

Title

Undergraduate nursing students' lived experiences when attending high fidelity simulation training during their bachelor education program

Background

Simulation based training is broadly applied in nursing education and provides the opportunity to practice skills in a controlled environment without the potential to harm real patients [1]. High-fidelity simulation is a subtype that involves computerized life-size mannequins that replicate various signs and symptoms, providing a realistic and interactive experience for students [2,3]. It promotes teamwork, critical thinking, knowledge acquisition, and communication skills among nursing students [4-6].

Aim(s)

This study aims to explore the lived experiences of nursing students participating in high-fidelity simulation throughout the four-year undergraduate nursing program.

Methods

Design:

A qualitative descriptive design based on focus groups was used.

Population:

This study involved bachelor nursing students who started their education in 2016 at Karel de Grote University College in Antwerp (KdG), Belgium. This cohort was followed throughout their entire undergraduate education.

Data-collection:

Data was collected through voluntary focus groups held at the end of each academic year from 2016 to 2020, resulting in a total of four focus groups. The sessions were audio-recorded, transcribed verbatim, and analyzed thematically using Braun and Clarke's six-stage approach [7]. The qualitative analysis software NVivo aided in the transition from inductive to deductive analysis.

Results

The thematic analysis revealed six themes: "anxiety/stress," "debriefing," "self-confidence," "internship," "learning," and "scenario." Participating in HFS and observing others' scenarios contribute equally to students' learning. High-fidelity simulation enhanced self-confidence through successes, close alignment of scenarios with real internships and a safe learning environment. Important preconditions for this safe environment included allowing mistakes, absence of examination, and familiarization with the simulation room and manikin. The instructor's role in maintaining a friendly, positive attitude and following an fixed debriefing-format was also highlighted. These factors collectively contributed to a reduced sense of anxiety among students during HFS. Third and last year students perceived HFS as an even greater learning opportunity than younger students.

Discussion-limitations

Comparisons with previous research should be approached cautiously due to the limited clarity and comparability of understanding, application and integration of HFS within the existing literature. While prior studies confirmed the positive impact of successful debriefing on learning effectiveness [8-13], this study contributes by introducing specific preconditions that enhance this understanding. The longitudinal design of this study is a strength; however, the recall of students' experiences might have varied in strength due to the time gap between HFS and the focus groups. Conducting focus groups earlier was not feasible due to organizational constraints. Several limitations should be acknowledged: including the researcher's dual role as a lecturer and researcher at KdG, the limited number of focus groups conducted each year and the potential influence of self-selection bias.

Implications/future perspectives

This study indicates that high-fidelity simulation not only empowers students but also enhances their acquisition and application of non-technical skills. Debriefing and a safe learning environment are key-elements in this process. Increasing high fidelity simulations combined with interprofessional simulation and multicenter research are recommended.

References

1. Brown L, Ilhan E, Pacey V, Hau W, Van Der Kooi V, Dale M. The Effect of High-Fidelity Simulation–Based Learning in Acute Cardiorespiratory Physical Therapy—A Mixed-Methods Systematic Review. *Journal of Physical Therapy Education*. 2021;35(2):146-58.
2. Hanshaw SL, Dickerson SS. High fidelity simulation evaluation studies in nursing education: A review of the literature. *Nurse Education in Practice*. 2020;46:102818.
3. Roberts D, Greene L. The theatre of high-fidelity simulation education. *Nurse Education Today*. 2011;31(7):694-8.
4. La Cerra C, Dante A, Caponnetto V, Franconi I, Gaxhja E, Petrucci C, et al. Effects of high-fidelity simulation based on life-threatening clinical condition scenarios on learning outcomes of undergraduate and postgraduate nursing students: a systematic review and meta-analysis. *BMJ open*. 2019;9(2):e025306.
5. Lei Y-Y, Zhu L, Sa YTR, Cui X-S. Effects of High-Fidelity Simulation teaching on nursing students' knowledge, professional skills and clinical ability: A Meta-analysis and systematic review. *Nurse Education in Practice*. 2022:103306.
6. Svellingen AH, Søvnik MB, Røykenes K, Brattebø G. The effect of multiple exposures in scenario-based simulation - A mixed study systematic review. *Nursing open*. 2021;8(1):380-94.
7. Braun, V., Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology*, 3(2), 77-101.
8. Akalin A, Sahin S. The impact of high-fidelity simulation on knowledge, critical thinking, and clinical decision-making for the management of pre-eclampsia. *Int J Gynaecol Obstet*. 2020;150(3):354-60.
9. Lei Y-Y, Zhu L, Sa YTR, Cui X-S. Effects of high-fidelity simulation teaching on nursing students' knowledge, professional skills and clinical ability: A meta-analysis and systematic review. *Nurse Education in Practice*. 2022;60:103306.
10. Labrague LJ, McEnroe-Petitte DM, Bowling AM, Nwafor CE, Tsaras K, editors. High-fidelity simulation and nursing students' anxiety and self-confidence: A systematic review. *Nursing Forum*; 2019: Wiley Online Library.
11. Levett-Jones T, Lapkin S. A systematic review of the effectiveness of simulation debriefing in health professional education. *Nurse education today*. 2014;34(6):e58-e63.
12. Paige JT, Arora S, Fernandez G, Seymour N. Debriefing 101: training faculty to promote learning in simulation-based training. *The American Journal of Surgery*. 2015;209(1):126-31.
13. Ryoo EN, Ha E-H. The importance of debriefing in simulation-based learning: comparison between debriefing and no debriefing. *CIN: Computers, informatics, nursing*. 2015;33(12):538-45.