Development and multilevel assessment of an equine nasogastric intubation simulator in veterinary education

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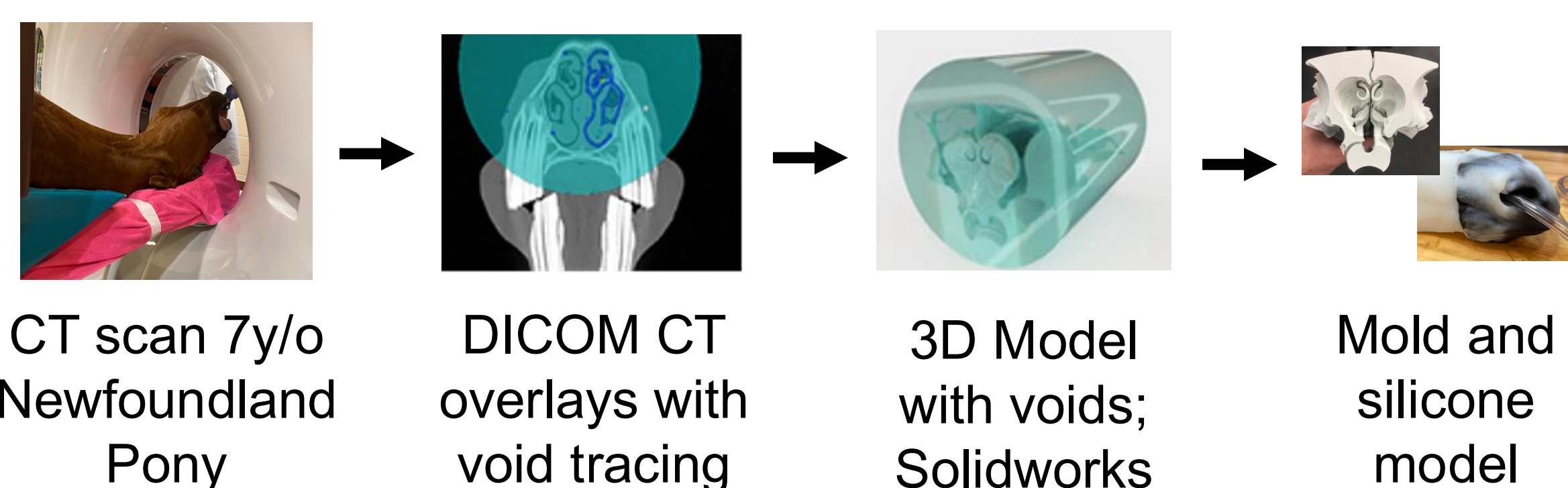
Introduction

- **Nasogastric intubation (NGI)** is a **life-saving procedure**, used to decompress the stomach and administer fluid therapy. Due to horse's inability to vomit, **timely NGI is essential**, but training on live horses poses safety and welfare risks, including, epistaxis[2,3].
- **Simulators offer low-risk yet realistic learning environments for veterinary students, helping build core clinical skills while minimizing animal use[1].**
- This study evaluated a novel NGI simulator's impact on student preparedness, veterinary team perceptions, and its potential to **enhance education and support animal welfare**.
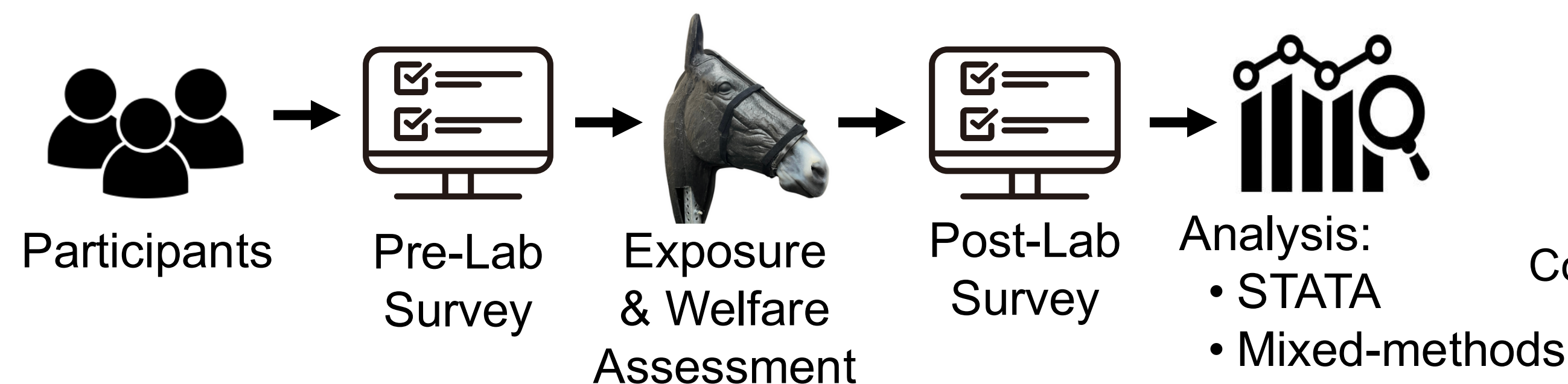
Methods

- **Participants** included 31 third-year veterinary students and 13 veterinary team members (veterinarians and technicians) from the Atlantic Veterinary College, UPEI.
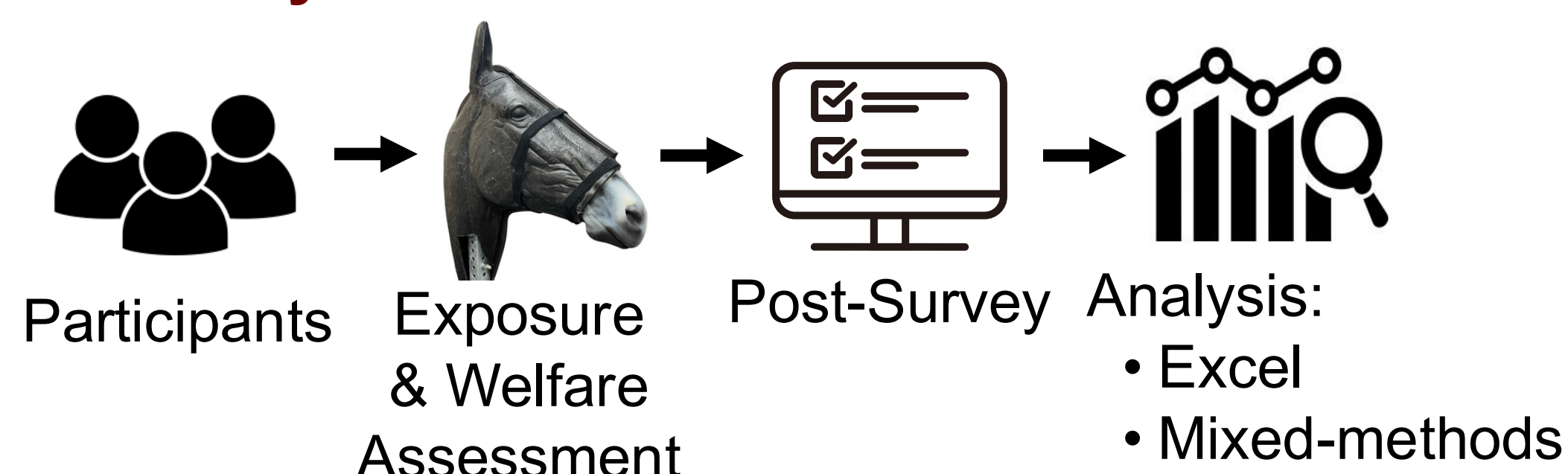
Simulator Development

CT scan 7y/o Newfoundland Pony → DICOM CT overlays with void tracing → 3D Model with voids; Solidworks → Mold and silicone model

Veterinary Student Phase

Participants → Pre-Lab Survey → Exposure & Welfare Assessment → Post-Lab Survey → Analysis: • STATA • Mixed-methods

Veterinary Team Phase

Participants → Exposure & Welfare Assessment → Post-Survey → Analysis: • Excel • Mixed-methods

Surveys contained Likert-scale and open-ended questions and were facilitated through Microsoft Forms.

Results

Veterinary Students (n=31)

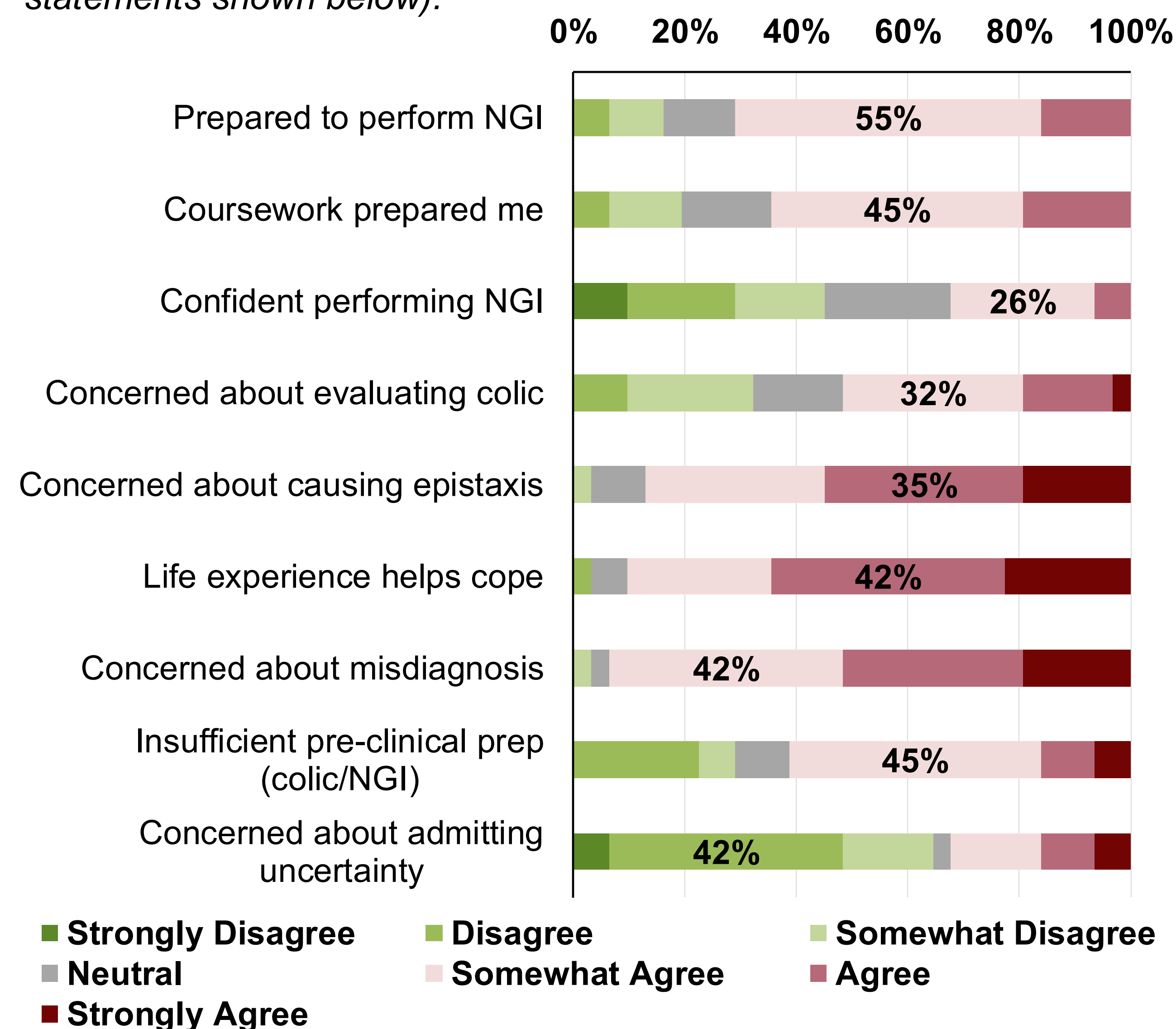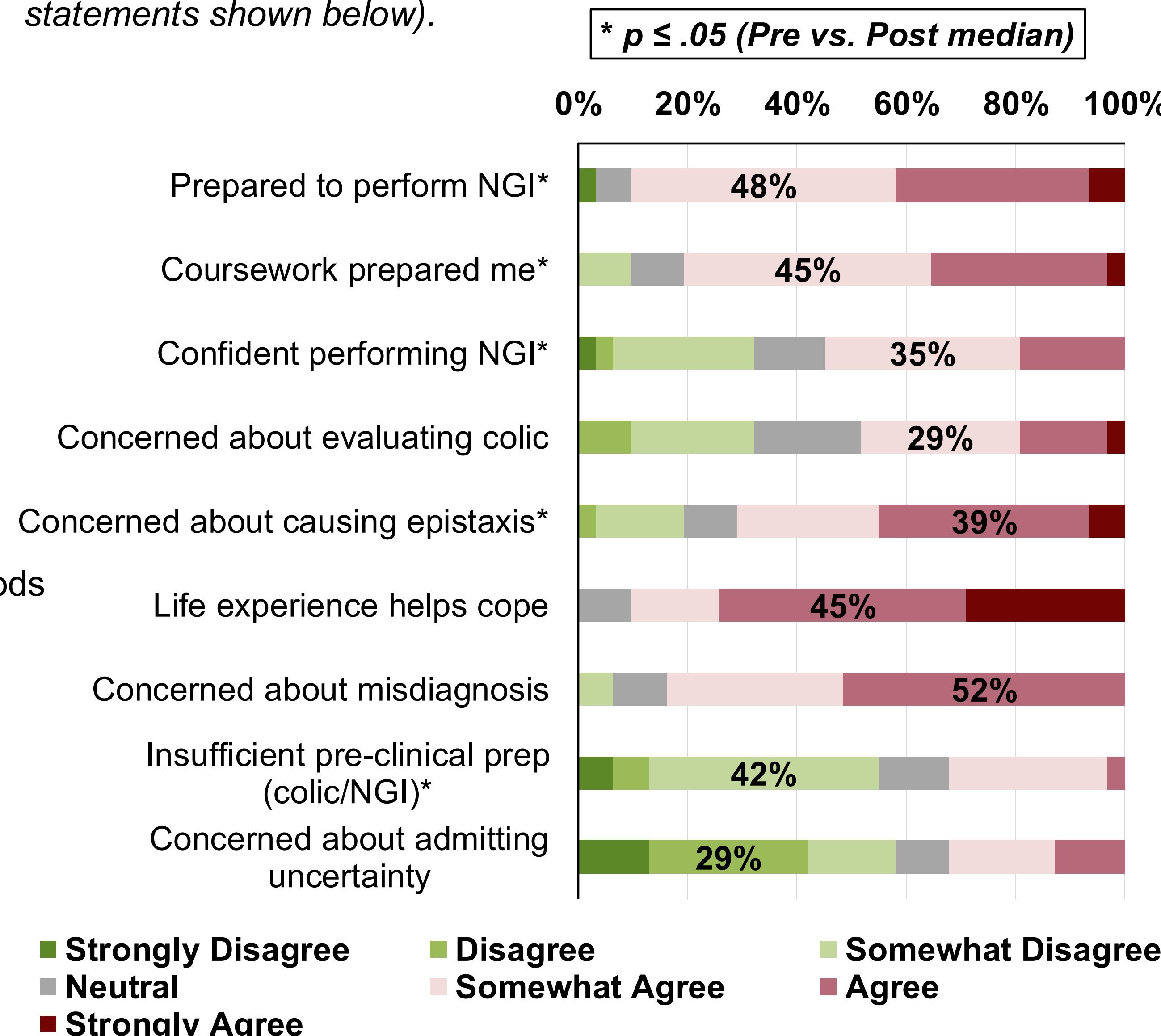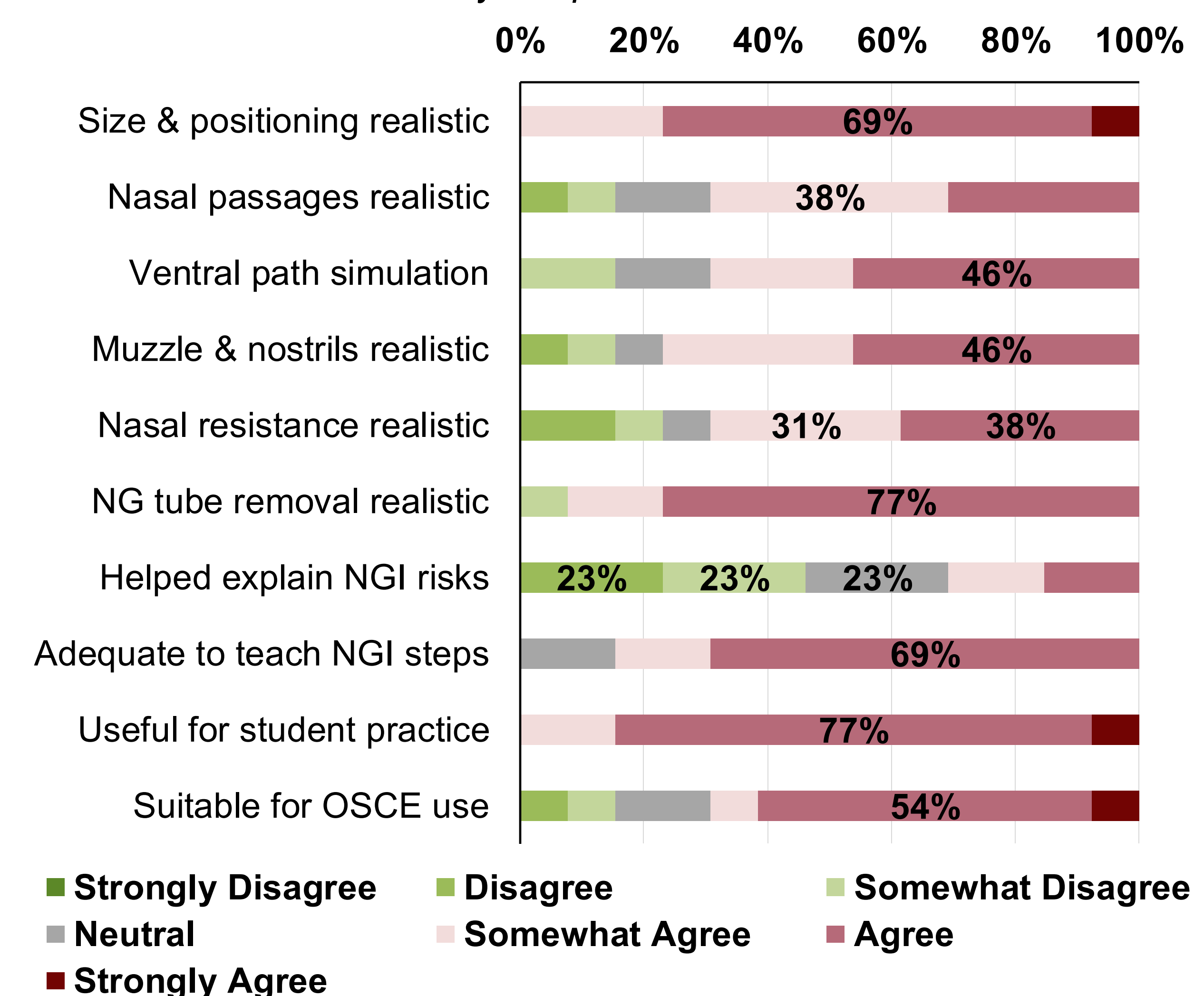*Figure 1. Pre-Laboratory Survey Likert-Scale Responses (abbreviated statements shown below).*

Figure 2. Post-Laboratory Survey Likert-Scale Responses (abbreviated statements shown below).

* p ≤ .05 (Pre vs. Post median)

Results

Veterinary Team (n=13)

Figure 3. Veterinary Team Perceptions of Simulator as Teaching Tool and Realism. Survey Adapted from Prutton 2024[3].

- Students and veterinary team members highlighted the simulator's educational value, particularly for building confidence and reducing stress before live-horse practice.
- Both groups also provided constructive feedback on limitations, suggesting improvements to increase anatomical realism and tactile feedback.

Conclusion

- The NGI simulator **improved student confidence and reduced concerns** about causing epistaxis during live-horse practice.
- **Veterinary team members rated the simulator as a valuable tool for teaching** foundational NGI skills.

Acknowledgements