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The Impact of Student-Led Lactation Education on Self-Efficacy in Clinical Simulation: An Integrative Literature Review

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THE IMPACT OF STUDENT-LED LACTATION EDUCATION ON SELF-EFFICACY IN
CLINICAL SIMULATION: AN INTEGRATIVE LITERATURE REVIEW

by

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ABSTRACT

Simulation is a critical component of nursing education. It provides a safe environment to practice and evaluate skills, supplements clinical hours, and removes barriers to a well-rounded education. Nurses are expected to be educators as part of our scope of practice, and simulation can facilitate this. One topic of nursing importance is lactation education, as breastfeeding has been shown to have multiple benefits for both mother and baby. National rates of exclusive breastfeeding for the first 6 months do not currently meet CDC recommendations. The pedagogy known as the Protégé Effect suggests that learning can be improved through teaching. Breastfeeding is a topic that inherently involves patient education but is currently given minimal attention in most nursing curricula. The purpose of this thesis is primarily to determine whether breastfeeding education within simulation improves student self-efficacy and secondarily, to explore the ramifications on clinical performance.

A literature review was conducted across CINAHL, MEDLINE, Applied Science & Technology Source, ERIC, ScienceDirect, and Google Scholar to find studies comparing breastfeeding education to student self-efficacy within a simulated environment. Inclusion criteria included medical and nursing students at undergraduate- and graduate-level education, full text, written in English, and any student-led teaching opportunities about lactation and breastfeeding. After critical appraisal, 8 qualitative and quantitative articles were included in the study. Current literature strongly suggests breastfeeding simulations improve self-efficacy, but the findings are preliminary in nature. More research is needed. Including breastfeeding education in simulation can better prepare nursing students to assume their role as educators.

DEDICATION

To my Papa, Mama, sister, boyfriend, and most of all Jesus Christ for all of their love and support as I strive to meet my academic dreams.

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INTRODUCTION

Simulation is critical to healthcare and especially nursing education. Simulation is "the art and science of recreating a clinical situation in an artificial setting" (Goldsworthy & Graham, 2013, p. 1). The Society for Simulation in Healthcare (SSH) identifies education and simulation-based assessment as two of its four main purposes (2022). Nursing education would not be as robust without simulation serving as "a bridge between classroom learning and real-life experience" (Society for Simulation in Healthcare, 2022, Simulation Education section). Examples include injecting a needle into a Practi-Injecta Pad or listening to heart sounds on a high-fidelity manikin. Simulation fulfills the need within program curricula of a comprehensive clinical experience when added to traditional means of training and evaluation (Goldsworthy & Graham, 2013; Labrague et al., 2019).

Learning how to educate, an important part of foundational nursing education, is part of a nurse's scope of practice, and simulation provides the perfect opportunity to actively practice this skill in a safe environment. The Protégé Effect suggests that learning can be improved through teaching (Shatz, 2022). This pedagogy is a psychological phenomenon that improves retention of knowledge and learned behavior through actions related to teaching, such as organizing content, role playing an educator, or teaching a live audience (Shatz, 2022). According to a systematic review by Rutherford-Hemming et al. (2019), teaching opportunities within simulation are insinuated to be well integrated internationally using standardized patients (SPs), or volunteers role-playing as patients who are receiving care. However, despite the aim of the review being "to determine how this modality of simulation is being used" (Rutherford-Hemming et al., 2019, p.

1), it did not specify the type of interaction, including but not limited to the frequency of education as opposed to the implementation of therapeutic communication. In addition, another literature review suggested communication in simulation-based training is well incorporated and appears to enhance students' abilities to teach, but the review does not specify whether patient education is included in the assessment of student communication, and if so, its prevalence among the programs assessed and its contributions to student outcomes (Koukourikos et al., 2021). The current body of literature lacks documentation of the frequency of student-led teaching in nursing simulation despite its promise as an effective pedagogy.

SIGNIFICANCE

Given that education is part of a nurse's scope of practice, patient education is a crucial component of nursing curricula and must be adequately incorporated and evaluated. Self-efficacy, or confidence, is one of the commonly measured outcomes of nursing simulation when used in preparation for clinical. Through a systematic literature review, Labrague et al. (2019) suggested self-efficacy to be a significant indicator of quality simulation education with consideration for study variability and missing quality-enhancement strategies. Its use as a quality indicator is founded in the Social Cognitive Theory, sometimes referred to as self-efficacy theory (Polit & Beck, 2022). The construct proposes that perception of one's ability to "produce desired results and forestall detrimental ones by their actions" is critical for one's motivation and ultimate human functioning (Bandura, 2001, p. 10). In other words, self-efficacy is inextricably linked to performance of tasks, such as what is expected during simulation and clinical.

Teaching topics such as lactation education are imperative to nursing curricula as well as the current state of maternal care in the United States (Villegas et al., 2021; Lovenheim, 2022). The production of milk and the action of breastfeeding offer many health benefits to both the mother and the baby, such as reducing the mother's risk for high blood pressure and the baby's risk for necrotizing enterocolitis (World Health Organization, 2022; Centers for Disease Control and Prevention, 2022). Unfortunately, national rates of exclusive breastfeeding for the first six months do not currently meet CDC recommendations (Centers for Disease Control and Prevention, 2022). Moreover, the recent formula shortage of 2022 limits alternative options for

substantial infant feeding (Lovenheim, 2022). As can be seen, there is an increased urgency to properly educate and encourage mothers to breastfeed when possible, and nurses have a responsibility to meet this need as educators.

PROBLEM

Despite its great relevance to current healthcare-related concerns, nursing students and new graduates report feeling underprepared and anxious when interacting with new mothers in the clinical setting (Prokop et al., 2021; Yang, 2019). Regardless of whether structured education is given prior to patient interaction, students entering clinical rotation and graduate nurses starting neonatal programs report lacking the confidence to support breastfeeding mothers (Prokop et al., 2021; Yang, 2019). In these descriptive studies, self-employed strategies to improve self-efficacy showed a positive impact on perseverance, continued learning, and overall clinical performance (Prokop et al., 2021; Yang, 2019). Yang (2019) even found study participants retrospectively suggesting the use of simulation to better prepare for clinical practice.

PURPOSE

The clinical application of lactation education inherently involves patient education by nature of the content. Unlike other topics, nurses cannot interact with breastfeeding patients and avoid providing education because the goal is to establish the autonomy of the mother. Nurses will not be equipped to properly teach unless given quality learning opportunities. As previously mentioned, simulation offers the perfect environment for students to practice their teaching skills and thus have a better learning experience according to the Protégé Effect. Therefore, the purpose of this thesis is primarily to determine whether breastfeeding education within simulation improves student self-efficacy and secondarily to explore the ramifications on clinical performance. Through these inquiries, the researcher hopes to broadly inform nursing programs on the inclusion of patient education opportunities within simulation and how it can advance curriculum so that students' clinical performance improves.

METHOD

A literature review of the 21st century was conducted to find studies inquiring about the relationship between student-led patient teaching and self-efficacy after participation in nursing clinical simulation. All levels of fidelity, from low to high fidelity, were acceptable so long as student-to-patient lactation education was incorporated into the simulation. An example of low-fidelity simulation is student engagement with static breast models, and an example of high-fidelty simulation is interacting with an SP who's assuming the role of a post-partum mother. Despite the literature review's aim to be applicable in all teaching subject matters, lactation and breastfeeding were specifically chosen because of its contemporary importance to public health and for greater control over confounding variables.

CINAHL, MEDLINE, Applied Science & Technology Source, and ERIC databases were searched using the following search terms: (a) lactation, (b) "breast feeding," (c) "breast feeding positions," (d) "latching, breastfeeding," (e) breastfeed*, (f) "breast feed*," (g) "infant diet," (h) "neonat* nutrition*," (i) "infant* latching," (j) simulations, (k) "computer simulation," (l) "augmented reality," (m) "patient simulation," (n) vignettes, (o) simulat*, (p) "virtual realit*", (q) debrief*, (r) prebrief*, (s) self-efficacy, (t) "self efficacy," (u) competenc*, (v) confidence, (w) self-esteem, (x) "self esteem." 113 articles without duplicates were retrieved, and 19 were considered for the study. Afterwards, ScienceDirect and Google Scholar were used to find full text and related articles. In ScienceDirect, the search phrase "nursing education and breastfeeding" retrieved more articles, and the most relevant 50 were screened. 2 additional articles were given consideration, totaling 21 articles.

Inclusion criteria were as follows: medical and nursing students at undergraduate- and graduate-level education, written in the English language, full text only, any form of student-led teaching opportunities about lactation and breastfeeding within simulation, and self-efficacy or confidence as an outcome of the simulation experience. Exclusion criteria included non-English language, published earlier than the 21st century, only abstracts, and any studies without self-efficacy or confidence as the dependent variable. After critical appraisal, 8 qualitative and quantitative articles were included in the study.

RESULTS

Of the original 21 articles, only eight remained after critical scrutiny. Two were removed because they did not discuss lactation or breastfeeding. 10 more were discarded because they lacked at least one of the following: delivering breastfeeding education and effects on self-efficacy. Simulation experiences corresponded with student-led teaching opportunities, so when one was not present, so was the other. Two of the remaining nine articles were found to be a continuation of the same study, resulting in eight unique research studies as shown in Figure 1.

Table 1 contains all of the collected studies. Most had a pretest-posttest (pre-post) design and collected data either qualitatively or quantitatively about participants' gained knowledge, acquisition of skills, satisfaction, and feelings of self-efficacy. One article was a cohort study and looked at the effects of the teaching experience on self-efficacy over time, and one article was a nonrandomized controlled study. Seven out of eight articles used nursing or midwifery participants while the other study used family medicine residents. Two of the nursing-focused articles studied nursing and midwifery professionals while the rest studied students in their respective programs. All but two studies took place within the U.S.

All studies suggested a positive correlation between breastfeeding simulations and increased self-efficacy. The studies which considered translation to clinical practice found evidence for improved performance and confidence. In addition, one study suggested that self-efficacy without reflective assessment of performance was not an accurate indicator of clinical performance.

DISCUSSION

This literature review is the first to compile lactation education opportunities within simulation and its effects on participants' self-efficacy and clinical performance through the lens of the Protégé Effect. All articles found participants' self-efficacy to improve in relation to the delivery of breastfeeding care, including but not limited to verbal education on the baby's nutritional needs and common breastfeeding complications as well as demonstration of hand pumping, ductal massage, and latching positions. When self-efficacy improved, a correlated improvement in knowledge and skills occurred as well. The breadth of what constituted a simulation and self-efficacy varied between studies and deserves thoughtful consideration.

Simulation Versus Workshop

The style of simulation varied, but all included student-led breastfeeding education in the form of educating a standardized patient (SP). More than half of the studies implemented multi-step workshops involving didactic lectures, worksheets, group discussion, basic skills laboratory, and vignettes (Grabowski et al., 2021; Grabowski et al., 2020; Terzioğlu et al., 2016; Haughwout et al., 2000; Rhodes & Burgess, 2018; Antoñanzas-Baztan et al., 2020). These workshops were designed to deliver innovative, comprehensive learning experiences that leveraged more than one style of learning.

The other four studies included basic components of simulation, including pre-work, the simulation scenario, and debrief (Wagner et al., 2009; Tanis et al., 2019; Webber et al., 2021). Some simulations had students switching between provider and patient while others had SPs or even faculty undertake the patient role (Rhodes & Burgess, 2018; Wagner et al., 2009). Low

fidelity and high fidelity breast models were used (Grabowski et al., 2021; Tanis et al., 2016; Webber et al., 2021). A wide range of scenarios were used, ranging from two to five per study (Webber et al., 2021; Tanis et al., 2016).

Self-Efficacy Versus Confidence

Self-efficacy was defined in multiple ways and evaluated to varying degrees. For the purposes of the literature review, both self-efficacy and confidence were used synonymously, but discrepancies were apparent between studies. Antoñanzas-Baztan et al. (2020) used the Kirkpatrick model, a comprehensive training model, to evaluantoate self-efficacy as defined by Albert Bandura at four levels of impact: the level of satisfaction, the quality of learning, the transferal to the workplace, and ripple effects within the individual and organization. Other studies, such as the study by Terzioğlu et al. (2016), juxtaposed confidence to anxiety and used two types of questionnaires to gather measurements – the Spielberger Trait Anxiety Inventory and the Spielberger State Anxiety Inventory. The former was used prior to the workshop to measure general anxiety, and the latter was used after each component of the workshop to measure situational anxiety (Terzioğlu et al., 2016). With nearly the opposite level of rigor, Tanis et al. (2019) evaluated confidence related to breastfeeding skills through a simple, 5-point Likert scale pretest-posttest evaluation.

Teaching as a Pedagogy

The authors of these studies conducted research for varying purposes but not to determine the effects of the Protégé Effect on students' self-efficacy, retention of knowledge, or clinical performance. Given this fact, extrapolations must be regarded with careful consideration.

Yet, some participants could not deny the impact it had on their learning and overall experience. Student participants in the study of Wagner et al. (2009) expressed a desire for more opportunities to teach after completing the simulation and following clinical experience. Upon finishing simulation, students in the study of Webber et al. (2016) showed eagerness to engage with breastfeeding mothers in clinical. And the study with family medicine residents employed a four and a half hour long workshop which included SP interviews, and those in the experimental group tested better in the skills-based objective structured clinical examination (OSCE) in comparison to the control group (Haughwout et al., 2000).

Impact on Clinical Performance

More than half of the studies included follow-up in the clinical environment. The two studies which looked at working nursing professionals measured translation to clinical practice because they strove to improve key performance indicators such as exclusive breastfeeding at the time of discharge (Antoñanzas -Baztan et al., 2020; Tanis et al.; 2019). Evaluations of clinical performance were based on outcome, skills check-off, self-reported perspective, and/or perspective reported by clinical leaders (Grabowski et al., 2021; Wagner et al., 2009; Tanis et al., 2019; Terzioğlu et al., 2019; Antoñanzas-Baztan et al., 2020). While most drew causal relationships, Grabowski et al. (2021) remained inconclusive without statistical analysis to confirm a cause-and-effect relationship between the workshop and the education given in the clinical setting. Therefore, translation to clinical practice has preliminary support.

LIMITATIONS

The main limitation of this literature review was the size of the existing body of knowledge and the discrepancies between studies. Despite including international studies, the number of articles found was still few, and their level of evidence was low given most were pretest-posttest design with no control group and small sample sizes. Convenience sampling was the method of choice as a result of research efforts being localized. The variability between studies was unavoidable, but because of the limited number of articles, the findings more readily complemented each other rather than reinforcing a well-established fact.

Another limitation stems from the approach which the researcher took to answer questions of inquiry. The articles that were included in the study contained two key components: student-led teaching in a simulated environment and the resulting effects on perceived self-efficacy. Breastfeeding and lactation education were specifically chosen as the teaching topic because the researcher initially believed a single education topic would better serve to understand the phenomena of learning by teaching. However, upon reflection, the topic did not work in favor of the thesis' aim to produce broad implications concerning the Protégé Effect in simulation.

Firstly, breastfeeding involves extensive hands-on skills, meaning tactile or kinesthetic learning was also a pedagogical factor that could have influenced self-efficacy. Secondly, the workshops included additional educational tools – didactic presentations, group discussion, and vignettes for example – that undoubtedly contributed to the participants' improved self-efficacy.

To narrow the learning experience strictly to student-led teaching opportunities would better

study the phenomenon of learning by teaching.

NURSING IMPLICATIONS

Students pursuing obstetrics and maternal care are graduating from nursing school feeling ill-prepared for the clinical work environment (Prokop et al., 2021; Yang, 2019). This should be minimized to the greatest degree possible, and simulation provides the solution. Including well-executed nursing simulation in curricula that covers breastfeeding and lactation education can decrease feelings of anxiety and low self-efficacy. Preliminary evidence shows this carries over into clinical practice.

Due to the limitations of the literature review, it is hard to extrapolate the implications of general student-led teaching on clinical performance as a beneficial pedagogy. However, the inclusion of breastfeeding education in simulation would be very beneficial for other purposes besides maximizing the Protégé Effect. Especially given the current state of breastfeeding rates in the U.S., it is imperative to instill in new nurses the importance of teaching and equipping mothers with lactation education.

DIRECTIONS FOR FUTURE RESEARCH

A potential study to better isolate the Protégé Effect would be conducting a literature review or possibly original research on discharge teaching in nursing simulation. Discharge teaching can cover any topic and is thus flexible for any clinical rotation. The level of complication can also be adjusted depending on the patient scenario to properly challenge participants according to how far along they are in their program. For instance, the amount of critical thinking a participant needs would increase for a patient who has more comorbidities or psychosocial concerns. Depending on the focus, teaching can also exclude topics which involve excessive tactile or kinesthetic learning to decrease confounding variables.
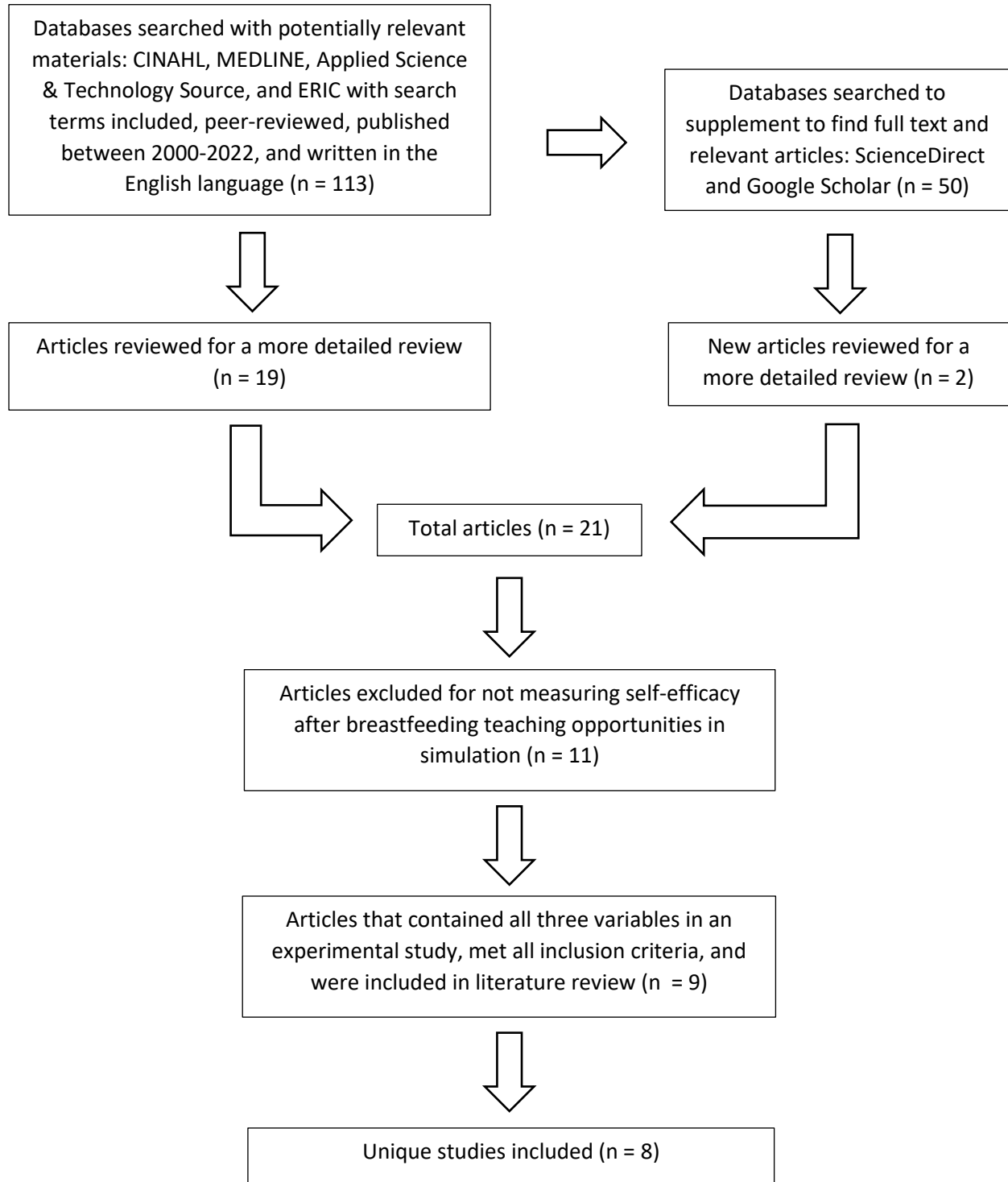
CONCLUSION

Nurses must be competent educators as part of their scope of practice, and the development of this skill is impacted by perceived self-efficacy as explained by the Social Cognitive Theory. Without self-efficacy to motivate a person's actions, performance of tasks will plunge, highlighting the importance of quality nursing simulations. When teaching opportunities are incorporated into simulation, the Protégé Effect reinforces learning. This combination was researched with the expectation that its union would foster self-efficacy in its participants and thus empower students to perform well in clinical and excel in the future as competent nurses.

Limited literature exists currently on the clinical benefits produced by the Protégé Effect. While a handful of studies support the positive impact of breastfeeding education on student's perceived self-efficacy, this evidence is only preliminary in nature. Likewise, an even more limited number of studies discuss how such experiences translate to clinical performance. The current literature lacks studies on general student-led teaching opportunities within nursing and medical curriculum, so a great gap is present in determining how the Protégé Effect could possibly improve clinical performance.

Lactation education is simply one example of the many topics nurses are expected to competently educate on. Its inclusion in nursing simulation would undoubtedly benefit the students, but more research is needed to understand the foundational interaction between the Protégé Effect, self-efficacy, and clinical performance.

APPENDIX A: FIGURE 1: SELECTION METHOD OF LITERATURE

Databases searched with potentially relevant materials: CINAHL, MEDLINE, Applied Science & Technology Source, and ERIC with search terms included, peer-reviewed, published between 2000-2022, and written in the English language (n = 113)

Databases searched to supplement to find full text and relevant articles: ScienceDirect and Google Scholar (n = 50)

Articles reviewed for a more detailed review (n = 19)

New articles reviewed for a more detailed review (n = 2)

Total articles (n = 21)

Articles excluded for not measuring self-efficacy after breastfeeding teaching opportunities in simulation (n = 11)

Articles that contained all three variables in an experimental study, met all inclusion criteria, and were included in literature review (n = 9)

Unique studies included (n = 8)

APPENDIX B: TABLE 1: TABLE OF EVIDENCE

Article	Title	Author(s) & Year	Sample	Research Design	Location	Intervention's Characteristics
1A	A pilot study to evaluate the effect of classroom-based high-fidelity simulation on midwifery students' self-efficacy in clinical lactation and perceived translation of skills to the care of the breastfeeding mother-infant dyad.	Grabowski et al., 2021	Graduate nurse midwifery students, N = 15	Prospective cohort design, mixed methods	U.S.A.	Workshop
1B	Midwifery students better approximate their self-efficacy in clinical lactation after reflecting in and on their performance in the LactSim OSCE.	Grabowski et al., 2020	Graduate nurse midwifery students, N = 9	Cohort design	U.S.A.	Workshop
2	Turning simulation into reality: increasing student competence and confidence.	Wagner et al., 2009	Undergraduate nursing students, N = 64	Posttest design	U.S.A.	Simulation
3	Breastfeeding Simulation With the Standardized Patient.	Tanis et al., 2019	Clinical mother-baby nurses, N unknown	Mixed methods pre-post design	U.S.A.	Simulation
4	A new strategy in nursing education: From hybrid simulation to clinical practice.	Terzioğlu et al., 2019	Undergraduate nursing students, N = 60	Prospective study, pre-post design	Turkey	Workshop
5	Improving residents' breastfeeding assessment skills: a problem-based workshop.	Haughwout et al., 2000	Family medicine residents, N = 24 (Control, N = 10; Intervention N = 14)	Nonrandomized controlled group	U.S.A.	Workshop
6	Using Simulation to Teach Breastfeeding Management Skills and Improve Breastfeeding Self-Efficacy.	Webber et al., 2021	Undergraduate nursing students, N = 77	Pre-post design	U.S.A.	Simulation
7	An Innovative Educational Intervention to Improve Nursing Students' Knowledge, Attitudes, and Skills Surrounding Breastfeeding.	Rhodes & Burgess, 2018	Undergraduate nursing students, N = 69	Pre-post design	U.S.A.	Workshop
8	Design, implementation and evaluation of an education course to promote professional self-efficacy for breastfeeding care.	Antoñanzas-Baztan et al., 2020	Healthcare professionals, N = 43 (Nurses, N = 25; Midwives, N = 12)	Pre-post design	Spain	Workshop

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