International Journal of Advanced Nursing Education and Research
Vol. 10, No. 2 (2025), pp. 17-32
http://dx.doi.org/10.21742/ijaner.2025.10.2.02

Teaching Childbirth through Simulation: Pedagogical, Institutional, and Emotional Experiences of Maternal Nursing Faculty in Spain

Victoria A. Perez[1*] and Ainara Sanchez-Prada[2*]

[1]*Faculty of Psychology, Universidad de las Islas Baleares, Palma, Spain*
[2]*Universidad Miguel Hernández, Spain*
[1]*https://orcid.org/0000-0002-8096-4031,* [2]*https://orcid.org/0000-0002-6242-1236.*
[1]victoria.ferrer@uib.es

Abstract

Simulation-based education has become a central strategy in maternal nursing programs in Spain, largely in response to restricted access to maternity clinical placements, heightened patient-safety requirements, and regional inequities in experiential learning opportunities. While prior research has focused predominantly on student outcomes, far less attention has been given to the faculty responsible for designing, implementing, and sustaining advanced simulation initiatives. This qualitative study explores the pedagogical, institutional, and emotional experiences of maternal nursing faculty who integrate advanced simulation modalities into their teaching practice. Data were generated through a semi-structured focus group involving seven maternal nursing instructors from universities and nursing schools across multiple Spanish regions. An inductive qualitative content analysis was conducted to capture shared patterns and context-specific insights. Four interrelated thematic categories emerged: (1) structural and professional imperatives driving the expansion of simulation in maternal nursing education; (2) the intensive pedagogical and preparatory workload required to design and deliver high-fidelity maternal simulation; (3) persistent technical and institutional constraints affecting implementation; and (4) ambivalent emotional experiences characterized by both professional fulfillment and pedagogical strain. Findings indicate that simulation has shifted from a supplementary teaching method to an indispensable pedagogical infrastructure within Spanish maternal nursing education. However, its effectiveness depends heavily on institutional commitment, access to technical support, and sustained faculty development. By foregrounding instructors' perspectives, this study contributes an instructor-centered understanding of simulation-based maternal nursing education. It highlights the need for systemic strategies that support faculty workload, emotional labor, and long-term program sustainability.

Keywords: *Maternal nursing, Simulation-based education, Spanish nursing faculties, Instructor experience, Qualitative inquiry*

1. Introduction

Simulation-based education has become a cornerstone of contemporary nursing curricula across Europe, with particularly rapid expansion in Spain due to structural, regulatory, and demographic pressures. A growing body of research demonstrates that simulation enhances

Received (September 26, 2025), Review Result (October 30, 2025), Accepted (December 1, 2025)
*corresponding author

clinical reasoning, psychomotor performance, and decision-making by immersing learners in controlled yet realistic clinical environments. Advanced simulation modalities—including high-fidelity manikins, hybrid simulations, and virtual reality—enable nursing students to engage with complex and high-risk clinical scenarios that are difficult or impossible to access during traditional clinical placements [1]. As one influential review notes, simulation allows for “structured exposure to high-risk, low-frequency events that students may never encounter during conventional clinical training” [2].

Within maternal nursing education, these pedagogical advantages are especially salient. In Spain, institutional regulations governing patient privacy, combined with heightened safety standards and variable regional birth rates, significantly restrict student access to maternity wards. As a result, opportunities for direct participation in childbirth and postpartum care have become increasingly limited. Recent national analyses indicate that simulation has evolved from a complementary instructional method into a compensatory—and often indispensable—strategy for ensuring competency development in maternal and obstetric nursing [4][5]. A 2024 Spain-focused review describes simulation as “essential for guaranteeing equity of learning across autonomous communities with uneven access to clinical placements” [4], reflecting a broader reconfiguration of experiential learning within nursing education.

Despite the widespread adoption of simulation-based education, empirical research has focused predominantly on student outcomes, such as skill acquisition, confidence, and satisfaction. Compared with little attention, the instructors who design, implement, and sustain simulation-based maternal nursing programs have received comparatively little attention. This omission is notable, given that faculty members are responsible for scenario construction, technological operation, learner facilitation, and structured debriefing—tasks that demand advanced pedagogical judgment, technical competence, and emotional engagement. Recent studies suggest that instructors often struggle with overlapping roles as educators, evaluators, and technicians, which contribute to increased cognitive and emotional workload [3][8]. Nevertheless, faculty-centered perspectives remain underrepresented in the simulation literature, with one recent qualitative review emphasizing that "the lived experiences of educators are critical yet insufficiently explored" [6].

Understanding instructor experiences is significant in maternal nursing education, where simulation must approximate not only technical procedures but also the emotional intensity, unpredictability, and ethical complexity of childbirth. Emerging evidence suggests that educator confidence, emotional labor, and perceptions of scenario authenticity play a decisive role in the effectiveness of simulation-based learning [1][6]. Moreover, regional disparities in simulation infrastructure, staffing, and institutional support across Spain further complicate implementation, underscoring the need for context-specific research that captures faculty experiences across diverse educational settings [4][5].

The present study addresses these gaps by foregrounding the perspectives of maternal nursing faculty engaged in simulation-based education across multiple Spanish regions. First, it contributes an instructor-centered qualitative account of the pedagogical, institutional, and emotional dimensions of teaching childbirth through simulation. Second, it examines how structural constraints—such as limited clinical access and uneven resource distribution—shape faculty workload and instructional practices. Third, it integrates instructors’ reflections on advanced simulation modalities, including virtual reality and hybrid approaches, to inform strategies for strengthening simulation sustainability, faculty development, and institutional support.

Accordingly, this study seeks to answer the following research questions:

(a) What contextual and professional factors drive the expansion of simulation-based maternal nursing education in Spain?

(b) What pedagogical, technical, and emotional challenges do instructors encounter when implementing advanced simulation modalities?

(c) What institutional strategies and supports are necessary to sustain high-quality simulation-based maternal nursing education?

By centering the voices of instructors, this study aims to advance a more comprehensive understanding of simulation-based maternal nursing education and to inform policy, curriculum design, and faculty support initiatives within the Spanish nursing education landscape.

2. Literature review

Simulation-based education has expanded substantially within European nursing curricula, with Spain demonstrating particularly accelerated adoption due to constraints in clinical placement availability, patient-safety regulations, and curricular reforms. Contemporary scholarship consistently characterizes simulation as a pedagogical approach that enhances clinical judgment, technical competence, and decision-making under controlled and repeatable conditions [9]. Recent systematic and scoping reviews further highlight the role of immersive technologies—such as Virtual Reality (VR) and hybrid simulation—in enabling exposure to complex, high-risk maternal scenarios that cannot be safely or consistently accessed during traditional clinical practicums [10]. Within this evolving educational landscape, simulation has become a structural component of nursing education rather than a supplementary instructional method.

2.1. Simulation in nursing education

A substantial body of literature confirms the effectiveness of simulation in supporting competency development across core nursing domains. Simulation environments allow learners to practice clinical prioritization, emergency response, and interprofessional communication without risk to patients, while facilitating structured feedback and reflective learning [11]. In maternal and neonatal nursing, simulation has been associated with improvements in learner engagement, confidence, and clinical reasoning, particularly in the management of obstetric emergencies and perinatal decision-making [12]. These findings position simulation as a critical mechanism for bridging the theory–practice gap, especially in specialties where clinical exposure is limited or inconsistent.

Rather than replacing clinical experience, simulation is increasingly conceptualized as an equivalent experiential learning modality when appropriately designed and supported. This reframing is particularly relevant in maternal nursing, where ethical, legal, and emotional considerations restrict student participation in real childbirth settings.

2.2. Structural challenges in maternal nursing education

Maternal nursing education presents distinct challenges that intensify reliance on simulation-based approaches. In Spain, multiple studies identify restricted access to maternity wards as a persistent barrier to experiential learning, driven by patient privacy concerns, institutional regulations, and regional variations in birth rates [13][14][15]. These constraints disproportionately affect student opportunities to observe and participate in childbirth and postpartum care, resulting in uneven competency development across educational settings.

National-level analyses emphasize that simulation has become indispensable for ensuring equity in maternal nursing education across autonomous communities [14]. In this context, simulation functions not only as a pedagogical tool but also as a compensatory infrastructure that mitigates structural inequities within the healthcare and educational systems. However, while the necessity of simulation is well documented, less attention has been given to the instructional labor required to sustain it.

2.3. Instructor roles, workload, and pedagogical complexity

Although simulation-based education is widely recognized for its pedagogical value, comparatively little research has examined the experiences of instructors who implement it. Existing studies indicate that simulation faculty assume multifaceted roles encompassing scenario design, technical preparation, facilitation, assessment, and debriefing—responsibilities that exceed those associated with traditional teaching modalities [15][16]. Unlike classroom or clinical instruction, simulation requires instructors to integrate pedagogical, technical, and emotional competencies simultaneously.

Research further suggests that this role multiplicity increases cognitive load and professional strain. Instructors often function concurrently as educators, evaluators, technicians, and emotional facilitators, particularly in high-fidelity simulations, a form of role compression that intensifies workload demands [15][16]. When simulation-related labor is inadequately recognized within institutional staffing and workload models, faculty report fatigue, stress, and diminished job satisfaction.

Several studies have linked the under-recognition of simulation workload to concerns about the long-term sustainability of simulation programs. Evidence from multi-institutional and qualitative research indicates that simulation preparation and facilitation require substantially more time and cognitive effort than conventional teaching, yet are frequently undervalued in academic workload allocation [15][18]. Without formal recognition, protected time, and adequate technical support, reliance on faculty goodwill becomes a fragile basis for sustaining simulation-based nursing education.

2.4. Technological innovation and implementation challenges

Technological advances have diversified simulation modalities, ranging from high-fidelity manikins to hybrid and VR-based platforms. Evaluations of multimodal simulation approaches demonstrate enhanced learner immersion, realism, and opportunities for interprofessional collaboration [17]. However, these benefits are contingent upon the instructor's technical competence, reliable infrastructure, and ongoing institutional investment.

Across European nursing programs, common implementation barriers include insufficient technical support staff, unreliable or outdated equipment, and limited access to formal simulation training for faculty [18]. These challenges are particularly salient in maternal nursing, where high-fidelity and emotionally realistic scenarios are essential for effective learning. Without adequate support, technological complexity may exacerbate instructor stress rather than enhance pedagogical outcomes.

2.5. Synthesis and identified gaps

Collectively, existing literature establishes simulation as an effective and increasingly necessary component of maternal nursing education, particularly within structurally

constrained contexts such as Spain. However, three critical gaps remain. First, instructor-centered perspectives are markedly underrepresented, despite evidence that faculty expertise, emotional engagement, and pedagogical judgment are central to simulation effectiveness [15][16]. Second, Spain-specific research addressing regional variability, institutional support, and faculty workload remains limited. Third, few studies integrate pedagogical, technical, and emotional dimensions of simulation into a single analytical framework.

This study addresses these gaps by examining the lived experiences of maternal nursing faculty implementing advanced simulation modalities across multiple Spanish regions. By synthesizing pedagogical demands, institutional constraints, and emotional labor, the study contributes a more comprehensive understanding of what it means to teach childbirth through simulation—and what is required to sustain this educational practice over time.

3. Conceptual and theoretical framework

This study is guided by an integrated conceptual framework that explains how simulation-based maternal nursing education operates within the Spanish context and how instructors experience its pedagogical, institutional, and emotional demands. The framework positions faculty members as central agents mediating between structural constraints, simulation modalities, and student learning outcomes. It is informed by three complementary theoretical perspectives: Experiential Learning Theory, Adult Learning Theory, and Simulation Fidelity and Debriefing Models.

As shown in Figure 1, simulation-based maternal nursing education is shaped by contextual and institutional factors—including restricted access to clinical placements, patient privacy regulations, and regional resource variability—which necessitate the use of advanced simulation modalities. These structural conditions directly influence the instructor experience, encompassing pedagogical workload, technical responsibility, and emotional labor. Instructors, in turn, design and facilitate simulation experiences using specific modalities and debriefing practices that ultimately affect student competency development in maternal care.

3.1. Experiential learning theory

Experiential Learning Theory conceptualizes learning as a cyclical process involving concrete experience, reflective observation, abstract conceptualization, and active experimentation. Simulation-based education aligns closely with this framework by providing structured clinical experiences that can be repeatedly enacted, reflected upon, and refined. In maternal nursing education, simulation enables students to engage in complex childbirth scenarios, practice clinical decision-making, and receive immediate feedback without risk to patients.

Within this study's framework, experiential learning underscores the importance of instructor-designed scenarios and facilitated reflection. Faculty members are responsible for creating experiences that meaningfully approximate clinical reality and for guiding learners through reflective debriefing that transforms simulated activity into clinical understanding. The quality of these experiences—and the cognitive and emotional demands placed on instructors during their facilitation—are central concerns of the present study.

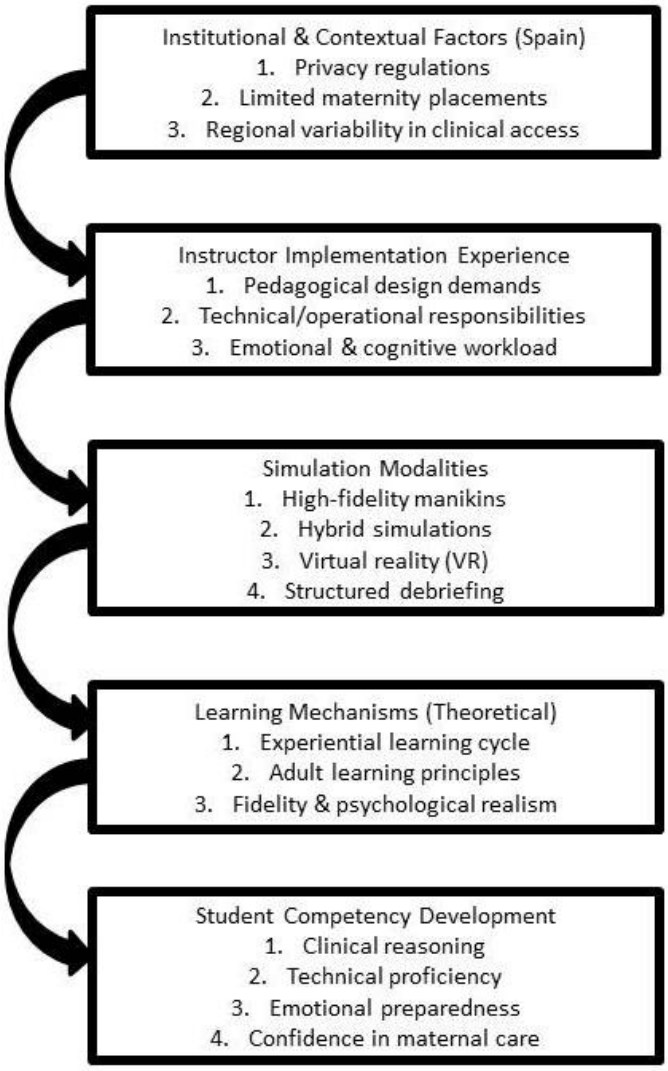

Figure 1. Conceptual framework for simulation-based maternal nursing education in Spain

3.2. Adult learning theory

Adult Learning Theory emphasizes learner autonomy, relevance, and problem-centered instruction. Nursing students, as adult learners, benefit from educational environments that reflect real-world clinical challenges and allow active participation in decision-making. Simulation supports these principles by situating learners in authentic maternal care scenarios that require prioritization, teamwork, and ethical judgment.

Within the conceptual framework, Adult Learning Theory highlights the pedagogical responsibility placed on instructors to design simulations that are not only technically accurate but also meaningful and relevant to learners' professional roles. In maternal nursing education, this includes replicating the emotional complexity and unpredictability of childbirth. The framework, therefore, recognizes instructor judgment, adaptability, and emotional engagement as essential components of effective simulation-based learning.

3.3. Simulation fidelity and debriefing models

Simulation fidelity—the extent to which a simulation reflects real clinical practice—is a critical determinant of learning effectiveness. Fidelity encompasses both physical fidelity (e.g., equipment realism, environmental accuracy) and psychological fidelity (e.g., emotional immersion, perceived authenticity). In maternal nursing education, psychological fidelity is particularly important, as childbirth involves heightened emotional intensity, uncertainty, and interpersonal interaction.

Debriefing models are positioned within the framework as the mechanism through which experiential learning is consolidated. Research consistently demonstrates that structured, reflective debriefing plays a more significant role in learning outcomes than technological sophistication alone. Instructors must therefore balance technical operation with pedagogical facilitation, guiding learners through reflection while managing time constraints, assessment demands, and emotional dynamics.

3.4. Application of the framework to the present study

Together, these theoretical perspectives provide a coherent lens for interpreting instructors' experiences of simulation-based maternal nursing education in Spain. As depicted in Figure 1, contextual constraints shape the conditions under which simulation is implemented, while instructors act as mediators, translating institutional demands into pedagogical practice. Their experiences—characterized by workload intensity, technical complexity, and emotional ambivalence—directly influence the effectiveness and sustainability of simulation-based education.

This framework guides the study's analysis by foregrounding the interconnected pedagogical, institutional, and emotional dimensions of simulation teaching. It also supports the study's central argument: that simulation-based maternal nursing education cannot be fully understood—or sustainably implemented—without attending to the lived experiences and professional realities of the instructors who deliver it.

4. Methodology

4.1. Research design and approach

This study employed a qualitative research design grounded in inductive qualitative content analysis, selected for its suitability in exploring the complex pedagogical, institutional, and emotional experiences of maternal nursing faculty engaged in simulation-based education. A qualitative approach was appropriate given the exploratory nature of the research questions and the study's focus on meaning-making, professional judgment, and lived experience rather than hypothesis testing or variable measurement.

Inductive content analysis enabled patterns and categories to emerge directly from participants' accounts, enabling a context-sensitive interpretation of simulation practices in Spanish maternal nursing education. This approach was particularly relevant given the limited existing research on instructor-centered perspectives in simulation-based maternal education and the need to avoid imposing predetermined analytical frameworks.

4.2. Setting, participants, and sampling strategy

The study was conducted across multiple public and private nursing faculties in Spain, including institutions located in Andalucía, Cataluña, Madrid, Castilla y León, and Valencia. These settings were selected to capture variation in institutional context, simulation infrastructure, and regional educational conditions.

Participants consisted of seven maternal nursing faculty members who met the following inclusion criteria: (a) advanced academic or clinical preparation in maternal or women's health nursing, and (b) active involvement in the design, facilitation, or coordination of simulation-based instruction related to childbirth, postpartum care, or obstetric emergencies. Purposive sampling was used to ensure that participants possessed substantive experience with advanced simulation modalities, thereby enabling rich, information-dense data. The sample size was deemed appropriate for in-depth qualitative inquiry and consistent with focus group–based qualitative research in nursing education.

4.3. Data collection procedures

Data were collected through a semi-structured focus group conducted at a university campus in Madrid in May 2024. The focus group format was chosen to facilitate interaction, collective reflection, and the co-construction of meaning among participants who shared comparable professional roles. This approach allowed instructors to build upon one another's experiences, revealing both consensus and divergence in perspectives.

The discussion guide was informed by the study's conceptual framework and explored four primary areas: (1) contextual and institutional drivers of simulation adoption; (2) pedagogical and technical demands of simulation design and delivery; (3) implementation challenges; and (4) emotional and professional impacts of simulation-based teaching. The session lasted approximately four hours and was audio-recorded in full with participants' consent. Field notes were taken to document group dynamics, nonverbal cues, and contextual observations. Following data collection, analytic memoing was conducted to capture initial reflections and emerging interpretive insights.

4.4. Data analysis

Data analysis followed established procedures for inductive qualitative content analysis. Audio recordings were transcribed verbatim and reviewed alongside field notes to ensure accuracy and contextual completeness. The analysis proceeded through several iterative stages: (a) repeated reading of transcripts to achieve immersion in the data; (b) open coding to identify meaningful units of text; (c) grouping of conceptually related codes into categories; and (d) abstraction of categories into broader thematic constructs.

Manual coding was employed to maintain close engagement with the data and preserve sensitivity to linguistic nuance. Throughout the analytic process, constant comparison was used to refine categories and ensure internal coherence and external distinction among themes. Analytical decisions were documented through memo writing, supporting transparency and reflexive awareness.

4.5. Trustworthiness, reflexivity, and ethical considerations

Methodological rigor was ensured through strategies addressing credibility, dependability, confirmability, and transferability. Credibility was enhanced through prolonged engagement with the data, peer debriefing among the research team, and member checking, whereby participants reviewed and affirmed the interpretive accuracy of the findings. Dependability

and confirmability were supported by maintaining a transparent audit trail documenting coding decisions, category development, and analytical reflections.

Researcher reflexivity was an integral component of the study. The researchers engaged in ongoing reflexive memoing to examine assumptions, positionality, and potential influences on data interpretation, particularly given their professional familiarity with nursing education and simulation practices.

Ethical approval was obtained in accordance with Spanish educational research guidelines. All participants provided informed consent prior to data collection, and confidentiality was ensured by anonymizing transcripts and removing identifying institutional details.

5. Results

The qualitative analysis yielded four interrelated thematic categories that describe how simulation-based maternal nursing education is enacted and experienced by instructors in Spain. As guided by the conceptual framework presented in Figure 1, the findings reflect the dynamic interaction among contextual and institutional constraints, instructor pedagogical and emotional labor, and simulation implementation practices, which collectively shape educational outcomes. Rather than representing discrete phenomena, the themes illustrate a layered process in which structural conditions influence instructor experience, which in turn mediates the design and delivery of simulation-based learning.

Table 1 summarizes the major themes, while Table 2 presents subthemes and illustrative instructor expressions.

5.1. Contextual and professional imperatives for simulation adoption

Consistent with the foundational layer of the conceptual framework (Figure 1), participants described simulation as a pedagogical response to structural constraints rather than a discretionary teaching innovation. Restricted access to maternity wards, stringent patient-privacy regulations, and regional disparities in clinical placement availability were repeatedly cited as primary drivers of simulation adoption.

Instructors emphasized that these contextual pressures positioned simulation as an essential mechanism for ensuring equitable competency development across student cohorts. Several participants framed simulation as an institutional obligation, reflecting how macro-level policy and regulatory conditions directly shape instructional practices at the faculty level. This finding reinforces the framework's emphasis on structural forces as antecedents that condition instructor workload, pedagogical decision-making and emotional engagement.

5.2. Burdens of course preparation

The second theme corresponds to the instructor experience component of Figure 1, particularly the pedagogical labor required to translate institutional demands into meaningful simulation experiences. Participants consistently described preparing maternal simulation scenarios as time-intensive and cognitively demanding. Activities included scenario scripting, alignment with national maternal health guidelines, equipment testing, and coordination of student rotations.

Faculty emphasized that achieving psychological and clinical fidelity—central elements in the conceptual framework—required repeated rehearsal and refinement. Compared with traditional lectures or clinical supervision, simulation preparation was perceived as substantially more burdensome, highlighting a misalignment between institutional

expectations and the recognition of workload. This theme illustrates how instructors function as mediators who operationalize simulation pedagogy under constrained conditions.

5.3. Practical challenges in simulation implementation

This theme reflects the interaction between simulation modalities and institutional infrastructure depicted in Figure 1. Participants reported recurrent operational challenges, including equipment malfunction, limited access to technical support staff, and outdated simulation resources. These constraints often required instructors to assume multiple roles simultaneously during live sessions, such as facilitator, evaluator, and technician.

Such role compression intensified cognitive load and disrupted instructional flow, directly affecting the quality of simulation delivery. The findings demonstrate how infrastructural limitations amplify the complexity of the instructor role, reinforcing the framework's assertion that simulation effectiveness depends not only on technology but also on systemic institutional support.

5.4. Ambivalent emotional responses to simulation-based teaching

The final theme aligns with the emotional dimension of instructor experience highlighted in Figure 1. Participants expressed ambivalent emotional responses toward simulation-based teaching, characterized by simultaneous professional fulfillment and emotional strain. While instructors reported pride in student growth and confidence, they also described fatigue, self-doubt, and frustration related to technical issues and perceived limitations in replicating the emotional intensity of real childbirth.

These emotional dynamics underscore the framework’s emphasis on instructor emotional labor as a critical, yet often invisible, component of simulation-based education. Participants noted that sustained exposure to high-intensity simulation teaching without adequate institutional recognition or support raised concerns about long-term sustainability. This theme reinforces the need to consider faculty well-being as integral to the effectiveness and durability of simulation programs.

Table 1 summarizes the four major themes identified in the analysis, while Table 2 elaborates these themes by presenting associated subthemes and illustrative instructor expressions for each thematic category.

Table 1. Major themes identified in the study

Theme	Description
Contextual and Professional Imperatives	Structural, regulatory, and institutional pressures necessitate the adoption of simulation in maternal nursing education.
Burdens of Course Preparation	Intensive time, planning, and cognitive effort are required to design, test, and coordinate simulation sessions.
Practical Challenges in Implementation	Technical issues, multitasking demands, and insufficient staffing complicate the delivery of live simulations.
Emotional Responses to Simulation	Mixed emotional reactions, including stress, doubt, satisfaction, and renewed professional purpose.

Table 2. Subthemes and illustrative instructor expressions aligned with major themes

Major Theme (from Table 1)	Subtheme	Description	Illustrative Instructor Expression
Contextual and Professional Imperatives	Limited maternity access	Restricted clinical exposure necessitating the use of simulation to ensure equitable learning opportunities	"We simply cannot bring every student to a delivery room—simulation is the only equitable option."
Contextual and Professional Imperatives	Institutional obligation	Simulation perceived as a required response to regulatory and structural constraints	"Simulation is no longer optional; it's how we meet the curriculum requirements."
Burdens of Course Preparation	Intensive scenario preparation	Extensive time and cognitive effort required to design realistic, guideline-aligned simulations	"A full scenario can take days to perfect; it's far more demanding than a lecture."
Burdens of Course Preparation	Fidelity management	Ongoing effort to achieve clinical and psychological realism	"You are constantly adjusting details so that it feels real for the students."
Practical Challenges in Implementation	Technical strain	Equipment malfunction and lack of technical support during live sessions	"I'm teaching, observing, and fixing the manikin all at once—it's overwhelming."
Practical Challenges in Implementation	Role compression	Simultaneous performance of educator, evaluator, and technician roles	"During simulation, you have to be everything at the same time."
Emotional Responses to Simulation	Emotional ambivalence	Coexistence of professional fulfillment and emotional exhaustion	"It drains me, but seeing students build confidence makes everything worth it."
Emotional Responses to Simulation	Sustainability concerns	Worry about long-term capacity to continue simulation-based teaching	"I love simulation, but I don't know how long we can keep doing this at this pace."

6. Discussion

This study examined the pedagogical, institutional, and emotional experiences of maternal nursing faculty implementing simulation-based education in Spain. Guided by the conceptual framework presented in Figure 1, the discussion interprets the findings as an interconnected process in which structural constraints shape instructor experiences, which in turn mediate the design, delivery, and sustainability of simulation-based maternal nursing education. Each subsection below corresponds explicitly to one of the four result themes, reinforcing the study's analytical coherence.

6.1. Simulation as a response to structural and institutional constraints

The findings demonstrate that simulation-based maternal nursing education in Spain is driven primarily by structural and regulatory constraints rather than by elective pedagogical innovation. Limited access to maternity wards, stringent patient-privacy regulations, and regional disparities in clinical placement availability compel institutions to rely on simulation as a compensatory educational strategy. Within the conceptual framework (Figure 1), these contextual factors form the foundational layer that necessitates the adoption of simulation and shapes all subsequent pedagogical decisions.

This aligns with national and European literature that identifies simulation as essential for ensuring equitable learning opportunities in specialties with limited clinical exposure. However, the present study extends existing research by illustrating how these macro-level conditions are experienced at the faculty level, where simulation is often perceived as an obligation rather than an option. This framing has important implications for how simulation is supported, resourced, and evaluated within nursing education systems.

6.2. Pedagogical labor and the hidden work of simulation design

The second theme highlights the extensive pedagogical labor required to translate institutional reliance on simulation into effective maternal nursing education. Instructors described simulation preparation as substantially more demanding than traditional teaching, requiring scenario scripting, alignment with clinical guidelines, technical rehearsal, and coordination of learning activities. Within Figure 1, this labor is situated at the intersection of instructor experience and simulation design and fidelity.

These findings reinforce the literature, which emphasizes that simulation is not a time-neutral substitute for clinical teaching but a labor-intensive pedagogical practice. The study adds nuance by demonstrating that achieving psychological and emotional fidelity—critical in maternal nursing—amplifies the demands of preparation. The lack of formal workload recognition for this labor raises concerns about equity, burnout, and long-term sustainability, underscoring the need for institutional policies that acknowledge the complexity of simulation pedagogy.

6.3. Role compression, technical constraints, and instructional strain

The third theme reflects how institutional infrastructure and technological resources directly affect instructors' capacity to deliver high-quality simulation experiences. Participants reported frequent equipment failures, insufficient technical staffing, and outdated resources, which forced instructors to assume multiple roles simultaneously during simulation sessions. In the conceptual framework (Figure 1), these challenges emerge from the interaction between simulation modalities and institutional support structures.

Consistent with prior research, the findings indicate that technological sophistication alone does not guarantee pedagogical effectiveness. Instead, inadequate infrastructure increases instructor cognitive load and disrupts instructional flow, potentially undermining learning outcomes. By situating these challenges within the framework, the study highlights how systemic shortcomings are absorbed at the instructor level, reinforcing the argument that sustainable simulation requires coordinated institutional investment rather than reliance on individual faculty resilience.

6.4. Emotional labor and the sustainability of simulation-based teaching

The emotional dimension of simulation-based teaching emerged as a central finding, revealing a complex interplay of professional fulfillment and emotional strain. Instructors expressed pride in students' development and confidence in simulation's pedagogical value, alongside fatigue, frustration, and self-doubt—particularly when technical or institutional barriers interfered with teaching. In Figure 1, these emotional responses are presented as a critical component of the instructor experience that influences the sustainability of simulation-based education.

This study contributes to the growing recognition of emotional labor as an integral, yet often invisible, aspect of simulation pedagogy. In maternal nursing education, where scenarios must approximate the emotional intensity of childbirth, instructors must manage not only learners' emotions but also their own affective engagement. Without adequate institutional support, this emotional burden risks compromising faculty well-being and the long-term viability of simulation programs.

6.5. Reintegrating the findings with the conceptual framework

Taken together, the discussion empirically validates the conceptual framework presented in Section 3. Structural constraints drive reliance on simulation; instructors mediate these constraints through intensive pedagogical and emotional labor, and institutional resources shape the quality and sustainability of simulation-based maternal nursing education. The framework thus provides an explanatory model that moves beyond outcome-based evaluations and foregrounds instructor experience as a central determinant of simulation effectiveness.

By explicitly linking each discussion subsection to both the results and Figure 1, the study demonstrates that simulation-based maternal nursing education is not solely a technological or curricular issue, but a systemic practice embedded in institutional structures and sustained through faculty labor.

6.6. Theoretical contributions

This study makes three interrelated theoretical contributions to the literature on simulation-based nursing education. First, it advances an instructor-centered conceptualization of simulation-based education, positioning faculty as active pedagogical mediators rather than peripheral implementers of technology. By integrating pedagogical workload, institutional constraints, and emotional labor within a single framework (Figure 1), the study shifts theoretical attention from simulation as a technical intervention to simulation as a socially and institutionally embedded educational practice.

Second, the study extends existing applications of experiential and adult learning theories by foregrounding the role of instructor labor in enabling experiential learning cycles. While prior research has emphasized learner engagement and outcomes, this study theorizes that simulation effectiveness is contingent on instructors' capacity to design psychologically and emotionally authentic experiences under constrained conditions. This reframing highlights instructor judgment and emotional engagement as theoretical prerequisites for meaningful experiential learning in maternal nursing contexts.

Third, the study contributes to simulation theory by conceptualizing emotional labor as a core component of simulation fidelity, particularly in high-intensity specialties such as maternal nursing. By demonstrating how instructors negotiate emotional authenticity alongside technical and pedagogical demands, the findings extend fidelity frameworks beyond the physical and psychological dimensions to include educators' affective work. This theoretical extension provides a foundation for future research examining how emotional labor shapes both instructional quality and the sustainability of simulation-based education.

7. Implications for policy, practice, and research

The findings of this study have important implications for nursing education policy, instructional practice, and future research on simulation-based maternal nursing education. By centering on instructors' experiences, the study highlights systemic conditions that must be addressed to ensure the effectiveness and sustainability of simulation as a core pedagogical strategy.

7.1. Implications for policy

At the policy level, the findings underscore the need for institutional and national frameworks that formally recognize simulation-based teaching as a distinct and resource-

intensive educational practice. Simulation has effectively become a compensatory infrastructure within maternal nursing education in Spain; however, policy and accreditation standards have not consistently evolved to reflect the pedagogical, technical, and emotional labor required of faculty.

Educational policymakers should incorporate explicit workload models, staffing standards, and funding mechanisms that account for scenario development, simulation facilitation, and debriefing. National or regional guidelines could support greater equity by standardizing minimum simulation resources, including access to dedicated technical personnel and protected faculty preparation time. Without such policy-level recognition, the sustainability of simulation-based maternal nursing education remains dependent on individual instructor commitment rather than systemic support.

7.2. Implications for educational practice

For nursing educators and academic leaders, the findings emphasize that effective simulation-based maternal education extends beyond technological acquisition. High-quality simulation requires intentional instructional design, interdisciplinary collaboration, and structured support for instructors. Institutions should prioritize ongoing faculty development focused not only on technical proficiency but also on pedagogical strategies for managing emotional realism, learner engagement, and reflective debriefing.

Additionally, the emotional labor associated with simulation facilitation—particularly in high-intensity maternal scenarios—should be acknowledged within academic cultures. Practical measures may include team-based facilitation models, access to simulation technicians during sessions, and opportunities for peer reflection and support. Recognizing instructors as pedagogical mediators rather than technical operators aligns instructional practice with the realities identified in this study and enhances the educational value of simulation.

7.3. Implications for future research

This study highlights several directions for future research. First, additional qualitative and mixed-methods studies are needed to examine further instructor experiences across diverse institutional contexts, including longitudinal investigations of faculty well-being and professional sustainability. Second, research should examine the relationships among instructor emotional labor, simulation fidelity, and student learning outcomes, moving beyond technology-focused evaluations.

Future studies could also examine institutional models that successfully distribute simulation-related labor through interdisciplinary teams or centralized support structures. Comparative research across regions or countries may further illuminate how policy environments shape the implementation of simulations. Finally, the conceptual framework developed in this study offers a foundation for theory-driven research that integrates pedagogical, institutional, and emotional dimensions of simulation-based education.

8. Conclusion

This study examined the pedagogical, institutional, and emotional experiences of maternal nursing faculty implementing simulation-based education in Spain, offering an instructor-centered perspective on a rapidly expanding educational practice. In a context of restricted clinical access and heightened regulatory demands, the findings demonstrate that simulation

has evolved from a supplementary teaching method into an essential pedagogical infrastructure in maternal nursing education.

By integrating experiential learning theory, adult learning theory, and simulation fidelity and debriefing models, the study advances a conceptual framework that foregrounds instructors as central mediators of simulation-based learning. The findings underscore that the effectiveness of simulation depends not only on technological sophistication or curricular alignment, but on instructors' capacity to design pedagogically coherent, emotionally authentic learning experiences under constrained institutional conditions. In this sense, simulation-based education emerges as a deeply human and relational practice, sustained through faculty judgment, emotional labor, and professional commitment.

The study contributes theoretically by reframing emotional labor as a core component of simulation fidelity and by extending learning theories to account for the often-invisible instructional work required to enact experiential learning in high-intensity clinical domains such as maternal nursing. These contributions move the simulation literature beyond outcome-focused evaluations toward a more holistic understanding of how simulation functions as an educational system embedded within institutional structures.

From a practical standpoint, the findings call for systemic investment in simulation infrastructure, workload recognition, and faculty development to ensure the long-term sustainability of simulation-based maternal nursing education. Without such support, the pedagogical promise of simulation risks being undermined by cumulative instructor burden and emotional strain.

In conclusion, this study highlights that teaching childbirth through simulation is not merely a technological or curricular endeavor, but a complex pedagogical practice shaped by institutional constraints and sustained by instructor expertise. Centering faculty experiences is therefore essential for advancing theory, informing policy, and strengthening the future of simulation-based maternal nursing education in Spain and comparable contexts.

References

[1] G. Makransky, G. B. Petersen, Immersive Learning Research Group, "Virtual reality simulation for nursing education: A scoping review," Nurse Education Today, vol.120, pp.105632, (2023) DOI:10.1016/j.nedt.2022.105632

[2] J. Radianti, T. A. Majchrzak, J. Fromm, I. Wohlgenannt, "Effectiveness of virtual reality in nursing education: A systematic review and meta-analysis," BMC Medical Education, vol.23, no.1, pp.412, (2023) DOI:10.1186/s12909-023-04312-7

[3] J. M. Padilha, P. P. Machado, A. L. Ribeiro, J. L. Ramos, P. Costa, "multidisciplinary design-based multimodal virtual reality simulation: Development and evaluation in nursing education," JMIR Medical Education, vol.10, pp.e48721, (2024) DOI:10.2196/48721

[4] R. P. Cant, S. J. Cooper, R. Sussex, F. Bogossian, "The use of simulation in nursing education programs: Implementation, prevalence, and barriers in Spain," Journal of Nursing Education, vol.63, no.2, pp.73–81, (2024) DOI:10.3928/01484834-20240110-04

[5] P. Serrano-Gallardo, R. Fernández-Peña, M. Linares-Abad, E. Fernández-Martínez, "Nursing students' satisfaction with clinical simulation in Spanish University Centres: A cross-sectional study," Healthcare, vol.12, no.3, pp.412, (2024) DOI:10.3390/healthcare12030412

[6] K. Hall, K. Tori, M. Davis, "A qualitative study of the value of simulation-based training: Student and faculty perspectives," Journal of Nursing Education and Practice, vol.14, no.1, pp.22–31, (2024) DOI:10.5430/jnep.v14n1p22

[7] S. Shin, J. H. Park, J. H. Kim, “Effects of a clinical simulation-based training program on nursing competencies: A quasi-experimental study,” Nurse Education Today, vol.117, pp.105491, (2023) DOI:10.1016/j.nedt.2022.105491

[8] C. Foronda, M. Fernandez-Burgos, C. Nadeau, C. N. Kelley, M. N. Henry, “Practice, experiences, and facilitators of simulation-based learning in clinical settings: A mixed-methods field study,” Clinical Simulation in Nursing, vol.69, pp.101–109, (2025) DOI:10.1016/j.ecns.2024.101109

[9] R. P. Cant, S. J. Cooper, “Simulation-based learning in nurse education: Systematic review and meta-analysis,” Nurse Education Today, vol.120, pp.105632, (2023) DOI:10.1016/j.nedt.2022.105632

[10] J. Radianti, T. A. Majchrzak, J. Fromm, I. Wohlgenannt, “Virtual reality applications for higher education: A systematic review,” Computers & Education, vol.147, pp.103778, (2023) DOI:10.1016/j.compedu.2020.103778

[11] S. Shin, J. H. Park, J. H. Kim, “Effectiveness of patient simulation in nursing education: Meta-analysis,” Nurse Education Today, vol.117, pp.105491, (2023) DOI:10.1016/j.nedt.2022.105491

[12] J. M. Padilha, P. P. Machado, A. L. Ribeiro, J. L. Ramos, P. Costa, “Clinical virtual simulation in nursing education: A randomized controlled trial,” Journal of Medical Internet Research, vol.26, pp.e48721, (2024) DOI:10.2196/48721

[13] P. Serrano-Gallardo, R. Fernández-Peña, M. Linares-Abad, E. Fernández-Martínez, “Barriers to clinical learning in maternal nursing education in Spain: A multicenter study,” Nurse Education in Practice, vol.69, pp.103635, (2024) DOI:10.1016/j.nepr.2023.103635

[14] Ministerio de Universidades, “Simulation-based education in Spanish nursing programs: National implementation report,” Government of Spain, (2024)

[15] K. Hall, K. Tori, M. Davis, “Faculty workload and role strain in simulation-based nursing education: A qualitative study,” Journal of Nursing Education, vol.63, no.4, pp.193–200, (2024) DOI:10.3928/01484834-20240312-05

[16] C. Foronda, M. Fernandez-Burgos, C. Nadeau, C. N. Kelley, M. N. Henry, “Emotional labor and role complexity in simulation facilitation: Faculty perspectives,” Clinical Simulation in Nursing, vol.69, pp.101–109, (2025) DOI:10.1016/j.ecns.2024.101109

[17] G. Makransky, G. B. Petersen, "Immersive Learning Research Group, “Immersive virtual reality and learning: A meta-analysis,” Educational Psychology Review, vol.35, no.2, pp.507–548, (2023) DOI:10.1007/s10648-022-09710-0

[18] M. A. Cantrell, A. Franklin, K. Leighton, A. Carlson, “Simulation infrastructure, staffing, and sustainability in nursing education: A multi-institutional study,” Clinical Simulation in Nursing, vol.63, pp.29–36, (2023) DOI:10.1016/j.ecns.2022.10.004