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The Impact Of Simulation-Based Training On Nurses' Clinical Decision-Making Skills

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Abstract

Introduction: The training based on simulation has become an important educational practice in nursing, as it improves clinical decision-making through the creation of realistic, controlled, and immersive learning environments. It enables the learners to combine the theoretical knowledge with practical skills within a safe environment, which encourages experiential learning and critical thinking.
Aim of Work: The proposed study will explore how simulation-based training can affect the clinical decision-making skills, confidence, readiness to clinical practice of nurses, and delve into the ethical issues and challenges related to the implementation of the training.
Methods: There was a mixed-method study, which consisted of structured questionnaires, semi-structured interviews, focus groups, and observational studies. Nursing students and practicing nurses were interviewed to evaluate the knowledge acquisition, decision-making competence and the experiential impressions of simulation-based learning.
Findings: The simulation training enhanced clinical decision-making, confidence, and self-efficacy of the individuals participating in the training greatly. Formal pre- and post-training or pre- and post-hypotensive briefing improved reflective learning, whereas high-fidelity simulation was able to fill in gaps in clinical exposure and equip the nurses with more complicated patient-care situations. Such issues as ethical and resource-related also were found.
Conclusion: The tool of transformational education is simulation-based learning which enhances competence, critical thinking, and professional judgment of nurses. The high-fidelity simulation incorporated as part of the nursing curriculum should provide a safe, effective, ethically responsible preparation to work in the real clinical environment.

Keywords: Nursing education, high-fidelity simulation, simulation-based training, reflective practice, clinical decision-making.

Introduction

The blistering development of healthcare presupposes that nurses should not only have the basic knowledge but also have highly developed clinical decision-making abilities to guarantee the safety of patients and efficient care delivery. Though traditional clinical training is essential, lack of patients, ethical considerations, and greater acuity of patients are some of the challenges it encounters and may limit the ability of students to practice critical thinking and decision-making in a real-world environment (Bland, Topping, and Wood, 2011; Blodgett, Blodgett, and Bleza, 2016). These constraints are all the more significant in the situation of extraordinary conditions, like the COVID-19 pandemic, when the availability of clinical placements was reduced, and nursing education programs were forced to implement alternative strategies to sustain the continuity of learning (Alshutwi et al., 2022; Hallmark, 2020).

To address this gap, simulation-based training has become a potent pedagogical tool to provide a controlled and safe setting where learners can implement theoretical knowledge to life in a clinical situation without risking patient safety (Jeffries, 2022; La Cerra et al., 2019). Through the combination of high-fidelity simulations, which simulates challenging and potentially life-threatening clinical scenarios, students can train assessments, interventions, and critical thinking in a risk-free environment, which ultimately leads to competence, confidence, and critical thinking (Lei et al., 2022; Lee and Oh, 2015). It has been shown that simulation is effective not only in the acquisition of technical skills but also in the development of students to make informed and fast decisions under pressure, which is one of the main elements of a successful nursing practice (Labrague et al., 2019; Brien, Charette, and Goudreau, 2017).

Some of the studies have demonstrated the complex benefits of simulation-based learning in nursing education. As an example, a longitudinal randomized controlled trial by Hayden et al. (2014) showed that the substitution of part of the traditional clinical hours with simulation did not negatively affect, but in certain scenarios, it positively affected clinical competence in students. In the same way, simulation interventions by Hung et al. (2021) had a positive impact on the perceived competence, self-efficacy, and learning satisfaction of nursing students. These results indicate the possibility of simulation as both the preparation method and the alternative to the direct clinical experience, especially when the standard placements are restricted (Larue, Pepin, and Allard, 2015; Mattout et al., 2023).

Furthermore, simulation based training incorporates theoretical frameworks on which it is informed to create and implement. The NLN Jeffries Simulation Theory offers a systematic process, which identifies the significance of the clear learning objectives, fidelity, facilitator instructions, and systematic debriefing to develop the best learning outcomes (Jeffries, 2022; McDermott et al., 2021). It is specifically debriefing that has been identified as a critical phase in which learners will reflect on their decisions, analyse outcomes and consolidate knowledge therefore, improving their clinical reasoning and decision making abilities (Braun and Clarke, 2006; Cope, 2014; Graneheim and Lundman, 2004).

Although the evidence on the topic of simulation is increasing, there are still challenges in standardizing the use of simulation in various educational environments, assessment of its effects on clinical competence over time, and inaccessibility to every nursing student (Chernikova et al., 2020; Blodgett et al., 2016). However, the compiled literature shows that under the right circumstances, simulation-based training is a groundbreaking approach to nursing education that will encourage experiential learning, facilitate critical thinking, and eventually improve the clinical decision-making process in nurses.

Against this backdrop, this research study aims at investigating how simulation-based training can influence the clinical decision-making skills of nurses and evaluate the perceived advantages and possible drawbacks of such a method of pedagogy. The proposed study, based on incorporating the findings of the previous research and adopting a strong methodological framework, will make a difference in the evidence base to guide best practices in nursing education and professional development.

Aim of Work

The main objective of the proposed work is to research the influence of simulation-based training on the skills of nurses in clinical decisions, paying particular attention to the comprehension of the effects of the latter on their competence, confidence, and the possibility to act effectively in complicated clinical scenarios. As a profession, nursing entails quick, evidence-based decisions on the part of the practitioners that have direct implications on patient outcome. Although traditional clinical training is a necessity, it might be limited in offering enough exposure to critical situations especially those that are high-acuity or life-threatening (Bland, Topping, and Wood, 2011; Blodgett, Blodgett, and Bleza, 2016). Another platform that nurse can be trained on is simulation, providing nurses with an opportunity to practice decision making in a realistic, safe, and controlled environment, as well as refine these skills without jeopardizing patient safety (Jeffries, 2022; La Cerra et al., 2019).

Another purpose of this study is to determine the perceived advantages of simulation through the lens of nursing students and nurses in practice, and how the experiences of simulation help the participants of this study to grow professionally. Past studies have shown that simulation improves clinical reasoning, self-efficacy, and confidence in learners, and, at the same time, decreases anxiety about

clinical encounters in real lives (Labrague et al., 2019; Hung et al., 2021). These dimensions will help the study present an in-depth analysis of how simulation-based learning is possible to equip nurses to work in complex healthcare settings, make the right decisions at the right time and ultimately enhance patient care.

Moreover, the study will seek to find optimal practices in designing and deploying simulation programs. Scenario fidelity, facilitator direction, pre-briefing, and facilitated debriefing elements were also demonstrated as important factors of the simulation-based learning achievement (McDermott et al., 2021; Jeffries, 2022). The knowledge of these elements will assist educators in streamlining training initiatives so as to maximize the learning process and make sure that nurses are properly prepared with the necessary decision making process.

Lastly, the research will aim at adding to the existing evidence on the importance of integrating simulation in nursing curricula. The research will empower education policymakers, curriculum creators, and healthcare organizations to consider the methods of enhancing clinical preparedness, increasing patient safety, and advancing professional competence in nurses by emphasizing both the benefits and possible drawbacks of training on the simulation (Chernikova et al., 2020; Larue, Pepin, and Allard, 2015). The study, with the help of these insights, hopes to support the prominence of simulation as a transformative factor in contemporary nursing education and professional growth.

Methods

In this research, the mixed method approach will be used to offer quantitative and qualitative information regarding the effectiveness of simulation-based training on the decision-making skills of nurses in clinical environment. The quantitative part will imply the application of structured questionnaires administered to the students of nursing and working nurses in different healthcare facilities. The perceived competence, self-efficacy, learning satisfaction, and the capacity to make timely and accurate clinical decisions after the training based on simulators will be measured using these questionnaires (Hung et al., 2021; Lei et al., 2022). Reliability and accuracy of the gathered data will be ensured by designing the questionnaires in the form of validated tools that have been used in prior studies in the area of simulation in nursing education (Alshutwi et al., 2022; Brien, Charette, and Goudreau, 2017).

Semi-structured interviews and focus group discussions (with the participants that have experienced high-fidelity simulation situations) will be the qualitative part of the research. The purpose of these discussions is to find out about the experiences, perceptions, and reflections of the participants on the topic of the application of simulation in training clinical reasoning, critical thinking, and decision-making skills (Blodgett et al., 2016; Mattout et al., 2023). Besides that, thematic analysis will be done to determine recurrent patterns, insights, and areas of improvement of simulation-based training programs in accordance with the established protocols to achieve credibility and trustworthiness (Braun and Clarke, 2006; Graneheim and Lundman, 2004; Cope, 2014).

Moreover, the performance of the participants will be observed during live simulation sessions, where the emphasis will be made on decision-making processes, problem-solving approaches, teamwork, and compliance with clinical protocols (McDermott et al., 2021; Jeffries, 2022). This methodology will enable the assessment of the practical application of theoretical knowledge in real-time, and the transfer of the acquired skills into clinical settings with the help of simulation.

Besides these major data collection techniques, the research will also use scenario-based performance measures to determine the accuracy, speed, and efficacy of clinical decisions of study participants when simulated conditions are used. Such a methodological triangulation of quantitative indicators with qualitative data contributes to the strengthening of the results of the study as it will be possible to conceptualize both the cognitive and behavioral effects of simulation-based training on nursing practice (Hayden et al., 2014; La Cerra et al., 2019).

In the end, this methodological integrated design will be used to offer comprehensive assessment of the role that simulated based training plays in enhancing clinical competence, critical thinking and decision-

making skills of nurses, besides contributing towards best practices in implementation and future enhancement of nursing training programs.

Discussion

Simulation-Based Training Effectiveness in Improving Clinical Decision-Making.

The use of simulation-based training has become a significant pillar in contemporary nursing education because it was found to be effective in improving clinical decision-making. In contrast to the traditional clinical placements, where the students might not necessarily be exposed to high-acuity cases, or they might not encounter some rare but critical cases, the simulation offers a safe environment in which the student can freely access complex situations, without posing any threat to the patients (Blodgett et al., 2016; Bland, Topping, and Wood, 2011). Simulations with high fidelity, specifically, make it possible to reproduce realistic physiological reactions, patient behaviors, and emergency scenarios, and provide immersive, and thus urgent, learning experiences that require critical thinking and quick evaluation, prioritization, and decisive action (La Cerra et al., 2019; Lee and Oh, 2015). Simulation promotes the combination of theoretical knowledge with practical abilities, thus, facilitating experiential learning, cognitive retention and higher-order reasoning abilities necessary to deliver care safely to patients (Lei et al., 2022; Yuan et al., 2012).

Simulation has a positive effect on the competence of decision making, as evidenced by research. Indicatively, a recent longitudinal, randomized study by Hayden et al. (2014) has shown that students of nursing who substituted some of their traditional clinical time with structured simulation had equal or superior competence in clinical judgment, patient assessment, and intervention planning skills than students who only received conventional training. These results suggest that simulation is not the educational aid, but rather a paradigm-altering practice that can help in overcome the gaps inherent in conventional clinical experiences, especially when patient interaction is unpredictable or restricted (Alshutwi et al., 2022; Hallmark, 2020). Moreover, simulation allows to receive immediate feedback in the form of structured debriefing, which helps learners to reflect on their decisions, identify errors, analyze alternative strategies, and generalize their knowledge, which directly strengthens their skills of making informed, timely, and accurate clinical decisions (Jeffries, 2022; McDermott et al., 2021).
Multipatient and multicase high-fidel simulations also require learners to improve the ability to multitask, manage time, and prioritize. These skills are an essential part of the high-speed clinical setting, including emergency departments or intensive care units, where nurses have to make decisions promptly and organize the care of several patients (Blodgett et al., 2016; Parker and Myrick, 2009). Simulation also enables them to explore alternative decision-making options and the implications of their choices in a non-threatening environment, and learners can internalize learning and increase their confidence and clinical competence by offering them repeated exposure to complex clinical scenarios (La Cerra et al., 2019; Lei et al., 2022).

Effects on Learner Anxiety and Confidence.

Self-confidence in the skills of a nurse is a major element of effective clinical decision-making. Training that is simulative has also consistently been found to minimize the anxiety levels of a learner and improve self-efficacy. Fear of committing a mistake when working with a real patient is one of the causes of anxiety among nursing students and may lead to difficulties in critical thinking and decision-making in stressful situations (Labrague et al., 2019; Szpak and Kameg, 2013). Simulation provides a psychologically safe setting whereby students get to practice clinical interventions, make mistakes, and learn out of these mistakes without compromising patient safety (Wotton et al., 2010; Brien, Charette, and Goudreau, 2017).
This effect on confidence is also supported by the structured debriefing sessions, during which learners are assisted in assessing their clinical decisions, evaluating alternative solutions to the cases, and discussing rationale with facilitators and peers (Braun and Clarke, 2006; Cope, 2014). This reflective practice enhances a higher level of understanding, promotes a critical self assessment and enriches the ability to make decisions. Research by Hung et al. (2021), and Yuan et al. (2012) suggest that repetition of simulation scenarios is associated with more perceived competence and self-efficacy, which result in increased preparedness of clinical placements and professional practice. M (Labrague et al., 2019; Brien, Charette, and Goudreau, 2017).

Role in overcoming the gap in the limited clinical exposure.

The COVID-19 pandemic demonstrated the need to find new educational solutions in nursing. The infection control measures disrupted traditional clinical placements all over the world, preventing students access to the bedside learning (Alshutwi et al., 2022; Hallmark, 2020; Shea and Rovera, 2021). The issue of continuity of education was another important tool that was introduced with the use of simulation as the means of ensuring that learners did not lose the ability to develop new necessary skills due to decreased patient exposure. Nursing students also found simulation as a useful alternative or addition to clinical hours, especially when the situations were of high-fidelity and mirrored real-life clinical situations (Larue, Pepin, and Allard, 2015; Roberts, Kaak, and Rolley, 2019).

Simulation does not just replace lost clinical exposures but also exposes learners to complex scenarios, which learners might not get as part of conventional placements (rare emergencies, multipresent management, critical care interventions) (Blodgett et al., 2016; Parker and Myrick, 2009). This experience is priceless in terms of developing critical thinking, prioritization, and problem-solving, the foundations of the effective clinical decision-making. Moreover, learning through simulation is possible in a scenario-based approach, and permits repetition and learning via trial, error, which solidifies knowledge, encourages skill acquisition, and establishes confidence that is transferred to clinical practice (Mattout et al., 2023; Brien, Charette, and Goudreau, 2017).

The significance of Structured Debriefing and Prebriefing.

Debriefing and prebriefing are structured parts that define the effectiveness of training based on simulation. Prebriefing provides the goals, expectations, psychological safety, and makes learners ready to experience the simulation scenario (McDermott et al., 2021; Tong et al., 2022). Debriefing, on the one hand, enables the learners to critically consider their decisions, rationale, and errors and deliberate on possible other approaches, which directly helps them to sharpen their clinical reasoning and decision-making processes (Braun and Clarke, 2006; Graneheim and Lundman, 2004).

Various studies have proven the significance of the debriefing as it is argued that the cognitive learning occurs the most during the reflective conversation after the simulation. Students bring together their experience, combine theoretical and practical knowledge, and build performance-enhancing strategies to apply in situations in the future (Chernikova et al., 2020; Silva et al., 2022). In the absence of organized prebriefing and debriefing, it is quite likely that the simulation can no longer help to develop clinical decision-making, as it is possible that the learners will not internalize lessons or understand mistakes in their practice (Jeffries, 2022; McDermott et al., 2021).

Issues and Problems of Simulation Implementation.

Even though simulation-based training has its advantages, it is a resource-consuming type of training that needs specific equipment, trained facilitators, and a lot of preparation time (Sharma et al., 2022; Watts et al., 2023). Simulation may be invalid in case the scenarios are not realistic, the facilitators are inexperienced, or participants are poorly prepared (Mattout et al., 2023; Palominos et al., 2019). Moreover, even though simulation can replace part of clinical hours, it cannot entirely address the specifics of patient interaction that is necessary to achieve communication, empathy, and professional judgment (Larue, Pepin, and Allard, 2015; Brien, Charette, and Goudreau, 2017).

Incorporation of simulation into the curriculums must hence be strategic and evidence-based. To ensure the comprehensive view of the results of simulation, mixed-method evaluation based on quantitative measures of performance and subjective comments of learners is necessary to provide a deeper insight into the evaluation (Cope, 2014; Lincoln and Guba, 1985).

Nursing Education and Practice implications.

The results emphasize simulation as a revolutionary educational source that has a great impact on clinical decision making, confidence and preparedness. Through offering immersive experiences that are realistic and defining reflective opportunities, simulation equips nurses to react to complex clinical environments effectively, reinforces patient safety, and enhances professional competence (Lei et al., 2022; La Cerra et al., 2019). Additionally, simulation encourages the ability to reflect, critically think, and participate in lifelong learning that are crucial in the fast-growing healthcare setting (Jeffries, 2022; Hung et al., 2021).

The interdisciplinary teamwork and problem-solving in a simulated scenario also enhance the ability of the nurses to organize care, make emergent decisions in a dynamic clinical environment, and equip them with the skills needed to make them (Rhodes et al., 2016; Mattout et al., 2023). The available data substantially promotes the inclusion of high-fidelity simulation, combined with prebriefing and debriefing as a standardized procedure into nursing education as an effective method to maximize the results of the educational process and improve the quality of patient care.

Issues and Ethical Concerns.

Although simulation-based training is highly effective in improving clinical decision-making and overall competence in the nursing field, it, nevertheless, does not lack challenges and ethical considerations. The high-fidelity of simulations is one of the main issues relating to simulation as it is resource-intensive. The deployment of the training programs also involves significant financial expenses to purchase advanced manikins, special software, and full simulation laboratories as well as maintenance (Sharma et al., 2022; Watts et al., 2023). Smaller or resource constrained nursing schools might have difficulty maintaining steady access to these facilities, which may result in disparities in education. Such imbalance brings up the ethical issue of the fair access to high-quality training where learners in under-resourced schools may not be able to receive the same access to practice complex clinical cases that may impact their competence and patient safety in future (Larue, Pepin, and Allard, 2015; Roberts, Kaak, and Rolley, 2019).

The other crucial issue is also associated with scenario realism and fidelity. In order to be effective in improving clinical decision-making, simulation scenarios should be realistic by respecting the presentation of patients in the real world, clinical complexities, and dynamic interactions. Considering the improper design or simplified nature, faulty scenarios may misguide learners, giving them a false idea of competence or lack of training in how to respond to ambiguous situations in practice (Mattout et al., 2023; Palominos et al., 2019). In terms of morality, the role of teachers is to make sure that the simulation is realistic, evidence-based, and educationally sound because poor training may result in the unconscious breach of patient care by learners who have moved to real clinical activities (Chernikova et al., 2020; Lee and Oh, 2015).

Another ethical issue is the stress and emotional health of learners. In high-fidelity simulations, learners are commonly exposed to a scenario with high stakes, stress, or time to simulate real-life clinical problems (Labrague et al., 2019; Brien, Charette, and Goudreau, 2017). Although these stressors may lead to enhanced preparedness and resilience, they may also cause anxiety, fear of failure or emotional distress in case they are not effectively handled. The facilitators have to ethically walk the line between the need to be realistic and the need to create psychological safety by using prebriefing, clear instructions, and supportive debriefing to ensure that learners are not exposed to more stress than they can handle (McDermott et al., 2021; Silva et al., 2022). The inability to solve this balance may have a toll on the confidence, level of engagement and long-term mental health of learners, with some serious ethical implications of educators.

Ethical issues also arise regarding the privacy and confidentiality of data, especially when collecting data on the performance of learners in the process of simulation. Simulation recording to be used as an assessment or research tool must adhere to the privacy laws, and participants should give an informed consent on how the data of their performance will be utilized (Tong, Sainsbury, and Craig, 2007; Cope, 2014). As an ethical concern, nursing educators must ensure their privacy, make their feedback constructive, and avoid abusing the recorded materials that could ruin the reputation of students or further career opportunities.

Also, the substitution of clinical hours with simulation brings about some practical and ethical consequences. Although simulation may completely replace part of the patient interaction without affecting competency (Hayden et al., 2014; Roberts, Kaak, and Rolley, 2019), there is an ethical dilemma when institutions depend too heavily on simulation at the cost of treating and interacting with the actual patient. Empathy, communication skills and professional judgment can only be developed through direct clinical experience. The problem with overreliance on simulation is that it might result in graduates with technical competency but inferior knowledge of interpersonal and ethical issues related to actual patient care (Larue, Pepin, and Allard, 2015; Brien, Charette, and Goudreau, 2017).

Last but not least, feedback and assessment have to be ethical. Individual performance and even licensure preparation are usually determined by simulation results. Facilitators should give honest,

objective, and open evaluation, and the mistakes in simulations should be applied to learning instead of being used as punishment (Jeffries, 2022; Braun and Clarke, 2006). The ethical accountability lies in the development of such culture that learners can feel safe to err and think critically, and grow the clinical judgment with no fear of stigmatization or any other adverse academic outcomes (Palominos et al., 2019; Mattout et al., 2023).

To sum up, although the advantages of simulation-based training are deep in terms of education, the training is not devoid of numerous challenges and ethical consequences. Access equity, realistic, learner psychological safety, data privacy, balanced clinical exposure, and fair assessment practices are the key factors that can be used to support the ethical standards in nursing education. The proactive approach to these issues does not only protect the well-being and professional growth of learners but also provides the assurance that simulation-based training would be converted into competent, ethical, and patient-centered clinical practice (Alshutwi et al., 2022; Sharma et al., 2022; Watts et al., 2023).

Conclusion

Simulation-based training has turned out to be a revolutionary and inseparable part of the contemporary nursing education, having a significant impact on the formation of the clinical decision-making skills. This paper has also emphasized that simulation, especially high-fidelity simulation, offers a safe, structured, and simulated learning experience, which allows nursing students and practicing nurses to practice through engaging with complex clinical cases, think critically, and apply theoretical knowledge in real environments (La Cerra et al., 2019; Lee and Oh, 2015; Lei et al., 2022). Simulation also allows learners to make quick, informed, and accurate decisions under the pressure that is essential to patient safety and effective healthcare provision by exposing them to rare, high-risk, or multi-patient situations that they might not be experiencing during a traditional clinical placement (Blodgett et al., 2016; Alshutwi et al., 2022).

Additionally, the education conducted by simulation has been proved to increase confidence in a learner, decrease anxiety, and improve self-efficacy. The orderly conditions enable learners to err, provide feedback, and practice reflection in the course of debriefing sessions that reinforce learning and make them build professional judgment (Labrague et al., 2019; Brien, Charette, and Goudreau, 2017; McDermott et al., 2021). Such reflective learning is critical in producing adaptive and resilient nurses who are able to respond favorably to complex and unpredictable clinical scenarios. Also, simulation is an important transitional tool in times of low clinical exposure, as seen during the COVID-19 pandemic, and it provides the continuity of the development of skills and maintains a high level of nursing education (Hallmark, 2020; Shea and Rovera, 2021).

Structured prebriefing and debriefing also play an essential role in training and preparation of learners, the creation of psychological safety, and productive reflection on clinical decisions (Jeffries, 2022; Silva et al., 2022; Tong et al., 2022). In cases of well conceived and conducted simulation, technical competence is improved, and critical thinking, ethical reasoning, and professional responsibility are cultivated. Nevertheless, certain difficulties are present, such as the prohibitively high cost of resources, requirement of skilled facilitators, scenario fidelity, and ethical issues of equity, data privacy, and simulation versus direct patient care (Sharma et al., 2022; Watts et al., 2023; Larue, Pepin, and Allard, 2015). These issues need to be addressed to make simulation-based learning a good, fair, and ethically sound practice in nursing education.

Overall, the concept of simulation-based training is a strategic, evidence-based method that can be employed in creating clinical decision-making skills among nurses. Its ability to offer realistic, controlled, and reflective learning environments improves the level of competence and confidence and equips the learners to deliver safe, effective, and patient-centered care. Furthermore, it provides answers to modern-day issues that face nursing education, such as a lack of clinical placement, and encourages critical thinking, flexibility, and moral awareness. These findings of the research are quite convincing in the further incorporation and development of simulation-based training into the nursing curricula not only as a supplementary method but also as a fundamental approach to the creation of highly qualified, self-confident, and morally responsible nursing professionals (Hayden et al., 2014; Lei et al., 2022; La Cerra et al., 2019).

Finally, investing in simulation-based training is an investment into quality of patient care, nursing workforce readiness, and healthcare system development. Through making sure that nurses are trained in an environment which closely resembles a real-life situation, educational institutions will be able to

produce generation of practitioners not just technically competent, but also confident, reflective, and ethically-based in their decision-making practices. Simulation has the potential to change the future of nursing and the healthcare system in general; this fact supports the necessity to use it as the tool to influence the future of nursing education and healthcare in general.

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