Development of Virtual Simulation Program: Hypoglycemia of Child With Diabetes

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1. Purpose
   • Virtual reality simulation (VRS) has emerged as an innovative method of education
   • VRS is cost-effective and reduces spatiotemporal constraints. It also provide learners with multiple opportunities and students can be exposed to various clinical situations
   • The case of hypoglycemia on child with diabetes frequently occurs in emergency department and clinics
   • 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

2. Methods

   ![](Figure 1. Methodological method process)

   - Preliminary scenario for cases of hypoglycemia on children with diabetes
   - Expert validity by 7 professionals
   - Scenario modification
   - 3D modeling of VR simulation using Unity 3D

   Learner created account in the VRS
   - Preliminary: Learn how to control virtual supplies through tutorial
   - Simulation orientation
   - Simulation operation: 15 minutes per person
   - SBAR (concept mapping & reporting)
   - Self-reflection with replayed video (Clinical judgment)
   - Group reflection in online conference system

   Figure 2. Simulation Process: Total running time 2 hours

3. Results

   • Development
     ✓ The value of S-CVI/Ave given by the experts was 0.88 (Modified 3 items which CVI was less than 0.78)
     ✓ The scenario for hypoglycemia symptom management consists of 11 frames
     ✓ The goal of the scenario was to help learners to practice their clinical judgment

   • Focus group interview:
     ✓ The experience of VRS is similar to clinical experience in reality as well as learned what to do and how to do when in the situation.
     ✓ The merits of VRS 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
     ✓ It needs to have enough time to learn the virtual environment in the tutorial and to improve the mechanical conditions

4. Conclusion

   • VRS allowed nursing students to practice clinical judgment in symptom management situation
   • Nursing students were satisfied with the experience of VRS.
   • VRS needs yet to be improved in its technical conditions and scenarios should be diversified
   • VRS would be an appropriate method to use as an educational method to narrow the gap between theory and practice

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