



Improving Pharmacy Education and Patient Centered Care Through Virtual Reality

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Abstract:

Introduction: This qualitative research explored the impact of immersive virtual reality (VR) experiences on student pharmacist knowledge, attitudes, and anticipated behaviors, when used as a supplement to traditional didactic education.
Methods: Participants completed one or more simulated VR experiences role-playing a person with Alzheimer’s Disease (AD), which included experiencing realistic visual and auditory disturbances, struggling with language comprehension and experiencing aphasia. Post experience, students responded to several short essay prompts.
Results: Thirteen pharmacy students participated in the study. Overall, the study assessed student’s self-perceived empathy and anticipated changes to provision of patient care as a result of this activity. Major categories of themes that emerged included 1) understanding the dementia experience, 2) importance of empathetic and patient- and family-centered care, and 3) resultant changes in practice.
Conclusions: A VR simulated experience of AD increased student pharmacist understanding of the experience of having AD and the importance of empathy and patient- and family-centered care. Participants indicated anticipated change in future behavior as a pharmacist.

Objectives and Study Aim:

- **Specific Aim:** Describe themes around empathy and anticipated behavior change in patient care that emerged in student reflections after the virtual reality (VR) experience of being a person with Alzheimer’s Disease.
- **Hypothesis:** Students will report higher levels of empathy as a result of this VR activity

Methods

- This was a mixed methods study with qualitative and quantitative components and the qualitative portion is presented here.
- The qualitative analysis included n=13 third-year Pharm.D. students who were all taking the Drugs and Disease XI: Neurology/Substance Use Disorder course. Involvement was voluntary, consented, non-randomized and non-blinded. Data was de-identified and analyzed as a whole.
- Each student completed one or more of the three modules offered by Embodied Lab’s Beatriz lab. Students subsequently completed four reflection prompts gauging their VR experience, impact on empathy, and application to patient care.
- Each response was split into meaning units retaining the original quotes. Data was the condensed further into codes. Responses were then grouped into larger categories and then finally into overarching themes. This allowed for key themes to be extrapolated to a broader audience of student pharmacists.

What did it feel like to have dementia and which stage did you experience?

What does the term “empathy” mean and how does this experience relate to this term for you?

Has your empathy increased as a result of this activity and why or why not? If not, what would increase your empathy for patients with dementia?

How will this experience inform your work as a pharmacist?

Why Virtual Reality (VR)? Who is Beatriz?

- VR is an effective & powerful training tool in aviation, manufacturing, and the military
- Stimulates a user’s physical senses to the point of feeling psychological immersion
- Differs from traditional media by giving a sense of presence and an embodied perspective in ways that are otherwise not possible
- Offers skill-building without risk and costs of real-life risky situations
- Researchers use VR to change social attitudes in a variety of settings, helping people see the world from others’ point of view
- The Beatriz lab from Embodied Labs offers a first person experience through different stages of Alzheimer’s Disease (AD), showing the range of symptoms and how it affects Beatriz, a middle-aged Latina woman, and her family.
- From onset to late stage disease, this lab includes the transition to residential care and allows the learner to understand the effects AD has on daily life and relationships.
- After completing the lab users are able to:



Identify ways that AD affects communication in the brain

Recognize changes in visual and auditory processing that can disrupt activities of daily living

Identify ways that a person with AD can be redirected, calmed, and engaged

Find effective ways to work as a team between patient, family, and healthcare personnel to contribute to patient quality of life



What is Alzheimer’s Disease?

- Major neurocognitive disease that progressively impairs cognitive function and accounts for 60 - 80% of all dementias
- Impacts and worsens short-term and recent memory, planning, and goal-directed behavior in addition to changes in mood, behavior, and social functioning, disorientation, confusion, paranoia, difficulty speaking, swallowing, and walking
- Patients progress from mild to moderate to severe/end stage and speed of cognitive decline varies and is usually over a span of multiple years
- AD begins to interfere with instrumental activities of daily living (e.g., grocery shopping, handling medications, and using transportation) and ultimately interferes with basic activities of daily living (e.g., eating, bathing, and toileting)
- Increasing age is the greatest known risk factor, however it is important to note that it is not a normal process of aging

References

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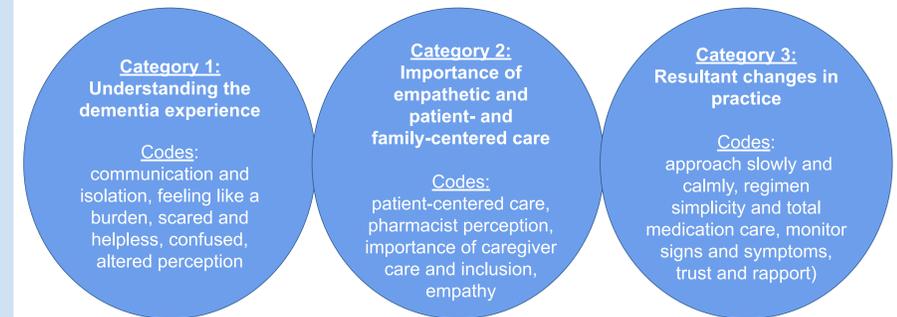
Results:

After the VR experience, 12 of 13 (92.3%) student pharmacists reported an increased level of empathy through their reflections, while one student reported no change.

Major themes

- 1) understanding the dementia experience
- 2) importance of empathetic and patient- and family-centered care
- 3) resultant changes in practice through self-expressed reflections

Identified Codes and Categories



Examples of Meaning Units

“Loss of communication and the inability to carry out my normal daily routine made this experience more frustrating. These feelings created panic. I would liken how I felt to a necklace is all tangled up and having to sit there and untangle the knots. If you’re feeling calm, you sit there patiently and one by one untangle the necklace and work out the reality of the day. If panic rises, it’s like when you’re impatient with the necklace and give in and feel like you’ve lost the use of the necklace.”

“Seeing this experience will definitely help me as a future pharmacist to make sure that I am expressing empathy in patients that have difficulty understanding what may be going on with them.”

“(They) talked right in front of her, like she wasn’t in the room. I felt like her thoughts and opinions didn’t matter. As a pharmacist, I will understand that it is very important to include the family and caregivers in the discussion of the treatment... it is also important to include the patient in the conversation, so they feel at ease.”

“Empathy is being able to understand what others are going through and to feel for them. It’s not feeling bad or sad for them, but it’s being able to relate to them”

Conclusions:

- Virtual reality (VR) allows the user to experience diseases using a fully immersive 360-degree, first-person view.
- After experiencing Alzheimer’s Disease via VR, students reported increased understanding of the dementia experience; recognition of the importance of empathetic and patient- and family-centered care; and identifying anticipated changes in future practice.
- Using VR to supplement didactic pharmacy education for dementia is a useful tool to increase student pharmacist empathy and is anticipated to change future practice. Follow up studies are being planned to assess long term benefits.