# Effectiveness of Simulation in a Midwifery Curriculum in India

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# Background

India's burden of neonatal deaths and home delivery

The World Health Organization's recommendation for integration of simulation into midwifery education

Contribution to the evidence for simulation in nursing education in India.

# Purpose

to evaluate the learning and skill outcomes of students in a nursing school in India using medium fidelity simulation enhanced instruction

# Research Design

- two group pretest-posttest evaluation
- randomized to simulation enhanced instruction (intervention) or traditional instruction (control)
- N= 28 third year baccalaureate nursing students

# Methods

- Check list for safe practice and essential skills were measured at the beginning and end of the course by faculty
- Knowledge and confidence were self assessed.
- Observed abilities scored 1 if behavior was present and 0 if absent. Total possible score was 10.
- Independent and paired t tests used for differences in simulation and traditional instruction for each group.

# Summary of Findings

57% of the simulation group displayed moderate increases in knowledge (29% for control)

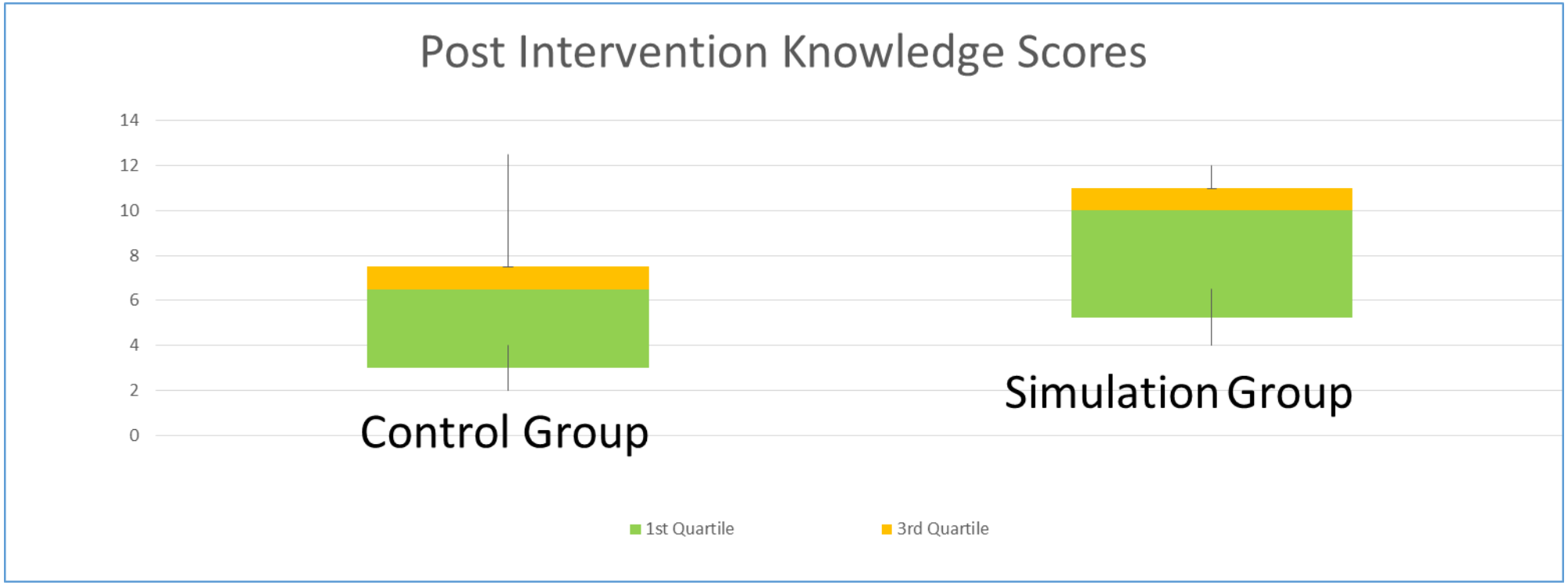
43% displayed adequate knowledge (none for control) at course end.

Mean scores were higher for midwifery skills.

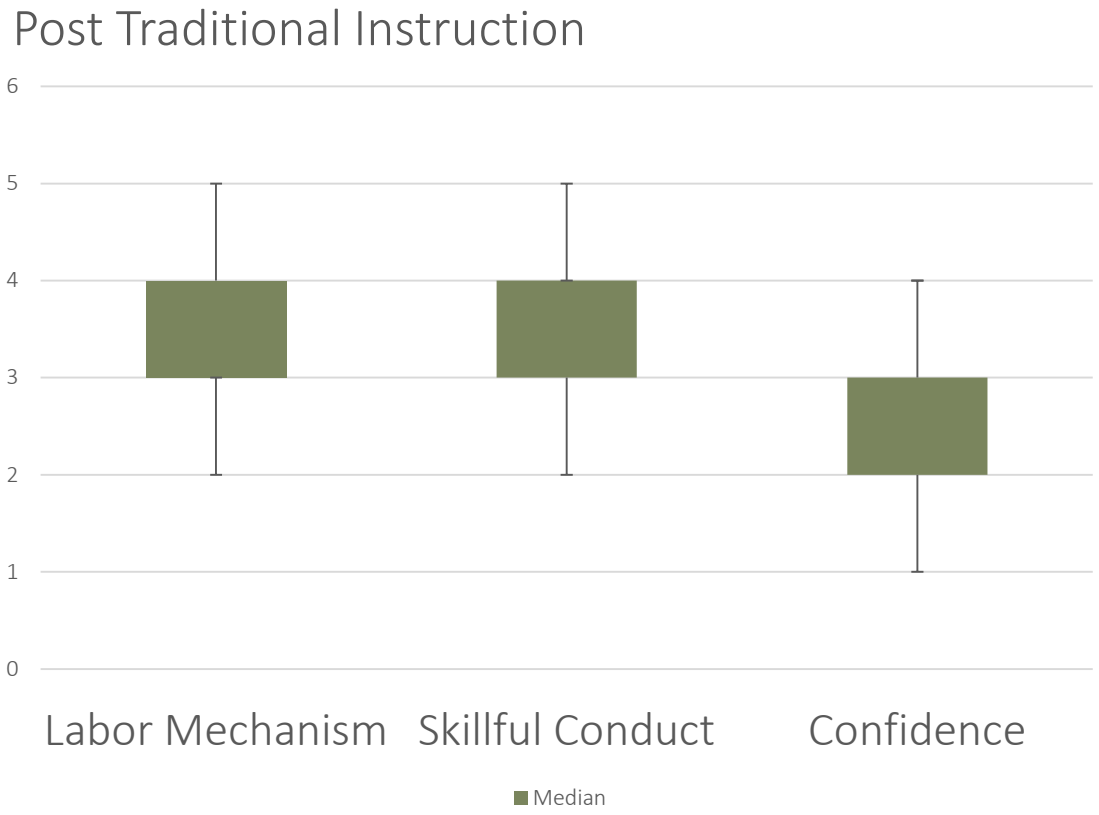
# Results

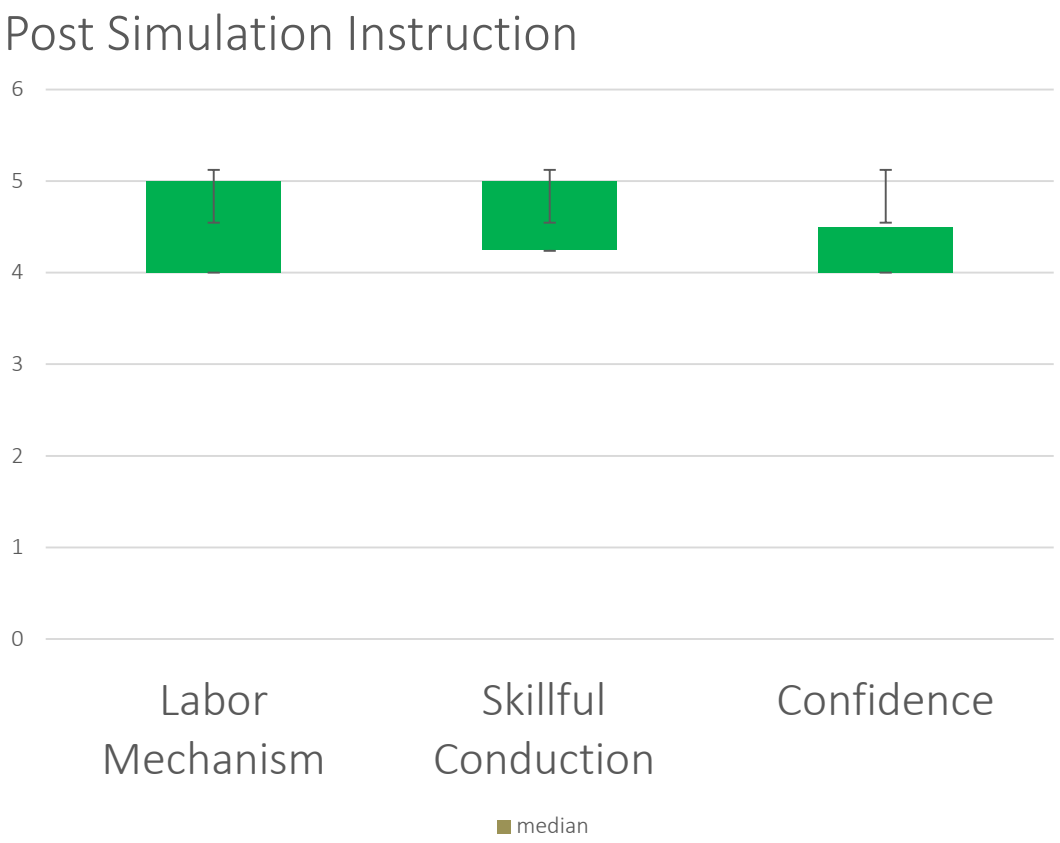
| Group | N | Baseline Knowledge mean (SD) | Baseline Confidence mean (SD) | Baseline Labor Mechan .mean (SD) | Baseline Skillful Conduct mean (SD) | Post Instruct. Know. mean (SD) | Post inst. Confid. Mean (SD) | Post inst. Labor Mechan. Mean (SD) | Post inst. Skillful Conduct Mean (SD) |
|---|---|---|---|---|---|---|---|---|---|
| Simulation | 14 | 4.2 (1.53) | 1.3 (0.48) | 2.3 (0.48) | 1.8 (0.38) | 6.3 (1.18) | 4.5 (0.52) | 4.6 (0.50) | 4.7 (0.48) |
| **Traditional** | 14 | 3.3 (1.55) | 2.0 (0.91) | 2.1 (0.76) | 2.0 (0.82) | 3.2 (1.42) | 2.1 (0.76) | 3.2 (0.55) | 2.5 (0.52) |
| t (p value) | | -12.09 | -2.38 * | 1.44 | -0.89 | 5.87 * | 9.49 * | 7.69 * | 11.5 * |
| | | *alpha < .05 | | | | | | | |

# Mean Knowledge Scores



# Mean Skills Scores



# Knowledge and Skills Differences Between Groups

| Outcome Scores | Simulation Group N=14 Mean (SD) | Traditional Group N=14 Mean (SD) | Independent *t* test df=26 |
|---|---|---|---|
| Knowledge | 6.3 (1.18) | 3.2 (1.42) | 5.87*** |
| Confidence | 4.5 (0.52) | 2.1 (0.76) | 9.49*** |
| Labor Mechanism | 4.6 (0.50) | 3.2 (0.55) | 7.69*** |
| Skillful conduction | 4.7 (0.48) | 2.5 (0.52) | 11.5*** |
| ***$p$ <.001 | | | |

# Knowledge and Skills Differences Pre and Post Simulation

| Sim Group<br>N = 14 | Knowledge mean (SD) | Confidence Mean (SD) | Labor Mechanism Mean (SD) | Skillful Conduction Mean (SD) |
|---|---|---|---|---|
| Baseline Simulation | 4.2 (1.53) | 1.3 (0.48) | 2.3 (0.48) | 1.8 (0.38) |
| **Post Simulation** | 6.3 (1.18) | 4.5 (0.52) | 4.6 (0.50) | 4.7 (0.48) |
| t (p value * < .001)<br>df = 13 | -12.0934 * | -12.3888 * | -18.2428 * | -15.0096 * |

# Conclusion

- Knowledge scores and skill performance were significantly different for students receiving simulation enhanced instruction compared to students receiving traditional instruction.
- Students receiving simulation instruction had significantly different skill performance scores and knowledge scores on pre/post testing.
- Simulation enhanced instruction was effective for midwifery skill acquisition in this setting.

# Implications for Practice

- Evaluation of simulation on practice skills rather than perceptions and satisfaction.
- Use of the clinical evaluation tool as an outcome measure
- Further research is needed for impact of simulation on the skills of graduate nurses in the clinical setting.