Acceptability and Feasibility of a Virtual Reality Enabled Eye Exam in the Bascom Palmer Eye Institute Emergency Room

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Bascom Palmer Eye Institute, University of Miami Health System | VIRTUAL EYE CARE

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Objective

To Assess the acceptability and feasibility of using a virtual reality (VR) device to facilitate eye exams in an eye emergency room.

Background

- Eye emergencies can result in permanent vision loss and require rapid and reliable assessment of visual function.
- Nursing staff shortages and heavy workloads may delay workup examinations required prior to evaluation by an ophthalmologist or optometrist.
- The VisuALL system allows patients to complete components of the comprehensive eye exam using a head mounted display, handheld controller, and integrated virtual assistant which walks patients through the exam

Methods

- Eligible patients were invited to participate in the study and consent was obtained.
- Patients were oriented to the VR device and handheld controller and then completed visual acuity, confrontation visual field, extraocular motility, color vision, and pupillometry testing on the VisuALL device.
- An optometrist completed the manual examination for comparison as well as collected intraocular pressure measurements and dilated the patient.
- Patients were provided a paper survey to complete in private to rate their satisfaction with the experience.

Results

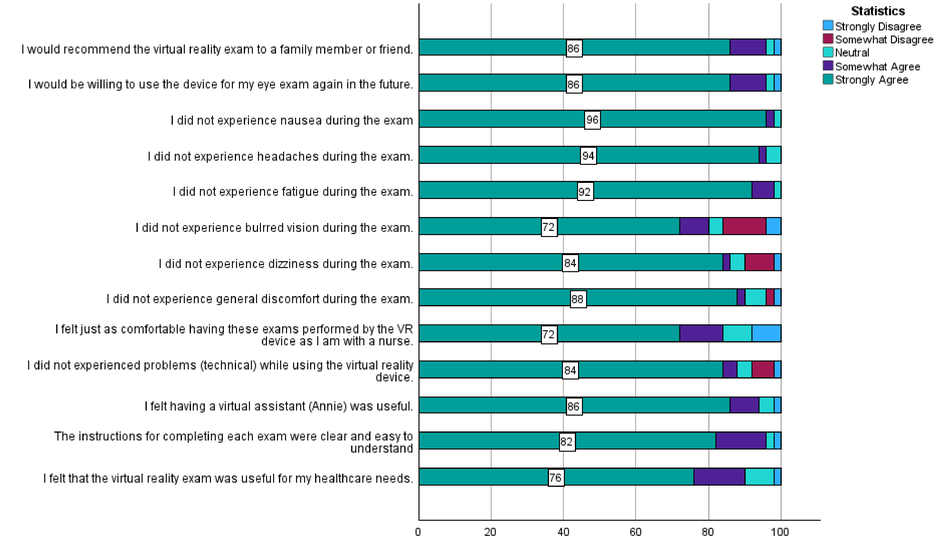


Figure 1. Likert scale of the post-test survey evaluating patient experience, satisfaction, and acceptability of the VisuALL device.

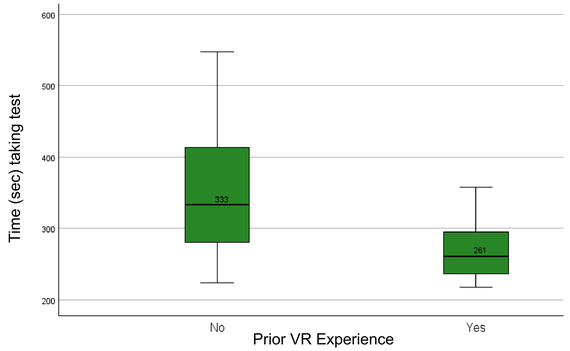


Figure 2. Boxplot of time (sec) taking test for prior vs non VR experience.

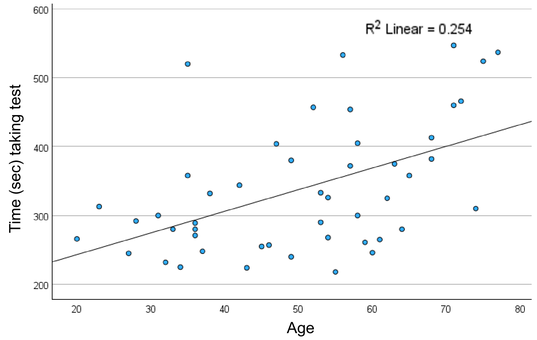


Figure 3. Pearson correlation of patient age and time (sec) taking test.

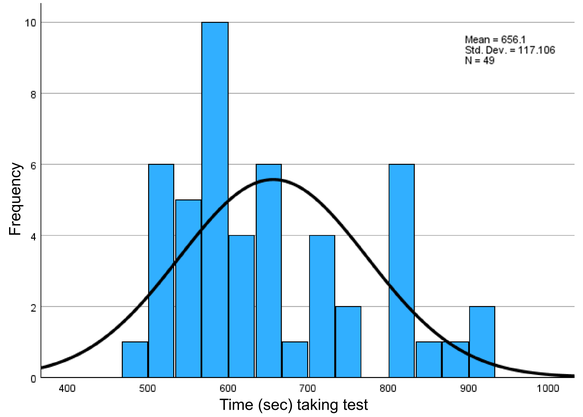


Figure 4. Histogram distribution of time taking test.

Conclusions & Future Directions

- Integration of the VisuALL system into the emergency room was feasible with 48 of 50 (96%) patients successfully completing the VR eye exam
- Patients reported high levels of satisfaction in a post test survey and a willingness to use the device in the future and recommend it to a family member or friend
- The average time to complete the eye exam, including time needed to provide instructions and repeat tests if needed, was 10 minutes 56 seconds (656 seconds)
- Factors associated with shorter test time included age and prior experience with VR, however elderly patients and VR naïve were still successful completing the exams

Disclosure and References

The authors have no conflict to disclose.
References available upon request.