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Title:

Development of Virtual Simulation Program: Hypoglycemia of Child With Diabetes

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ACCEPTED

Session Title:

Evidence-Based Practice Poster Session 1 (Saturday/Sunday, 16 & 17 November)

Slot:

EBP PST1: Sunday, 17 November 2019: 11:45 AM-12:15 PM

Abstract Describes:

Completed Work/Project

Applicable Category:

Clinical, Academic, Students, Researchers

Keywords:

hypoglycemia management, nursing education and virtual simulation

References:

Freina, L., & Ott, M. (2015). A Literature Review on Immersive Virtual Reality in Education: STATE OF THE ART AND PERSPECTIVES. In *the Role of Internet in Education – Change and Transformation* (pp. 199–205). https://doi.org/10.12753/2066-026X-13-131

LaFond, C. M., Vincent, C. V. H., Lee, S., Corte, C., Hershberger, P. E., Johnson, A., … Wilkie, D. J. (2015). Development and Validation of a Virtual Human Vignette to Compare Nurses' Assessment and Intervention Choices for Pain in Critically Ill Children. *Simulation in Healthcare: Journal of the Society for Simulation in Healthcare*, *10*(1), 14–20. https://doi.org/10.1080/10810730902873927.Testing

Laura A. S. (2013, Mar 15). A Digital Revolution: Games, Simulations, and Virtual Worlds in Nursing Education. Retrieved from https://www.medscape.com/viewarticle/780819_4

Abstract Summary:

Virtual reality simulations were constructed using Unity 3D and in Second Life and avatars, virtual equipment and supplies were created. Learners stated that they had similar experiences with clinical experience in reality as well as learned what to do and how to do when in the situation.

Content Outline:

1. Introduction
    1. Simulation in virtual environment has emerged as an innovative method of education as simulation has become possible in virtual reality.
    2. The purpose of this study was to develop a virtual simulation scenario of nursing care for hypoglycemia on child with diabetes and to evaluate the applicability by evaluating feasibility.
2. Body
    1. We used methodological research method to develop scenarios appropriate for virtual reality simulation.
    2. The scenario for hypoglycemia symptom management in children with diabetes consists of 11 frames, and the goal of the scenario was to help learners to practice their clinical judgment. Virtual reality simulations were constructed using Unity 3D and in Second Life and avatars, virtual equipments and supplies were created.
    3. Learners stated that they had similar experiences with clinical experience in reality as well as learned what to do and how to do when in the situation.
    4. They said merits of simulation were to try a practice multiple times without threatening patients and they were good at performing the practice in the virtual environment rather than in the real world.
3. Conclusion
    1. Simulation in virtual environment allowed nursing students to practice clinical judgment process in clinical symptom management situation.
    2. Nursing students were satisfied with the experience of virtual reality simulation.
    3. Virtual reality simulation would be an appropriate method to use as an educational method to narrow the gap between theory and practice.

Topic Selection:

Evidence-Based Practice Poster Session 1 (Saturday/Sunday, 16 & 17 November) (25743)

Abstract Text:

Purpose: Simulation was introduced in nursing training to bridge the gap between theory and practice. Recently, simulation of virtual reality has emerged as an innovative method of education as simulation has become possible in virtual reality. Virtual reality simulation is simulation that is performed in virtual environment which means “a synchronous, persistent network of people, represented as avatars, facilitated by networked computers”. Virtual reality simulation requires less maintenance cost than high-fidelity simulation and reduces spatiotemporal constraints, which makes access to learners easier. For this reason, virtual reality simulations provide learners with multiple opportunities, particularly appropriate teaching methods that can be applied to expose various clinical situations. In the case of a child patient, the case of hypoglycemia on child with diabetes frequently occurs in emergency department and clinics. Nursing competencies such as assessment and intervention are very important when they encountered child demonstrating hypoglycemia. Therefore, it is important to provide multiple opportunities for the case to learn the guidelines and provide the proper nursing intervention through virtual reality simulations. The purpose of this study was to develop a virtual simulation scenario of nursing care for hypoglycemia on child with diabetes and to evaluate the applicability by evaluating feasibility.

Methods: We used methodological research method to develop scenarios appropriate for virtual reality simulation. In the first stage, we reviewed the guidelines for cases of hypoglycemia on children with diabetes in several children's hospitals. Based on the literature review, three researchers developed a preliminary scenario. The developed preliminary scenarios were evaluated by expert validity using content validity index (CVI) for the relevance of 7 professionals with more than 10 years of clinical practice. Items that had low CVI values during the scenario were modified according to the expert comments. In the second stage, virtual simulation programs were constructed using Unity 3D and in Second Life. Eight senior nursing students implemented the revised scenario and had a focus group interview on the virtual reality experience.

Results: The scenario for hypoglycemia symptom management in children with diabetes consists of 11 frames, and the goal of the scenario was to help learners to practice their clinical judgment. Avatars and several virtual equipments and supplies were created using Unity 3D and in Second Life. The value of S-CVI given by the experts was 0.88 but three items were identified as I-CVI values less than 0.78. Three items were modified. One learner entered the virtual reality simulation and played a role as the patient's nurse. Simulation went through the steps of pre-briefing, simulation, and de-briefing. During the pre-briefing session, learners learned how to control virtual supplies in virtual environment through tutorial session. The simulation took 15 minutes per person, but the total simulation program lasted 2 hours. In the focus group interviews after implementing the simulation, learners stated that they had similar experiences with clinical experience in reality as well as learned what to do and how to do when in the situation. They said merits of simulation were to try a practice multiple times without threatening

patients and they were good at performing the practice in the virtual environment rather than in the real world. In addition, learners suggested more time to learn the virtual environment in the tutorial before entering the simulation and improving mechanical conditions needed to be improved.

Conclusion: Simulation in virtual environment allowed nursing students to practice clinical judgment process in clinical symptom management situation. Nursing students were satisfied with the experience of virtual reality simulation. Though virtual reality simulation needs yet to be improved in its technical conditions and its scenarios should be diversified, virtual reality simulation would be an appropriate method to use as an educational method to narrow the gap between theory and practice.