Project Title

Self-Assessment of Visual Acuity Via a Mobile App

Project Lead and Members

- Serene Sim
- Rose Ann Goh
- Eugenia Ng
- Chua Xinyi
- Kelly Wong
- Lim Mun Ching
- Louis Tan
- Cedric Yeo
- Dr Kelvin Teo
- A/Prof Gavin Tan

Organisation(s) Involved

Singapore National Eye Centre, Singapore Eye Research Institute

Healthcare Family Group(s) Involved in this Project

Medical

Applicable Specialty or Discipline

Ophthalmology

Aim(s)

Aim to reduce bottlenecks at testing stations in the clinics and reduce the waiting time.

Background

See poster appended/ below

Methods

See poster appended/ below

Results

See poster appended/ below

Conclusion

See poster appended/ below

Additional Information

Singapore Healthcare Management (SHM) Congress 2022 – 3rd Prize (Patient Experience category)

Project Category

Technology

Digital Health, Mobile Health, Digital Apps

Keywords

Self-Assessment, Visual Acuity, Mobile App

Name and Email of Project Contact Person(s)

Name: Serene Sim

Email: singaporehealthcaremanagement@singhealth.com.sg

EySEE

Singapore Healthcare Management 2022

Self-assessment of visual acuity via a mobile app

Serene Sim [1]
Rose Ann Goh [1]
Eugenia Ng [2]
Chua Xinyi [2]
Kelly Wong [2]
Lim Mun Ching [1]
Louis Tan [1]
Cedric Yeo [1]
Dr Kelvin Teo [1,2]
A/Prof Gavin Tan [1,2*]
*Corresponding author

1. Singapore National Eye Centre, 2. Singapore Eye Research Institute

Figure 1. Community engagement event by MDA Digital for Life (Seniors), May 2022

Introduction

EySEE is a smart mobile phone app that allows presentation of size standardised logmar optotypes and test the patients' near vision with an abbreviated logMAR protocol. With EySEE, patients can test their visual acuity (VA) at home before attending their eye consult appointment and reduce waiting time in the clinics as well optimise clinic resources e.g. manpower and space.

Aim & Methodology

The current standard of care is to perform VA test using a LogMAR chart with patient sitting at a distance in the clinic. In our on-going study, we compared the accuracy and reliability of the visual acuity reported by EySEE app versus standard of care (SOC) VA test by healthcare professionals in a group of 113 random patients in our eye clinics. EySEE performed a constant automatic distance calibration of 33cm to ensure the accuracy of the angle of vision measured during the test. EySEE displayed optotypes to the patients and answers were recorded through voice recording or selection inputs.

With EySEE at home before eye appt (Average time taken: 5 minutes)

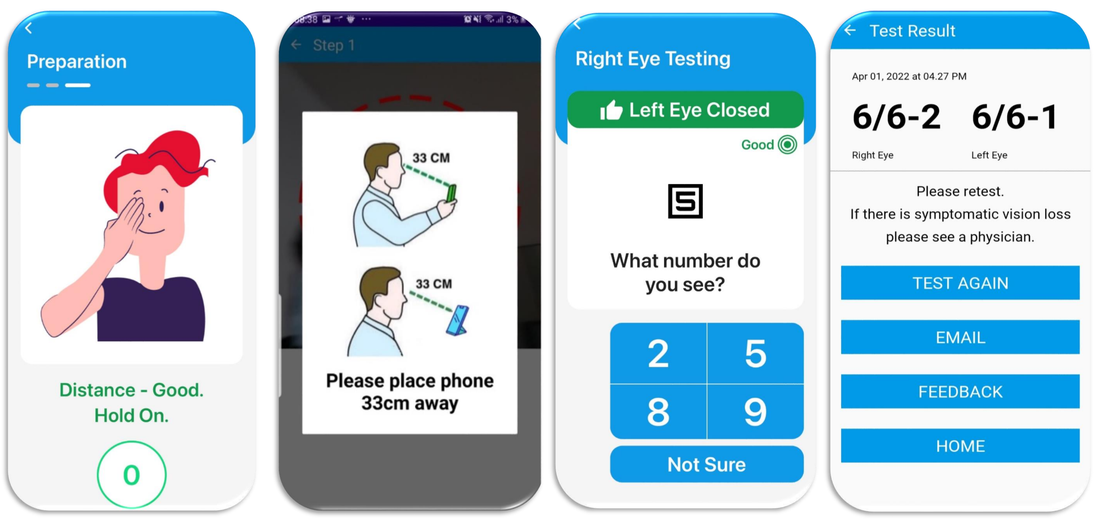

Figure 2. EySEE App screenshots

Standard of care in clinic VS proposed VA workflow with EySEE (Average time saved: ~ 40 minutes)

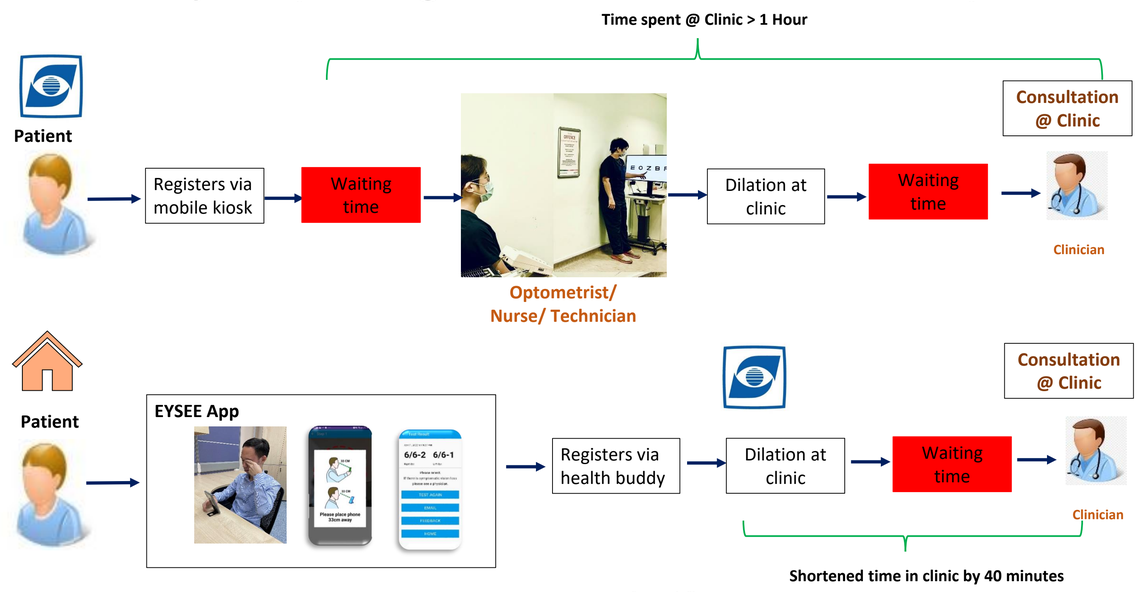

Figure 3. Comparison of workflows

Our interim results:

- Median age of our study patients was 66.
- For **97.7% of patients**, EySEE reported VA within 2 lines when compared to the SOC test and within this group,
- 82 patients had a difference of 1 line with p value of >0.9.
- Overall, the median difference of letters was 4.03.
- 4 patients were excluded due to poor VA of worse than 6/60.
- Patients required 5 minutes to complete the EySEE app test when compared to current standard of care of average of 8 minutes.

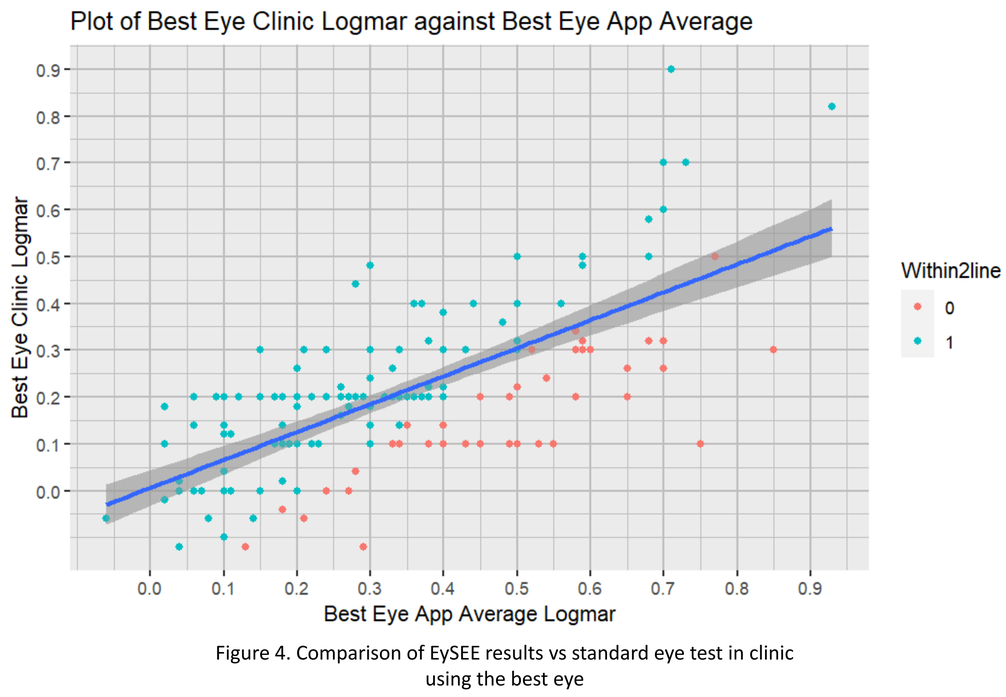

Figure 4. Comparison of EySEE results vs standard eye test in clinic using the best eye

Conclusion:

- EySEE has reported similar results when compared to current standard of care with a shorter testing period .
- Patients can potentially perform the test at home, and reduce bottlenecks at testing stations in the clinics and reduce the waiting time. Resources can be further optimized and re-allocated to support other functions within the eye clinic.
- EySEE will be further enhanced to improve its accuracy and plans to integrate with Health Buddy by FY23Q1

View the EySEE video here

SCAN ME

Reference

1. Lim LA, Frost NA, Powell RJ, Hewson P. Comparison of the ETDRS logMAR, 'compact reduced logMar' and Snellen charts in routine clinical practice. Eye (Lond) 2010; 24(4): 673-7.