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Introducing e-health technology to routine cataract care: patient perspectives on web-based eye test for postoperative telemonitoring

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Purpose: To explore cataract patients' experiences with an e-health tool for self-assessing visual function (ie, a web-based eye test), and to formulate recommendations for its successful adoption in routine cataract care.

Setting: Clinics in the Netherlands, Germany, and Austria.

Design: Mixed-methods study.

Methods: 22 participants were included in this study; in-depth interviews were conducted with 12. Questionnaires and in-depth semi-structured interviews were conducted alongside a multicenter randomized controlled trial evaluating the validity, safety and cost-effectiveness of remote care after cataract surgery (Cataract Online Refraction Evaluation, a Randomized Controlled Trial). Results were analyzed thematically.

Results: Participants reported positively about performing the web-based eye test at home. 4 overarching themes were identified in the interviews. First, participants were inventive in overcoming practical barriers encountered while conducting the test. Second, participants desired a clear presentation of test results and their meaning. Third, the ability to self-monitor visual function was appreciated. Fourth, most participants preferred to keep the option to contact their eyecare professional (ECP) postoperatively, especially when experiencing symptoms. Most would be satisfied with a phone consultation or an e-consult. Participants reported positive experiences with the web-based eye test. Barriers for successful adoption were identified, including insecurity about correctly performing the test, incomplete information on how to interpret test results, and a feeling that in-hospital assessments were superior to remote assessments.

Conclusions: It is recommended to focus on building trust in remote eyecare delivery and that access to the ECP be retained when medically indicated or deemed necessary by the patient.

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The interaction between healthcare providers and patients is increasingly mediated by a variety of digital technologies, commonly referred to as "e-health."[1] E-health technology allows remote health monitoring and can contribute to the transition toward patient-centered care by engaging patients in their own health and well-being.[2]

Several applications for self-assessing visual function have been introduced over the past decade.[3] These "web-based eye tests" could enable patients to self-assess visual function at home and provide themselves and their eyecare professionals (ECPs) with measurements without visiting a clinic. Thereby, web-based eye testing has the potential to improve the efficiency of certain ophthalmic patient journeys, by increasing possibilities for monitoring patients remotely (ie, telemonitoring). The high volume of surgical procedures and low adverse event rates make routine cataract surgery follow-up particularly interesting. However, it might be challenging to introduce web-based eye tests to patients with cataract, as the condition is most commonly age-related. Many older adults face barriers to e-health engagement, such as a lack of confidence in (or knowledge of) using digital technology.[4]

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For successful adoption of e-health technology, it is crucial to look beyond the aspects of validity, safety, and cost-effectiveness and also take the patients' perspective into account, especially during the development phase.[5,6] Therefore, this study aims to explore experiences of patients with cataract with a web-based eye test and to formulate recommendations for its successful adoption in routine cataract surgery follow-up care.

METHODS

This mixed-method study was embedded in a prospective clinical trial: Cataract Online Refraction Evaluation, a Randomized Controlled Trial (CORE-RCT) (ClinicalTrials.gov: NCT04809402). The study was performed in accordance with the Declaration of Helsinki and approved by the METC Utrecht, the Netherlands (NL74625.041.21); the Ethikkommission der Stadt Wien, Austria (EK 20-334-0121); and the Ethikkommission Saarbrücken, Germany (Ha 44/18). Written informed consent was obtained from all participants.

Cataract patients without ocular comorbidities, with planned bilateral surgery either immediate or delayed sequential, were invited to participate. Patients were eligible when meeting technical requirements before enrollment, meaning that they should be able to access the studied web-based eye test at home using their own devices without preceding extensive (on-site) training. After enrollment in the CORE-RCT, participants were randomized into either a "usual care" or "telemonitoring" group. This mixed-methods study specifically focuses on the latter. These telemonitoring participants performed the web-based eye test at 4 specific timepoints: preoperatively, within 1 week postoperatively, approximately 1 month postoperatively, and 3 months postoperatively. A hospital visit was planned at approximately 1 month postoperatively for the purpose of validating the web-based eye examination outcomes. After the last web-based eye test, participants were asked about their experiences in questionnaires and interviews. In this study, all questionnaire respondents between April 19, 2021 (the trial start date), and November 1, 2022, were included. In addition, semistructured in-depth interviews were conducted with Dutch-speaking participants only.

Web-Based Eye Test

The studied test has been developed by Easee BV. It allows users to self-assess visual acuity or refractive error using their own electronic devices (a computer or tablet and a smartphone). In this trial, a hyperlink to access the test was sent through email. Although the web-based test can be performed independently, it was recommended to perform it with assistance from a relative, if possible.

The web-based test consists of 3 phases: setup, vision assessment, and results. Audio and written instructions guide users through the test. Figure 1 depicts an overview of the different phases. Preoperatively, patients wore their current spectacles (if applicable) while performing the test, assessing corrected distance visual acuity. Postoperatively, the test was performed without correction, assessing uncorrected visual acuity (distance and near) and refractive error.

Data Collection and Analysis

Questionnaires The questionnaire used in this study is based on the theoretical technology acceptance model, a commonly used model to evaluate and incorporate user experience in the development process of technology.[7–9] Since its introduction, multiple research teams have extended this model, including to make it applicable to healthcare settings.[5,10,11] These models formed the reference framework for adoption into a questionnaire specific for web-based eye testing.[12] The full study questionnaire is presented Supplemental Table 1 (available at http://links.lww.com/JRS/A855).

Interviews To deepen the quantitative results, qualitative insights were gathered using the Consolidated Criteria for Reporting Qualitative studies.[13] Semistructured interviews took place by phone (n = 9) or by video call (n = 3), as preferred by the participant. J.L.J.C. and E.P.E.M., both medical doctors with experience in (qualitative) research, conducted the interviews. The interview topic list was based on preliminary questionnaire results. Interviews were conducted until saturation was reached, meaning that new insights were no longer gained. Interview transcripts were imported into NVivo (release 1.5.1) and analyzed thematically. The initial coding scheme was based on the topic list and extended by additional themes emerging from transcript analyses.

RESULTS

Participant Characteristics

A total of 22 participants were included. In-depth interviews were conducted with 12 of them. The demographics and clinical characteristics are summarized in Table 1.

Quantitative Analysis

Figure 2 depicts responses to a relevant subset of the questionnaire. The full questionnaire outcomes are presented in Supplemental Table 1 (available at http://links.lww.com/JRS/A855).

An overall positive attitude toward the web-based eye examination was identified. The majority was willing to use e-health services like the web-based eye examination in the future (mean 4.1/5.0) and considered the web-based eye test useful for self-monitoring visual function (3.9/5.0). The web-based eye examination was reported to be easy to use (3.8/5.0); participants felt adequately capable of using their own electronic devices for e-health services (4.3/5.0); and most participants stated that they would be able to complete the eye test independently, without assistance (3.7/5.0). The web-based eye test was considered trustworthy by almost all participants (4.3/5.0), and participants trust their physician's judgment on the use of the web-based eye test (4.3/5.0).

Qualitative Analysis

Participants reported positively about performing the web-based eye test. In general, instructions were considered clear and participants were adequately capable to perform the web-based test. One participant explicitly stated that the test was "way too difficult, for older aged adults."

All participants were first-time users of the web-based eye examination and many stated that, initially, the setup in their home environment felt odd, although their familiarity with the testing environment and the tool itself increased over time. The majority executed the test independently; some (n = 3) were assisted by a relative, especially for controlling the smartphone during the vision assessment.

Four overarching themes were identified in the data. Relevant quotes are given in Table 2.

Theme 1: Inventiveness to Overcome Practical Barriers While quantitative results indicated that participants had no difficulty in conducting the test, the interviews revealed that participants did experience some challenges while doing so. Notably, participants were inventive in overcoming these challenges, and their general user experience was not negatively affected. The main challenge reported was

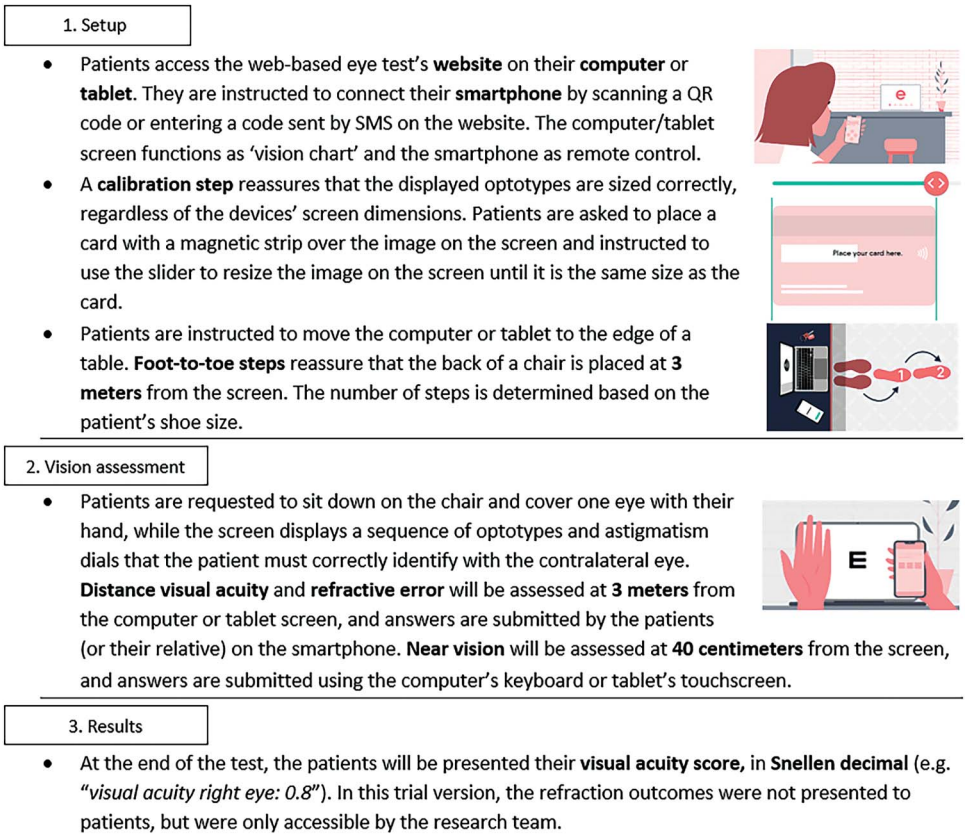

Figure 1. Overview of the 3 different phases of the studied web-based eye test.

controlling the smartphone during the vision assessment, as the postoperative test is performed without spectacles and most of the participants require reading spectacles for near work activities because their postoperative target refraction was emmetropia. In addition, some mentioned that they were not used to controlling their smartphone with one hand while also holding it (the other hand was covering their eye). Some overcame this by asking a relative to control the smartphone. Others, despite having a relative around, took other steps to complete the test independently. These included increasing the distance between their eyes and smartphone by stretching out their arm or placing their smartphone on a table and using a pencil-eraser to control the touchscreen. Others increased the smartphone's font size or intermittently put on reading spectacles during the assessment.

Theme 2: Interpretation of Web-Based Test Results At the end of the test, the visual acuity scores were presented in Snellen decimal. Participants' interpretation of these presented test results varied greatly. Some paid little attention to the result page or reported that they did not know how to interpret the scores. Other participants actively engaged with the presented scores by comparing them to previous web-based or in-hospital visual acuity scores and actively drew conclusions (eg, that their eye sight has improved). Regardless of these different interpretations, all participants expressed the desire of being presented a result at the end of the test. Presenting only a numerical score without additional information was confusing to some. They stressed the need for additional information on how to interpret test results (eg, "Is the score good/bad?") and whether follow-up actions are required, information that was currently considered incomplete (quote 1, Table 2).

Although the quantitative results indicated that most participants "trust" the web-based test, many reported that their opinion on the test's trustworthiness turned positive only after having seen that the results were fairly similar to in-hospital findings. Participants were explicitly asked if they would trust the web-based test to the same extent, without confirmation of results during an in-hospital consultation. All answered that they consider a conventional in-hospital assessment more trustworthy. Reasons for being hesitant to trust the web-based test revolve around being insecure about correctly performing the test. This was partly because of the absence of feedback on their performance and the inability to ask questions to get this feedback. In addition, participants questioned whether their personal devices were sufficient for the web-based test and mentioned an unfamiliarity with home-based testing in general (quote 2, Table 2).

All participants stated that, one way or another, the web-based test results require confirmation. Most considered the test trustworthy for future use after a single confirmation of the result, potentially negating the desire for additional in-hospital follow-up. The majority desired confirmation by an ECP during an in-hospital consultation. Others believed it would be sufficient to receive

Table 1. Demographics and clinical characteristics

Parameters	All participants (n = 22)	Interviewees (n = 12)
Age (y), mean (SD)	70 (7)	71 (6)
Sex (M), n (%)	14 (64)	6 (50)
Country, n		
The Netherlands	12	12
Germany	3	0
Austria	7	0
Best corrected VA score assessed at the clinic (logMAR), mean (SD)		
Preop (right eye)	0.27 (0.19)	0.29 (0.22)
Postop (right eye)	−0.03 (0.09)	−0.04 (0.08)
Preop (left eye)	0.25 (0.20)	0.35 (0.23)
Postop (left eye)	−0.05 (0.11)	−0.03 (0.12)
Postop target refraction, n (%)[a]		
Emmetropia	18 (82)	8 (67)
Myopia (−2.00 D)	4 (18)	4 (33)
Vision-related quality of life score (scale 0-100), mean (SD)[b]		
Preop	76 (12)	76 (15)
Postop	91 (5)	94 (4)
General health condition: self-rated health score at baseline (scale: 0%-100%), mean (SD)[c]	84 (17)	80 (22)
Self-reported travel distance between home and eye clinic in km, mean (SD)	11 (7)	9 (5)
Assisted by a relative while conducting the web-based test, n (%)	6 (27)	3 (25)
Device used for web-based test, n (%)		
Desktop computer	10 (46)	4 (33)
Laptop	10 (46)	7 (58)
Tablet	2 (9)	1 (8)

[a]Postoperative target refraction was similar for both eyes
[b]Based on National Eye Institute Visual Functioning Questionnaire-25[14]
[c]Based on the EuroQol 5 dimensions questionnaire 5 level version visual analog scale at baseline[15]

computerized textual feedback on their performance or human feedback from an ECP remotely (eg, by phone).

Theme 3: Value for Self-Monitoring Participants who actively engaged with the test results mostly appreciated having access to these themselves. Some reported that "active" self-testing resulted in greater insights into their visual improvement, as compared with "passively" being assessed at the hospital. When desired, participants could—and regularly did—repeat the web-based eye test to monitor visual function over time. Some expressed an intention to use the tool again in the future when suspecting a visual deterioration (quote 3, Table 2). One participant remarked that being given the tools for self-monitoring in follow-up care is a sign of "being taken seriously" and that the patient's input is valued (quote 4, Table 2).

Participants were positive about being able to perform the web-based test at moments suitable to them. It was mentioned that self-testing saves time and efforts related to clinic visits and that this could be beneficial for patients with limited mobility. Yet, this study population did not consider visiting the hospital as an evident barrier.

Theme 4: Need for Human Interaction The opinions on interaction between patients and ECPs in remote cataract surgery follow-up varied. Most of the participants wished to maintain the option to contact their ECP, mainly to discuss questions or postoperative symptoms. It was suggested to incorporate functionality in the web-based test for

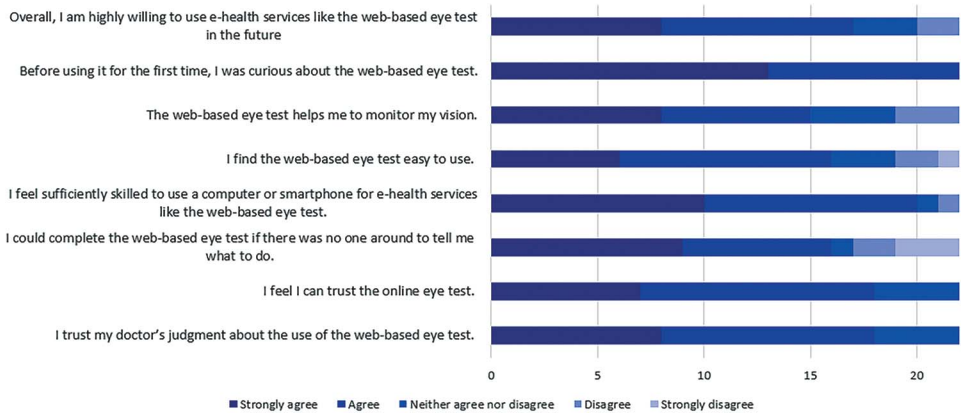

Figure 2. Selection of questionnaire results.

Table 2. Quotes illustrating interviewee perspectives

Theme	Quote[a]
Interpretation of web-based test results	Q1: Yes, so the number 0.25 is presented to me, and it leaves me thinking: "What am I supposed to do with that? What does it mean?"—*73-year-old male*
	Q2: The instructions were all clear and easy to follow. But trusting myself in terms of thinking: "I am doing this right," that's not there yet. It may, however, be possible… but I might be a bit old-fashioned, due to my age. I can image that younger people trust this practice more easily—*78-year-old male*
Value for self-monitoring	Q3: You can print the test results and self-monitor the improvement. I thought that was very interesting. I must admit that I even performed the test one extra time, in between the requested testing. (…) I must also admit that I had my wife perform the test as well, to get an impression of her visual function—*57-year-old male*
	Q4: By explaining what's going to happen and explicating what it means, the test result… the patient says "I am being taken seriously. I execute the test, a result follows, and I also understand what it means."—*73-year-old male*
Need for human interaction	Q5: During the hospital visit, they (ie, the eyecare professionals) do not only assess the visual function. They also look behind the eyes. Maybe they are checking if the lens has been correctly implemented, I don't know—*71-year-old female*

[a]Quotes have been translated from Dutch to English

reporting symptoms. Most would be satisfied with a phone consultation or an e-consult (eg, through email/chat) while others explicitly appreciate an in-hospital consultation. Some mentioned that they would not require human interaction if web-based test results were good and symptoms or questions absent.

Some participants mentioned that they value in-hospital consultations for being more comprehensive than web-based eye testing, as these consultations usually include slitlamp examinations in addition to the vision assessment. Furthermore, other examinations, such as "scans", could be performed easily when at the clinic. Notably, it was not always clear to participants what in-hospital examinations were performed exactly, yet they valued being examined by an ECP, even in the absence of symptoms (quote 5, Table 2).

Apart from medical reasons, some participants appreciated human interaction for its social dimension, namely for expressing gratitude to the surgeon or sharing experiences regarding the surgery and recovery period. It was specifically mentioned by some that this may be a characteristic of their generation, being of older age and not particularly familiar with digital communication in general.

DISCUSSION

This study analyzed patients' experiences with a web-based test for self-assessing visual function after cataract surgery. Overall, participants reported positively about the test. Instructions were considered clear, and although some practical challenges were encountered while performing the test, participants were inventive in overcoming these and their overall user experience was not negatively affected. Almost all participants were willing to use the test again in the future. Although participants reported being adequately capable of performing the test, several barriers for successful adoption were identified in the interviews. We argue that focusing on these barriers in further improvements of the test facilitates its adoption in cataract care.

The first barrier was insecurity about performing the web-based test correctly. Participants missed feedback on their performance. Furthermore, some questioned whether their own devices were sufficient. This is in line with a study among 46 million senior Americans, which identified that many lacked confidence to use electronic devices for online activities.[14] We expect that this insecurity will fade away over time, as usage of internet services is growing rapidly.[15] Future patients with cataract will generally be more familiar with technology.

Interestingly, all participants desired a confirmation of the test results, including those who were confident about performing the test correctly. This suggests that the need for confirmation of the test results is not solely dependent on a (generation-specific) unfamiliarity with technology. We acknowledge that patients desiring an in-hospital confirmation after every remote self-assessment would jeopardize the justification of investments in remote eyecare. Interestingly, most participants reported that a single confirmation of the test result was sufficient for trusting the test in future attempts. We suppose that granting patients access to the technology preoperatively could allow them (and the ECPs) to assess their ability to use this test and concurrently allows for a confirmation of the result, reassuring them to trust the test in the future.

A second barrier was the inability to interpret web-based test results. Solely reporting a numerical score, without any further information regarding its meaning or additional steps to be taken, was confusing to some participants. In the absence of an ECP, participants expressed a wish to be well-informed about their eye status after completing the test and which follow-up actions are required (eg, contacting the clinic). This indicates that patients are motivated to actively participate in follow-up care. By providing patients the opportunity to do so, the web-based eye test recognizes the central role of patients as informed and engaged partners in decisions affecting their own health. This contributes to promoting patient-centered care, a key element and goal for healthcare in the 21st century.[2,16]

Third, some participants expressed the feeling that in-hospital assessments are superior to web-based home-assessments, as more comprehensive examinations can be performed if needed. This line of thought was also captured in a recent study among non-ophthalmic patients, evaluating patients' attitudes toward telephone consultations during the COVID-19 pandemic. In this study, most patients were worried about the accuracy of their health assessment in the absence of physical examinations and nonverbal communication.[17] It suggests a general feeling that quality of care is reduced when delivered remotely. However, examples are available where remote care seems to be a feasible and safe alternative to in-hospital assessments.[18,19] In addition, in the context of cataract surgery follow-up, the value of a comprehensive ophthalmic examination after uneventful surgery is debatable when patients do not experience symptoms, as shown by a large comparative cohort study on cataract follow-up in Finland.[20] According to the Dutch national cataract surgery guidelines, clinically relevant outcomes indicative of surgical success are the improvement of visual acuity and visual function preoperatively.[21] These outcomes can be assessed remotely with the studied web-based eye test, complemented with patient-reported outcomes questionnaires focusing on vision-related daily life activities (such as the Catquest-9SF).[22]

Even when the aforementioned barriers are adequately overcome, it should be noted that human interaction remains important. Patients wish to communicate with their ECP to discuss symptoms or ask questions. For some, the social dimension is a fundamental part of (follow-up) care.

Based on the included experiences of patients with cataract with the web-based eye test, we formulated the following recommendations to advance its successful adoption in routine cataract surgery follow-up care: (1) New versions of the web-based test should address the patients' need for feedback during the test, for example, by providing artificial intelligence–guided live feedback during the vision assessment. Furthermore, the result page should include more information on how to interpret test results and which additional actions are required. (2) The web-based eye test should be introduced to patients preoperatively, for example by providing a brief instruction guide requesting patients to access and perform the test before the preoperative consultation. This allows confirmation of the web-based test result during this consultation, thereby both assisting ECPs to assess patients' eligibility and creating patients' trust regarding the test result. Furthermore, "practicing" the web-based test preoperatively fosters the patients' capacity to perform the assessment postoperatively. (3) Costly and time-consuming training of patients should be avoided. Patients who are unable to complete the web-based eye test after brief instructions, or who do not have a relative who can assist them in achieving this, should not be considered eligible. The web-based eye test is designed to be intuitive and self-explanatory, and those with basic digital skills should be able to complete the test at home without training. (4) At the preoperative consultation, ECPs should invite patients to contact them postoperatively when experiencing alarm symptoms. (5) A safety guard should be implemented to ensure that patients with these symptoms are adequately identified and contacted by their ECP, in the case they do not reach out themselves. This could take the form of a self-reported triage questionnaire, as an addition to the web-based vision assessment, linked to an automated warning system. (6) Naturally, the option for conventional, in-hospital follow-up should remain open to those who are not willing or able to perform the web-based test at home.

The mixed-methods approach allowed for a deeper understanding of patients' experiences with the web-based eye test, as insights gained during the in-depth interviews were supplementary to the quantitative questionnaire results. Interviews were conducted until data saturation was reached, meaning that no longer new insights were gained. This is the most commonly used concept for determining sample sizes in qualitative research.[23,24] Sample sizes in qualitative studies, like this study, are commonly smaller than that in clinical studies based on quantitative research.

Interestingly, barriers identified in this study relate to more general themes revolving around remote care, such as the unfamiliarity with technology and the altered human interaction. Therefore, a strength of this study is that these insights will add to the academic and societal debate on how e-health technology should meet the healthcare needs of older adults.

It is important to note that only patients who were willing and able to use the web-based eye test were included. Participants with an innate sense of curiosity and general interest in technology are known to be more likely to engage with e-health.[4] There is a group of patients whose low digital literacy may restrict them from using this web-based test. Notwithstanding, in this emerging field, the feedback of early technology adopters is most valuable to improve the web-based eye test and increase the access to remote eyecare delivery.

In this research setting, all participants had an in-hospital examination to validate the web-based test. Future research could investigate the web-based eye test without a parallel offering in-hospital consultation. It is important to realize that this setting means that ECPs will have to rely on the patients' own measurements. Self-testing technology shifts tasks and responsibilities to patients.[25] For some, this additional burden may be stressful.[26] Notwithstanding, this new practice will also have implications for the ECPs. It would be interesting to explore their perspectives on web-based eye testing.

This study evaluated patients' experiences with a web-based test for self-assessing visual function after cataract surgery. Overall, patients reported positively about their experience with the test. Barriers for adoption were identified. To further promote successful adoption of the web-based eye test in cataract surgery follow-up care,

recommendations were formulated. These focus on building trust in remote eyecare delivery and acknowledging the need to retain access to the ECP when medically indicated or deemed necessary by the patient.

WHAT WAS KNOWN

- Web-based eye tests enable patients to self-assess their visual function at home, thereby increasing possibilities for remote monitoring. This could potentially improve the efficiency of routine cataract patient journeys.
- Cataract is often age-related, and as older adults face barriers to e-health engagement, it might be challenging to introduce technology like this to this patient population.
- For successful adoption of this web-based test in routine cataract care, it is crucial to take the patients' perspective into account. Experiences of these early adopters can guide the improvement of the web-based test.

WHAT THIS PAPER ADDS

- Participants reported positive experiences with performing a web-based test to self-assess visual function after cataract surgery.
- Barriers for successful adoption of this web-based eye test were identified, including insecurity about correctly performing the test, incomplete information on how to interpret test results, and a feeling that in-hospital assessments are superior to remote assessments.
- For successful adoption of this web-based test in cataract surgery follow-up, it is important to focus on building trust in remote eyecare delivery and acknowledge the need to retain access to the eyecare professional when medically indicated or deemed necessary by the patient.

REFERENCES

1. Kluge E-HW. Chapter 5: framework considerations. In Kluge E-HW, ed. The Electronic Health Record: Ethical Considerations. Cambridge, MA: Academic Press; 2020:105–133
2. World Health Organization. From Innovation to Implementation: eHealth in the WHO European Region. Geneva, Switzerland: WHO; 2016
3. Claessens JLJ, Geuvers JR, Imhof SM, Wisse RPL. Digital tools for the self-assessment of visual acuity: a systematic review. Ophthalmol Ther 2021;10:715–730
4. Wilson J, Heinsch M, Betts D, Booth D, Kay-Lambkin F. Barriers and facilitators to the use of e-health by older adults: a scoping review. BMC Public Health 2021;21:1556
5. Jansen-Kosterink S, Dekker-van Weering M, van Velsen L. Patient acceptance of a telemedicine service for rehabilitation care: a focus group study. Int J Med Inform 2019;125:22–29
6. Holden RJ, Karsh BT. The technology acceptance model: its past and its future in health care. J Biomed Inform 2010;43:159–172
7. Ryan C, Bergin M, Wells JS. Theoretical perspectives of adherence to web-based interventions: a scoping review. Int J Behav Med 2018;25:17–29
8. Broens TH, Huis in't Veld RMHA, Vollenbroek-Hutten MMR, Hermens HJ, van Halteren AT, Nieuwenhuis LJM. Determinants of successful telemedicine implementations: a literature study. J Telemed Telecare 2007;13:303–309
9. Davis FD. Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Q 1989;13:319–339
10. Kamal SA, Shafiq M, Kakria P. Investigating acceptance of telemedicine services through an extended technology acceptance model (TAM). Technol Soc 2020;60:101212
11. Gagnon MP, Orruño E, Asua J, Abdeljelil AB, Emparanza J. Using a modified technology acceptance model to evaluate healthcare professionals' adoption of a new telemonitoring system. Telemed J E Health 2012;18:54–59
12. Imhof T. Home telemonitoring acceptance for eye care patients. Student theses, University of Twente, 2020
13. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. Int J Qual Health Care 2007;19:349–357
14. Anderson BYM, Perrin A. Tech Adoption Climbs Among Older Adults. Washington, DC: Pew Research Center; 2017
15. Eurostat. Digital economy and society statistics: households and individuals. 2022. Available at: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Digital_economy_and_society_statistics_-_households_and_individuals#Services_ordered_via_the_internet. Accessed December 15, 2022.
16. World Health Organization. ROADMAP: Strengthening People-Centred Health Systems in the WHO European Region. Geneva, Switzerland: WHO; 2013
17. van Erkel FM, Pet MJ, Bossink EH, van de Graaf CFM, Hodes MTJ, van Ogtrop SN, Mourits MJE, Welker GA, Halmos GB, van Leeuwen B, Racz E, Reyners AKL, van Munster BC, van der Zaag-Loonen HJ. Experiences of patients and health care professionals on the quality of telephone follow-up care during the COVID-19 pandemic: a large qualitative study in a multidisciplinary academic setting. BMJ Open 2022;12:e058361
18. van den Heuvel JFM, Lely AT, Huisman JJ, Trappenburg JCA, Franx A, Bekker MN. SAFE@HOME: digital health platform facilitating a new care path for women at increased risk of preeclampsia: a case-control study. Pregnancy Hypertens 2020;22:30–36
19. Morgan AU, Balachandran M, Do D, Lam D, Parambath A, Chaiyachati KH, Bonalumi NM, Day SC, Lee KC, Asch DA. Remote monitoring of patients with Covid-19: design, implementation, and outcomes of the first 3,000 patients in COVID watch. NEJM Catal 2020. doi:10.1056/CAT.20.0342
20. Eloranta H, Falck A. Is an ophthalmic check-up needed after uneventful cataract surgery? A large retrospective comparative cohort study of Finnish patients. Acta Ophthalmol 2017;95:665–670
21. Federatie Medisch Specialisten. Richtlijn Cataract. Utrecht, Netherlands: Federatie Medisch Specialisten; 2022
22. Lundström M, Pesudovs K. Catquest-9SF patient outcomes questionnaire: nine-item short-form Rasch-scaled revision of the Catquest questionnaire. J Cataract Refract Surg 2009;35:504–513
23. Guest G, Bunce A, Johnson L. How many interviews are enough? Field Methods 2006;18:59–82
24. Guest G, Namey E, Chen M. A simple method to assess and report thematic saturation in qualitative research. PLoS One 2020;15:e0232076
25. Oudshoorn N. Diagnosis at a distance: the invisible work of patients and healthcare professionals in cardiac telemonitoring technology. Sociol Health Illn 2008;30:272–288
26. Lucivero F, Jongsma KR. A mobile revolution for healthcare? Setting the agenda for bioethics. J Med Ethics 2018;44:685–689

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