Teaching home tonometry via a remote video link

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To evaluate the effectiveness of teaching patients with glaucoma self-tonometry remotely, and to understand the perspectives and experiences associated with virtual teaching.

BACKGROUND

Glaucoma is the leading cause of preventable sight loss in the United Kingdom. [1]

Raised intraocular pressure (IOP) is a well-established risk factor in glaucoma progression. IOP monitoring is integral to glaucoma care, as current glaucoma treatments aim to lower IOP.

Goldmann applanation tonometry (GAT) is the accepted industry standard but requires in-person clinic time and topical anaesthesia to obtain just one measurement.

The ICare HOME is a self-tonometer that shows good agreement to GAT and is repeatable. [2-5] Home tonometry has become particularly valuable since the pandemic, due to increased demand to undertake healthcare appointments remotely.

Until now, 30-minute in-person tutorials were required to teach patients how to use the ICare HOME.

METHODS

Consecutive patients attending outpatient glaucoma clinic were offered the opportunity to participate

INCLUSION CRITERIA

- Access to the internet
- Video calling device at home

EXCLUSION CRITERIA

- Previous use of home tonometry
- Recent surgery

→ 12 patients received the Icare HOME with instructions to attend remote teaching from home

→ 30-minute Near Me video tutorial on how to use the device was conducted by an optometrist

→ Questionnaire evaluating patients' perceptions on home tonometry and the video tutorial

→ Success recorded when good quality measurements taken (according to device) 4x daily for 2 days, in both eyes

DISCUSSION

This is the first known project evaluating teaching self-tonometry to patients with glaucoma virtually. It further supports previous studies that have demonstrated home tonometry as an acceptable and manageable way to monitor diurnal IOP's. [6-8] Willingness to learn via video call appeared to be associated in part with patients' recent familiarity with this technology. Video healthcare consultations have increased exponentially since the pandemic hit;[9] this seems to have lead to fundamental behaviour changes.

Pre-COVID		Post-COVID
300	Weekly Near Me consultations [9]	17,000
35%	Video calling usage in adults [14]	71%
22%	Video calling in over-65's [14]	61%

The overall rise in internet use indicates that virtual, remote home glaucoma monitoring might eventually reach almost all people living with glaucoma. Although patient-generated at-home optic nerve head analysis remains theoretical for time being,[10, 11] teaching the ICare HOME remotely offers the possibility of a remote IOP monitoring service for glaucoma patients, which may prove valuable in conjunction with emerging portable home-monitoring automated perimetry.[12, 13]

Small sample size | Observation bias? | Sample selection bias?

Those who declined to participate were not consistently documented nor interviewed to explore their decision so we are unable to identify the demographic of glaucoma patients that would not be happy to or might be unable to learn self-tonometry remotely. Future research involving a larger cohort will be useful in addition to identifying hard-to-reach glaucoma patients.



Photograph credit: Mr Peter Hastie

Most patients were able to perform self-tonometry successfully and consistently, when taught remotely.

Moreover, there are patients with glaucoma who are receptive to using video calling as a platform for healthcare interactions.

Teaching home tonometry remotely can further negate the need for patients to attend outpatient clinics to monitor IOP.

RESULTS

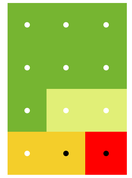
12 patients with glaucoma: mean (SD) age of 60.1 (15.5) years old. 58% were women.

100% would prefer to learn remotely as opposed to in-person

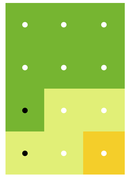
42% think they would have preferred to learn in-person before the pandemic

STRONGLY AGREE	AGREE	NEITHER AGREE NOR DISAGREE	DISAGREE	STRONGLY DISAGREE
• successful			• unsuccessful	

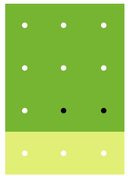
In your opinion, you are able to take successful measurements



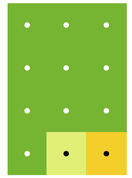
The Icare HOME is easy to use



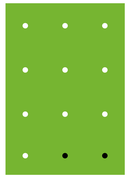
The measurements are comfortable to take



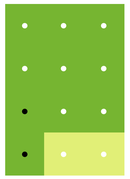
You would be happy to use the Icare HOME in the future



You were happy to be taught remotely



It was easy to learn how to use the Icare HOME via video call



"I think now I would prefer learn like this. It saves me time and also saves transport as I can't drive anymore and parking [at the hospital] is a nightmare for my husband"

"It's probably actually better to learn at home instead of being in the hospital as you have more confidence you can actually do it at home yourself; because you've already done it."

"Maybe people who haven't been used to being near their eyes, with eyedrops and all the things I'm used to, might find it more difficult."

"Before lockdown, I had never used video calls before, but now I play online bridge and "Zoom" my family frequently, so I'm much more comfortable with video calls now."

ABSTRACT & REFERENCES