

ORIGINAL RESEARCH

Strengthening practice readiness through a pediatric critical care elective: A pre–post evaluation

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ABSTRACT

Background and objective: New graduate nurses frequently report gaps in confidence, self-efficacy, and readiness for high-acuity pediatric practice, largely due to limited exposure to critical care environments during prelicensure education. Specialty electives may offer an upstream strategy to strengthen preparation and support pediatric workforce development. This evaluation examined the impact of a pediatric acute–chronic critical care elective on prelicensure nursing students' confidence, self-efficacy, and perceived readiness for high-acuity pediatric practice.

Methods: A pre–post quality improvement design was used to evaluate a 12 week elective within an accelerated prelicensure program. Seventeen Likert scale items measured confidence, self-efficacy, and perceived readiness across pediatric critical care domains. Wilcoxon signed rank tests and effect sizes (r) were used to assess changes. Qualitative reflections from journals and discussion boards were analyzed using thematic content analysis to contextualize quantitative findings.

Results: Eighteen students completed matched surveys. Statistically significant improvements were observed across all 17 domains, with large effect sizes ($r = .588–.940$). The greatest gains occurred in ventilator management (107.5%), pediatric emergency/code preparedness (76.5%), and recognition of pediatric shock (63.2%). Qualitative themes demonstrated increased confidence, strengthened self-efficacy, and clearer career trajectories. Students described greater decisiveness in high-acuity situations, improved application of structured communication frameworks, and the value of mentorship from pediatric and neonatal critical care nurses.

Conclusions: Participation in the pediatric critical care elective was associated with meaningful improvements in students' confidence, self-efficacy, and perceived readiness for high-acuity pediatric practice. Findings support specialty focused electives as feasible, scalable strategies to enhance practice readiness and contribute to pediatric workforce development.

Key Words: Clinical confidence, Critical care, Pediatric nursing, Prelicensure nursing education, Self-efficacy

1. INTRODUCTION

Practice readiness among new graduate nurses has emerged as a persistent concern, particularly in high-acuity pediatric environments where rapidly changing patient conditions require strong clinical judgment, emotional regulation, and

confidence. Despite structured orientation and residency programs, new graduates frequently report gaps in self-efficacy, fear of causing harm, and limited exposure to pediatric critical care.^[1–4] These challenges occur alongside national workforce shortages, with the greatest deficits projected in

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acute and specialty care settings.^[5] Children's hospitals continue to report shortages in pediatric and neonatal critical care roles,^[6] and more than 138,000 nurses have exited the profession since 2022.^[7]

Specialty focused electives have demonstrated potential to strengthen confidence, reduce anxiety, and shape career trajectories among prelicensure nursing students. Studies examining electives in areas such as critical care, neuroscience, and perioperative nursing have shown improvements in students' clinical knowledge, communication, and perceived readiness, with many participants ultimately pursuing careers in related specialties.^[8–10] These electives also appear to support the development of transferable skills, including situational awareness, structured communication, and technical competence, skills essential for safe practice in complex environments.^[11,12]

Despite these benefits, opportunities for structured pediatric critical care exposure remain limited in many prelicensure programs. New graduates entering pediatric and neonatal intensive care units often describe feeling underprepared for the emotional and technical demands of high-acuity practice.^[1,3] These gaps highlight the need for upstream educational strategies that build confidence and perceived readiness before graduation. Upstream educational strategies refer to early, proactive learning interventions designed to strengthen readiness before graduation, thereby reducing transition to practice challenges and supporting workforce development.^[13,14]

To address these challenges, faculty developed a pediatric acute–chronic critical care elective designed to strengthen prelicensure nursing students' confidence, self-efficacy, perceived readiness, and career interest. This evaluation examines the impact of the elective on student outcomes and contributes to the growing evidence base supporting specialty focused educational interventions as a strategy to enhance practice readiness and support pediatric workforce development.

Literature review

Prelicensure nursing students frequently report gaps in confidence, self-efficacy, and readiness for high-acuity practice, particularly in pediatric and neonatal critical care environments.^[1–4] These gaps are well documented across national and international studies and are attributed to limited exposure to unstable pediatric patients, insufficient opportunities to practice rapid clinical decision making, and anxiety related to causing harm. As a result, new graduates entering pediatric intensive care unit (PICU) and neonatal intensive care unit (NICU) settings often describe feeling underpre-

pared for the emotional, cognitive, and technical demands of high-acuity pediatric care.^[1,3,15]

Specialty-focused electives operate as upstream educational strategies by providing students with early, structured exposure to complex clinical environments before they enter the workforce. Through proactive learning experiences that strengthen confidence, self-efficacy, and clinical judgment ahead of graduation, these courses help reduce transition-to-practice challenges and better prepare students for high-acuity roles. Evidence from electives in perioperative nursing, neuroscience, and adult critical care demonstrates consistent improvements in students' clinical judgment, communication skills, technical competence, and perceived readiness for practice.^[8–10] Structured communication and interprofessional collaboration are also essential competencies for safe practice in high-acuity environments, and interventions aimed at improving nurse-physician communication have demonstrated meaningful impact in intensive care unit (ICU) settings.^[12] These courses provide structured exposure to complex environments, allowing students to rehearse clinical reasoning, apply conceptual knowledge, and develop confidence in managing unfamiliar or high-stakes situations. Importantly, students who complete specialty electives often pursue careers in related fields, suggesting that these experiences may also influence workforce pipeline development.^[8–10]

Specialty electives appear particularly effective because they cultivate transferable competencies essential for safe practice in high-acuity settings. Additional evidence from Lewis et al.^[7] demonstrates that clinical elective courses can strengthen new graduate nurses' confidence, clinical practice behaviors, and transition readiness, further supporting the value of specialty-focused electives in workforce preparation. These include situational awareness, structured communication, rapid prioritization, and the ability to synthesize subtle clinical cues—skills emphasized in national frameworks such as the American Association of Colleges of Nursing (AACN) Essentials and the National League for Nursing (NLN) competencies.^[11,15] These competencies align closely with the demands of pediatric critical care, where early recognition of deterioration, timely intervention, and clear communication with interprofessional teams are central to patient safety.

Despite these benefits, structured pediatric critical care exposure remains limited in many prelicensure programs. Most curricula emphasize generalist preparation, leaving students with minimal opportunities to engage with pediatric physiology, ventilator management, shock recognition, or emergency response. This gap is particularly concerning given persistent workforce shortages in pediatric and neonatal criti-

cal care roles.^[5,6] Upstream educational strategies defined as interventions implemented early in training to strengthen readiness before workforce entry have been proposed to reduce transition to practice stress, enhance confidence, and support workforce development in areas experiencing critical shortages.^[13,14]

This literature provides the foundation for evaluating a pediatric acute chronic critical care elective designed to strengthen confidence, self-efficacy, perceived readiness, and emerging career interest among prelicensure nursing students. By integrating simulation, case based learning, mentorship, and structured communication frameworks, the elective was intentionally designed to address known gaps in pediatric critical care preparation and to provide students with meaningful opportunities to apply knowledge in high-acuity contexts. The pre-post evaluation approach allows examination of whether these experiences produced measurable changes in confidence, self-efficacy, and perceived readiness, key indicators of practice readiness identified across the literature.

2. METHODS

2.1 Design

A pre-post quality improvement evaluation was conducted to examine the impact of a pediatric critical care elective on student outcomes. This design aligns with early stage educational intervention evaluations and does not infer causality.

2.2 Setting and sample

The elective was offered as a 12 week course within a 16 month accelerated prelicensure nursing program and was available to fourth semester students who had successfully completed the Family Centered Care prerequisite. Thirty four students enrolled; 18 completed matched pre and post course surveys.

2.3 Ethical considerations

All data were de-identified. The project met criteria for quality improvement and did not require full IRB review.

2.4 Survey instrument

A 23-Item likert scale survey was used to collect quantitative data at the start and completion of the elective. The instrument included eight demographic items, four items related to elective participation and overall experience, and seventeen Likert scale items measuring confidence, self-efficacy, and perceived readiness across pediatric critical care domains. These domains encompassed pediatric physiology, recognition of deterioration, ventilator management, emergency and code preparedness, arterial blood gas interpretation, communication, and interprofessional collaboration.

2.5 Outcome measures

For this evaluation, three core outcomes were measured: confidence, self-efficacy, and perceived readiness for pediatric critical care practice. Confidence was defined as students' belief in their ability to approach, interpret, and respond to high-acuity pediatric situations with composure and decisiveness. Self-efficacy referred to students' perceived capability to perform specific pediatric critical care tasks, including recognizing deterioration, initiating interventions, and communicating effectively with interprofessional teams. Perceived readiness was defined as students' overall sense of preparedness to enter high-acuity pediatric environments, integrating knowledge, technical skills, emotional regulation, and situational awareness. These definitions guided item development and provided conceptual clarity for interpreting pre-post changes.

2.6 Qualitative data sources

Students completed reflective journals throughout the elective. Prompts invited reflection on case studies, simulations, clinical observations, and guest speakers.

2.7 Data analysis

Quantitative data were analyzed using Wilcoxon signed rank tests with a significance level of $\alpha = .05$, and effect sizes (r) were calculated to determine the magnitude of change across domains. Qualitative data were examined using thematic content analysis following the six phase approach outlined by Braun and Clarke (2006), an established method well suited for identifying patterned meaning across reflective narratives and capturing the depth of students' learning experiences.^[16]

2.8 Sample characteristics

Eighteen students completed matched surveys, all of whom identified as female. The sample consisted of fourth semester students enrolled in a 16 month, four semester accelerated prelicensure program, and half indicated plans to pursue pediatric critical care roles following graduation.

3. RESULTS

A total of 34 accelerated prelicensure nursing students enrolled in the pediatric critical care elective, and 18 completed both the pre and post course surveys, yielding a 54% matched response rate. All respondents identified as female, and half reported plans to pursue pediatric critical care roles following graduation. This sample provides important context for interpreting the quantitative and qualitative findings.

3.1 Qualitative findings

Qualitative data were examined using thematic content analysis informed by Braun and Clarke's six phase methodology,

which offers a flexible yet systematic approach for identifying patterned meaning across narrative data.^[16] Reflective journals were read closely to gain familiarity with students' experiences, and initial codes were generated inductively to capture salient ideas related to confidence, self-efficacy, communication, and readiness. Codes were then grouped into broader categories, and recurring patterns were organized into preliminary themes. These themes were reviewed for coherence and refined to ensure they accurately represented the data. The final themes were interpreted alongside quantitative findings to provide contextual depth and illustrate how students described their learning and development throughout the elective. This analytic approach supported transparency and consistency while allowing for meaningful interpretation of students' reflections.

Students described a marked increase in confidence when approaching complex pediatric scenarios. Early reflections frequently referenced anxiety, uncertainty, and fear of causing harm; however, by the end of the elective, students reported greater decisiveness and comfort recognizing deterioration, participating in emergency responses, and applying clinical reasoning in high-acuity situations. Structured simulation, case based discussions, and observation of expert clinicians were consistently identified as key contributors to this growth. As one student reflected, repeated exposure "made the environment feel less intimidating and more manageable," illustrating a shift from apprehension to readiness.

Mentorship from pediatric and neonatal critical care nurses emerged as a central mechanism supporting students' development. Participants emphasized the value of timely, supportive feedback and opportunities to ask questions in a psychologically safe environment. Guided reflection exercises helped students integrate theoretical knowledge with clinical experiences, reinforcing their belief in their ability to perform effectively in high-acuity settings. These findings align with McTier et al.'s assertion that "clear communication between facilitator and student" is a key enabler of learning.^[17] Students described mentorship as instrumental in building trust in their clinical judgment and navigating emotionally complex situations.

The significant improvements observed across confidence, self-efficacy, and perceived readiness reflect meaningful changes in students' preparedness for high-acuity pediatric practice. Confidence increased as students reported greater decisiveness and reduced anxiety when approaching complex pediatric scenarios. Self-efficacy improved through repeated opportunities to apply critical care concepts, practice structured communication, and receive feedback from

expert clinicians. Perceived readiness strengthened as students integrated foundational knowledge, technical skills, and emotional preparedness, aligning with national competency expectations for safe practice in unstable pediatric environments. Together, these improvements demonstrate that the elective supported multidimensional growth across cognitive, behavioral, and affective domains essential for transition to pediatric critical care practice.

Participation in the elective also prompted students to reflect on their professional identity and future career goals. Several students reported a strengthened interest in pediatric or neonatal critical care, whereas others discovered a preference for adult critical care or emergency nursing. Regardless of direction, students described the elective as pivotal in informing residency decisions and long term career planning. Exposure to expert clinicians, leadership sessions, and high-acuity environments contributed to a clearer understanding of the realities of critical care practice and their personal fit within it.

Collectively, these themes demonstrate how structured specialty exposure, mentorship, and reflective learning supported students' confidence, self-efficacy, and professional clarity. The qualitative findings contextualize the quantitative improvements and highlight the elective's role in preparing students for transition to high-acuity pediatric practice. Representative student excerpts illustrating each theme are presented in Table 1.

3.2 Quantitative findings

Analysis of matched survey data demonstrated statistically significant improvements across all 17 items measuring confidence, self-efficacy, and perceived readiness for pediatric critical care practice. Wilcoxon signed rank tests indicated a strong overall effect, with effect sizes ranging from .588 to .940, reflecting substantial practical significance. The largest gains occurred in domains where students reported the lowest baseline confidence, including ventilator management, which increased by 107.5% ($r = .904$), pediatric emergency/code preparedness, which improved by 76.5% ($r = .828$), and recognition of pediatric shock, which increased by 63.2% ($r = .851$). Foundational knowledge areas also demonstrated meaningful improvement, such as understanding pediatric physiology ($p = .002$, $r = .743$) and arterial blood gas interpretation ($p = .002$, $r = .728$). Across all domains, post course scores reflected stronger clinical judgment, enhanced readiness for high-acuity situations, and increased confidence in applying critical care concepts, suggesting that the elective had a consistent and robust impact on student preparedness. Table 2 presents the complete statistical findings, offering

a clear depiction of the effect sizes and directional changes observed.

4. DISCUSSION

Findings from this research evaluation demonstrate that a pediatric critical care elective can significantly enhance prelicensure nursing students' confidence, self-efficacy, and perceived readiness for high-acuity practice. These results align with prior studies showing that specialty electives improve clinical judgment, technical skills, and emotional pre-

paredness.^[8–10] These findings align with national calls to strengthen acute and critical care preparation in prelicensure programs, as outlined in the Blueprint for Change in acute and critical care nursing.^[18] The largest gains occurred in ventilator management, pediatric code preparedness, and recognition of shock—domains that require rapid decision making and strong situational awareness, consistent with competencies identified in the AACN Essentials and other national frameworks.^[11,18]

Table 1. Qualitative themes in reflections

Theme	Definition	Representative Text Evidence (Verbatim Quotes)
Growth in Clinical Confidence	Increased confidence in assessing, interpreting, and responding to high-acuity pediatric clinical situations.	"I now feel the strongest and most confident is recognizing and responding to pediatric respiratory distress." "By the end of the course, I felt most confident navigating rapid responses and code." "Respiratory issues, changes in ABGs, and early indicators of shock make much more sense to me now."
Strengthened Self-Efficacy and Clinical Judgment	Belief in one's ability to act decisively, trust assessments, and step into urgent clinical situations.	"For the first time, everything clicked in real time." "It was the first time I felt myself stepping into that role of recognizing subtle changes and speaking up confidently." "That moment reminded me that critical care isn't only about complex interventions; sometimes the most meaningful thing you provide is steady, compassionate presence."
Use of Structured Communication and Frameworks	Reliance on structured tools and systematic approaches to guide communication and decision-making.	"Strategies that helped me believe in my ability to succeed are using structured frameworks like SBAR." "Giving a clear, concise report for the medical team."
Mentorship and Supportive Learning Environment	Perceived support from faculty, peers, and preceptors that fostered learning, confidence, and autonomy.	"Knowing that I was able to go to you with questions without feeling like I could be judged, also increased my ability to succeed." "The support from instructors and classmates also mattered." "I have also learned the kind of mentorship that helps me thrive."
Commitment to Family-Centered Care	Emphasis on therapeutic communication, emotional presence, advocacy, and family support during pediatric crises.	"My presence reassured her." "I found myself being able to therapeutically communicate with children and their caregivers more easily." "Parents and caregivers need guidance, reassurance, and clear communication just as much."
Clarification of Career Interests and Professional Identity	Reflection on how the course shaped or reinforced interest in pediatric acute or critical care roles.	"This course has absolutely influenced my interest in pediatrics." "It made pediatrics feel less intimidating and more like a path I could actually choose." "This course has confirmed my love for the population and has made me more confident."

An important implication of these findings is the role of the elective as an upstream educational strategy. Upstream approaches are early, proactive learning interventions implemented during prelicensure training to strengthen readiness before students enter the clinical workforce. These strategies anticipate common transition to practice challenges: such as limited exposure to high-acuity environments, gaps in clinical judgment, and low self-efficacy, and provide structured opportunities for students to build confidence and competence ahead of graduation. The pediatric critical care elective functioned as an upstream intervention by introducing

targeted learning experiences earlier in the curriculum, including simulation, case based learning, structured communication frameworks, and mentorship from expert clinicians. These components directly addressed documented gaps in pediatric critical care preparation and contributed to measurable improvements in confidence, self-efficacy, and perceived readiness. In the context of persistent pediatric and neonatal critical care workforce shortages, upstream strategies such as this elective may serve as feasible, scalable mechanisms to strengthen workforce pipeline development and reduce transition to practice stress among new graduates.^[10,11]

Qualitative findings provided important context for these improvements. Students described translating course content into increased decisiveness, emotional readiness, and a stronger sense of professional identity. These reflections mirror broader literature documenting that self-efficacy, mentorship, and structured feedback are central to new graduate readiness and retention.^[11, 16] Mentorship from pediatric and neonatal critical care nurses emerged as a pivotal mechanism supporting the development of confidence and clinical judgment, reinforcing the importance of academic–practice partnerships in preparing students for complex environments.

These results also align with national workforce concerns. Persistent shortages in pediatric and neonatal critical care roles highlight the need for educational strategies that

strengthen readiness and support workforce pipeline development.^[5, 6] Specialty electives may serve as an upstream approach to mitigating transition to practice challenges and reducing early career attrition.^[13, 14]

Our findings align with broader evidence demonstrating that confidence is closely linked to educational preparation. Westman et al.^[19] found “a significant, positive relationship between both educational preparedness and confidence, and perceived importance and confidence,” indicating that as preparation increases, so do the odds of confidence among new graduate nurses. Their results reinforce the importance of upstream educational strategies such as specialty electives that strengthen readiness before transition to high-acuity practice.

Table 2. Confidence, self-efficacy and preparedness Wilcoxon signed rank test results

Item	N	Pre		Post		<i>p</i>	<i>r</i> (effect size)	% improvement in mean score
		M	SD	M	SD			
I feel prepared to engage in simulations and clinical experiences in pediatric critical care settings.	18	2.67	0.84	3.56	0.51	.003	0.694	33.3
I understand the physiology and pathophysiology of common pediatric critical care conditions.	18	2.50	0.71	3.44	0.51	.002	0.743	37.8
I can accurately interpret arterial blood gases and apply findings to clinical decisions.	18	2.72	0.75	3.67	0.49	.002	0.728	34.7
I am confident identifying types of pediatric shock and appropriate interventions.	18	2.11	0.58	3.44	0.51	<.001	0.851	63.2
I can apply infection control principles effectively in pediatric critical care settings.	18	2.89	0.68	3.61	0.50	.003	0.700	25.0
I understand how to manage ventilator settings and respiratory support in pediatric patients.	18	1.39	0.50	2.88	0.49	<.001	0.904	107.5
I can apply ethical principles in high-stakes situations, such as resuscitation and end-of-life care.	18	2.39	0.78	3.50	0.62	<.001	0.789	46.5
I feel confident advocating for pediatric patients and their families in critical care settings.	18	2.89	0.76	3.50	0.62	.013	0.588	21.2
I identify as a future pediatric critical care nurse and feel prepared for the workforce transition.	18	2.44	0.78	3.67	0.59	.001	0.770	50.0
I feel confident in recognizing signs of pediatric respiratory distress.	15	2.93	0.46	3.60	0.51	.014	0.930	22.7
I am comfortable initiating basic interventions for pediatric patients in critical condition.	15	2.47	0.64	3.59	0.51	.003	0.910	45.5
I understand the principles of pediatric fluid resuscitation.	15	2.00	0.53	3.35	0.49	.002	0.902	67.6
I feel prepared to participate in a pediatric code situation.	15	1.93	0.80	3.41	0.51	.003	0.828	76.5
I understand the unique pharmacologic considerations in pediatric critical care.	15	2.60	0.63	3.29	0.59	.026	0.787	26.7
I feel equipped to support families during pediatric critical care situations.	15	2.73	0.80	3.53	0.51	.003	0.940	29.1
I can identify early warning signs of pediatric sepsis.	15	2.33	0.62	3.24	0.44	.004	0.923	38.7
I feel that this elective has improved my confidence in managing pediatric critical care scenarios.	15	2.47	0.64	3.65	0.61	.002	0.910	47.9

Taken together, the quantitative and qualitative findings indicate that participation in the pediatric acute–chronic critical care elective was associated with meaningful improvements in confidence, self-efficacy, perceived readiness, and emerging career interest. These results contribute to the growing evidence supporting specialty focused educational interventions as scalable, feasible strategies for preparing prelicensure students for high-acuity pediatric practice. The outcomes of this work suggest opportunities for nurse educators to consider implementation of specialty courses or workshops which aim to address workforce needs and trends in healthcare. Using the upstream effect approach may alleviate many shortages seen in specialty settings such as the pediatric and neonatal critical care units, by preparing students for real-world experiences and enhancing their readiness for practice settings that are not integral to typical pre-licensure programs.

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AUTHORS CONTRIBUTIONS

The DNP committee members contributed to refining the project framework and offered substantive feedback throughout the manuscript preparation process. All authors contributed to the review and editing of the manuscript and have read and approved the final version. No special authorship agreements apply, and all contributors fulfilled the criteria for authorship.

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DATA SHARING STATEMENT

No additional data are available.

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