

ENHANCING INPATIENT PEDIATRIC NURSES' COMPETENCE IN INFANT  
CARE AND PARENTAL GUIDANCE THROUGH EDUCATIONAL  
INTERVENTIONS

by

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As members of the DNP Project Committee, we certify that we have read the DNP project prepared by Zoe Jordan Dill, titled Enhancing Inpatient Pediatric Nurses' Competence in Infant Care and Parental Guidance Through Educational Interventions, and recommend that it be accepted as fulfilling the DNP project requirement for the Degree of Doctor of Nursing Practice.

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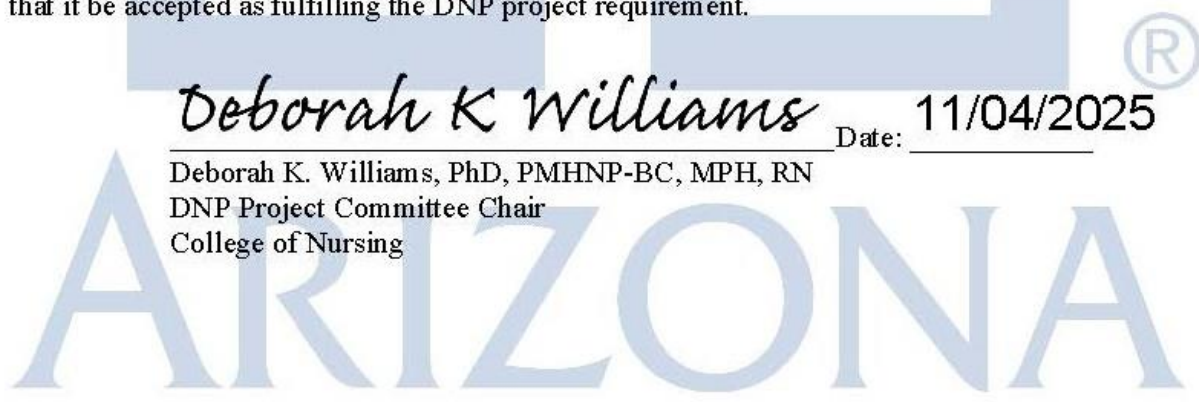
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## Abstract

**Background:** Inpatient pediatric nurses often receive limited formal education on pediatric health promotion, as undergraduate curricula prioritize adult/geriatric content, and continuing education emphasizes acute care management. These gaps leave nurses underprepared to deliver developmentally appropriate guidance to parents, despite the importance of bedside education in improving pediatric outcomes. At Tucson Medical Center (TMC), the combined pediatric/pediatric intensive care unit (PICU) experienced high nurse turnover in 2024-2025, with most new hires during that time being recent graduates or transfers from adult care. Stakeholder feedback highlighted gaps in foundational knowledge and hesitancy in providing parent education, particularly for infants.

**Purpose:** The purpose of this quality improvement project was to evaluate whether a structured, evidence-based educational session on newborn and infant care could enhance inpatient pediatric nurses' self-perceived competence in infant health promotion and increase their intent to integrate education into bedside practice.

**Methods:** A 55-minute educational session, titled "*Diapers, Diet, and Development: Infant Care 101*," was delivered to nursing and support staff. Pre- and post-intervention surveys measured nurses' self-perceived competency, knowledge, willingness to provide bedside education, perceived relevance of the content, and intent to implement the content in their practice. Quantitative data were analyzed with descriptive statistics and measures of central tendency, while qualitative data were reviewed for thematic insights.

**Results:** 18 pre-survey answers and 11 post-survey answers were analyzed ( $n=11$ ). Nurses demonstrated a 26% improvement in their self-perceived competency in infant care topics after

the intervention. Most participants (91%) rated the content as highly relevant, and all expressed intent to apply the information in practice. Qualitative feedback highlighted the value of non-acute pediatric education and identified future topics of interest, including guidance on breastfeeding, pain management, and vaccine education.

**Conclusion:** This intervention enhanced nurses' self-perceived competence and motivation to provide health promotion education at the bedside. Findings support the incorporation of pediatric health promotion into unit-based continuing education and onboarding, with future research needed on the long-term impact, broader implementation, and parent perspectives.

## **Background**

Health promotion is a critical component of pediatric care, particularly regarding newborn and infant care. However, inpatient pediatric nurses often receive minimal formal education on these topics. While inpatient nursing education typically emphasizes acute care management, there is a growing need to enhance nurses' competency and confidence in providing foundational health education to parents. Ensuring that parents receive accurate, timely, and reinforced health information from multiple sources, including inpatient nurses, is essential for optimizing infant and child health outcomes.

A key justification for the addition of health promotional education in acute care settings stems from the fact that an estimated 30-50% of children do not attend all recommended primary care health surveillance appointments. This is especially the case for uninsured, underinsured, or low-income families (Angier et al., 2022). These visits serve as crucial touchpoints for health promotion, but gaps in attendance mean that many parents miss vital education on newborn and infant care. Using inpatient pediatric or neonatal intensive care unit (NICU) admissions, or discharge education from pediatric emergency rooms, as an opportunity to provide this education can help bridge the gap and ensure that parents receive critical knowledge, even if they have circumstances that prevent routine primary care visits.

Furthermore, research suggests that parents retain only 20% of the information provided during each healthcare encounter (Cleveland Clinic, 2024). Given this low retention rate, reinforcing health education across multiple settings—prenatal appointments, postpartum care visits, primary care encounters, and inpatient pediatric/NICU admissions, as examples—provides

opportunities for repetition of information, which significantly improves the odds of information retention and, ultimately, parental confidence and competence in caring for their newborns.

Evidence from NICU studies further underscores the need to improve inpatient nursing education in health promotion. One study found that while NICU parents greatly valued education in how to support their child's healthy development after discharge, 42% felt that the education they received from staff was suboptimal (Bater et al., 2024). This indicates a clear opportunity to enhance the knowledge base of inpatient pediatric and NICU nurses, enabling them to provide more effective and meaningful guidance to parents.

Compounding this issue is the limited emphasis on pediatric health promotion in nursing education. A white paper published by the Institute of Pediatric Nursing's Education Task Force discussed how undergraduate nursing education heavily prioritizes adult and geriatric medical-surgical content and how that, coupled with diminishing pediatric clinical hour requirements, leaves new graduate nurses with extremely limited knowledge on how to provide developmentally appropriate care for pediatric patients (Chesney et al., 2021). This article also argues that thorough foundational pediatric education is necessary for inpatient nurses, as an understanding of the basics of development, growth, and communication is essential to anticipate how pediatric patients experience illness and injury.

This lack of educational preparedness is highlighted in the 2023 NCLEX Test Plan, which includes only 9% of content related to health promotion and just 2 of the 14 content bullet points within the health promotion category specifically addressing pediatric health promotion (National Council of State Boards of Nursing, 2023). This minimal representation in the main nursing licensure exam in the United States highlights a significant gap in formal nursing

curricula, leaving new graduate nurses and those transitioning into pediatric roles underprepared to provide essential care to patients and health education to parents. Strengthening nurses' knowledge in this area will enhance their ability to support families, ultimately contributing to improved health outcomes for newborns and infants.

Unit-based continuing education is crucial in today's complex and rapidly evolving healthcare environment. As clinical practices, technologies, and patient needs continue to grow, ongoing education is vital for nurses to maintain and enhance the knowledge and skills that directly impact patient outcomes. While ongoing research continues into the most effective method of delivering continuing education, nurses often perceive unit-based education as more beneficial than centralized hospital-wide programs, due to its immediate relevance to their specific clinical settings. Additional findings highlight that for continuing education to truly impact nursing practice, it must be relevant, realistic, and attainable (Mlambo et al., 2021). These qualities are more commonly found in unit-based approaches, which are delivered by specialized content unit educators and experts.

This project aimed to assess whether addressing these foundational pediatric knowledge gaps through unit-based educational interventions can improve inpatient nurses' competency and confidence in delivering education for families of newborns and infants. While the specific intervention presented in this project focused on education related to newborn and infant basic care and health promotion, the inclusion of this type of education for inpatient nurses can be expanded to cover health topics relevant to other pediatric age groups and issues as well, further broadening its impact on pediatric nursing practice and overall pediatric patient healthcare. The literature review of the above sources is highlighted in Appendix A.

## **Purpose and PICO Question**

### **Purpose Statement**

Inpatient pediatric nurses can often feel daunted by the task of providing parent education regarding health promotion and primary healthcare practices, especially if the nurses are new to pediatrics or do not have children themselves. The purpose of this quality improvement project was to enhance the self-perceived competency of inpatient pediatric nurses in providing newborn and infant health promotion education to parents, which is often found to be lacking (Mansourian et al., 2020). This project at Tucson Medical Center (TMC) aimed to address gaps in nursing education that arise from a predominant focus on acute care topics and treatments, which can limit nurses' ability to effectively educate parents on essential newborn care and health promotion topics. This intervention was completed on the pediatric/PICU unit at TMC. Specific objectives for this implementation at TMC included: improving inpatient pediatric nurses' foundational knowledge; enhancing the self-perceived competency of inpatient nurses in providing care and health promotion education to parents; improving nurses' willingness and intent to implement parent education into practice; and assessing the relevance and benefit of adding primary care topics to acute care continuing education.

The nurses' intent to change practice by implementing parent education into their bedside care was measured. An evidence-based, structured educational session provided guidance to inpatient nurses on newborn and infant care, ultimately aiming to enhance parental preparedness and improve infant health outcomes for patients discharged from TMC. The initial effectiveness of this implementation highlights an opportunity to add health promotion and education sessions

for other populations and problems within pediatrics to staff onboarding and continuing education within TMC departments that care for pediatric patients.

### **PICO Question**

Does providing education sessions on newborn/infant care and health promotion to inpatient registered nurses (RNs), compared to education based on acute care topics only, have a positive impact on their self-perceived competency in providing care to infants and improve their intent to implement parent education into their bedside practice?

### **Methods**

#### **Site and Local Problem**

This quality improvement project was implemented on the combined pediatric and pediatric intensive care unit (PICU) at Tucson Medical Center (TMC) located in Tucson, Arizona. This unit includes 28 general pediatric beds and 12 PICU beds. The patient population served includes individuals from birth to 18 years old who require inpatient or critical care for medical and surgical conditions, with subspecialty services in orthopedics, urology, ear, nose, and throat (ENT), and plastic surgery. The unit is staffed by approximately 30-40 RNs and 12 patient care technicians (PCTs). There had been recent high turnover within the pediatric departments at TMC, and a large percentage of staff are either newly graduated nurses or transfers from adult care units. This highlighted a need for thorough education to prepare these new staff members for working with pediatric populations.

#### **Stakeholder Engagement**

Initial stakeholders for this project included the staff nurses on the pediatric/PICU unit at TMC. A needs assessment was conducted with a group of newly graduated, new-to-pediatrics,

and experienced nurses who expressed concerns about gaps in their knowledge related to fundamental pediatric health concepts. Other key stakeholders for this project included the unit educator and the clinical nurse leader (CNL) of the pediatric/PICU unit at TMC. These individuals serve as essential facilitators in implementing staff education initiatives and provide valuable insights into the educational needs of the unit's nursing and nursing support staff. A meeting was held with both educators to discuss the proposed intervention and its potential alignment with the unit's existing continuing education format, which is traditionally led by hospitalist and intensivist physicians.

During this meeting, the stakeholders confirmed support for the project and affirmed that the topic—infant health promotion for nursing staff—would be both timely and valuable. They provided several recommendations to enhance the intervention's relevance and integration into unit workflows. These included incorporating elements related to nursing documentation where applicable, consulting with recently onboarded nurses to identify specific gaps in foundational pediatric knowledge, and coordinating with the unit's registered dietitian and providers to ensure alignment of content with current evidence-based practices and institutional standards. Additionally, they advised a review of relevant hospital policies and procedures.

Other stakeholders involved included obtaining implementation approval from the Manager of the Quality Department and the Chief Nursing Officer (CNO) of the Women and Children's Department at TMC. The CNO approved project implementation, and Site Authorization Letters were obtained from the pediatric unit educator and the Manager of the Quality Department (Appendix B).

Other potential stakeholders involved in this intervention included hospitalist providers, pediatric patients, their parents, and the community. Effective bedside education from RNs may result in less time required for hospitalist clarification or intervention and could lead to positive health outcomes for patients and their caregivers.

After demonstrating benefits to both staff and patients through this project, stakeholders expressed interest in integrating this content into the formal onboarding curriculum for new graduate nurses and staff new to pediatric care, thereby extending the project's potential impact beyond the initial education session.

### **Participants and Recruitment**

Recruited participants included staff RNs and PCTs from the pediatric/PICU unit who voluntarily attended the infant health promotion education session presented by the author of this project and completed pre- and post-surveys. While PCTs were encouraged to attend and participate, primary data analysis focused on RN responses. Recruitment included an email sent by the unit educator before the scheduled presentation, along with a recruitment flyer (Appendix C), which was displayed in the staff conference room and break rooms. An additional reminder email was sent by the project author two days in advance, which included the survey links and the informed consent form (Appendix D). Furthermore, information on the presentation was announced in pre-shift huddle announcements for both day and night shift staff.

Participation was voluntary and anonymous, and responses were not linked to any identifiers. The session was offered both in person and live-streamed via Microsoft Teams to facilitate access for both shifts and those not working on-site that day. Attendance, while voluntary, counted toward annual unit competency requirements, which was expected to

encourage participation. This competency requirement for staff involves staff members attending at least four educational presentations throughout the year. However, there are numerous presentations offered throughout the year which did not necessitate staff attending this particular session. The Teams meeting was also recorded and emailed to staff members who were unable to attend the session for their educational purposes. However, data was not collected from individuals who reviewed the recorded lecture, only those who attended either via Teams or in person.

### **Intervention**

The intervention consisted of a 55-minute educational presentation titled “Diapers, Diet, and Development: Infant Care 101” (Appendix E), which included five minutes allotted for questions and discussion. The session covered essential content for promoting infant (newborn to 1 year) health and development, including: age-specific feeding frequency and volume goals; elimination expectations, bladder capacity, and urinary output calculations; ages for transition to solids and whole milk, with developmental explanation and reasoning; and key developmental milestones and interventions that encourage development.

The content in this presentation was gathered from referenced, evidence-based resources and verified by a content specialist. The evidence-based data were compiled from various textbooks and peer-reviewed sources, most substantially from the *Bright Futures: Guidelines for Health Supervision of Infants, Children, and Adolescents* (4th ed.), published by the American Academy of Pediatrics, and *The Harriet Lane Handbook* (23rd ed.), endorsed by Johns Hopkins Hospital. The content specialist included one of the unit’s hospitalist physicians, who verified that the content presented was consistent with the hospitalist team’s treatment guidelines and

practices. The presentation was delivered using PowerPoint slides accessible to both in-person and virtual attendees. Slides were emailed to staff after the session for future reference and for those joining by audio call only. The educational presentation was stored internally by the unit educators for future educational reference, with this author's consent. The stored presentation did not display any data results or participant information.

### **Evaluation Measures**

Two separate surveys were designed for data collection, one for RNs and one for PCTs. Each survey contained one page of pre-intervention questions and one page of post-intervention questions. Pre- and post-intervention questions were combined (Appendix F) and administered using the online survey platform Qualtrics XM. The survey collected demographic data, including years of experience as an RN, years of experience in pediatrics, and experience with childcare prior to healthcare employment.

Pre-survey questions for RNs assessed baseline self-ratings using Likert scales in the following areas: self-perceived competency in providing newborn and infant education to parents; current willingness to provide parent education; and current ability to detect abnormalities related to intake, output, and development.

Post-survey questions for RNs assessed included self-reported changes, or lack thereof, in their self-perceived competency in covered topics, their willingness to change practice by implementing parent education, and the perceived relevance of the content to their current practice.

The post-survey questions also included open-ended questions about the value of non-acute care topics in onboarding education and suggestions for future issues. Questions in the

PCT survey assessed whether the presentation enhanced their understanding and ability to care for infants; however, their responses were used for narrative discussion rather than formal data analysis, due to differences in the scope of practice regarding the provision of parent education.

The survey questions were mainly pulled from the Centers for Disease Control and Prevention's (2019) *Recommended Training Effectiveness Questions for Post-course Evaluations*. This guide provides nine survey questions, along with evidence-based rationales, for use in program evaluation. The wording of the validated CDC's recommended post-course evaluation questions, which assess self-rated knowledge and skill in course topics, was retained for this project's post-survey questionnaire. These factors were intentionally unchanged, as "knowledge" and "skill" represent two of the most frequently cited elements within the broader construct of nursing competency (Fukada, 2018). Additionally, the use of these terms provides greater clarity for participants, as they are more concrete and less open to individual interpretation than the broader concept of "competency." This wording choice was maintained to minimize ambiguity and ensure that responses more accurately reflect participants' perceptions of their own ability in relation to the educational content. As such, asking participants to self-rank their knowledge and skills provided a valid means of capturing perceived competency, aligning with the project's PICO question.

However, some of the open-ended questions regarding training session strengths and weaknesses, as well as the characteristics of training, were altered, as this author wanted to focus more on the participants' perceptions of the type of content provided in the session, rather than the session format itself. The unit educators reviewed these surveys to ensure that the data being

assessed helped determine whether to implement this intervention into their unit-based educational content.

### **Analysis**

Quantitative data from Likert-style questions were analyzed as ordinal data. Answer percentages and measures of central tendency were calculated for each item to identify shifts in self-perceived competency and intent to implement into practice. Qualitative data from open-ended responses were reviewed for recurring themes and integrated into the discussion section to provide context and insight into staff perspectives and educational needs. Demographic data percentages were also utilized in the qualitative discussion.

### **Ethical Considerations**

This project was reviewed to ensure ethical integrity and minimize risk to participants. The author of this project was employed on the pediatric/PICU unit at the time of intervention implementation, which posed a potential conflict of interest. To address this, anonymity was maintained, participation was voluntary, and no identifying information was collected. Survey responses were not visible to unit leadership and were not used in performance evaluations. Participants were informed via a consent form and presentation disclaimer that this study aimed to evaluate the utility of primary care education topics in an acute care setting, rather than to judge individual performance or the effectiveness of the presenter.

No physical or psychological risks were anticipated. Institutional Review Board (IRB) consultation and approval were obtained to determine that the project qualified as a quality improvement initiative and not human subject research. All survey data was securely stored in password-protected files accessible only to the project author.

This project aimed to align with the ethical principles of human subject protection guidelines summarized in The Belmont Report (Office for Human Research Protections, 2018), including respect for persons, assessment of risks and benefits, beneficence, and informed consent.

In alignment with the principles of The Belmont Report, this project upheld respect for persons by ensuring that participation was voluntary, anonymous, and free from coercion, thereby protecting participants' autonomy. The assessment of risks and benefits was carefully considered, with minimal risk anticipated and potential benefits including professional growth and improved patient outcomes. The principle of beneficence was upheld by designing an intervention aimed at enhancing nursing knowledge and confidence, ultimately improving care for infants and their families. Finally, informed consent was obtained through the disclosure of the project's purpose, procedures, and voluntary nature, along with assurances of confidentiality, ensuring that participants had the necessary information to make an informed decision about their participation.

### **IRB Review and Approval**

This project was submitted to the University of Arizona IRB on July 31, 2025. It received the determination of "Not Human Research" and approval to implement on August 5, 2025.

### **Implementation and Theoretical Models**

#### **Peplau's Cycle of Inquiry**

Hildegard Peplau's Cycle of Inquiry served as the conceptual model for this quality improvement project, providing a framework for an intervention that aimed to transform evidence-based knowledge into nursing knowledge applicable to daily practice. In essence, it

works to build nursing knowledge through the combination of knowledge gained through practice, refined through research methods, and tailored back into practical application and development (Reed & Crawford Shearer, 2018).

The cycle begins with the observation of fundamental units, in which a practicing nurse or team identifies a gap or pattern in clinical care that warrants further exploration. In this project, the initial observation centered on the recognition that inpatient pediatric nurses at TMC frequently felt underprepared to provide parent-facing education on infant health promotion topics. This gap was particularly notable among new graduate nurses or those without prior experience caring for infants, and it was reinforced through stakeholder engagement and a literature review.

The second phase, abductive inquiry or theoretical exploration, involved “peeling out” potential explanations for why this gap exists and identifying practical solutions to address it. Drawing on both evidence-based guidelines and stakeholder input, the project author developed an educational presentation that translated theoretical knowledge into useful, clinically relevant content. Instead of presenting broad primary care concepts, the presentation was intentionally designed to align with inpatient nursing responsibilities. For example, the class included specific guidance on interpreting feeding volumes based on age, recognizing abnormal elimination patterns, providing anticipatory guidance to parents regarding feeding transitions, managing symptoms of reflux and constipation in infant patients, and using application of relevant developmental milestones in nursing assessments—all scenarios that inpatient nurses are likely to encounter during routine bedside cares and interactions with families.

In the final phase, the transformation of energy and knowledge, the educational presentation served as a vehicle to reframe and re-energize nursing practice by equipping staff with actionable knowledge that can be integrated into daily workflows. This transformation occurs as nurses reflect on their pre-existing understanding, assimilate new information, and apply it in ways that improve both their communication with families and the overall quality of care. By making space for reflective learning and practical application, the project advances Peplau's vision of nursing as both an art and a science grounded in curiosity, clinical engagement, and transformation.

### **PDSA Cycle Implementation Model**

The Plan-Do-Study-Act (PDSA) Cycle was selected as an implementation model for this project due to its practicality in iterative quality improvement initiatives and its alignment with frontline clinical education efforts. The PDSA model was also deemed appropriate for this project due to its nature as a tool for rapid evaluation of small-scale changes (Greenhalgh, 2018). This model facilitates a structured approach to planning and evaluating changes in healthcare practices, making it well-suited for testing the effectiveness of an educational intervention on a single unit. Within this project, the PDSA cycle supports a focused examination of how a targeted educational presentation on infant health promotion can impact the competency of inpatient nurses in delivering infant care and parental education (Table 1).

The PDSA cycle is a widely used quality improvement framework that guides the testing and implementation of changes in healthcare practice. The first step, Plan, involves identifying a problem or gap, hypothesizing a change or intervention, and determining the methods for evaluation. The second step, Do, focuses on implementing the intervention on a small scale

while systematically collecting data to capture outcomes and observations. The third step, Study, entails analyzing the collected data to evaluate whether the change led to the desired improvements and identifying any unintended effects. Finally, the Act step utilizes the findings from the analysis to refine, adapt, or expand the intervention, either proceeding with the broader implementation or initiating another cycle for continued improvement. This iterative process ensures that interventions are both evidence-based and responsive to the realities of clinical practice.

The intervention was implemented in the first cycle, beginning with careful planning and collaboration with unit stakeholders to ensure relevance and feasibility. The education session was then delivered to staff, with data collected through pre- and post-surveys to assess its impact. Following the intervention, results were analyzed to determine whether the intended improvements in nurse self-efficacy and intent to change practice were observed. The outcomes of this evaluation will inform future revisions and potential expansion of the educational format into new graduate orientation or broader pediatric nursing curricula, as well as possible extension to other inpatient units.

**Table 1***Plan-Do-Study-Act (PDSA) Cycle Steps*

<b>Step</b>	<b>Application</b>
<b>Plan</b>	<ul style="list-style-type: none"> <li>• Identified a gap in nursing confidence and competence related to infant promotion, care, and education.</li> <li>• Collaborated with stakeholders to design an education presentation aligned with unit needs and continuing education goals.</li> <li>• Developed session education content based on evidence-based information and current practice guidelines.</li> <li>• Developed pre/post-intervention surveys to measure impact of intervention.</li> </ul>
<b>Do</b>	<ul style="list-style-type: none"> <li>• Implemented Masterclass education presentation on the pediatric/PICU unit at TMC, offering both in-person and Microsoft Teams Video attendance options.</li> <li>• Collected data using digital pre- and post-surveys from participants.</li> </ul>
<b>Study</b>	<ul style="list-style-type: none"> <li>• Analyzed Likert-style responses and qualitative feedback from the post-surveys to evaluate changes in perceived nurse confidence and intended use in future practice.</li> <li>• Measured values and reviewed narrative feedback for thematic insights.</li> </ul>
<b>Act</b>	<ul style="list-style-type: none"> <li>• Used findings to assess the effectiveness of the intervention.</li> <li>• Stakeholder and participant feedback via survey results informed potential adjustments to content and content delivery.</li> <li>• Overall positive results lead to recommendations to unit educators to integrate similar education into onboarding and ongoing staff development, as well as expansion to other inpatient units.</li> <li>• Future cycles could include adaptation based on staff feedback or expansion to include other health promotion topics that are applicable to inpatient nursing practice.</li> </ul>

**Results**

The educational presentation had 42 viewers via Teams and four in-person viewers, for a total of 46 attendees. These viewers included nurses and patient care technicians from the pediatrics/PICU, pediatric emergency room, and neonatal intensive care units at TMC. The specific number of RNs, PCTs, and the number of viewers from other units was not available to this author; only the total number of viewers via Teams was provided. This was done to further preserve anonymity. Surveys were only sent to, and data were only collected from, the peds/PICU inpatient unit nurses and PCTs to align more specifically with the PICO question and limit data variability. Of these 46 viewers, 20 individuals participated in the optional surveys (18 RNs and 2 PCTs). For clarification purposes, “viewers” is used to describe the individuals who

attended/watched the educational presentation, and “participants” refers to those who attended as well as completed the surveys. 18 sets of RN pre-survey data were obtained, and 11 sets of RN post-survey data were obtained from participants. While there were 18 total RN survey participants, an error of unknown cause occurred on Qualtrics that prevented the display of post-survey data for the last seven surveys completed. For those post-survey question results, it displayed “This question was not displayed to the respondent.” Therefore, only 11 RN paired pre- and post-survey responses were available for review and analysis. While there were two PCT survey participants, the same technical error occurred for one of the PCT responses. Therefore, two PCT pre-surveys were obtained, but only one PCT post-survey response was available for analysis.

The surveys were open for participant response for seven days after the presentation, as survey links were sent to unit staff via their professional work email accounts. As many nurses reported that they do not access work emails at home, seven days were deemed sufficient by this author to provide opportunities for willing participants to be on-site for shifts and access their work email accounts.

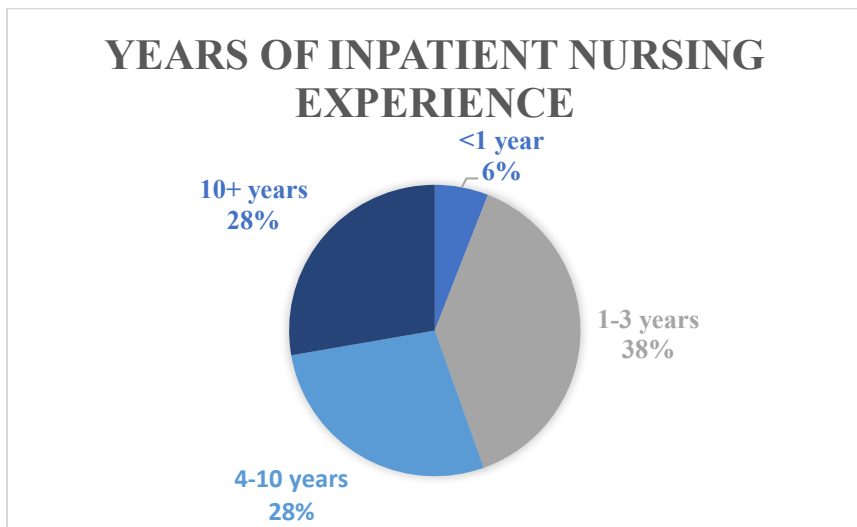
### **Nursing Participant Demographics**

Demographic data was collected from pre-survey questions. Of the 18 survey participants, one (6%) had less than one year of inpatient nursing experience, seven (38%) had between one and three years of inpatient nursing experience, five (28%) had between four and ten years of inpatient nursing experience, and five (28%) had greater than ten years of inpatient nursing experience (Figure 1). Three (17%) had less than one year of pediatric nursing experience, six (33%) had between one and three years of pediatric nursing experience, four

(22%) had between four and ten years of pediatric nursing experience, and five (28%) had greater than ten years of pediatric nursing experience (Figure 2).

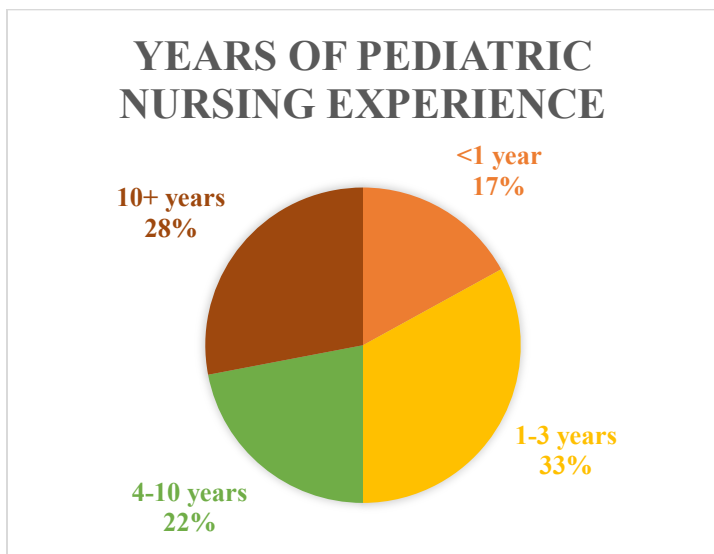
**Figure 1**

*Participant Years of Inpatient Nursing Experience*



**Figure 2**

*Participant Years of Pediatric Nursing Experience*

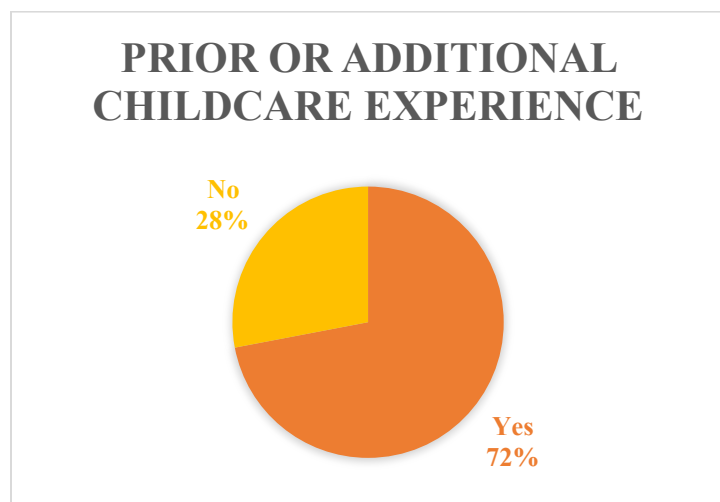


When asked about childcare experience before or in addition to healthcare employment, 13 (72%) participants answered “yes,” and five (28%) participants answered “no” (Figure 3).

When asked if that other childcare experience included having children of their own, seven (39%) participants answered “yes,” and 11 (61%) participants answered “no” (Figure 4).

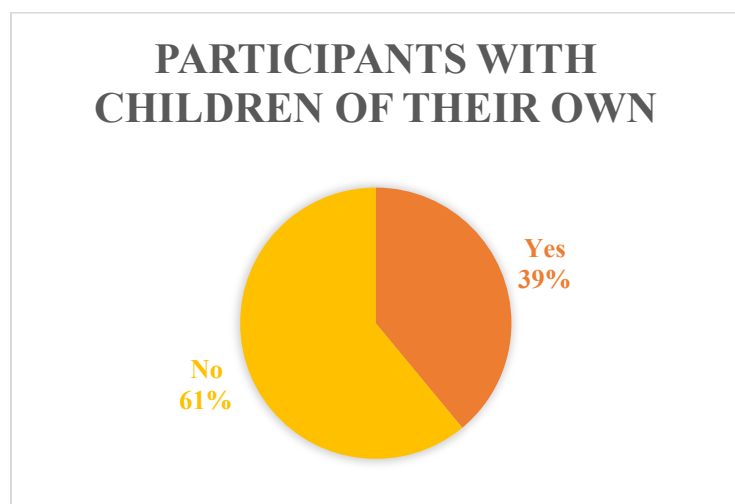
**Figure 3**

*RN Participants with Prior or Additional Experiences with Childcare*



**Figure 4**

*RN Participants with Children of Their Own*

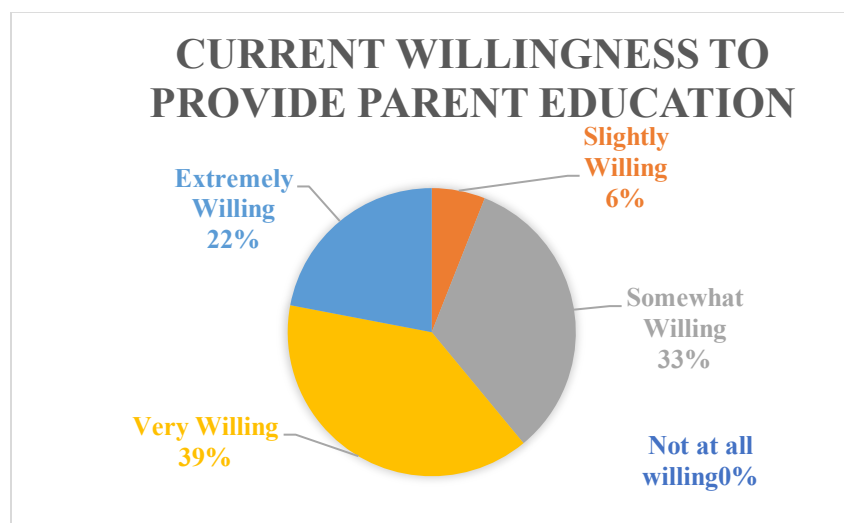


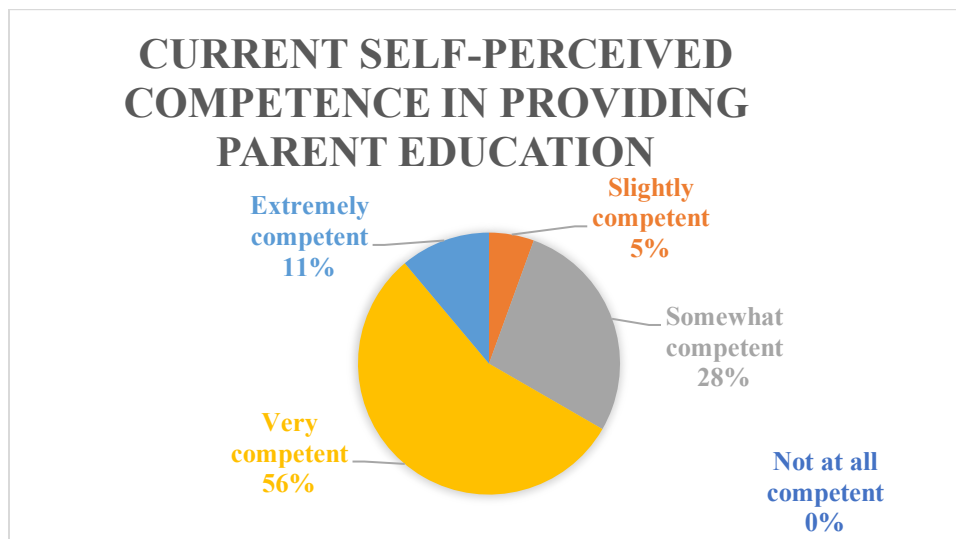
## RN Pre-Survey Quantitative Results

Pre-survey questions focused on participants' willingness to provide parent education at the bedside and their self-perceived competence in providing that education before the educational presentation. For ranking their pre-intervention willingness to provide parent education (Figure 5), one (6%) participant responded with "slightly willing," six (33%) of participants said they were "somewhat willing," seven (39%) of participants said they were "very willing," and four (22%) of participants said they were "extremely willing." No participants responded that they were "not at all willing" to provide parent education. For ranking their pre-intervention self-perceived competence at providing parent education and infant care (Figure 6), one (6%) participant responded with slightly competent, five (28%) of participants responded with somewhat competent, 10 (56%) of participants responded with "very competent," and two (11%) of participants responded with "extremely competent." No participants answered that they were "not at all competent."

**Figure 5**

*RN Pre-Intervention Willingness to Provide Parent Education*



**Figure 6***RN Pre-Intervention Self-Perceived Competence of Parent Education***RN Post-Survey Quantitative Results**

Post-survey quantitative questions focused on self-perceived knowledge of the discussed topics before and after the intervention, the relevance of the intervention topics to bedside practices, and the intent to implement the discussed topics into bedside practices.

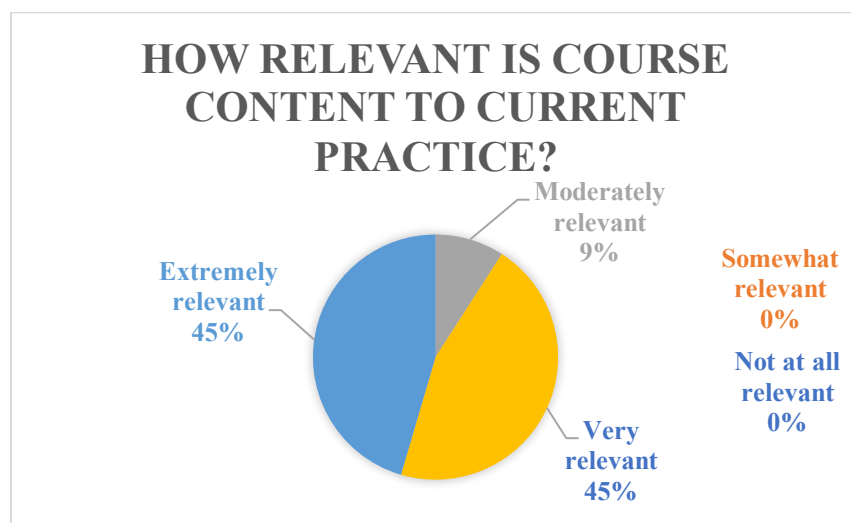
In response to the post-survey question about how relevant the course content is to their current practices as a pediatric nurse (Figure 7), one (9%) participant answered “moderately relevant,” five (45%) participants answered “very relevant,” and five (45%) participants answered “extremely relevant.”

In response to the post-survey question about whether participants had the intention to apply what they learned in the presentation to their current bedside practices (Figure 8), two (18%) of participants answered “probably yes,” and nine (82%) participants answered “definitely yes.”

Two post-survey questions asked participants to rate their knowledge of or skill in presentation topics before and after the presentation, measuring their self-perceived competency. For rating their understanding of topics before the presentation, one participant (9%) answered “slightly knowledgeable,” seven participants (64%) answered “moderately knowledgeable,” and three participants (27%) answered “very knowledgeable.” For rating their knowledge of topics after the presentation (Figure 10), one participant (9%) answered “moderately knowledgeable,” nine participants (82%) answered “very knowledgeable,” and one participant (9%) answered “extremely knowledgeable.” Table 2 displays each individual’s pre- and post-presentation knowledge rating and score difference. For scoring purposes, each answer option was given a number. “Not at all knowledgeable” was one point, “slightly knowledgeable” was two points, “moderately knowledgeable” was three points, “very knowledgeable” was four points, and “extremely knowledgeable” was five points.

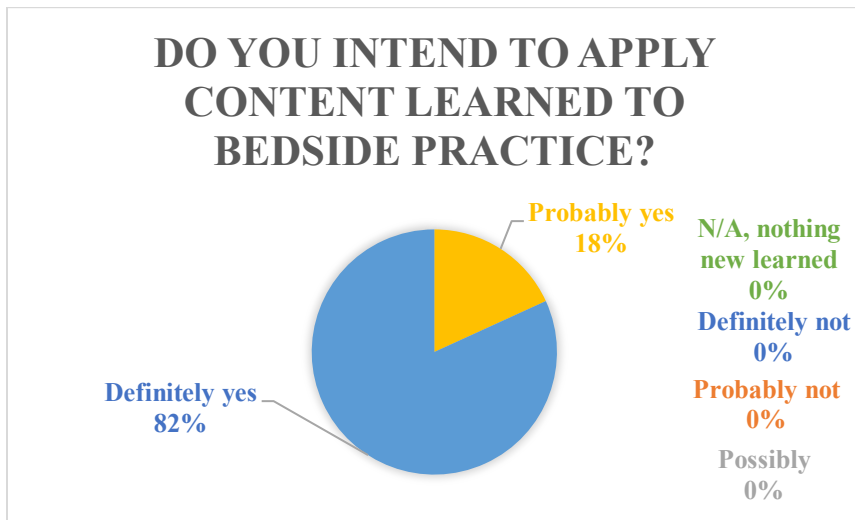
### Figure 7

*RN Post-Survey Perception of Relevance of Intervention to Current Practice*



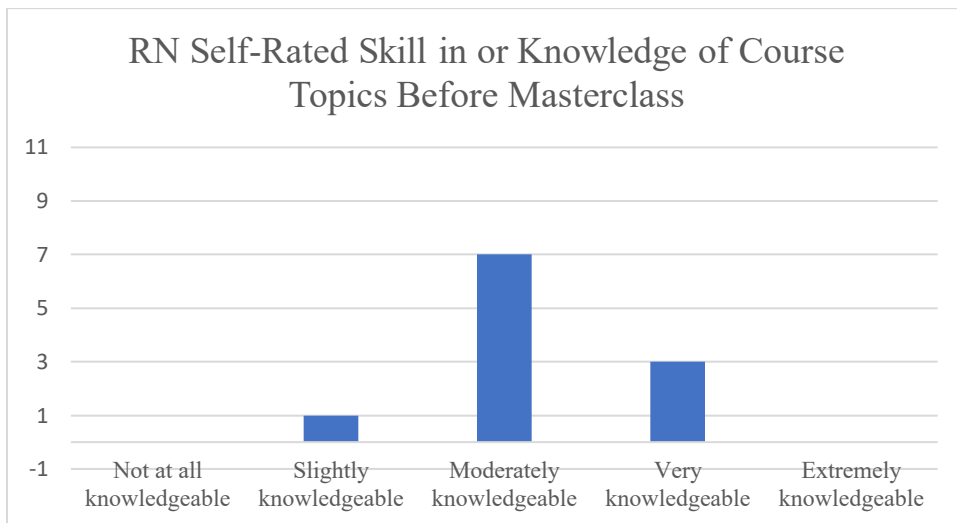
**Figure 8**

*RN Post-Survey Participant Intent to Apply Intervention Content to Bedside Practices*



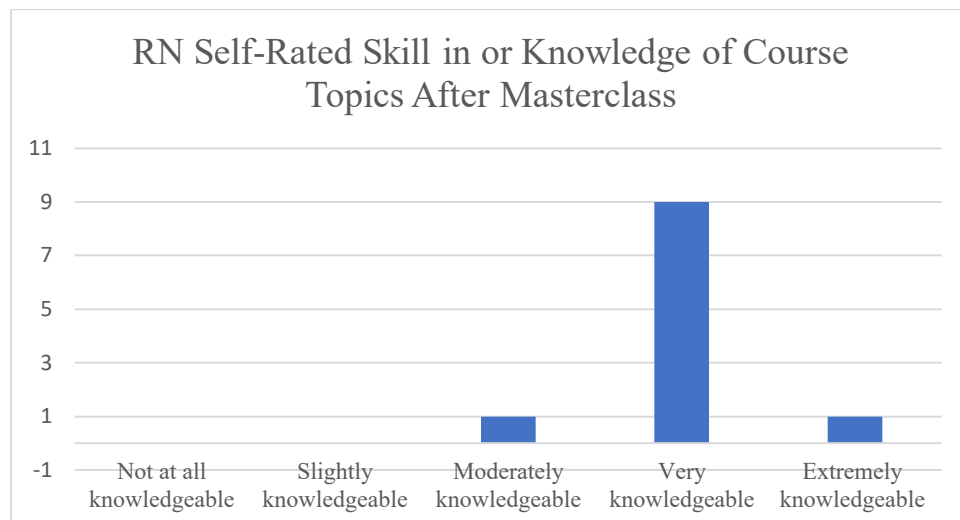
**Figure 9**

*RN Self-Ranking of Knowledge of Presentation Content Before the Intervention*



**Figure 10**

*RN Self-Ranking of Knowledge of Presentation Content After the Intervention*

**Table 2**

*Individual RN Responses of Self-Ranking of Knowledge or Skill Before and After Intervention*

Participant	Pre-Ranking	Post-Ranking	Difference (Pre to Post)
1	3	4	+1
2	3	4	+1
3	3	4	+1
4	4	5	+1
5	3	4	+1
6	3	4	+1
7	4	4	0
8	4	4	0
9	3	4	+1
10	3	4	+1
11	2	3	+1

### **RN Post-Survey Qualitative Results**

The post-survey included one question related to factors that might keep participants from implementing content into their bedside practices. The most common answers to this

question were “I will not be provided opportunities to use what I learned” and “I will not have the time to apply what I learned.”

Two write-in questions provided participants with the opportunity to express their overall feedback on whether nonacute pediatric topics were beneficial to inpatient pediatric practices and, if so, what other nonacute topics would be helpful to their practice. For overall feedback on the beneficence of content to inpatient pediatric nurses, one participant responded, “It’s extremely beneficial to continue education on nonacute care pediatrics because RNs need to go back to the basics. It will also help to improve assessment skills.” Two participants provided feedback on what other nonacute care topics they believe would be beneficial to their bedside practices. Their answers included “breastfeeding, pain control, and communication techniques for behavioral health patients” and “vaccine schedule overview would be helpful.”

### **Discussion of Patient Care Technician Results**

Two respondents completed the PCT survey; however, the same error in displaying post-survey data in the RN survey also occurred for one of the participants in the PCT survey. For pre-survey data, one participant had four to ten years of experience in healthcare and four to ten years of experience specific to pediatric healthcare settings. The second participant had four to ten years of experience in healthcare, with one to three years of experience specifically in pediatric healthcare settings. Both respondents reported having previous childcare experience, either before or in addition to their employment in healthcare, and both indicated that they do not have children of their own.

From the one PCT post-survey, responses included that they perceive course content as “extremely relevant” to their current work as a pediatric PCT, they “definitely” intend to apply

what they learned in the presentation to their current bedside practices, and rated their knowledge of topics as “moderately knowledgeable” pre-intervention and “extremely knowledgeable” post-intervention.

For free-text questions, the participant’s summarized response to the overall opinion of the beneficence of content to inpatient pediatric PCTs was “education given during CNA courses and training is very basic and general, and I feel that this needs to be more in-depth to accommodate the pediatric healthcare population [...] I feel that this knowledge is the foundation when someone has a child through their pediatrician, but for someone like me who works with kids but is not a parent, I do not know these exact milestones.” For other topics they believe would be beneficial to their practices, they answered with developmental milestones of different age groups and therapeutic communication techniques for mental health patients.

### **Analysis of Results**

Data from pre- and post-survey Likert questions were analyzed using descriptive statistics and measures of central tendency. Percentage analysis of responses was calculated based on answers assessing self-perceived competency, the relevance of content to their bedside practices, and the intent to apply new knowledge and concepts to their bedside practices.

For the assessment of changes in self-perceived competency, 11 paired pre- and post-responses were available. Differences between pre- and post-scores showed that nine participants reported a one-point increase in self-perceived competency, while two participants reported no change. No participants reported a decrease in self-perceived competency. The median self-rating of competency before the intervention was 3.18, which increased to 4 after the intervention, reflecting a 26% improvement in self-perceived competency. Although the small

sample size precludes the determination of statistical significance, the observed increase in median score suggests a positive trend in RN self-perceived competency associated with the educational intervention.

When asked about the relevance of the intervention content to current practice, 91% of participants rated the content as either “very relevant” (45%) or “extremely relevant” (45%), with one participant (9%) rating it as “moderately relevant.” When asked about intent to apply the content to bedside practice, 100% of participants reported a high level of intent, with 82% selecting “definitely yes” and 18% selecting “probably yes”. These findings demonstrate strong endorsement of the educational session’s content applicability to clinical practice.

### **Discussion**

The findings indicate that the education intervention improved the self-rated competency of inpatient pediatric nurses in infant health promotion topics. Nearly all participants demonstrated improvement in knowledge or skill, and those who did not improve still rated themselves at higher levels of competence both before and after the intervention. This supports the existing literature, which shows that focused, unit-based education enhances knowledge acquisition and clinical confidence (Mlambo et al., 2021).

Beyond the statistical results, nurses also reported high relevance of the session to their current practice, with 91% rating the content as “very” or “extremely” relevant. Additionally, all participants expressed some degree of intent to apply the content learned to their bedside practices, with 82% selecting “definitely yes.” This highlights that the session not only enhanced competency through unit-based education but also increased nurses’ motivation to integrate health promotion education into their practice as inpatient pediatric nurses.

Taken together, these findings answer the PICO question: Does providing education sessions on newborn/infant care and health promotion to inpatient RNs, compared to education based on acute care topics only, have a positive impact on their self-perceived competency in providing care to infants and improve their intent to implement parent education into their bedside practice? The data demonstrates that the intervention positively impacted nurses' self-perceived competency (as shown by a 26% improvement in self-perceived knowledge or skill ratings) and that most nurses surveyed endorsed a strong intent to implement learned information into their bedside practices. These findings affirm that supplementing acute care-focused education with structured health promotion sessions can enhance competence, confidence, and willingness to participate in bedside parent education, thereby addressing gaps identified in the background and literature review.

Furthermore, qualitative feedback highlighted participants' desire for additional non-acute pediatric content, including breastfeeding guidance, pain management strategies, development in other age groups, and vaccine education. This reinforces that while acute care knowledge is essential for inpatient pediatric practice, nurses recognize the value of health promotion education in their work and see opportunities for its expansion.

### **Alignment with DNP Essentials**

This project directly aligns with the DNP Essentials outline by the American Association of Nursing (AACN, 2006). By identifying gaps in pediatric nurses' preparation and developing an evidence-based educational intervention, the project demonstrates integration of scientific underpinning for practice (Essential I) and systems-level leadership to improve health outcomes (Essential II). The use of Peplau's Cycle of Inquiry and the PDSA model reflects the application

of clinical scholarship and analytical methods for evidence-based practice (Essential III), while stakeholder collaboration highlights competencies in interprofessional collaboration (Essential VI). Additionally, the project's focus on improving parental education and infant health promotion addresses population health needs and supports the advancement of quality improvement at the organizational level (Essentials VII and VIII). Together, these elements illustrate how the intervention supports the DNP role in translating knowledge into practice, strengthening the pediatric nursing workforce, and promoting better health outcomes for infants and their families.

### **Limitations**

Several limitations should be acknowledged. The small sample size, with only 11 paired pre- and post-survey results available, limits the generalizability of the findings. A technical error in the survey platform prevented analysis of seven post-surveys, further reducing the dataset. The use of self-reported measures introduces the potential for response bias. This data also does not capture long-term retention of information or actual changes in bedside practice. Additionally, the project was implemented in a single pediatric/PICU unit within a non-freestanding pediatric hospital, which may limit applicability to other settings with different onboarding and continuing education practices.

Although PCTs were invited to participate, their results were not included in the data analysis as they relate to the PICO question due to differences in scope of practice and the limited number of responses. Only two PCTs completed surveys, and one lacked post-survey data because of the same technical issues experienced in the RN surveys. However, their feedback suggested that the educational session was highly relevant and beneficial to their role,

highlighting a potential missed opportunity to more fully assess the intervention's impact on this important group of healthcare workers. This represents a limitation, as PCTs play a significant role in infant care at the bedside and could potentially benefit from more thorough continuing education as well.

### **Sustainability**

A key consideration for this project is the sustainability of both its outcomes and the evaluation process. While the post-survey results demonstrated improvement in nurses' self-perceived competency, these findings capture only immediate changes following the intervention. To ensure the sustainability of measurement, future evaluations should include longitudinal follow-up surveys administered weeks or months after the intervention to assess knowledge retention, ongoing self-perceived competency, and the extent to which nurses continue to apply the content in their daily practice, as well as the factors that may have inhibited them from doing so. Repeated measurement over time would provide valuable insight into whether the educational intervention leads to sustainable changes, rather than short-term knowledge gains.

Sustainability of the results themselves also warrants attention. In addition to improvements in knowledge or skill (competence), all participants reported some degree of intention to implement new learning into their bedside practice, with most indicating a strong intention. This intention represents an essential precursor to sustained behavioral change. To support translation from intent into practice, strategies such as reinforcing education during staff meetings, encouraging peer discussion of real-world application, and incorporating follow-up reflection opportunities may strengthen the connection between learning and practice change.

Embedding the educational session into unit-based onboarding for newly graduated and new-to-pediatrics nurses, and offering it as part of ongoing continuing education, would also help ensure that the observed improvements in competence and intent to implement extend beyond a single cycle of education. Incorporating periodic refresher modules or updates on health promotion topics could reinforce knowledge and mitigate knowledge or skill decay. Sustained engagement of unit educators is essential to maintain relevance, particularly as guidelines and information evolve.

Finally, sustainability may be further strengthened by expanding educational ownership among staff nurses, such as by developing peer-led sessions or designating “infant care champions” on the unit to act as a resource, model best practices, and encourage bedside implementation. These strategies can foster a culture of continuous learning and accountability, ultimately supporting long-term integration of health promotion education into inpatient pediatric care.

The guiding models for this project also provide a framework for sustainability. The PDSA cycle supports iterative repetition of this intervention, allowing ongoing refinement based on expanding units, staff feedback, changing clinical priorities, or new evidence-based practices. In this way, sustainability can be built into the unit’s continuous improvement processes. Similarly, Peplau’s Cycle of Inquiry emphasizes reflection and transformation of nursing practice through the integration of evidence-based knowledge into daily practices. By encouraging staff to reflect on their evolving competence and practice after each educational session, the intervention could become a continuous cycle of inquiry and professional growth, rather than a one-time learning event.

## **Potential for Future Research**

The results of this project suggest several directions for further study. First, additional research is warranted to explore the educational needs and outcomes for inpatient PCTs. Although there was only post-survey data from one participant, their qualitative feedback indicated a strong interest in foundational pediatric content, suggesting that future projects could formally assess the impact of PCT-tailored educational sessions on pediatric care knowledge, confidence, and care practices.

Second, expanding this type of intervention to other departments caring for infants and children, such as the NICU, pediatric emergency department, and postpartum units, would help determine whether similar educational sessions are equally beneficial across different practice environments and conditions. Each of these units provides unique opportunities for parent education and health promotion, and evaluating the intervention across settings could support broader institutional adoption.

Third, longitudinal evaluation is needed to assess the sustainability of self-perceived competency gains and practice change. Re-surveying participating nurses weeks or months after an educational intervention would help determine whether information was retained, whether nurses successfully integrated the content into their bedside practice, perceptions of actual improvements in their bedside practices, and whether barriers emerged that limited implementation.

Finally, future research could incorporate the perspective of the parents of admitted pediatric patients, who are also potential stakeholders in this project. Surveying parents post-discharge, both before and after the implementation of this intervention, could provide valuable

insight into whether enhanced nurse education in health promotion topics translates into more effective bedside teaching, improvements in parental preparedness for caring for their infants, and higher care satisfaction scores/reports. Capturing parent perspectives would also align with the project's overarching goal of improving infant health outcomes through strengthened parent education.

## **Conclusion**

### **Implications for Practice**

This project demonstrates that targeted, evidence-based educational interventions can improve pediatric nurses' self-perceived competence in infant health promotion and encourage adoption of best practices and parent education at the bedside. With a large proportion of nurses expressing both an intent to implement the content into practice and recognition of its relevance, this intervention has strong potential for practical impact. These findings support the integration of pediatric non-acute/health promotion content into staff onboarding and continuing education. Expanding similar education across units that care for pediatric populations and embedding content into orientation education may help address the educational gaps created by limited pediatric health promotion training in undergraduate nursing curricula. Ultimately, such interventions could enhance parental preparedness and improve infant health outcomes by ensuring that nurses are well-equipped to provide consistent, accurate guidance to families. While further research with larger samples, different organizations, and longitudinal data tracking is needed, the results highlight the importance of equipping inpatient pediatric nurses with foundational health promotion knowledge to strengthen their role in supporting parents and improving pediatric outcomes.

**Appendix A**  
**Literature Review Grid**

Author(s) & Year	Title & Source	Study Design/Publishing Format and Sample	Main Outcomes of Findings	Relevance to Project
Angier et al. (2022)	Association of parent preventive care with their child's recommended well-child visits in <i>Academic Pediatrics</i>	Quantitative study; analyzed parent-child preventative care linkages	There is a large gap in utilization of pediatric primary care, due to a variety of factors. Missing out on recommended well child visits creates gaps in opportunities for families to learn health promotion skills for their children.	Highlights how inpatient admissions are often one of the only opportunities parents have to receive basic care information and assistance. Supports the importance of parent education and health promotion in all healthcare settings, reinforcing the need for competent nurse-led education
Betz (2021)	Pediatric nursing education: Trends, challenges and aspirations in <i>Journal of Pediatric Nursing</i>	Literature review and peer reviewed editorial	Discusses the gaps in pediatric nursing and experience within undergraduate and professional programs	Reinforces the need for education in the full spectrum of pediatric topics, both primary and acute care, in unit-based education for registered nurses in order to bridge the gaps left by undergrad program's lack of focus on pediatric care.
Chesney et al. (2021)  Published by The Institute of Pediatric Nursing's Education Task Force	<i>Safeguarding the Future of Pediatric Care: Challenges and Opportunities for Educating and Expanding the Pediatric Nursing Workforce</i>	Literature review/synthesis and White Paper	Highlights challenges in pediatric nursing workforce and education gaps related to pediatric basics and care in undergraduate and professional degree programs	Emphasizes the importance of continuing education of all pediatric topics for pediatric nurses (especially new grads and new to peds experienced nurses), along with structured support. The low percentage of content related to health promotion and pediatric care reflects how these topics are low priorities in nursing education and, therefore, highlights the need to teach and expand upon these topics within unit based

Author(s) & Year	Title & Source	Study Design/Publishing Format and Sample	Main Outcomes of Findings	Relevance to Project
				education once nurses are hired onto units that care for pediatric populations
Cleveland Clinic (2024)	<i>New Approach to NICU Parents Education Delivers Widespread Benefits</i>	Case study on newly developed NICU parent education process; incorporating interview data	Cleveland Clinic has begun utilizing e-learning modules for the parents to NICU babies approaching discharge dates. These e-modules reiterate education taught in person by nurses and interdisciplinary staff, and then is reinforced during encounters with staff.	Highlights how parents often need multiple opportunities of learning to retain information, which supports how reiterating information during inpatient admissions can support parents' development of health promotional skills developed during primary care visits.
Mansourian et al. (2020)	Assessment of educational performance of nurses in neonatal intensive care unit from parents' perspective in <i>Journal of Education and Health Promotion</i>	Cross-sectional survey; assessed parental perceptions of NICU nurses' parent education	Parents rated nurse-led education as critical but reported inconsistencies in the quality of information provided	Highlights the need for standardized nurse education to ensure consistency and competency in parent education in supporting newborn health promotion and development support
National Council of State Boards of Nursing (2023)	<i>NCLEX-RN Test Plan</i>	Guideline document for nursing competencies	Provides a breakdown of content on the licensing exam for registered nurses in the United States; identifies core competencies expected of newly graduated nurses	Most undergraduate and professional nursing programs are structured around the content and competencies tested on within the NCLEX exam. The low percentage of content focused on health promotion and pediatrics in general highlights that these are subjects that are not discussed in depth during nursing school education and therefore must be supplemented in continuing education for nurses.

**Appendix B**  
**Site Approval/Authorization**



Tucson Medical Center  
5301 E Grant Rd.  
Tucson, AZ, 85712

Date June 25, 2025

Human Subjects Protection Program  
The University of Arizona  
845 N Park Ave., Suite 537A  
Tucson, AZ 85719

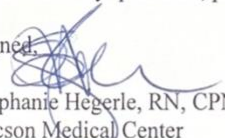
Please note that Ms. Zoe Dill, University of Arizona Doctor of Nursing Practice student, has permission of the Pediatric Unit at Tucson Medical Center to conduct a quality improvement project at our facility for her project, "Enhancing Inpatient Pediatric Nurses' Competence in Infant Care and Parental Guidance Through Educational Interventions"

Ms. Dill will deliver an education presentation and then conduct a survey of nurses and patient care technicians at Tucson Medical Center. She will recruit nurses through email, a flyer in the breakroom, and unit announcements. The email and flyer will provide a description of the project, what they will be asked to do, and the time involved. Ms. Dill's activities will be completed by September 1, 2025.

Ms. Dill has agreed to provide to my office a copy of the University of Arizona Determination before she recruits participants. She will also present aggregate results to the educators on this unit.

If there are any questions, please contact my office.

Signed

  
Stephanie Hegerle, RN, CPN, BSN  
Tucson Medical Center  
Pediatric/PICU CNL, Education Coordinator

Updated 11/2024

5301 East Grant Road • Tucson, Arizona 85712 • (520) 327-5461

LT-002



September 8<sup>th</sup>, 2025

Human Subjects Protection Program  
The University of Arizona  
845 N Park Ave., Suite 537A  
Tucson, AZ 85719

Please note that Ms. Zoe Dill, University of Arizona Doctor of Nursing Practice student, has permission from the Tucson Medical Center Quality Department to conduct a quality improvement project at our facility for her project, "Enhancing Inpatient Pediatric Nurses' Competence in Infant Care and Parental Guidance Through Educational Interventions". The Quality Department completed a review of her abstract and methods and has given her permission to move forward with her project. Furthermore, she received approval for her initiative from the Chief Nursing Officer of Women's and Children's Services at Tucson Medical Center, Nicole Cole, DNP, ARNP-C, CCRN.

Ms. Dill will deliver an education presentation and then conduct a survey of nurses and patient care technicians from the pediatric/PICU department at Tucson Medical Center. She will recruit nurses through email, a flyer in the breakroom, and unit announcements. The email and flyer will provide a description of the project, what they will be asked to do, and the time involved. Ms. Dill's activities will be completed by September 30<sup>th</sup>, 2025.

Ms. Dill has provided to my office and the Quality Department a copy of the University of Arizona IRB Determination Letter before she recruits participants. She will also present aggregate results to the educators on this unit and Quality Department, if requested.

If there are any questions, please contact my office.

Signed,

Kelsey Camps, MPH  
Quality Manager  
Office: (520)-324-6040  
[Kelsey.Camps@tmcaz.com](mailto:Kelsey.Camps@tmcaz.com)

**Appendix C**

**Recruitment Materials (Flyer, Email Recruitment Announcement and Survey Distribution  
by Project Author, Email Recruitment Announcement by Unit Educator)**



## **Master Class Presentation:**

*“Diapers, Diet, and Development: Infant Education 101”*



By:

Zoe Dill, RN, BSN, CPN

Date and Time TBD

Peds/PICU Conference Room and Teams

Optional Pre- and Post-Survey Participation Requested

## Email Recruitment Announcement and Survey Distribution by Project Author

Delete Archive Move to Reply Reply all Forward Share to Teams Zoom Pin / Unpin

**Masterclass Information**

Zoe Dill  
To: Pediatric Staff, PICU Staff  
Cc: Luis Murillo, Stephanie Hegerle  
Mon 9/1/2025 12:36 PM

Retention: TMC - Email Retention Policy (7 years) Expires: Tue 7/20/2032 1:03 PM

Dill DNP Project Site Disclosu...  
27 KB

Hello everyone!

As you guys have seen from Luis' email and announcements, I will be presenting a Masterclass presentation titled "Diapers, Diet, and Development: *Infant Care 101*" this Wednesday September 3<sup>rd</sup> at 0800-0900. This presentation is a part of a quality improvement initiative project for my graduate degree requirements through the University of Arizona. I have surveys listed below that will help me in analyzing whether or not this type of content is beneficial to the practice of inpatient pediatric RNs/PCTs. As always, attending this Masterclass is completely optional, but I verified with Luis and Stephanie that it will count as a part of our annual competencies. The surveys are also completely optional/anonymous and you are more than welcome to still attend whether or not you decide to complete the questions. However, for the purposes of my project, survey responses would be greatly appreciated! You can complete the pre-survey (page 1) at any time before the Masterclass and then I will have the post-survey (page 2) open through the rest of the day on September 3<sup>rd</sup>. They are submitted together, so I recommend leaving it open as an internet tab on your computer or phone once you complete the pre-survey until you're done with the post-survey questions on page 2 and can submit. I have included a document that explains more about my project and the specifics of your anonymous involvement, should you choose to participate. Please let me know if you have any trouble with the surveys or have any questions.

I hope that I will see you all for this presentation and that you find it helpful. Thank you guys in advance for your time and support! I truly cannot express my appreciation enough!


**Pre- and Post Survey Link for Nurses:**

[https://u.arizona.co1.qualtrics.com/ifs/form/SV\\_4O706xWUjd67Hmu](https://u.arizona.co1.qualtrics.com/ifs/form/SV_4O706xWUjd67Hmu)

**Qualtrics Survey | Qualtrics Experience Management**


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u.arizona.co1.qualtrics.com



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**Masterclass Information**




**Pre- and Post Survey Link for PCTs:**

[https://u.arizona.co1.qualtrics.com/ifs/form/SV\\_ek8BcmmW7slRbOW](https://u.arizona.co1.qualtrics.com/ifs/form/SV_ek8BcmmW7slRbOW)

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The most powerful, simple and trusted way to gather experience data. Start your journey to experience management and try a free account today.

u.arizona.co1.qualtrics.com




Please let me know if you have any questions and thank you again,  
Zoe Dill

Reply Reply all Forward

## Email Recruitment Announcement by Unit Educator




Delete Archive Move to Reply Reply all Forward Share to Teams Zoom Quick steps Read / Unread Categorize Flag / Unflag Pin / Unpin

Join Us for Zoe Dill's Master Class Presentation – Sept. 3

 Luis Murillo  
 To: Pediatrics Leadership; Pediatric Staff; PICU Staff; Womens Division Float Pool; Pediatric Emergency Dept-Staff; @ Zoe Dill; Diane Hill  
 Wed 8/6/2025 2:54 PM

**High importance**

Retention: TMC - Email Retention Policy (7 years) Expires: Wed 8/4/2032 2:54 PM

 44 KB  27 KB  1 MB

3 attachments (2 MB) Save all to OneDrive - Tucson Medical Center Download all

Hi Team,

Please join us in supporting one of our own, Zoe Dill, as she presents her Master Class titled **"Diapers, Diet, and Development: Infant Education 101."** This presentation is part of Zoe's final DNP project as she nears the completion of her studies at the University of Arizona. Please note this Master Class is mandatory for the new graduates and those who recently transferred to pediatrics. Attendance is highly encouraged for the rest of the pediatric team: **Four (4) Master Classes will be required as part of your competencies for 2025.** Thank you!

**Date:** September 3  
**Time:** 0800-0900  
**Location:** PICU Conference Room or via Microsoft Teams

**"Optional pre- and post-survey requested, to be sent out by Zoe via email before the Masterclass"**

Let's come together to support Zoe and learn from her insightful work. We hope to see you there!

Thank you,

Zoe and Luis

**Microsoft Teams** [Need help?](#)

[Join the meeting now](#)

Meeting ID: 279 389 884 155 3  
 Passcode: x6NS7uq9

**Appendix D**  
**Informed Consent Disclosure**

**Enhancing Inpatient Pediatric Nurses' Competence in Infant Care and Parental Guidance  
Through Educational Interventions  
Zoe Dill**

The purpose of this project is to assess if adding education on health promotion and nonacute-based information on pediatrics populations can improve inpatient nurses' competency and intent to change practice regarding providing care and parent education.

If you choose to take part in this project, you will be asked to attend a 45-60 minute Masterclass presentation regarding a few topics on infant care and health promotion and then respond to a short survey. It will take approximately 5-10 minutes to complete the survey. There are no foreseeable risks associated with participating in this project. You will receive no immediate benefit from your participation. Your responses are anonymous. Your name will not be collected or linked to your answers.

If you choose to participate in the project, participation is voluntary, refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled. You may withdraw at any time from the project. In addition, you may skip any question that you choose not to answer. By participating, you do not give up any personal legal rights you may have as a participant in this project.

For questions, concerns, or complaints about the project, you may call Zoe Dill, RN, BSN, CPN, at 480-567-8119 or [zjdill@arizona.edu](mailto:zjdill@arizona.edu)

You agree to have your responses used for this project.

**Appendix E**  
**Educational Session PowerPoint**

# Diapers, Diet, and Development: Infant Education 101

By Zoe Dill, RN, BSN, CPN

## Learning Objectives

- Understand general nutritional needs in infants by age (calories, volumes and frequencies, vitamins)
- Identify feeding and hunger cues in infants
- Understand general guidelines for feeding transitions by age
- Identify elimination expectations by age and recognize concerns
- Understand the major developmental milestones expected in infancy
- Recognize red flags in infant development

## Expected Weight Gain in Healthy Infants

- Normal for term infants to lose 5-10% of their birth weight
- Ideal weight gain by age
  - Ages 0-3 months: 20-30g (or 0.7-1oz) per day
  - Ages 3-9 months: 15-22g (or 0.5-0.8oz) per day
  - Ages 9-12 months: 6-11g (or 0.2-0.4oz) per day

(Anderson et al., 2024)

## General Nutritional Needs of Healthy Infants

- Newborn-6 months
  - 108 kcal/kg/day
  - 2.2 g of protein/kg/day
- 6-12 months
  - 98 kcal/kg/day
  - 1.6 g of protein/kg/day

(Anderson et al., 2024)

## Frequency and Amount of Feedings (Formula)

Age	Volume per Feed	Feed Frequency	Minimum Amount/Volume of Feeds per 24hours
1 <sup>st</sup> days of life	0.5-2oz (15-60mL)	1-3 hours	360-480mL, 8-12 feeds per day
1 <sup>st</sup> month	2-4 oz (60-120mL)	2 to 4 hours	480-630mL, 6-8 feeds per day
2 <sup>nd</sup> month	4-5 oz (120-150mL)	3 to 4 hours, with one stretch overnight of up to 5-6 hours	630-960mL, 6-8 feeds per day
3 <sup>rd</sup> to 5 <sup>th</sup> month	6-7 oz (180-210mL)	4 to 5 hours	780-1080mL, 5-6 feeds per day
6 <sup>th</sup> to 8 <sup>th</sup> month	7-8oz (210-240mL)		720 to 960 mL
8 <sup>th</sup> to 10 <sup>th</sup> month	7-8oz (210-240mL)		480 to 960mL
10 <sup>th</sup> to 12 <sup>th</sup> month	7-8oz (210-240mL)		360 to 720 mL

(Hagan et al., 2017; Anderson et al., 2024)

## Breastmilk

- Breastmilk usually comes in by day 2-4 of life
- Newborns should be breastfeeding at least 8-12 times per day
- At about 1 month of age
  - Should feed every 1-3 hours in the daytime,
  - Every 3 hours at night and one longer 4- to 5- hour stretch overnight between feedings
- By 3 months of age
  - Should generally be eating every 2-3 hours during the day
  - Can go 5-6 hours overnight as long as they're eating 8-12 times in a 24-hour period

(Hagan et al., 2017; Anderson et al., 2024)

## Newborn Stomach Capacity



La Leche  
League  
Canada, 2022

## Vitamins

- Most vitamin and mineral needs are supplied through breastmilk and *correctly prepared* infant formula
- Vitamin D
  - Poorly passed from mother to infant via breastmilk
  - Supplementation recommended for breastfed or partially breastfed infants through 12 months of age, at which point they can transition to vitamin D fortified cow's milk
- Iron
  - Infants have a reservoir of maternal iron stores through about 4 months of age
  - Early iron deficiency can result in cognitive and motor delays
  - Cow's milk before 12 months=increased risk of iron-deficiency anemia
  - Supplementation recommended for term infants at 4 months of age, recommended for preterm infants by 1 month of age
- B12
  - Supplementation recommended for breastfed infant of mothers who are vegan or deficient in B12

(Anderson et al., 2024)

## Diet Transitions

- Newborns-6months: exclusively breastmilk or formula
- Can take up to 8oz of water per day at 6 months old, no free water before that
- Can start solids at six months, if developmentally ready
  - Purees and solids are complementary to diet at this point, breastmilk/formula should still be primary nutrition source through 12 months of age
- Cow's milk can be introduced at 12 months
- By 12 months, should be taking 3 meals a day plus snacks
- No honey before 12 months

(Hagan et al., 2017)

## Feeding/Hunger Cue

- Crying is a late hunger cue and can cause poorer feeding
- Ways to stimulate baby for feeds
  - Rocking, patting, touch, undressing and unswaddling
- Cues in newborns
  - Rooting, sucking, fussiness, grimacing, hand movements
- Cues in young infants
  - Hand-to-mouth movements, grimacing, lip smacking
- Cues in older infants
  - Excited arm and leg movements, opening mouth and moving forward as the utensil or bottle approaches, and swiping food towards their mouth

(Hagan et al., 2017)

## Fullness Cues

- Becoming fussy during feeding
- Relaxing arms and/or hands
- Slowing the pace of eating
- Turning away
- Ceasing sucking
- Spitting out and refusing the nipple

(Hagan et al., 2017)

## Voiding Patterns

- Newborns should urinate for the first time by 24 hours old
- Infants should have at least 6 diapers per day, 6-8 diapers per day is expected by the time they're 4-5 days old
- Anywhere from 6-20 wet diapers a day in infants
- Volume increases and frequency decreases as they get older and their kidneys get better at concentrating urine

(Hagan et al., 2017; Anderson et al., 2024)

## Age-adjusted Bladder Capacity

- Expected urine excretion is 1-2mL/kg/hour
- Age-adjusted bladder capacity
  - Infants <1
    - Capacity (mL)= 7 x weight(kg)
    - A newborn's bladder has a predicted capacity of 20-30mL
  - Older children
    - Capacity (mL)= (2+age in years) x 30

(Fairhurt et al., 1991; Kitchens et al., 2007)

## Stooling Patterns

- Newborns should pass first meconium stool by 48 hours old
- Stool should transition from meconium to yellow, seedy stool around day 3-5
- 0-6 months
  - 2 to 4 bowel movements/day
  - Breastfed infants may stool after every feed or go 5 to 7 days with no stool
  - However, if breastfed babies <1 month aren't stooling regularly, it could be a sign of insufficient intake
- 6-12 months
  - 1.8 stools/day

(Anderson et al., 2024; Hagan et al., 2017)

## Stool Descriptions

- Breastfed infant stool should be loose, seedy, sticky, light yellow, or curdy, with a “sour” smell
- Formula-fed infants sometimes have darker, firmer, and smellier stools
  - Can change based on type of formula. Cow’s milk or soy formulas can cause firmer stools, hypoallergenic formulas can cause looser stools
- Older infants will have soft, semi formed stool with color dependent on food intake

(Hagan et al., 2017)

## Constipation

- Not necessarily dependent on frequency as long as it is child’s normal and stools are soft and easy to pass
- Constipation
  - Hard or pellet like stools
  - Stooling less than normal for that child
  - Signs of distress
    - Screaming, crying, arching their back, tightening their buttocks

(Hagan et al., 2017; Sood, 2023)

## Constipation Remedies

- **Nonpharmacological**
    - Physical movements
      - “Bicycle kicks”
      - Bending legs and hips up towards abdomen
    - 100% pear, prune, or apple juice
      - 4-8 months old: 2 to 3 oz in a day
      - 8months+: 4 to 6 oz in a day
    - High-fiber foods
      - Barley cereal, high-fiber fruits or vegetables, apricots, sweet potatoes, pears, prunes, peaches, plums, beans, peas, broccoli, spinach, etc.
  - **Pharmacological**
    - Glycerin suppositories are most common
    - Miralax is sometimes prescribed and is safe, but is not technically FDA approved for infants
- (Sood, 2023)

## Signs of Concern Regarding Elimination

- Signs of dehydration (ex. Depressed fontanel, dry mucous membranes, not making tears when crying)
- Fewer than 6 wet diapers a day
- Fewer than 1-2 stools/week unless is a part of normal stool patterns in a breast-fed infant
- Constipation coupled with refusal to feed and discomfort
- Abdominal distention and firmness
- Bloody, clay colored or dark stools

(Hagan et al., 2017; Maaks, et al., 2019; Anderson et al., 2024)

## Importance of Knowing Developmental Milestones in Pediatrics

- Window into overall health
- Can provide information on external environments and family dynamics
- Provide guidance to families on how to support growth and development
- Anticipatory risk aversion
- Detecting signs of abuse or neglect

(Maaks et al., 2019)

## Gross Motor Milestones

- 1 month: able to briefly at least lift head when prone
- 3 months: raises head and shoulders when prone
- 4 months: head lag is gone, head control when sitting, begin to roll from front to back
- 5 months: roll back to front
- 6 months: sit with some support
- 8 months: might be able to balance when standing and holding on to something; sitting unsupported
- 9 months: pulling to stand, crawling
- 10 months: cruising
- 12 months: walking with hand held, first few independent steps, able to stand unsupported

(Maaks et al., 2019; Hagan et al., 2017)

## Fine Motor Milestones

- 1 month: clench hands/grasp on contact (rattle, jewelry, hair, etc)
- 3 months: able to hold onto items and pull at blankets/clothes
- 4 months: **begin to reach for items**
- 5 months: **palmar grasp, pull items to mouth**
- 6 months: can manipulate held items (ex. Banging), able to hold bottle
- 7 months: transfer objects from one hand to the other, rakes at objects
- 8 months: release objects at will, begin pincer grasp
- 9 months: **refine pincer grasp**
- 11 months: place and remove objects from containers
- 12 months: **begins using utensils and a cup, can easily turn book pages**

(Maaks et al., 2019; Hagan et al., 2017)

## Language Milestones

- 2 months: **cooing**
- 3 months: **squealing, begins babbling**
- 4 months: laughing
- 6 months: begins to imitate speech sounds
- 7 months: produces two syllable words without meaning (ex. Baba or dada)
- 8 months: vocalizes with emotion
- 9 months: **comprehends "no", responds to simple commands**
- 10 months: may begin saying "mama" and "dada" with meaning, comprehends "bye-bye", might say one-syllable words with meaning such as "hi" or "bye"
- 12 months: **can say 3-5 words, imitate animal sounds, knows familiar object names**

(Maaks et al., 2019; Hagan et al., 2017)

## Social/Sensory Milestones

- 1 month: able to track; calms when spoken to
- 2 months: social smile; searches for/turns head towards sounds
- 3 months: recognizes familiar people and objects, aware of strange situations; looks at mirrors, pictures, shapes, lights, and colors
- 4 months: enjoys interacting with others, may intentionally fuss to demand attention
- 5 months: plays more enthusiastically
- 6 months: stranger anxiety may begin
- 7 months: responds to own name
- 8 months: separation anxiety may begin
- 10 months: plays interactively with others, repeat behaviors that attract attention or cause reaction
- 12 months: enjoys familiar settings (home or daycare), begins to explore away from parent, may show affection with hugs or kisses, gets angry when jealous, may have favorite object

(Maaks et al., 2019; Hagan et al., 2017)

## Developmental Red Flags

- 1 month: no visual tracking or reaction to loud sounds
- 3 months:
  - hypotonia or hypertonia, asymmetric movements, no hand-to-mouth activity
  - no verbalizations (coos or squeals), **Add-ins** e, lack of eye contact, flat affect, doesn't visually fix on face of object, doesn't turn head towards sounds
- 6 months:
  - head lag when pulled to sit, poor head control, unable to sit with support, can't grasp items
  - no babbling, no response to play

(Maaks et al., 2019; Hagan et al., 2017)

## Developmental Red Flags cont.

- 9 months:
  - can't self feed, no solid foods, can't sit even in tripod position, can't pick up a toy with one hand, doesn't reach for items
  - doesn't respond to name or voice, intense or absent stranger anxiety, doesn't seek comfort from caregiver, poor eye contact, doesn't explore toys visually or orally
- 12 months:
  - not pulling self to stand, no attempt to feed self or use cup, can't transfer object from hand to hand
  - doesn't imitate speech sounds; can't use at least 2 or 3 words; no response to games, reading, other other interactive activities

(Maaks et al., 2019; Hagan et al., 2017)

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**Appendix F**

**Evaluation Methods (Pre- and Post-Survey Questions)**

## PCT Pre-Survey Questions

I have read the Disclosure Statement on the welcome page and give my informed consent for having my anonymous responses used for program evaluation data and discussion

Yes

No

How many years have you worked in a healthcare setting?

<1 year

1-3 years

4-10 years

10+ years

How many years have you worked with the pediatric population?

<1 year

1-3 years

4-10 years

10+ years

How confident do you currently feel in providing bedside cares to newborn and infant patients?

1=Not at all confident

2=Slightly confident

3=Somewhat confident

4=Very confident

5=Extremely confident

Did you have any childcare experiences prior to or during employment within healthcare?

Yes

No

Does this childcare experience include having children of your own?

Yes

No

How would you rank your current ability to recognize abnormalities related to newborn and infant intake, output, and development that requires the nurse's attention?

1=Poor

2=Okay

3=Neutral

4=Good

5=Great

## PCT Post-Survey Questions

Rate your knowledge of (or skill in) the course topics before the Masterclass.

1=Not at all knowledgeable

2=Slightly knowledgeable

3=Moderately knowledgeable

4=Very knowledgeable

5=Extremely knowledgeable

Rate your knowledge of (or skill in) the course topics now after the Masterclass.

1=Not at all knowledgeable

2=Slightly knowledgeable

3=Moderately knowledgeable

4=Very knowledgeable

5=Extremely knowledgeable

---

How relevant is this course content to your current work as a pediatric PCT?

1=Not at all relevant

2=Slightly relevant

3=Moderately relevant

4=Very relevant

5=Extremely relevant

Do you intend to apply what you learned in this Masterclass to your current bedside practices?

1=Definitely not

2=Probably not

3=Possibly

4=Probably yes

5=Definitely yes

6=Not applicable--I did not learn anything new from this course

What factors would keep you from using this content in your bedside practices?  
Select all that apply.

- I will need additional training in the subject matter
- I will not have the resources I need
- I will not have opportunities to apply what I learned
- I will not have the time to apply what I learned
- The course content is not relevant to my current work

Do you have any other feedback on overall opinions about whether or not you believe continuing education on nonacute care pediatrics would be beneficial to your practice, or would have been beneficial to learn earlier in your career as a pediatric PCT?

If you do have more interest in learning nonacute care topics, are there any topics specifically you think would be beneficial? Ex. Developmental milestones for other age groups; Communication techniques with adolescents; Basic info and timing for recommended vaccinations; Therapeutic communication techniques for mental health patients, etc.



## RN Pre-Survey Questions

I have read the Disclosure Form attached to the email and give my informed consent for having my anonymous responses used for program evaluation data and discussion

Yes

No

How many years of inpatient nursing experience do you have?

<1 Year

1-3 Years

4-10 years

10+ Years

How many years of pediatric nursing experience do you have?

<1 years

1-3 years

4-10 years

10+ years

Did you have any childcare experiences prior to or during employment within healthcare?

Yes

No

Does this childcare experience include having children of your own?

Yes

No

How would you rank your current willingness to provide parent education related to newborn and infant care and health promotion?

1=Not at all willing

2=Slightly willing

3=Somewhat willing

4=Very willing

5=Extremely willing

How would you rank your current confidence in providing parent education related to newborn and infant care and health promotion?

1=Not at all confident

2=Slightly confident

3=Somewhat confident

4=Very confident

5=Extremely confident

How would you rate your current ability to recognize normals and abnormals related to newborn and infant intake, output, and development?

1=Poor

2=Okay

3=Neutral

4=Good

5=Great

### RN Post-Survey Questions

Rate your knowledge of (or skill in) the course topics before the Masterclass.

1=Not at all knowledgeable

2=Slightly knowledgeable

3=Moderately knowledgeable

4=Very knowledgeable

5=Extremely knowledgeable

Rate your knowledge of (or skill in) the course topics now after the Masterclass.

1=Not at all knowledgeable

2=Slightly knowledgeable

3=Moderately knowledgeable

4=Very knowledgeable

5=Extremely knowledgeable

---

How relevant is this course content to your current practice as a pediatric nurse?

1=Not at all relevant

2=Slightly relevant

3=Moderately relevant

4=Very relevant

5=Extremely relevant

Do you intend to apply what you learned in this Masterclass to your current bedside practices?

1=Definitely not

2=Probably not

3=Possibly

4=Probably yes

5=Definitely yes

6=Not applicable--I did not learn anything new from this course

What factors would keep you from using this content in your bedside practices?  
Select all that apply.

I need additional training in the content matter

I will not have the resources I need

I will not be provided opportunities to use what I learned

I will not have the time to apply what I learned

The course content is not relevant to my current work

Do you have any other feedback on overall opinions about whether or not you believe continuing education on nonacute care pediatrics would be beneficial to your practice, or would have been beneficial to learn earlier in your career as a pediatric nurse?

Do you have any other feedback on overall opinions about whether or not you believe continuing education on nonacute care pediatrics would be beneficial to your practice, or would have been beneficial to learn earlier in your career as a pediatric nurse?

If you do have more interest in learning nonacute care topics, are there any topics specifically you think would be beneficial? Ex. Developmental milestones for other age groups; How to provide breastfeeding support; Asthma maintenance medication regimens; How to have sensitive discussions with adolescent patients/Communication techniques with adolescents; Basic info and timing for recommended vaccinations; Therapeutic communication techniques for mental health patients, etc.



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