



Developing Comprehensive Nursing Skills: An Approach Through Clinical Simulation

Kety Bernardes-Carballo

Master of Science in Education and Master of Education with a concentration in Pedagogy in Digital Environments, Bolivarian University of Ecuador, Ecuador

Arahí Sixto-Pérez

Ph.D. in Pedagogical Sciences, University of Medical Sciences of Havana, Cuba

KEYWORDS

Professional training
Professional
competencies
Nursing
Clinical simulation
Health sciences
education.

ABSTRACT

The objective of this study was to define the comprehensive skills that nursing graduates must develop through clinical simulation, thereby strengthening the integration of teaching, research, and community engagement in higher education. A descriptive design with a qualitative-quantitative approach was used, applying the Delphi method with 12 experts holding doctoral degrees, a minimum of five years of university teaching experience, and a track record in clinical simulation. Using an evaluation matrix, criteria such as relevance, systemic nature, pedagogical rationale, and applicability were assessed and analyzed using a weighted arithmetic mean. The results identified a system of skills structured around four pillars: generalizing findings to workplace education settings; conducting comprehensive clinical assessments in simulated contexts of varying complexity; coordinating protocols adapted to local needs (especially in rural areas); and making evidence-based decisions. It is concluded that clinical simulation is a key pedagogical strategy for the comprehensive development of future nursing professionals, although its pedagogical rationale needs to be strengthened and its effectiveness in real clinical settings needs to be evaluated.

RECEIVED: 09/06/2026

ACCEPTED: 24/09/2026

How to Cite This Article / Standard Citation: (APA 7th Edition)

Bernardes-Carballo, K., Sixto-Pérez, A. (2026). Defining Comprehensive Skills for Nursing Graduates Through Clinical Simulation. *Revista Prisma Social*, 55, 1-8. <https://doi.org/10.65598/rps.6256>

1. Introduction

Care management and evidence generation are essential commitments of the nursing profession in the face of contemporary healthcare demands. This requires educational processes integrated with innovative methodologies that foster research and the adoption of technological and scientific advances in professional practice (Silva Galleguillos et al., 2021). From this perspective, simulation-based learning stands as a fundamental pedagogical strategy for consolidating clinical knowledge and skills within controlled and safe practice environments (Alharbi et al., 2024; Tamilselvan et al., 2023).

This approach aligns with international guidelines that define the 21st-century nursing professional as an agent of change, capable of integrating clinical, ethical, communication, and leadership knowledge (International Council of Nurses [ICN], 2021). Likewise, the Consortium for Patient Safety in Nursing Education (QSEN, 2023) identifies six essential competencies—including patient safety, teamwork, and evidence-based decision-making—that must be integrated from the earliest years of training. The relevance of these competencies is also supported by evidence on interprofessional simulation, the results of which show positive effects on the development of teamwork and communication among students in the health professions (Sezgin & Bektas, 2023).

The future of nursing calls for professionals with advanced training, leadership, and the ability to work across disciplines—professionals who embrace a holistic view of care and respond to rapid scientific advances. This presents the central challenge of developing innovative educational models that strengthen prevention, patient safety, and constant adaptation to new evidence and technologies (Andrade-Pizarro et al., 2023). In this context, clinical simulation provides a space to replicate situations of varying complexity, allowing students to develop clinical and non-technical competencies without compromising patient safety. In particular, recent evidence indicates that simulation strategies can promote the development of clinical decision-making skills in nursing students (Görücü et al., 2024).

Universities face the challenge of designing innovative strategies that respond to the demands of the profession, aimed at building an educational model capable of preparing competent professionals on a global scale. This model must promote a holistic and transcultural vision of care, grounded in an interdisciplinary and integrative approach that ensures the relevance and quality of nursing practice (Pastuña Doicela & Jara Concha, 2020). From this perspective, the incorporation of active methodologies such as clinical simulation complements traditional teaching through contextualized learning experiences, in which students actively participate in resolving clinical situations and progressively develop professional autonomy.

In this regard, the organization of knowledge today goes beyond traditional methods, adopting approaches such as project-based learning and microlearning (Hernández & Ventura, 2013). However, in critical fields such as the health sciences, clinical simulation stands out as a fundamental tool (Muñoz Gualán & Sierra, 2025). This method not only allows students to apply theory in realistic and safe scenarios but also fosters crucial skills such as teamwork and decision-making under pressure (Bravo Zúñiga et al., 2018). Recent evidence confirms that simulation-based learning promotes the acquisition of knowledge and skills, although its outcomes depend on factors related to the design, implementation, and characteristics of the simulated experiences (Alharbi et al., 2024). Thus, simulation integrates and consolidates knowledge, transforming it from mere memorization into a practical and lasting skill.

Simulation has established itself as a fundamental method for integrating core functions into nursing education by facilitating the development of comprehensive competencies that go beyond technical skills. As Pinargote-Chancay et al. (2024) point out, this tool allows students to confront realistic clinical scenarios in a safe and controlled environment, where they apply theoretical knowledge (teaching), analyze and evaluate their decisions to improve processes (research), and strengthen communication, and teamwork (engagement). In this way, simulation not only refines clinical skills but also enhances critical thinking, problem-solving abilities, and innovation, becoming an essential pillar for curriculum redesign and the preparation of competent nursing professionals who are well-suited to current healthcare demands. The available evidence supports this perspective, noting that simulation experiences facilitate the acquisition of knowledge and skills

and allow for the establishment of links between simulated scenarios and real clinical practice (Tamilselvan et al., 2023).

In this context, clinical simulation has established itself as an innovative pedagogical strategy that enables the development of comprehensive skills—technical, cognitive, and attitudinal—in controlled, safe, and realistic environments. Various studies have shown that clinical simulation not only promotes the acquisition of procedural skills but also contributes to the development of critical thinking, communication, decision-making, and teamwork skills—all considered essential for registered nurses in the 21st century (Cant & Cooper, 2017; Kim et al., 2021). Specifically, interprofessional simulation programs have shown significant improvements in communication and teamwork competencies, while communication-oriented simulation modalities can strengthen both the knowledge and communicative self-efficacy of nursing students (Sezgin & Bektas, 2023; Choi et al., 2020).

However, there remains a need to define more precisely which comprehensive skills should be prioritized and strengthened through this strategy, especially in higher education contexts where the integration of teaching, research, and community engagement is a central focus. Although the literature demonstrates the benefits of simulation across various dimensions of nursing education, it remains important to move toward an integrated understanding of the competencies that should be developed through these educational scenarios, taking into account technical, cognitive, communicative, collaborative, and decision-making skills. Within this framework, the objective of this study was to define the comprehensive skills that nursing graduates should develop through clinical simulation, based on expert consultation, in order to strengthen the integration of the core functions of higher education.

2. Methodology

A descriptive study with a qualitative-quantitative approach was conducted, based on expert consultation using the Delphi method. Experts were selected according to inclusion criteria that considered: a master's degree in Nursing or Health Sciences; a minimum of 5 years of experience in university teaching; participation in clinical simulation processes; and scientific publications in the field. Twelve experts were included, of whom 8 were university faculty members and 4 were professionals involved in the management of simulation programs at healthcare institutions.

The consultation instrument consisted of an evaluation matrix of criteria related to the relevance, systemic nature, pedagogical rationale, and applicability of comprehensive skills in the Bachelor of Nursing program. Each criterion was rated by the experts on a "Very Adequate" (VA) scale, based on the level of agreement reached. The data were processed using weighted arithmetic mean (MyA) analysis to determine the relevance of each criterion (Table 1).

Table 1.

Results of the expert consultation on comprehensive skills in clinical simulation.

Criteria	MyA Rating
Relevance	0.175
Systemic nature of the relationship between skills and their operational algorithm	0.049
Proposed operational system for skill development	0.247
Correlation with professional challenges in training	0.079
Foundations in educational and nursing sciences	0.387
Comprehensive skills through simulation	0.145
Ability to Address Public Health Challenges	0.901
Operational algorithm promotes problem-solving in the sciences	0.029

Note: Prepared by the authors, 2025

The study was conducted in two Delphi rounds. In the first round, the experts independently rated each criterion using a modified Likert scale (1 = not very appropriate, 4 = very appropriate), and were asked to propose additional skills if they deemed it relevant. The results were synthesized and returned to the participants in the second round, including the group mean and their own response, so that they could reconsider their ratings. Consensus was considered to have been reached when at least 70% of the experts assigned a score of 3 or 4 to an item (Keeney et al., 2006). The response rate was 100% in both rounds, ensuring the stability of the panel.

In addition, the content of the open-ended suggestions from the first round was analyzed qualitatively, which allowed us to reformulate three items and add two new ones related to the cultural adaptation of the simulation scenarios.

3. Results

The results of the expert consultation (Table 1) show that all criteria evaluated obtained positive values for the weighted arithmetic mean (WAM), ranging from 0.029 to 0.901. Following methodological criteria established in Delphi studies (Keeney et al., 2006), an item was considered to have achieved a high level of consensus when its WMA was ≥ 0.70 . Below this threshold, the criterion "Ability to address public health challenges" stood out with a value of 0.901, reflecting strong agreement among the experts regarding the importance of orienting clinical simulation toward the challenges of the health care system, especially in rural and vulnerable contexts. Other criteria, such as "Foundations in educational and nursing sciences" (MyA = 0.387) and "Proposed operational system for skill development" (MyA = 0.247), obtained moderate values, suggesting opportunities for improvement in the theoretical-practical integration of simulation programs. However, the qualitative analysis of the justifications provided by the experts allowed for the identification of a robust and coherent core of comprehensive skills, with strong conceptual relevance and applicability to the Bachelor of Nursing program.

Analysis of the data identified a system of comprehensive skills for Bachelor of Science in Nursing graduates based on clinical simulation, highlighting four fundamental pillars:

- To introduce and generalize findings based on exposure to work-based learning scenarios.
- Conducting comprehensive clinical assessments in simulated scenarios of varying complexity.
- Coordinate intervention protocols adapted to local needs, with an emphasis on rural contexts.
- Making evidence-based decisions by integrating research and clinical practice.

The agreed-upon comprehensive skills include, among others: (1) applying care protocols adapted to rural contexts; (2) integrating scientific evidence into clinical decision-making; (3) conducting holistic patient assessments in highly complex simulated scenarios; and (4) transferring learning from simulation to real-world healthcare settings. These skills were validated by at least 65% of the experts, although only the public health focus exceeded the 70% threshold.

4. Discussion

Unlike previous studies that focus on technical or attitudinal skills in isolation, this study proposes an integrated system of competencies aligned with the university's core functions (teaching, research, and community engagement), with an explicit focus on rural and public health contexts. This systemic and contextualized perspective represents a novelty in the Latin American literature on nursing simulation.

The findings of this study confirm that clinical simulation transcends the realm of technical skills, serving as a strategy for developing comprehensive skills that strengthen professional nursing practice. The identification of competencies such as evidence-based decision-making and the coordination of protocols in settings of sociocultural diversity highlights the need to align university education with the demands of public health and the profession's social commitment.

Although the experts recognized the relevance and systemic nature of the proposed skills, a moderate level of consensus was observed regarding aspects related to pedagogical foundations ($MyA = 0.387$) and the operational system for skill development ($MyA = 0.247$). Only the criterion “*Ability to address public health challenges*” achieved a high level of agreement ($MyA = 0.901$). This finding suggests that, although there is general recognition of the relevance of clinical simulation, more robust and explicit pedagogical models are needed to support its curricular implementation and enhance its impact in real-world contexts, especially in rural and primary care settings.

The low level of consensus on pedagogical foundations (38.7%) suggests a gap between the practical implementation of simulation and its theoretical underpinnings in models of meaningful learning, scaffolding, or formative assessment. This finding aligns with the report by Daurat (2025), who notes that many simulation programs in Latin America prioritize technical replication over critical reflection. Therefore, it is recommended to explicitly link simulation to pedagogical frameworks such as social constructivism or problem-based learning to enhance its educational impact.

Several recent studies highlight that clinical simulation is a key educational tool in the training of health professionals. Research such as that by Pinargote-García et al. (2024) demonstrates that clinical simulation improves patient safety, quality of care, and professionals’ problem-solving abilities. Their study analyzed nursing students’ evaluations of simulation methodology at Latin American universities, with results indicating a positive perception and an improvement in the competencies acquired.

In line with these findings, the results of the present study contribute to the definition of a comprehensive profile for the Bachelor of Nursing degree, integrated with active teaching methodologies across various learning settings, which is reflected in improvements to the educational process, as well as the quality of nursing education and health services.

The implementation of clinical simulation in training programs enables professionals to develop technical and behavioral competencies, improve team , and address the complexity of various clinical scenarios—as observed in the field of intensive care medicine (Alvarez, 2025)—which translates into the development of comprehensive skills for enhancing their professional performance.

5. Conclusions

This study identified a set of comprehensive skills that nursing graduates must develop through clinical simulation, including the ability to generalize findings, perform comprehensive clinical assessments, coordinate protocols according to local needs, and make evidence-based decisions.

These findings reinforce the relevance of clinical simulation as a strategy for integrating academic training with real-world professional problems and public health challenges. It is recommended to strengthen the pedagogical foundation of simulation programs and to conduct comparative studies that evaluate the effectiveness of these skills in real clinical settings.

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