Exploring outcomes from an innovative, pediatric-focused intervention with undergraduate nursing students

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ABSTRACT

Background: To adapt to COVID-19 restrictions, a virtual pediatric skills day was developed to provide nursing students with practical experience prior to entering the pediatric clinical setting. Student assessment before and after participation indicate a virtual skills day is helpful in building student confidence prior to pediatric clinicals.
Methods: This mixed-method study involved a cross-sectional approach with a six-item survey administered before and immediately after the virtual pediatric skills day intervention to undergraduate junior nursing students. Outcome measures included comfort and preparation for pediatrics and families of pediatric patients.
Findings: After exploring outcomes from 93 students complete pre and post intervention measures, we addressed comfort themes including excited, nervous, and readiness while preparedness themes highlighted concerns with parental interactions, upset children, and COVID-19 restrictions.
Discussion: It is beneficial for nursing students to have clinical experiences with children prior to visiting a pediatric clinical setting. Such experiences decrease student stress and anxiety and allow meaningful opportunities to occur.

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Background

Undergraduate nursing students beginning pediatric course and curricular content need to receive information and develop an understanding of the developmental periods that distinguish infants, toddlers, preschoolers, school-age children, and adolescents. Added to traditional lectures and reading content, students need active learning strategies to gain understanding about development across the lifespan, with a specific focus on infancy through adolescence. A foundation of typical characteristics for each age group provides a basis for students providing care for children of all stages (Hockenberry & Wilson, 2015). Recently, Kusi Amponsah and colleagues explored educational strategies with pain in the pediatric population and identified innovative teaching methods like simulation were not often used when exploring pain. It is imperative to examine emerging nursing educational methods when teaching concepts related to pediatric assessment and management (Kusi Amponsah et al., 2019).

Students report chief concerns and feelings of incompetence when entering the pediatric clinical setting for the first time and performing skills with real patients (Gunberg & Carney, 2017). Many nursing students eagerly anticipate a clinical experience with hospitalized children, only to discover working with sick children and their families to be challenging. Students with inadequate experience with the pediatric population often feel anxious or worried about how to care for children. Specific factors cause students to worry while caring for pediatric patients and are related to performing assessment, performing procedures on a child, explaining procedures or medications to a child, and fearing causing pain (Lassche et al., 2013). A recent international study explored worry and comfort with undergraduate pediatric students and found both to be substantiated in the clinical experience. Faculty awareness of worry and comfort, in nursing students during pediatric clinicals, may alter personal experiences and impact clinical success (Çunkuş et al., 2021).

Purpose

The purpose of this article is to introduce an innovative educational approach aimed at teaching pediatric content for undergraduate nursing students. We will explore the effect of this innovative approach on student anxiety and comfort.

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Literature synthesis

Undergraduate students need opportunities to practice skills and gain confidence before attending pediatric clinical. By engaging in opportunities to practice assessment, pediatric procedures, and age-specific communication, the student can develop competence before working in the clinical setting and, as a result, feel more prepared prior to the pediatric clinical rotation. Developing competencies in performing pediatric skills and communicating with children in an active learning environment can decrease anxiety and stress (Cummings & Connelly, 2017).

As nursing programs design clinical experiences and competition increases for pediatric inpatient settings, clinical learning experiences are moving to the outpatient and community care settings. In this setting, quality clinical rotations can be broad-based with course objectives that encompass the larger scope of child and adolescent care. Key concepts such as growth and development, preventive screening and care, communication techniques, and managing pediatric chronic health problems such as asthma and obesity can provide a flexible framework for these experiences. The National League for Nursing (NLN) Think Tank (National League for Nursing, 2008) advocated for a clinical educational model in which faculty help students learn core concepts and nursing interventions that are transferrable from one setting to another. The NLN report suggested focusing on common health problems and populations that can provide ideal clinical experiences. This further supports the idea of limiting time spent on pediatric inpatient units and reflects the changing roles and where and how pediatric healthcare is delivered.

Acute care or hospital settings provide inpatient pediatric clinical experiences for students to be involved with high acuity and complex patients. The inpatient unit offers students a chance to learn and practice technical skills and an opportunity to work with acutely ill children and adolescents. Wheras, community experience provides students time to experience pediatric communication together with growth and development in action. Such experiences are often limited in nature, and pediatric experiences are few (Kolb, 1984).

Simulation experiences and opportunities to demonstrate competence can help build confidence and decrease anxiety and stress (Cummings & Connelly, 2017; Gunberg & Carney, 2017; Lassche et al., 2013). Simulation is a realistic and safe setting to structure crucial content, skills, and critical thinking. Simulation can also augment inpatient rotations and provide a safe environment for students to practice technical skills such as trach suctioning and care. Added to simulation, our curriculum provides a wide range of experiences for students to work with children in settings such as schools, childcare centers, after school programs, rehabilitation facilities, and camps. These environments expose students to more common pediatric health care needs and problems (Cole & Fioto, 2018). Students can learn core concepts and interventions and then apply these skills in a range of settings and with different pediatric populations. Introducing our students to well children in a non-threatening environment allows them to have a concrete experience with skills, communication, and assessment. By increasing student confidence and comfort level, they can then transfer this knowledge, such as stages of growth and development, to any future settings (Cummings & Connelly, 2017).

In previous, pre-COVID-19 semesters, well children from the community (from one month to five years of age, and some teenagers) attended skills day. Unfortunately, due to COVID-19 restrictions, community members could not come to campus. A significant hurdle to providing students with early occasions to implement classroom learning in clinical settings is the COVID-19 public health crisis. This subsequently curtailed most, if not all, in person community health fairs and or screening events at which student nurses gain experience. To better equip our students for success in the pediatric clinical rotation, we explored whether a virtual pediatric skills day could improve students comfort levels and skills used with pediatric clinical experiences.

Methods

The current study involved a cross-sectional approach with a six-item survey administered before and immediately after the virtual pediatric skills day intervention. Both quantitative and qualitative data were collected through the survey items. In this study, we assessed quantitative and qualitative reflections on students' comfort, preparation, and perceptions on pediatric experiences. The participating nursing students are in the second of five semesters and new to pediatric settings. Due to limited clinical experiences in recent years, we have recognized the need to practice with students before attending a pediatric setting. The stated goal of this event was to **prepare** each student for pediatric clinical by addressing growth and development concepts, providing pediatric assessment practice, discussions on normal vital signs, and providing activities around the pediatric experience.

Participants

Ninety-seven junior undergraduate students completed the pre-survey while 95 completed the post-survey. Overall, 93 students completed both pre- and post-survey. Of these, 91.3% female and 8.6% male, and 96.7% non-Hispanic White.

Survey

The survey included three items on a 0–100 scale measuring comfort and preparedness with pediatrics. The qualitative analysis used content analysis of the results from three open-ended items addressing student perceptions related to a pediatric clinical experience.

Setting

We implemented this cross-sectional intervention with a large, junior cohort enrolled in an across the lifespan medical-surgical course. The medical-surgical course, offered during the second semester of a five-semester baccalaureate program of study, focuses on the acute and commonly occurring medical surgical conditions of the following populations: pediatrics, adult, and geriatrics. Students completed a health assessment course in their first semester of the nursing program focused across the lifespan but have not had a clinical opportunity that focused specifically on the pediatric population. Before the intervention, students participated in traditional lecture course activity and required readings in a textbook. Ninety-four junior nursing students were assigned reading material on pediatric growth and development, specifically focused on psychosocial and cognitive theories plus the effects of hospitalization. Additionally, students received interactive class lectures from pediatric faculty.

Intervention

The virtual pediatric skills day intervention was introduced before traditional pediatric clinical opportunities in acute or community-based settings. Based on previous student feedback in the past medical-surgical course and clinical experiences, we designed a one-day pediatric experience using a virtual classroom with "breakout rooms" for eight stations. These stations included medication calculation, respiratory devices and emergency equipment, growth monitoring station with documentation (e.g., head circumference, weight and height plotting on CDC growth charts), input and output calculation (e.g., weighing diapers, calculating input, syringe pump), Denver II assessments, pediatric assessment and vital signs, theoretical growth and development, and therapeutic communication.

Findings

Ninety-three undergraduate, junior students completed the intervention and both pre- and post-intervention surveys virtually during

the fall semester. All completed the pre-intervention survey, received the pediatric intervention virtually, and then completed the post-intervention survey. Students completed this six-hour experience using the university's online course management system "Canvas" with pediatric experts in Canvas Breakout rooms.

Using paired samples *t*-test examining students' perceived comfort level, preparedness for children, and preparedness for family between pre- and post-intervention, results indicated a statistically significant increase in all three areas with large effect size, $t(92) = 9.53$, $p < .001$, Cohen's $d = 0.99$; $t(92) = 12.69$, $p < .001$, Cohen's $d = 1.32$; $t(92) = 11.56$, $p < .001$, Cohen's $d = 1.20$, respectively (See Table 1).

When asking students what they would expect in pediatric clinic rotations, four different themes emerged. These themes included working with children, learning new skills, direct patient care, and child/family interaction. In the pre-survey, many students indicated they were looking forward to having experiences in working with children ($f = 47$, 48.5%) Whereas, 29.90% ($f = 29$) indicated they were excited to learn new skills and knowledge. In the post-survey, the same themes emerged as an increasing number of students ($f = 58$, 61.05%) were looking forward to interacting and working with children, and 20.0% ($f = 19$) were ready for direct patient care (See Table 2). Students indicated similar expectations in practical experiences and dealing with parents/families. However, students focused more on how to interact and help pediatric patients after the intervention, while putting less focus on knowledge and skills they would learn during the pediatric clinic rotation. Students had an increased focus on pediatrics after this virtual clinical immersion experience.

When asking students what they were looking forward to in pediatric clinic rotations, students' responses indicated three major themes in both the pre- and post-survey: unpreparedness and lack of confidence (with dealing with children, dealing with parents, related to COVID-19 restrictions, and general), travel and accommodations, and overloaded with information. In the pre-survey, 22.68% ($f = 22$) worried about dealing with the emotions of children, and 23.71% ($f = 23$) worried about dealing with the emotions of parents. Near 10 % indicated they were not confident and ready in general. Few students ($f = 3$, 3.09%) indicated their unpreparedness due to COVID-19 restrictions. In the post-survey, 29.47% ($f = 28$) worried about dealing with the emotions of children. After the intervention, 22% ($f = 21$) worried about dealing with the emotions of parents. Increasingly, near 10% ($f = 10$) of students indicated their unpreparedness due to COVID-19 restrictions, and 24.21% ($f = 23$) were not confident and ready in general (See Table 3). Students' concerns toward their ability to deal with pediatric patients and their families were similar before and after the intervention. However, students indicated more concerns about preparedness and readiness after the intervention, compared to information overload and logistics of clinical (e.g., travel and accommodations) prior to the intervention.

Discussion

The study assessed reflections with comfort, preparation, and perceptions on pediatric experiences. Theory as it informs practice is often a difficult concept for the undergraduate nursing student. Research studies support this disconnect between theory and practice and the need for meaningful experiences to compensate for limited clinical placements (Cole & Fioto, 2018; Fogg et al., 2020; Kenny et al., 2016; Little, 2015). Our study is in accordance with other studies linking the

Table 2

Examples of participants' responses of: "I Am Looking forward to ____This Semester".

Theme	Pre-survey (n = 97)	Post-survey (n = 95)
Interacting with Children	$f = 47$ (48.45%) Interacting with children to make them feel better. Helping kids through tough times.	$f = 58$ (61.05%) Meeting some pediatric patients. Treating the pediatric patients, interacting with them.
Learning Skills/Knowledge	$f = 29$ (29.9%) Learning how to assess children in the clinical setting. Developing my skills as a nurse caring for pediatric patients.	$f = 18$ (18.95%) Learning as I go. Learning more about pediatric patients.
Practical Experiences	$f = 15$ (15.46%) Making medical treatment fun for kids. Hands-on experiences.	$f = 19$ (20.0%) Putting what I have learned into practice. Practicing skills and interacting with the children in the hospital.
Interacting with Families	$f = 12$ (12.37%) Being a light to families and children. Meeting parents.	$f = 12$ (12.63%) Working with children and their families. Meeting families.

increased anxiety students may feel when interacting with parents and working with a sick child. A study of 17 new graduate nurses with a pediatric focus reflected on the importance of preparing students to link theory and practice (Little, 2015). For example, the child's emotional health is discussed in course work but not often practiced in the clinical setting until beginning work. This study of new nurses found those nurses with children themselves or having younger siblings displayed more confidence in caring for the emotional needs of children, but in every occurrence, there were reported needs to enhance training to support children's emotional needs (Little, 2015). Other studies focus on communication as a learned item in class but there is a greater need for practice. When handling challenging conversations with children and parents, students report increased anxiety and reluctance (Cole & Fioto, 2018; Kenny et al., 2016). Faculty have an important role in fostering programs that prepare future nurses to not only meet the emotional needs of a child and family, but also how to interact, engage, and assess children in a clinical setting.

The goal of the virtual pediatric skills day was to prepare each junior-level student for a pediatric clinical by addressing growth and development concepts, assessment practice with pediatrics, discussions on normal vital signs, and activities around the pediatric experience. Although well children were not present, a virtual skills day did prove to prepare students for clinical placement. A similar study reported an intervention where medical program adapted a two-week interactive pediatric boot camp to a Zoom™ platform due to COVID-19 and social distancing requirements. Six-students and 32-volunteer instructors and facilitators participated remotely. Findings suggest this model was successful and students responded positively (Burns & Wenger, 2020). Like the medical school, this intervention also had to quickly adapt and utilize the Zoom™ platform to deliver didactic content.

A study by Kubin and Wilson (2017) supports varying methods utilized to teach students pediatric concepts. In this study, 99 undergraduate nursing students in a pediatric course participated in health assessment activity. A portion of students performed health assessment

Table 1

Descriptive statistics and paired samples t-test results of students' comfort and preparedness.

	Pre M (SD)	Post M (SD)	t(92)	p	Cohen's d effect size
Comfort Level	58.22 (21.64)	75.48 (15.31)	9.53	<0.001	0.99
Preparedness for Children	51.33 (22.86)	75.68 (14.89)	12.69	<0.001	1.32
Preparedness for Family	50.19 (23.65)	50.19 (72.47)	11.56	<0.001	1.20

Table 3
Examples of participants' responses of: "I Am Not Looking forward to ____This Semester".

Theme	Pre-survey (n = 97)	Post-survey (n = 95)
Confidence/Readiness for Working with Children	f = 22 (22.68%) Administering any uncomfortable procedure to infants. Seeing children in pain/sick.	f = 28 (29.47%) Uncooperative kids. Trying to get a good assessment with a crying child.
Confidence/Readiness for Interacting with Families	f = 23 (23.71%) Dealing with hard parents. Communicating with stressed parents.	f = 21 (22.11%) Dealing with the emotions of parents. Talking with tough parents.
Confidence/Unpreparedness due to COVID-19 Restriction	f = 3 (3.09%) Being limited in what we can see and learn because of COVID. Dealing with COVID.	f = 10 (10.53%) The learning gap between learning pediatrics online and doing it in person. COVID limiting our learning.
Confidence/Readiness in General	f = 10 (10.31%) Performing skills. Not knowing the answers in the peds setting.	f = 23 (24.21%) Making mistakes. Not knowing all the answers.
Emotional/Information Overloaded	f = 13 (13.40%) The amount of information. Having to watch families grieve the loss or pain of their child.	f = 4 (4.21%) The sadness along with pediatrics. The sad things nursing brings.
Travel and Accommodations	f = 11 (11.34%) Waking up early. Driving a long way and 2 long shifts.	f = 3 (3.15%) Waking up early. Driving.

on community children and a portion on a high-fidelity simulator. The Pediatric Student Comfort and Worry Assessment tool was utilized pre- and post-intervention as well as the Lasater Clinical Judgment Rubric performance evaluation. Regardless of simulator or community children scenario, both groups saw benefits to meaningful pediatric opportunities prior to clinical and a decrease in stress and anxiety (Kubin & Wilson, 2017). Therefore, providing any meaningful opportunities to prepare students for clinical placement is of benefit to the student (Fogg et al., 2020).

Virtual opportunities, such as this study, have demonstrated a role in fostering a level of preparedness for clinical placements. A study conducted by Fogg et al. (2020) discovered virtual simulations can develop the undergraduate student's clinical judgment. A pilot study of 234 senior level nursing students completed five virtual-simulation cases. The students utilized the Lasater Clinical Judgment Rubric to self-evaluate their performance from the first to the fifth virtual scenario. The study was a repeated measures design and discovered the virtual simulations to be beneficial to learning and students reported perceived increase in clinical judgment and knowledge (Fogg et al., 2020). Our study elaborated on the virtual classroom as a setting to enhance student preparedness.

Practice implications

An interactive pediatric skills day provides students valuable opportunities to practice high-volume, low-risk assessment and skills often seen in the clinical setting prior to actual clinical placement. Students benefit from these safe learning experiences (Weaver et al., 2019). Although in-person interactions are ideal and many healthcare professional programs utilize these platforms, the COVID-19 pandemic did alter traditional styles of programs and learning. Adapting a traditional form of teaching to a virtual platform had challenges, but still proved to engage and prepare students.

After review of the intervention, virtual platforms and case scenarios will add a sense of realism to the pediatric experience (Kenny et al., 2016). In this period, we plan to continue the virtual pediatric setting yet will explore return to traditional measures in coming years. In addition to well children in attendance at a pediatric skills day in a face-to-face setting, we will explore how to incorporate other disciplines such as drama students to portray a specific situation or role play could enhance communication skills (Kenny et al., 2016). While students and faculty tend to have more satisfaction when working with community children (Kubin & Wilson, 2017), there is not a significant difference in application of high-fidelity simulator versus a well-child.

Research implications

This study is worthy of continued effort and evaluation. We have addressed recognized improvements and would suggest increased rigor with the processes identified to understand efficacy of the intervention components. Funding would assist in increased connection with community members and faculty involvement with future studies related to pediatric nursing education topics.

Limitations

We were limited in this intervention with a single cohort of undergraduate nursing students alongside a global pandemic. We expect greater evaluation of interventions highlighted in this manuscript with expanded efforts in geographical settings. The effectiveness of this intervention will likely increase with repetition and enhanced efforts of faculty and community members. Another limitation included the cross-sectional design with pre and post evaluation as the pre and post evaluation did not measure longitudinal outcomes. With future initiatives, we would encourage use of multiple measures.

Conclusions

Even with a virtual platform, it is possible to provide students with interactions they would encounter via an in-person pediatric skills day. Students acknowledged advantages with a pediatric-focused intervention to build confidence and lessen anxiety prior to clinical opportunities. Therefore, providing any meaningful opportunities to prepare students for clinical placement is of benefit to the undergraduate nursing student.

Author statement

Gibson-Young: Conceptualization, Data curation, Methodology, Analysis **Lambert**: Project administration, Writing- original draft, Supervision, **Yordy**: Writing- original draft, Writing- review & editing. **Wang**: Data curation, Software, Validation.

Declaration of Competing Interest

No author has declare conflict of interest with this study. No primary funders included in this research.

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