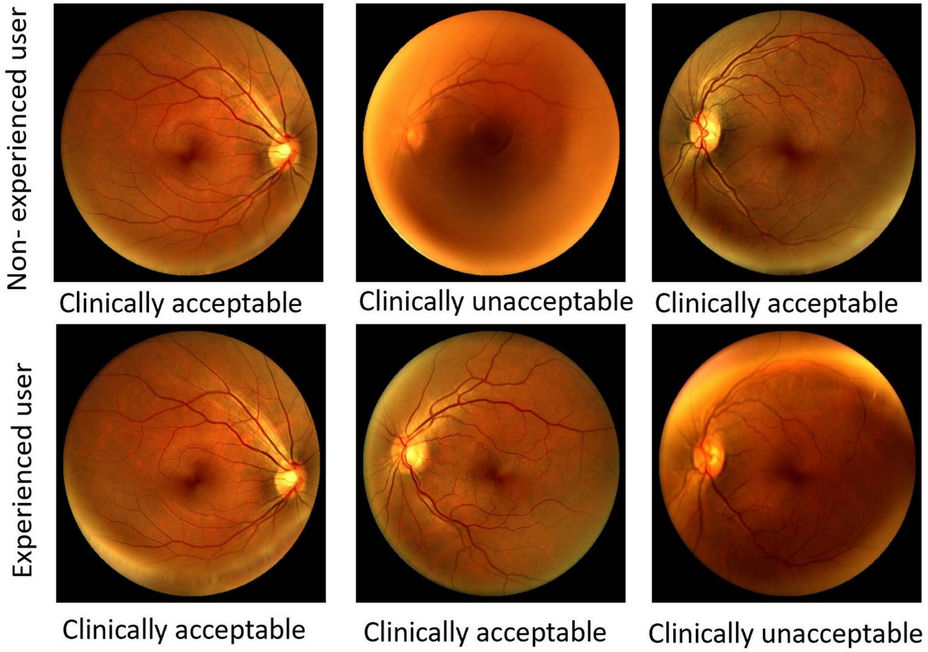

Figure 1: Clinically acceptable and unacceptable images captured by both the non-experienced and experienced users. All images were graded by a licensed optometrist on a 1-5 scale:

- 1–very poor, clinically unacceptable
- 2–poor, clinically unacceptable
- 3–fair, clinically acceptable
- 4–good, clinically acceptable
- 5–excellent, clinically acceptable

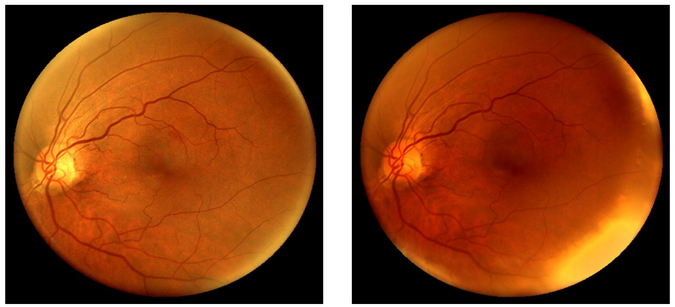

Figure 2: Clinically acceptable images of mild DR subject from a non-experienced (left image) and experienced user (right image).

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Disclosures: AC (E), NM (E), BE (C), PS (E), Carl Zeiss Meditec, Inc.