Development of Communication Skills Through Virtual Reality on Nursing School Students: Clinical Trial : CIN: Computers, Informatics, Nursing

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FEATURES

Development of Communication Skills Through Virtual Reality on Nursing School Students

Clinical Trial

Mayor Silva, Luis Iván PhD; Caballero de la Calle, Raquel PhD; Cuevas-Budhart, Miguel Angel MSc; Martin Martin, José Oliver PhD; Blanco Rodriguez, José María PhD; Gómez del Pulgar García Madrid, Mercedes PhD

Author Information

Author Affiliations: Universidad Complutense de Madrid (Drs Mayor Silva, Caballero de la Calle, Martin Martin, Blanco Rodriguez); Unidad de Investigación de Enfermedades Nefrológicas, Instituto Mexicano del Seguro Social, Mexico (Dr Cuevas-Budhart); and Centro Universitario de Ciencias de la Salud y Socio sanitarias Hygiea (Drs Cuevas-Budhart and Gómez del Pulgar García Madrid); and Universidad Francisco de Vitoria (Dr Gómez del Pulgar García Madrid).

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Corresponding author: Miguel Angel Cuevas-Budhart, MSc, Av. Cuauhtémoc 330, Doctores, Cuauhtémoc, 06720 Ciudad de México, México (angel_budhart@hotmail.com; miguel.cuevas@imss.gob.mx).

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Abstract

Multiple studies demonstrate benefits of virtual simulations as recreation of reality in the development of instrumental skills, but few randomized studies prove its efficacy in the development of communication and interpersonal relationships skills. The objective was to develop a virtual reality simulator to improve communication skills and compare its results with a traditional workshop based on cases and theoretical content explained through video. This is a randomized and controlled clinical trial, with a pretest and a posttest. Participants were first-year students from the Faculty of Nursing, Complutense University of Madrid, Spain (n = 100). The sample was divided into two groups: the intervention group (n = 50) was provided a virtual reality simulation teaching process as a novel resource, whereas the control group was provided with a case-based traditional workshop. Because data followed a normal distribution, it was analyzed with Student *t* test for independent samples, the group sample comparison, and analysis of variance, to find differences among age subgroups. Significant changes were observed at the time of evaluating the skills for the intervention group ($P < .01$) in comparison with the control group. Both interventions are effective after the first evaluation; however, virtual reality–based intervention stands above the usual method and showed better results in older students.

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Table 1 - Program Development Process

Developing Nursing Education Program for Strengthening Clinical Decision-Making Ability Using VR

Preparation	
Analysis	1. Literature review 2. Survey of students' educational needs 3. Program development design analysis 4. Selection of measurement instruments
Design	1. Form a development team with expertise and practical experience 2. Selection of simulation topics 3. Simulation curriculum design 4. Selection of scenario case 5. Selection of key problems and nursing skills in the scenario 6. 3D movie continuity production 7. Web page construction for Web-based VR implementation
Development	1. Video lecture production on patient nursing theory 2. Simulation scenario development 3. Building a simulation environment 4. Production of theoretical and visual data related to nursing diagnosis 5. Web-based VR simulation prequiz and postquiz development 6. 3D movies shooting and editing 7. Uploading a Web-based VR program to a Web page
Implementation	
Session 1: clinical practice	1. Attention concentration through video lectures on patient nursing theory 2. Patient nursing demonstration 3. Check the order before patient rounding 4. Perception of patient ordering dictionary content 5. Derive patient-related clinical questions 6. Form meaningful data units through patient data collection 7. Talk about nursing diagnosis applicable to relay game format 8. Connecting the theory and visual data on nursing diagnosis
Session 2: Web-based VR simulation	1. Identification of patient cases and organization through inferring nursing problems 2. Elaboration through the application of nursing process 3. Nursing diagnosis and nursing performance selection 4. Present the situation with a 3D video 5. Imaging through the provision of hints based on pictures and videos
Session 3: high-fidelity simulation	1. Connecting Web-based VR simulation and high-fidelity simulation context 2. Patient identification and assessment 3. Direct practice of nursing skill performance 4. Therapeutic communication 5. Provide debriefing
Evaluation	Confidence in performance Clinical decision-making ability Practice flow Class evaluation Simulation design evaluation

Abbreviation: 3D, three-dimensional.

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September 2023

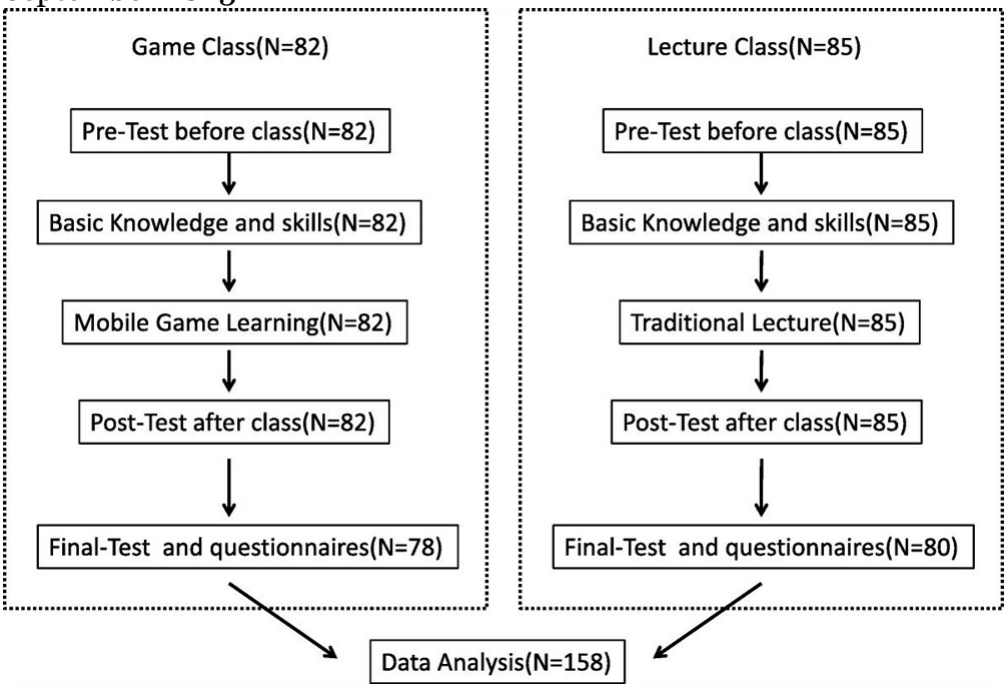

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Table 1 - NST-VRS Satisfaction Survey Results of Participants

#	Items of Satisfaction	Mean	%
1	The VRS helped me understand the NST protocol.	4.92	98.5
2	The VRS helped me recognize critical issues to take note of during the NST.	4.92	98.5
3	The VRS integrated previously studied concepts regarding the NST.	4.92	98.5
4	Compared to traditional teaching, the VRS increased motivation to learn.	4.92	98.5
5	Compared to static manikin partial task practice, the VRS increased my motivation to learn.	4.92	98.5
6	The VRS has increased my level of self-confidence when carrying out the NST.	4.91	98.1
7	Compared to traditional teaching, the VRS has helped me improve my technical proficiency.	4.94	98.9
8	Compared to static manikin partial task practice, the VRS helped me improve my technical proficiency.	4.94	98.9
9	The VRS has helped improve my ability to execute the NST independently.	4.91	98.1
10	The VRS allowed me to apply scientific principles I have studied, when interpreting the NST results.	4.91	98.1
11	Overall, I am satisfied with the use of the VRS.	4.91	98.1

Abbreviations: NST, non-stress test; VRS, virtual reality simulator.

Development and Pilot Testing of a Non-stress Test Virtual Reality Simulator

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