Introduction
Pediatric Asthma affects 8.6% of children in the United States. Nurse practitioners are frontline caregivers and patient educators to recognize, assess manage asthma.

Purpose
Study the efficacy of clinical simulation scenarios using Augmented Reality (AR) technology education to improve learning outcomes for nurse practitioner students studying Pediatric Asthma Management (PAM).

Methods
- 21 PNP students
- Mixed-methods study of two cohorts over two-semester period.
- ARISE clinical “flipped classroom”

Tools
- 7 item test of knowledge before and after simulation
- Instructional Materials Motivation Survey (IMMS) four subscales of motivational factors (Attention, Relevance, Confidence, and Satisfaction)
- Simulation Design Scale (SDS) (20 items) includes: Objectives and Information, Support, Problem Solving, Feedback/Guided Reflection, and Fidelity (Realism)
- Student Satisfaction and Self-Confidence (SS-SC) (13 items)
- Focus group interview

Result Tables

<table>
<thead>
<tr>
<th>Asthma study</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>df</th>
<th>p-value</th>
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<tbody>
<tr>
<td>Pre-test before using iPad (671)</td>
<td>3.93</td>
<td>1.13</td>
<td>-8.95</td>
<td>20</td>
<td>&lt;.001</td>
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<td>Post-test after using iPad (671)</td>
<td>6.13</td>
<td>0.87</td>
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<tr>
<td>Pre-test before using iPad (672)</td>
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<td>-4.35</td>
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<td>6.50</td>
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Result Summary
- Significant improvement in Asthma Test scores
- Positive correlations in the areas of Confidence, Support, Problem Solving and Fidelity

Conclusions
IPAD education promising for clinical learning
Students found simulation realistic and tied together clinical teaching and learning

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F15- Efficacy of an Augmented Reality Technology in Learning Pediatric Asthma Management

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Details of Innovation

This innovation studied the efficacy of clinical simulation scenarios using Augmented Reality (AR) technology education to improve learning outcomes for nurse practitioner students studying Pediatric Asthma Management (PAM). The pilot study included 21 pediatric nurse practitioner students. A mixed-methods study was conducted with two cohorts of students over a two-semester period to measure their perspective of using AR technology on an iPad provided. The ARISE clinical scenarios were used in a “flipped classroom” approach, where students interacted with the clinical scenario and further discussion occurred during class. Students used the AR ARIS app on their iPad to assess and manage patient care. This process allowed for making connections between classroom learning and clinical practice. A 7 item test of knowledge was given before and after integrated simulation education. The Instructional Materials Motivation Survey (IMMS) is made up of four subscales of motivational factors (Attention, Relevance, Confidence, and Satisfaction). The Simulation Design Scale (20 items) includes: Objectives and Information, Support, Problem Solving, Feedback/Guided Reflection, and Fidelity (Realism). Student Satisfaction and Self-Confidence was measured in Learning Scale (13 items). A structured focus group interview was conducted each semester to elicit student perceptions of benefits and difficulties associated with the learning experience.

Outcome

Significant improvement in Asthma Test scores was found after using the iPAD in both the first semester [t(20)=8.95, p<.001] and second semester [t(16)=4.35, p<.001]. Overall and subscale scores were reviewed across all measures, including the IMMS, Simulation Design Scale, and Student Satisfaction and Self-Confidence in Learning scale. Average scores ranged from 3.2 to 4.2, all above the midpoint (3.0) of the scales, indicating that students were generally satisfied and confident with their learning, and felt the content was important. This study found no change in motivation (i.e. motivation was high and did not decline) and positive correlations with student’s motivation, satisfaction and confidence, which is a clear indication that faculty can be hopeful of integrating this technology for successful learning experiences. Focus groups found that the simulation was realistic and it tied together teaching and learning.

Implications

The findings in this study indicate the importance of utilizing AR in teaching PAM content. It demonstrates the use of technology to provide clinical situations without the concerns related to synchronous scheduling. Students comments imply the need for establishing increased technical support and guidance using technology devices. The AR simulation provided a flexibly timed pediatric situation to help with learning that would be applicable to future clinical practice.