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"OUT OF THE BOX" EASY
Testing the Usability of the
Welch Allyn® RetinaVue®
700 Imager

BACKGROUND

Over the past few years, many frontline care institutions have adopted teleretinal imaging programs to evaluate patients with diabetes for diabetic retinopathy (DR), the leading cause of blindness in working-age adults.[1] DR often starts with no symptoms, leading individuals with diabetes to fail to attend routine appointments with an eye care provider.[2] Unfortunately, once vision loss occurs, it is often too late to reverse its progression.

Teleretinal imaging programs allow primary care providers to capture an image of the patient's retina during a routine appointment using a specialized camera. The retinal images are uploaded and transmitted to a remote eye specialist, who provides a diagnosis back to the initiating facility. Patients with signs of DR are referred for further care with an ophthalmologist or optometrist.

Although teleretinal programs have been very successful to date, many suffer from workflow challenges that result in challenges that result in few patients being evaluated. Retinal cameras, particularly handheld cameras can be difficult and time-consuming to use. Busy nurses and medical assistants require in-depth training to operate the cameras and may not have time to capture images on all diabetic patients. Additionally, older patients and patients with chronic medical conditions often have small pupils, making capturing a clear image difficult without first chemically dilating the pupil.

The RetinaVue 700 Imager (RV700) aims to address these workflow challenges.The RV700 is handheld but image capture occurs automatically, similar to a tabletop camera, with minimal technique required by the user. It can capture clear images through pupils as small as 2.5 mm,[3] dramatically decreasing the need for dilating drops. Image capture can be completed in minutes, with minimal disruption to the busy clinic workflow.

This study aimed to understand how usable the RV700 was for new users who had no experience with retinal imaging. It was hypothesized that at least 85% of the novice users recruited could train themselves to use the RV700 within 30 minutes and demonstrate their competency by successfully capturing retinal images on a patient.

METHODS

Registered nurses, licensed practical nurses and medical assistants working in primary care and internal medicine were invited to participate in the study. Participants were provided with the RV700, the instructions for use manual, and the device technique guide. They were given 30 minutes to review the written documentation and practice using the device. Participants were not provided any formal training.

Following the 30-minute self-practice period, the participants were asked to capture retinal images on a patient. Participants were not given any assistance in using the camera or capturing images. Participant success was measured by successfully capturing retinal images of both eyes within three attempts.

RESULTS

A total of 35 participants were enrolled in the study. There were 12 (34.3%) registered nurses, 17 (48.6%) licensed practical nurses, and six (17.1%) medical assistants who participated.

All participants used the full 30 minutes to practice using the camera. Some users focused on reviewing the written materials and some participants spent more time using the camera. All participants successfully captured retinal images during the practice period. No assistance was provided, nor questions answered by the study staff during the practice period.

Following the 30-minute practice session, participants were introduced to a patient and asked to capture retinal images with no assistance. The task included:

● identifying the patient

● entering patient information into the camera

● capturing a retinal image of the right eye

● giving the patient time to rest between images

● capturing a retinal image of the left eye

● reviewing the captured images for quality.

All participants were able to capture a high-quality retinal image of each eye within three attempts. Three users took three attempts, five users took two attempts, and 27 out of 35 users were successful within a single attempt.

Study participants were also surveyed on the usability of the device. All participants either "Agreed" or "Strongly Agreed" that it was easy to manage patient data on the camera and 33/35 participants "Agreed" or "Strongly Agreed" that it was easy to capture a retinal image with the RV700. The two participants who found it more difficult to use the RV700 commented that there was a learning curve to using the buttons on the screen and aligning the camera with the patient's pupil.

All participants either "Agreed" or "Strongly Agreed" that it was easy to manage patient data on the camera.

CONCLUSIONS

The RV700 retinal camera proved to be easy to use in this usability study with clinical users who received no formal training. 100% of users were able to successfully capture patient retinal images after a 30-minute self-guided training session.

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For more information, please visit www.RetinaVue.com or contact your local distributor or Hillrom sales representative at 1-800-535-6663.

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[1]Centers for Disease Control and Prevention. Vision Health Initiative (VHI). Common Eye Disorders. Available at: https://www.cdc.gov/visionhealth/basics/ced/ index.html. Accessed July 24, 2019.
[2]National Eye Institute. Facts About Diabetic Eye Disease. Available at: https://nei.nih.gov/health/diabetic/retinopathy. Accessed May 30, 2017.
[3]See RetinaVue 700 Imager Directions for Use for more information.