The Effects of a Virtual Simulation on Knowledge and Comfort Level of Healthcare Students in Their Interaction with Individuals with Intellectual and Developmental Disability (IDD)

NLN Nursing Education Research Conference
Washington, DC
March 28, 2025

Suzanne C. Smeltzer, EdD, RN, ANEF, FAAN (VU)

Bette S. Mariani, PhD, RN, ANEF, FAAN (VU)

Barbara Kellar, PT, DPT (SJU)

Nicole Roberts, OTD, MOT, OTR/L (SJU/WU)

Disclosure Statement

This study was supported in part from a grant from the Administration for Community Living awarded to Rush University, Chicago, Ill

Background: Intellectual and Developmental Disability (IDD)

- People with disability receive health care that is inferior to care provided to those without disability
- Risk of inferior care is greater in those with intellectual/ developmental disability (IDD) than those without disability and those with other types of disability
- Lack of education of health care professionals about disability in general and IDD specifically has repeatedly been identified as ***the*** major factor in inferior health care

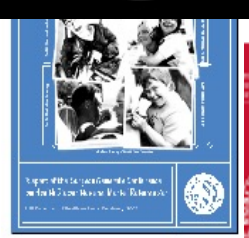
Prevalence and Incidence of IDD

- 1 in 6 children in U.S. has a developmental disability*
- 16.6% of U.S. population has a developmental disability*
- 7 – 8 million people (children and adults) in the U.S. have IDD*
- Despite the sizable population in U.S. with IDD, healthcare has been problematic at best
- Multiple calls to action have been issued to address disability in all healthcare professions, including nursing and nursing education

*CDC, 2024

National & International Calls to Action to Address Disability in Healthcare Professions Education

NATIONAL ACADEMY of MEDICINE



U.S. Surgeon General

H.R.3590 - Patient Protection and Affordable Care Act111th Congress (2009-2010) "Obama Care

NATIONAL COUNCIL ON DISABILITY

Alliance for Disability in Health Care Education

World Health Organization report on health equity persons with disabilities

World Health Organization

National Council on Disability 2022 Policy Brief

CONVENTION on the RIGHTS of PERSONS with DISABILITIES

HEALTHY PEOPLE 2010

Healthy People 2020

Healthy People 2030

DEI Efforts at National Level = DEIA
Biden's Executive Order 1-20-21

Definitions of IDD

- Intellectual or cognitive disability (IDD) a life-long developmental disability that affects intellectual or cognitive function

- IDD affects general intellectual abilities (learning, problem solving, reasoning) *and* adaptive functioning in three domains:
  - conceptual (language, reading, writing),
  - social (IPR skills, social judgement)
  - practical (self-care, ADL, school and work skills).

PATH-PWIDD Project

(Partnering to Transform Heath Outcomes with Persons with Intellectual and Developmental Disabilities)

- A 5-year, ACL grant-funded project to create high-impact and inclusive learning materials to educate health care professionals
- Five universities involved (Rush, U OF Illinois at Chicago, U of Minnesota, St. John Fisher, and Villanova University)
- Intent is IPE IDD education in all participating schools with goal of disseminating to other HC professions programs
- Each program developed different strategies and materials with intent to have menu of these strategies and materials available to programs

Villanova University College of Nursing

- The only one of the 5 participating schools in PATH-PWIDD that is not part of a campus with other HCP programs or situated on academic health center campus.
- Most U.S. nursing programs are not part of academic health center campuses; thus there is a need for alternative approaches to addressing goals for PATH-PWIDD.
- VU's project involves virtual IPP-IDD simulation with individuals with IDD participating virtually.

Villanova University College of Nursing…

An IPE IDD virtual simulation was built on previous Villanova SPWD program to include persons with IDD.

Guided by previous simulation with faculty and students from St. Joseph's University, nursing, OT, PT, Pharmacy, and/or PA programs.

Project includes 7 modules on IDD for students to complete prior to their participation in the simulation.

Family members and disability advocates assisted in development of modules and scenarios.

Phases of Virtual IPE Simulation

- Students complete pre-simulation surveys of knowledge about IDD and level of comfort in interacting with persons with IDD.
- Students are asked to review 7 modules about IDD that addressed
  - Communication with persons with IDD
  - Attitudes, bias, ableism and stereotyping
  - Social determinants of health, intersectionality, and models of disability
  - IDD Part I: What it is
  - IDD Part II: Select health-related issues
  - Important differences between IDD and ASD
- Students participate in a 2-hour IPE IDD Virtual Simulation that includes an interaction with an individual with IDD (“Expert Patient”) with debriefing
- Students are asked to complete post-simulation surveys of knowledge about IDD, comfort level, and impressions of simulation (+ and – aspects).

Overview

Timeline

Pre-Simulation Activities: Readings & Completion of Pre-Simulation Measures

IPE IDD Simulation Experience Begins with Students Moving to Interprofessional Breakout Groups

Part 1: Overview and Introduction (5 min) Icebreaker & "What's wrong with this picture?" and "Check your attitudes and biases" (20 min)

Part 2a: Half of students participate in: 1st assigned case study followed by Interaction with Expert Patients with IDD (60 min)

OR

Part 2b: Half of students participate in: Interaction with Expert Patients with IDD followed by 2nd assigned case study (60 min)

Part 3: After completion of case studies and Expert Patient Interaction, students move to debriefing with their group and faculty facilitator (30 min)

Post-Simulation Activities: Completion of Post-Simulation Measures

Sample

	Student Participation in Simulation	Students who Provided Pre- and Post-simulation Data
Nursing	49	22
Occupational Therapy	21	20
Physical Therapy	47	46
Physician Assistant	36	11
	TOTAL: 153	Total: 99

Demographic Characteristics of Sample

Gender: Female: 72 (72.2%)

Male: 27 (27.3%)

Age: Range: 21 – 36 (87% were 25 or younger)

Mean ± SD: 23.38 ± 2.63

Discipline: Nursing 22 (22.2%)

OT 20 (20.2%)

PT 46 (46.5%)

PA 11 (11.1%)

Outcome Measures

- **Knowledge test – 20-item pre- and post-simulation knowledge tests based on content of 7 modules**

- **Self-Perceptions Scale (modified Healthcare Provider Questionnaire [Robey, 2001]): a semantic differential scale of self-attribution of skill and comfort when imagining caring for 3 persons with upper respiratory infection:**
  - **With no disability**
  - **With physical disability**
  - **With physical and moderate cognitive disability**

- **Responses to open-ended questions that asked about value of the simulation (most helpful and least helpful)**

Outcomes:
Knowledge Level

- Knowledge test – no significant difference in overall scores on pre- and post-simulation knowledge tests
  - Pre-simulation score mean: 16.36 ± 1.89
  - Post-simulation score mean: 15.43 ± 2.35
- No differences in pre- or post-simulation knowledge scores by student groups/disciplines
- No differences in changes in pre- or post-simulation knowledge scores by student groups/disciplines

Outcomes: Self-attributions of Skill and Comfort

Prior to Simulation (Higher scores = greater confidence, skill, etc.)

Self-Attributions	Three Scenarios		
	No Disability	Physical Disability	Physical & Cognitive Disability
Confident/Apprehensive	5.56 ± 1.80	5.19 ± 1.201	4.56 ± 1.319
Skilled/Unskilled	5.44 ± 1.13	5.18 ± .952	4.48 ± 1.124
Comfortable/Uncomfortable	5.67 ± 1.03	5.36 ± 1.083	4.95 ± 1.273
Graceful/Awkward	5.61 ± 1.19	5.24 ± 1.270	4.90 ± 1.410
Efficient/Inefficient	5.57 ± 1.08	5.26 ± 1.112	4.72 ± 1.176
Calm/Anxious	5.65 ± 1.24	5.40 + 1.195	4.93 + 1.431

RM-ANOVA: significant differences (*p* = .006 to >.001) across scenarios before student participation in simulation with lower scores in scenarios with physical and cognitive disability than no disability or physical disability alone.

Outcomes: Self-attributions of Skill and Comfort *Prior* to Simulation

Self-Attributions	Three Scenarios		
	No Disability	Physical Disability	Physical & Cognitive Disability
Confident/Apprehensive	5.56 ± 1.80	5.19 ± 1.201	4.56 ± 1.319
Skilled/Unskilled	5.44 ± 1.13	5.18 ± .952	4.48 ± 1.124
Comfortable/Uncomfortable	5.67 ± 1.03	5.36 ± 1.083	4.95 ± 1.273
Graceful/Awkward	5.61 ± 1.19	5.24 ± 1.270	4.90 ± 1.410
Efficient/Inefficient	5.57 ± 1.08	5.26 ± 1.112	4.72 ± 1.176
Calm/Anxious	5.65 ± 1.24	5.40 + 1.195	4.93 + 1.431

RM-ANOVA: significant differences *(p* = .006 to >.001) across scenarios before student participation in simulation with lower scores in scenarios with physical and cognitive disability than no disability or physical disability alone.

Outcomes: Self-attributions of Skill and Comfort *After* Simulation

Self-Attributions	Three Scenarios		
	No Disability	Physical Disability	Physical & Cognitive Disability
Confident/Apprehensive	6.11 ± .879	5.99 ± .931	5.77 ± .998
Skilled/Unskilled	5.99 ± .875	5.92 ± .893	5.71 ± .995
Comfortable/Uncomfortable	6.18 ± .804	6.03 ± .883	5.78 ± .975
Graceful/Awkward	6.06 ± .951	6.04 ± .907	5.80 ± 1.027
Efficient/Inefficient	6.07 ± .811	6.03 ± .879	5.79 ± 1.025
Calm/Anxious	6.13 ± .853	6.06 + .971	5.94 ± 1.049

RM-ANOVA: significant differences *(p* = .006 - > .001) across scenarios after student participation in simulation with lower scores in scenarios with physical and cognitive disability than no disability or physical disability alone.

Outcomes: Comparison of Pre- and Post-Simulation Scores In Scenario with Person with Physical and Cognitive Disability

(Higher scores = greater confidence, skill, etc.)

Self-Attributions	Pre-Simulation Scores	Post-Simulation Scores
Confident/Apprehensive	4.56 ± 1.32	5.77 ± .998
Skilled/Unskilled	4.48 ± 1.12	5.71 ± .995
Comfortable/Uncomfortable	4.95 ± 1.27	5.78 ± .975
Graceful/Awkward	4.90 ± 1.41	5.80 ± 1.03
Efficient/Inefficient	4.72 ± 1.18	5.79 ± 1.03
Calm/Anxious	4.93 + 1.43	5.94 ± 1.05

Paired *t* test revealed statistically significantly increases in all scores from pre- to post-simulation ($p < .001$)

Outcomes:
Open-ended Responses of Students to Simulation

- Questions asked for responses about what parts of simulation were most helpful and least helpful
- Basic descriptive qualitative analysis of responses was used to analyze responses
- 93 students provided "**most helpful**" responses
  (Responses categorized as expert-patient focused, IPE-related, and "other")
- 98 students provided "**least helpful**" responses
  (Responses categorized as virtual vs. in-person interactions, and "none")

Outcomes:
Open-ended Responses of Students to Simulation

- **Responses to the simulation: *Most* helpful**
  - **Expert-patient focused (n = 93)**
    - **"Breaking stereotypes of what you think someone with IDD is"**
    - **"Talking to a real person with IDD…and not an actor"**

Outcomes:
Open-ended Responses of Students to Simulation

- Responses to the simulation: ***Most*** helpful
  - IPE-focused responses (n = 24)
    - "I learned the importance of collaborating with other professionals"
    - "Although all HCPs have different areas of focus, the goals are the same"
  - Other (n = 7)
    - Case study and case study discussion
    - Debriefing
    - Modules and slides

Outcomes:
Open-ended Responses of Students to Simulation

- **Responses to the simulation: *Least* helpful**
  - **Virtual vs. in-person simulation (n = 23)**
    - **"The only difficulty was it was on Zoom rather than in-person"**
    - **"Virtual format could have been intimidating to persons with IDD"**
  - **No part of simulation identified as unhelpful or uninteresting (n = 25)**
    - **"N/A. I found it all to be a helpful exercise."**
    - **"It was all helpful because it was a new experience and helped me prepare for my next encounter with someone with IDD."**

Summary of Results

- Knowledge level of students did not change from pre- to post-simulation on 20-item T/F tests.
  - Students may not have completed review of educational modules
  - Possible lack of reliability and validity of knowledge tests
- Students' self-attributions about skill and comfort in interaction with persons with IDD increased significantly from pre- to post-simulation.
- Most students identified virtual simulation as being effective although some believed that in-person interaction with person with IDD would be preferable.

Conclusions and Implications

- **Attention and diverse approaches to educate healthcare students about caring for persons with IDD are needed.**
- **Changes on self-perceptions scale in this study are similar to those observed in studies with face-to-face interaction with persons with IDD.**
- **In the absence of readily available HCP peers, virtual IDD simulation can be effective in improving healthcare students' comfort and confidence r/t interacting with and providing care to persons with IDD.**
- **More testing of virtual simulations to address IDD is needed with measures of IPE and of learners' acquisition of knowledge.**

ACE

Advancing Care Excellence for Persons With Disabilities

NLN's Advancing Care Excellence (ACE) website includes teaching materials and other resources to address the care of individuals with IDD

Including our 7 modules and case studies and other materials to address IDD and other types of disability

Questions or Comments?

Suzanne.smeltzer@Villanova.edu

Bette.mariani@Villanova.edu