

Introduction

Assisted Reproductive Technologies (ART), including Intrauterine Insemination (IUI) and Embryo Transfer (ET), are critical procedures in infertility treatment.

However, training in these procedures remains limited in Indonesia due to:

- Ethical concerns with live patients,
- Limited access to ART centers,
- Variability in operator skills affecting success rates,
- Lack of standardization and patient exposure in residency training.

Virtual Reality (VR) simulation offers a promising alternative by providing repeatable, safe, and immersive learning without patient involvement.

Objectives

To explore the **perceptions, feasibility, and market potential** of VR-based simulation training for IUI and ET among Indonesian OBGYN residents and specialists, and assess barriers and opportunities for its implementation.

Methods

- Design: Convergent mixed-methods
- Quantitative Phase:
 - Online survey of 120 OBGYN professionals and residents
- Qualitative Phase:
 - Focus Group Discussions (FGDs) with 12 participants across experience levels.
 - In-depth interviews with 3 decision-makers.

Results

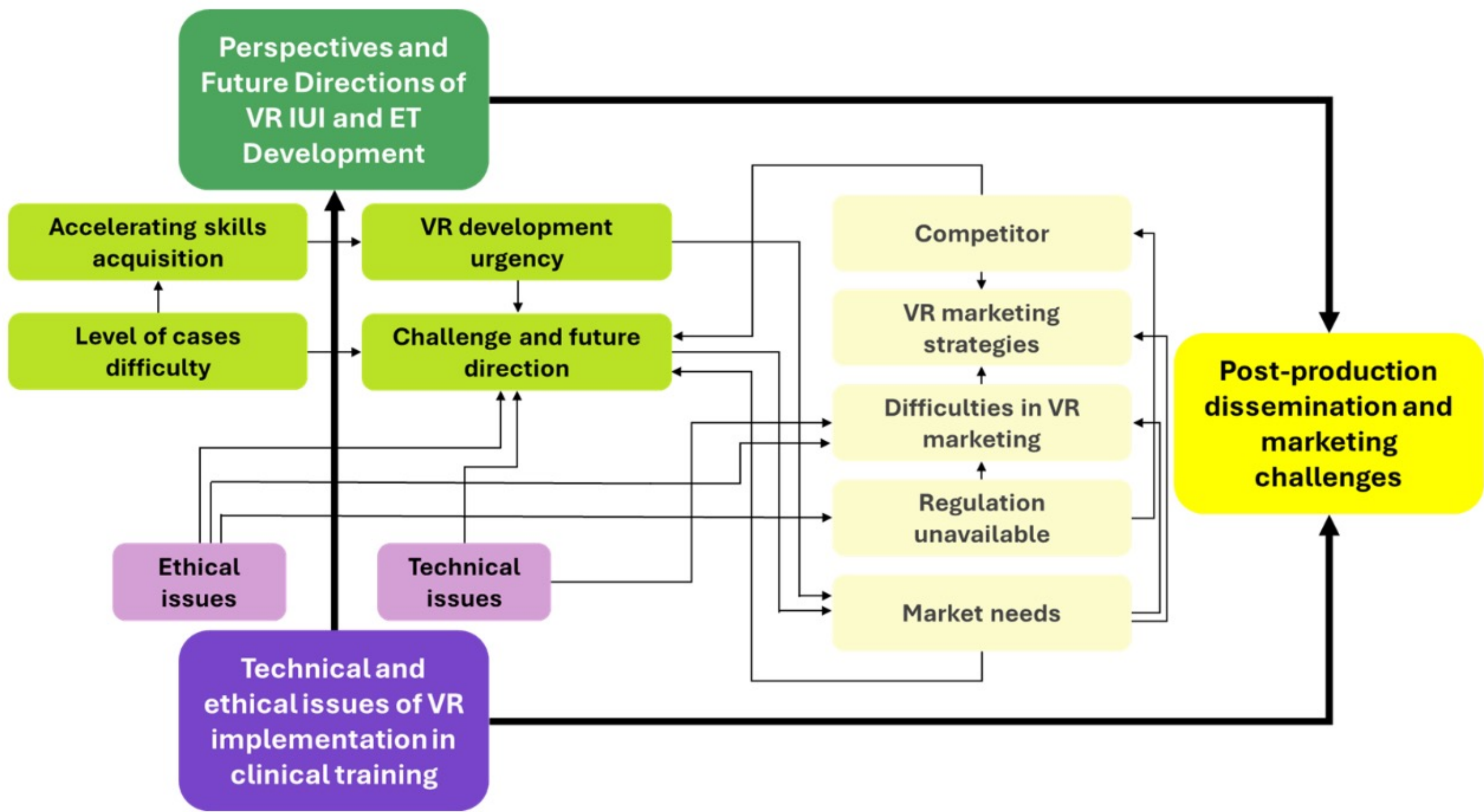
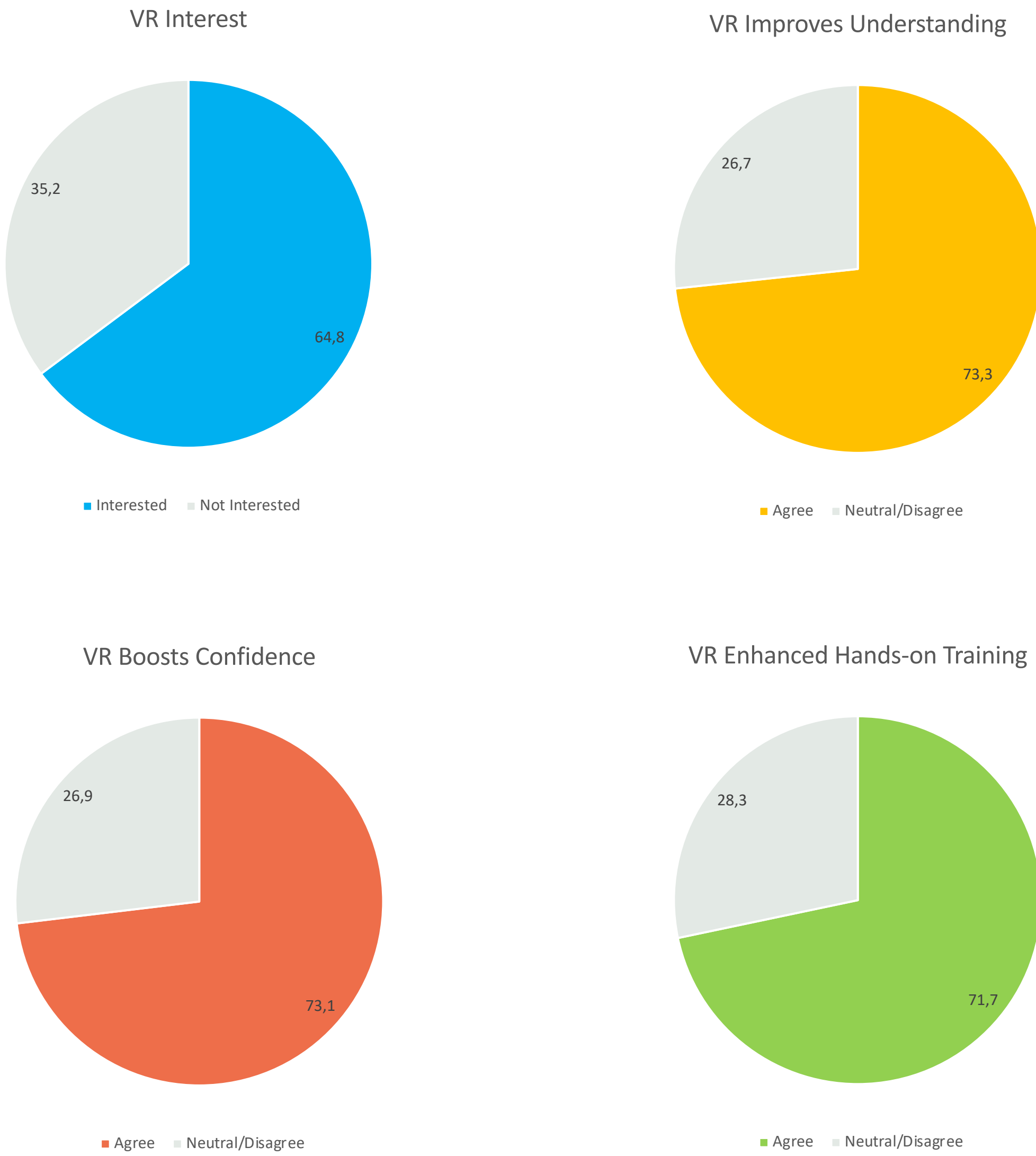
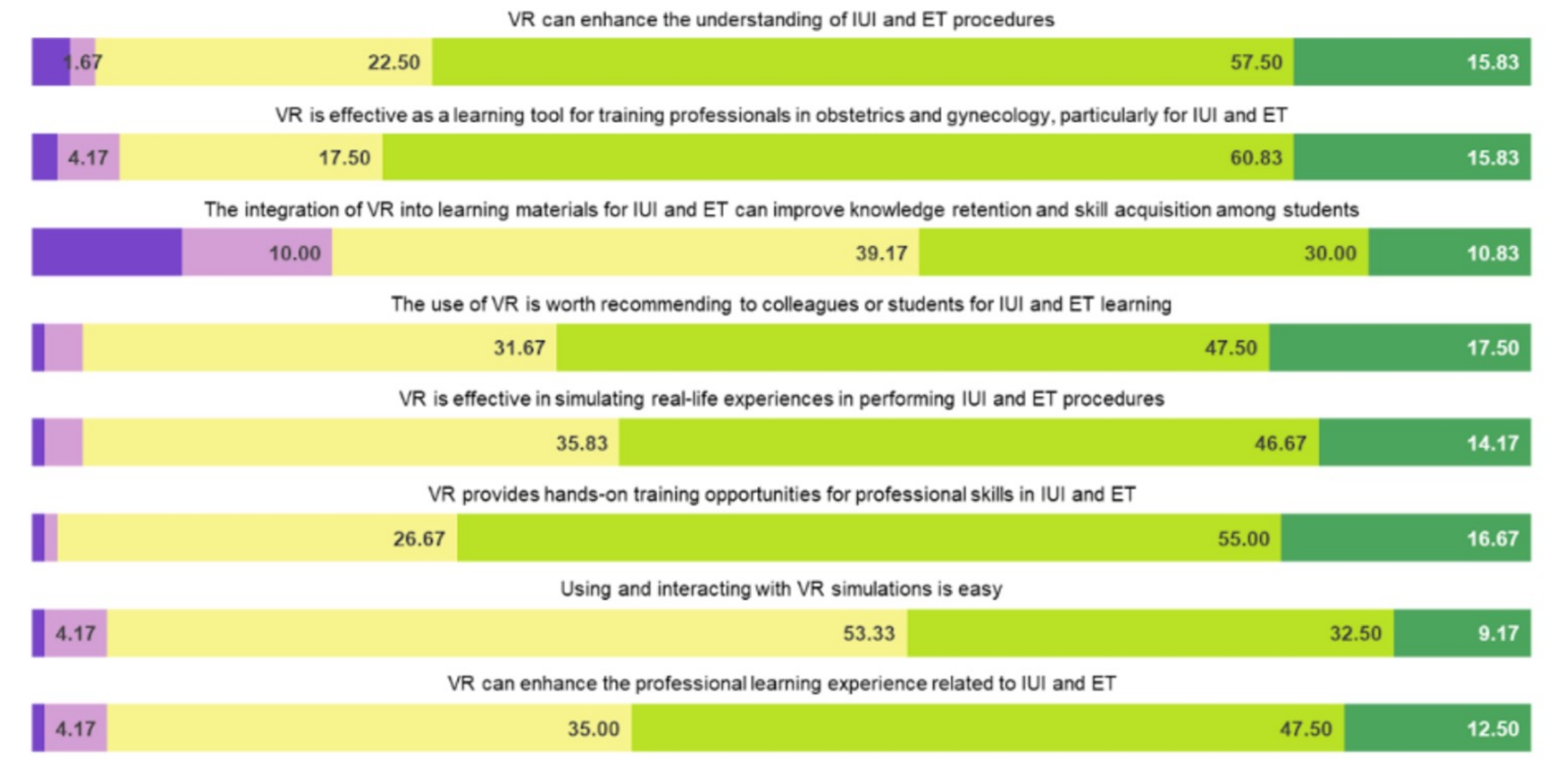
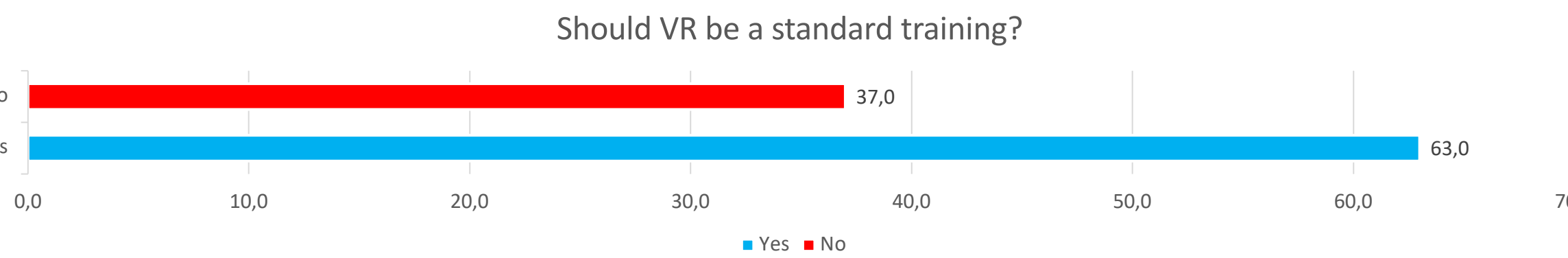
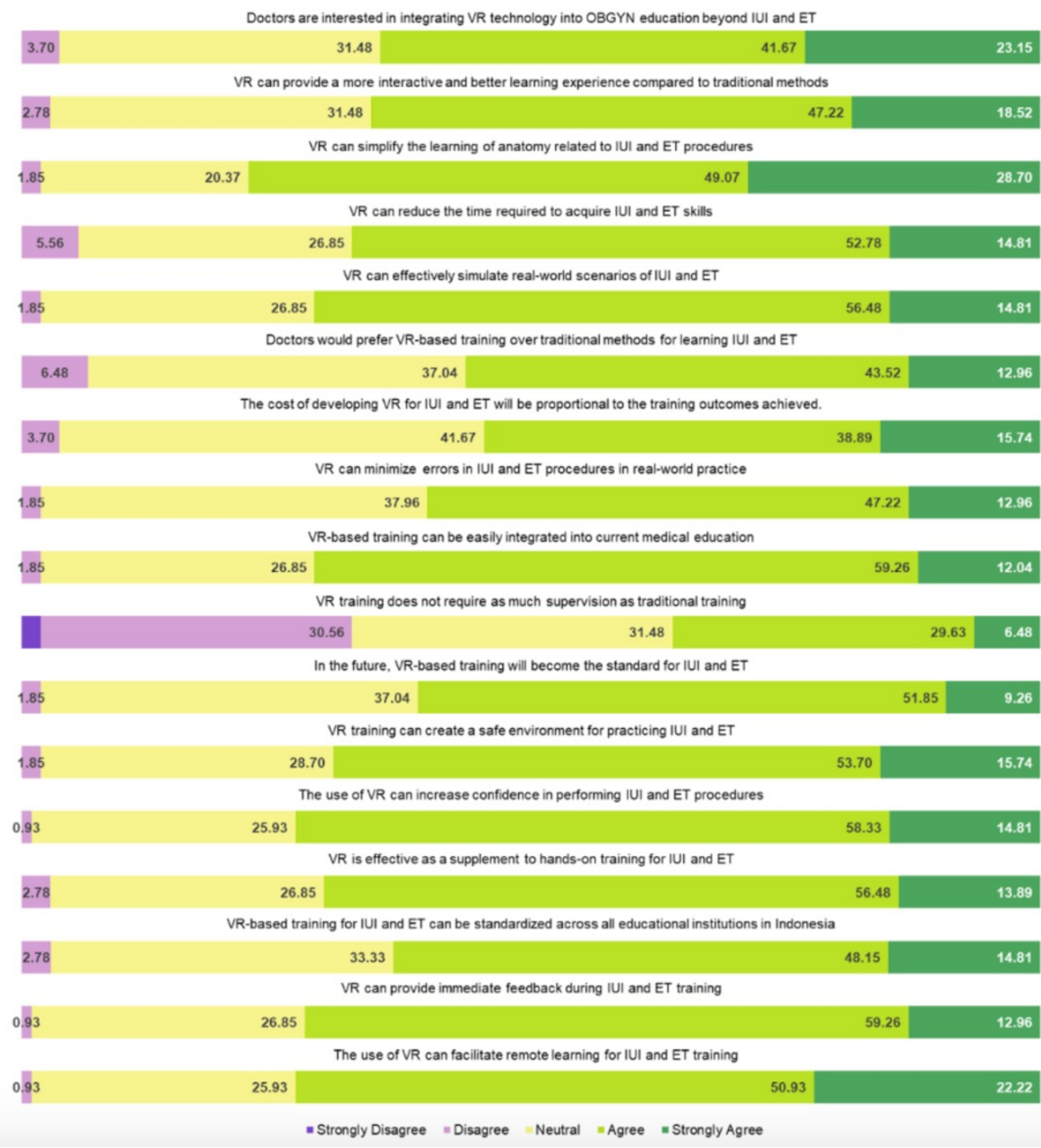


Figure 1. Framework illustrating the challenges and opportunities in VR IUI and ET development, from technical and ethical considerations to market needs and dissemination strategies

a) Perception toward VR-Based Learning (n=120)



b) Follow-Up Questions for Respondents Interested in Using VR for Training (n=108)



Qualitative Assessment and Discussion

Need & Future Direction: Strong desire to integrate VR in curricula.

Technical/Ethical Barriers: Infrastructure, data privacy, and lack of regulations.

Post-production Issues: Dissemination strategies, market readiness, stakeholder buy-in.

- ✓ Current ART training lacks standardization and sufficient hands-on practice.
- ✓ VR is seen as an ethical, scalable, and immersive solution.
- ✓ Similar global programs (e.g., ASRM ET simulator) show improved confidence and skill.
- ✓ VR can bridge educational gaps, especially in remote or resource-limited regions.
- ✓ Success depends on curriculum integration, infrastructure investment, and stakeholder collaboration.

Conclusion

Virtual reality offers a transformative solution to address training gaps in ART in Indonesia by enhancing procedural understanding and confidence, supporting remote and repetitive learning, and aligning with ethical and educational needs.

Strategic investment and stakeholder alignment are essential for sustainable implementation.

Acknowledgement

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References

