

## Comment on “Advances in the application of virtual reality technology in ophthalmic surgical skills training”

Van C. Lansingh, Nicoletta Fynn–Thompson, Akshay Gopinathan Nair, Minal ShahBaldota, Stephen Chai

HelpMeSee Inc., Jersey City, NJ 07302, USA

**Correspondence to:** Van C. Lansingh. 1 Evertrust Plaza, Suite 308, Jersey City, NJ 07302, USA. vancharles@helpmeseec.org

Received: 2026-02-24 Accepted: 2026-04-08

**DOI:10.18240/ijjo.2026.06.26**

**Citation:** Lansingh VC, Fynn-Thompson N, Nair AG, ShahBaldota M, Chai S. Comment on “Advances in the application of virtual reality technology in ophthalmic surgical skills training”. *Int J Ophthalmol* 2026;19(6):1216-1218

### Dear Editor,

We read with interest the article titled “Advances in the application of virtual reality technology in ophthalmic surgical skills training”<sup>[1]</sup>. We congratulate the authors on their comprehensive review of an important and rapidly evolving topic: the use of virtual reality (VR) in cataract surgical training. We would like to expand on the discussion surrounding the “assessment of the cataract surgery training system’s effectiveness”.

In addition to comparative discussions of simulators based on reported validity outcomes, the time allocation and the instructional model used for validity assessment should also be considered when interpreting study results. Previous literature reviews have noted that many VR studies report total time spent in a simulator but lack specificity about the training program’s structure<sup>[2]</sup>. This distinction is important because certain simulation-based training programs, such as HelpMeSee’s (HMS), must be completed and led by an experienced instructor. Hence, HMS has been reported to require longer, more frequently supervised training sessions than other non-supervised programs using other VR simulators<sup>[3]</sup>. Therefore, if the simulator itself is the only element evaluated rather than the broader training program, study results may not capture what is being implemented when a specific simulator is integrated into training. To mitigate this potential error, as suggested by Nair *et al*<sup>[4]</sup>, studies should strive to assess face and content validity during the design process rather than post hoc.

We would also like to add to the study’s sources by discussing three studies that attempted to validate the HMS surgical simulation, either published near the original article or missed in the initial literature review. Previously, Sankaranathan *et al*<sup>[5]</sup> established content validity, showing that manual small-incision cataract surgery trainees exhibited measurable, stepwise improvements in technical performance with fewer simulated complications over repeated attempts. Dormegny *et al*<sup>[6]</sup> demonstrated that medical students without prior surgical experience improved their continuous curvilinear capsulorhexis performance on a synthetic eye model following simulation training using EyeSi or HMS. Most recently, Dormegny *et al*<sup>[7]</sup> provided further evidence supporting construct validity by showing that HMS assessments could differentiate surgeons across varying levels of cataract experience based on both technical performance and non-technical skills, particularly stress management.

VR simulation in cataract surgery is increasingly recognized as an additional and ideal avenue for safe surgical practice. This is supported by a growing number of higher-quality studies published in recent years, compared with earlier work, which may have been limited by methodological weaknesses. We believe that when assessing VR effectiveness, it is critical to distinguish between evaluating a simulator as a technological tool and evaluating the structured training curriculum within which it is embedded. In doing so, studies may better capture the true effectiveness of VR simulation.

### ACKNOWLEDGEMENTS

**Conflicts of Interest:** Lansingh VC is a consultant with HelpMeSee; Nair AG is a consultant with HelpMeSee Vision Pvt. Ltd.; Fynn-Thompson N and ShahBaldota M are employees of HelpMeSee; Chai S, None.

### REFERENCES

- 1 Wei JW, Wang XY, Huang MX, *et al*. Advances in the application of virtual reality technology in ophthalmic surgical skills training. *Int J Ophthalmol* 2026;19(2):393-404.
- 2 Rothschild P, Richardson A, Beltz J, *et al*. Effect of virtual reality simulation training on real-life cataract surgery complications: systematic literature review. *J Cataract Refract Surg* 2021;47(3):400-406.

- 3 Dormegnny L, Yaïci RM, Koestel E, *et al.* Global trends and practice patterns in virtual reality simulation training for ophthalmic surgery: an international survey use of virtual reality simulation training around the world. *Sci Rep* 2025;15:30886.
- 4 Nair AG, Lansingh VC, Fynn-Thompson N. The consultant-trainee paradox in simulation: a question of validity, not inherent skill. *Indian J Ophthalmol* 2025;73(10):1549-1550.
- 5 Sankarananthan R, Prasad RS, Koshy TA, *et al.* An objective evaluation of simulated surgical outcomes among surgical trainees using manual small-incision cataract surgery virtual reality simulator. *Indian J Ophthalmol* 2022;70(11):4018-4025.
- 6 Dormegnny L, Byfili Y, Yaïci R, *et al.* Continuous curvilinear capsulorhexis training models for medical students: who might they benefit the most? <https://doi.org/10.21203/rs.3.rs-6686867/v1>. Accessed on Jun. 18, 2025.
- 7 Dormegnny L, Schaeffer M, Neumann N, *et al.* Validity assessment for technical skills and stress management of the HelpMeSee® Manual Small Incision Cataract Surgery module. *Acta Ophthalmol* 2026:70083.

## Authors Reply to the Editor

### Dear Editor,

We appreciate the thoughtful comments by Van C. Lansingh about our article “Advances in the application of virtual reality technology in ophthalmic surgical skills training”. We also want to thank the editor for the chance to further discuss our article.

We fully agree with the important distinction raised by the reviewer: when evaluating the effectiveness of VR training systems, consideration should be given not only to the simulator as a technical tool itself, but also to the structured training curriculum built around it, including training time allocation, instructional models, and supervision by experienced instructors. Only by separately evaluating device performance and curriculum design can we scientifically and reliably clarify the actual value of VR surgical simulation in clinical training. The HMS training system clearly stipulates that all simulator-based training sessions must be conducted by specially certified instructors to ensure supervised practice and individualized feedback<sup>[1]</sup>. In practice, HMS shows significantly longer mean total training time (228.5h) compared with EyeSi (32.8h)<sup>[2]</sup>. Additionally, HMS relies more on frequent supervised training, while EyeSi focuses on autonomous practice. For example, in the study by Nair *et al.*<sup>[3]</sup>, the HMS simulation training employed a 6-day structured curriculum, which sequentially included self-study using HMS-exclusive e-books, instructor-led classroom teaching, dry lab training, simulator-based practical training (accounting for 80% of the total duration), and operating room tutoring with

a surgeon from HelpMeSee and the supervising surgeon both present for guidance.

Existing research indicates that current simulator-based training programs vary considerably, lack standardized protocols, and often fail to provide sufficient details about their training curricula<sup>[4-5]</sup>. Future studies should explore the design and effectiveness of different training programs, taking into account factors such as training duration, curriculum structure<sup>[5]</sup>, ergonomic assessment, and stepwise design tailored to surgeons at different experience levels<sup>[6]</sup>. In addition, the full architecture of training programs should be reported in detail to enable meaningful comparisons across studies. For outcome evaluation, it is recommended to combine simulator scores with live-surgery evaluations for holistic competency mapping<sup>[7]</sup>. It should be clearly noted that VR surgical simulation training is not intended to replace traditional teaching methods but rather to serve as a powerful supplement to existing educational systems.

Furthermore, we sincerely thank the reviewer for providing important studies validating the HelpMeSee simulator<sup>[6,8-9]</sup>. These studies offer crucial evidence for content validity and construct validity, and have greatly enhanced our understanding of VR-based simulation training systems in cataract surgery.

Thank you again for your interest in our article.

Wei-Hua Yang<sup>1</sup>, Jia-Wen Wei<sup>2</sup>

<sup>1</sup>Shenzhen Eye Hospital, Shenzhen Eye Medical Center, Southern Medical University, Shenzhen 518040, Guangdong Province, China

<sup>2</sup>School of Nursing, Southwest Medical University, Luzhou 646699, Sichuan Province, China

## REFERENCES

- 1 Lansingh VC, Nair AG. More than simulation: the HelpMeSee approach to cataract surgical training. *Community Eye Health* 2023;36(120):20-21.
- 2 Dormegnny L, Yaïci R, Koestel E, *et al.* Global trends and practice patterns in virtual reality simulation training for ophthalmic surgery: an international survey use of virtual reality simulation training around the world. *Sci Rep* 2025;15:30886.
- 3 Nair AG, Ahiwalay C, Bacchav AE, *et al.* Effectiveness of simulation-based training for manual small incision cataract surgery among novice surgeons: a randomized controlled trial. *Sci Rep* 2021;11(1):10945.
- 4 Dormegnny L, Lansingh VC, Lejay A, *et al.* Virtual reality simulation and real-life training programs for cataract surgery: a scoping review of the literature. *BMC Med Educ* 2024;24(1):1245.
- 5 Rothschild P, Richardson A, Beltz J, *et al.* Effect of virtual reality simulation training on real-life cataract surgery complications: systematic literature review. *J Cataract Refract Surg* 2021;47(3):400-406.

- 6 Dormegny L, Schaeffer M, Neumann N, *et al.* Validity assessment for technical skills and stress management of the HelpMeSee® Manual Small Incision Cataract Surgery module. *Acta Ophthalmol* 2026;70083.
- 7 Nair AG, Lansingh VC, Fynn-Thompson N. The consultant-trainee paradox in simulation: a question of validity, not inherent skill. *Indian J Ophthalmol* 2025;73(10):1549-1550.
- 8 Sankarananthan R, Prasad RS, Koshy TA, *et al.* An objective evaluation of simulated surgical outcomes among surgical trainees using manual small-incision cataract surgery virtual reality simulator. *Indian J Ophthalmol* 2022;70(11):4018-4025.
- 9 Dormegny L, Byfili Y, Yaïci R, *et al.* Continuous curvilinear capsulorhexis training models for medical students: who might they benefit the most? <https://doi.org/10.21203/rs.3.rs-6686867/v1>. Accessed on Apr. 11, 2026.