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Virtual Simulation-Based Training and Person-Centered Care

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Abstract: Person-centered care is instrumental in the treatment of individuals with dementia. Despite this finding, research on the efficacy of training future healthcare providers to implement person-centered care for individuals with dementia is limited. Simulation-based education serves as one training method, but its effects of preparing students to treat persons with dementia using person-centered care is unknown. This mixed methods study used short-term treatment goals, reflective essays, and focus groups to evaluate the difference prior to and after a virtual reality dementia experience in graduate Communication Sciences and Disorders' students' perceptions of person-centered care. Findings support the theory that a virtual reality dementia experience impacts students' intent to provide PCC for persons with dementia. More research is warranted to determine whether a virtual reality dementia experience effectively facilitates the use of PCC in the clinical setting.

Keywords: Dementia, simulation, experiential learning theory, and person-centered care.

Nearly 5.5 million Americans over 65 years of age live with dementia today (Oh & Rabins, 2019). Approximately 47 percent of these individuals reside in long-term care facilities (Harris-Kojetin et al., 2019). These statistics are expected to increase, as technological and medical advancements enable Americans to live longer. Persons with the diagnosis of dementia residing in long-term care facilities typically receive therapy from a speech-language pathologist (SLP) for cognitive and/or communicative impairments. Speech-language treatment development that involves residents and caregivers aligns with person-centered care (PCC), which focuses on the whole person instead of the disease (Morgan & Yoder, 2012). According to Buron (2008), PCC is defined as achieving a person's physical, psychological and social needs within the realm of healthcare. The individual with dementia becomes a member of the healthcare team and is involved in communications, decision-making, and problem-solving related to healthcare (Epp, 2003; Harding, 2020; Kitwood & Bredin, 1992).

Douglas, Brush and Bourgeois (2018), as well as the Alzheimer's Association (2022), emphasize that providing person-centered practices are critical to treating persons with dementia. In their systematic review, Li and Porock (2014) found that residents in long-term care (LTC) demonstrated significantly fewer responsive behaviors (verbal/physical aggression, wandering, paranoia) with person-centered interventions. Moreover, a significant number of residents reduced use of psychotropic medications (Chang, Li, & Porock, 2013; Thomas, 1996).

Despite the benefits of using PCC to treat individuals with dementia, DiLollo and Favreau (2010) indicated that literature supporting SLPs' use and implementation of PCC is limited. They claim that most SLPs follow the medical model in which they recognize, diagnose, and treat the client's disorder. Additional challenges of PCC implementation involve high productivity demands within a 'business-first' culture instead of a 'patient-first' culture (Eklof et al., 2014; Hagenow, 2003; Hartmann et al., 2009). In this way, therapy is very structured, task-oriented and delivered in a specific time-frame, making it difficult to determine if PCC is being provided.

In order to increase the amount of PCC in LTC facilities, graduate programs must prepare future SLPs to provide appropriate, person-centered treatment for individuals with dementia. Simulation-based learning has gained acceptance in health care education to promote realistic learning opportunities throughout the field (Harder, 2010; Hayden, 2010; Jansen, 2015) and to develop skills such as PCC. Simulation serves as an interactive, experiential learning technique that mimics real world experiences (Flanagan et al., 2004; Gaba, 2004). Based on Kolb's Experiential Learning Theory (ELT; Kolb, 1984), simulation can provide students with the link between theory, classroom-based knowledge, and application to clinical practice. Kolb identified four interactive steps associated with learning from experience: concrete experience, reflective observation, abstract conceptualization, and active experimentation. In this study, students experienced a simulated learning experience (concrete experience), engaged in reflection (reflective observation), and generated short-term treatment goals (abstract conceptualization and active experimentation).

The reflective observation of simulation-based learning involves pre-briefing and debriefing following simulations moderated by a trained facilitator (Fanning & Gaba, 2007; Lopreiato, 2016). Pre-briefing serves as an orientation to the simulation learning experience in which students learn the performance expectations. The debriefing process entails self-reflection and application-based questions related to the simulation (Dudding et al., 2019). According to Jeffries et al. (2015), debriefing is a vital component of transferring knowledge for future clinical experiences.

The goal is that students will apply the knowledge learned in the simulation to future clinical practice and continue to adapt their skills with more experiences which aligns with abstract conceptualization and active experimentation of ELT (Kolb, 1984). Within this study students wrote short-term goals to reflect clinical application of the simulation-based learning experience.

Simulation research in the area of educating students in allied health programs shows that simulation is effective in teaching knowledge and skills similar to hands-on practice (Cook et al., 2011). Cook et al. (2011) reported improvements in patient safety, student performance and skills as well as student confidence following health care simulations. Out of the 136 ASHA-accredited Communication Science and Disorders (CSD) programs who participated in a survey, 51% incorporate some form of simulation-based learning within academic or clinical courses (Dudding & Nottingham, 2018). CSD students accepted high and/or low fidelity simulation experiences and reported increased comfort levels as well as knowledge (Burnes et al., 2012; Putter-Katz, 2018).

Given the growing demand to treat the aging population with dementia, simulation may be used as a teaching technique to enhance CSD students' awareness of the difficulties associated with a diagnosis of dementia and facilitate PCC. Current research indicates simulation-based learning improves healthcare providers' sense of empathy for persons with dementia (Eaton, 2018), but empathy is only one of the many components required in providing PCC. Recent literature is inconclusive as to how graduate students apply skills, such as PCC, cultivated through simulation to future practice.

Particularly, additional pedagogical evidence is required to establish a relationship among simulation-based learning and the development of PCC for persons with dementia. This study sought to elaborate on previous simulation-based learning studies that identified increased knowledge following simulation to application of simulation-based learning. The application of learning and PCC will occur through generation of short-term goals for a person with dementia. Goal writing serves as a clinical tool students will use in future practice to measure behavioral changes following therapy (Nobriga & St. Clair, 2018).

Methods

The purpose of this convergent mixed methods study was to better understand how a virtual reality dementia experience influences graduate CSD students' perceptions of PCC for future clinical practice by converging both quantitative and qualitative data. Using a quantitative approach, graduate students' treatment goals for persons with dementia were used to measure the effect of a virtual reality dementia experience on PCC. At the same time, using a qualitative approach, graduate students' perceptions of a virtual reality dementia experience in relation to PCC were explored using reflective essays and focus groups. The following research questions guided the study:

- Quantitative: What is the difference between the treatment goals for persons with dementia developed by students before and after participation in the virtual reality dementia experience?
- Qualitative: What are the perspectives of graduate CSD students on a virtual reality dementia experience in relation to providing PCC?
- Mixed: Do changes in the pre and post simulation goals represent the students' perspectives of the relationship between a virtual reality dementia experience and providing PCC for individuals with dementia?

This study is unique in two ways. First, it adds to previous studies within scholarship of teaching and learning (Burnes et al., 2012; Cook et al., 2011; Putter-Katz, 2018) which investigated students' self-perceptions of simulation (comfort, knowledge) by describing students' application of the simulated learning experience. Second, it provides a method and measurement of applying knowledge from simulation-based learning for CSD graduate students through goal writing.

Methods of this study were approved by the university's IRB. Participants included second year graduate CSD students enrolled in a Cognitive Rehabilitation course at the same university. Students understood the definition and general behavioral characteristics associated with dementia evident by completion of two required graduate courses entitled Introduction to Communication Disorders as well as Adult Neurogenic Communication Disorders. Students also received training in development of goals and treatment plans within academic and clinical practicum courses. Training involved knowledge and practice writing SMART (specific, measurable, assignable, realistic, and time-related; Schut & Sham, 1994) as well as life participation goals (Haley et al., 2019). In this way, purposeful sampling was used to intentionally sample a group that would be most informative to the research questions.

Materials and Procedures

As a course requirement, all students (*n* = 16) enrolled in the course reviewed a written history and viewed a video of "Barbara," a person with dementia, during the Cognitive Rehabilitation course. The video was developed by the National Health Services Organization (2022) and used to increase awareness of dementia. The video lasted approximately thirty minutes in duration and outlined "Barbara's" experience with dementia and difficulties faced in her everyday life associated with her diagnosis. Immediately following the presentation of the video, students developed one short-term treatment goal for "Barbara."

Then, following pre-briefing instructions with information about the simulation, they participated in a virtual reality dementia experience called "A Walk Through Dementia." This app was designed by Alzheimer's Research United Kingdom to simulate living with dementia (AlzheimersResearch UK, 2016). Students downloaded and watched the "On the Road" virtual reality dementia experience on their individual phones, which demonstrated what it is like for a person with dementia to navigate sidewalks/roads while finding her way home from the supermarket. According to Alzheimer's Research United Kingdom, this virtual reality dementia experience targets many deficits that persons with dementia experience, such as reduced memory, recognition, and visual acuity. The simulation relates to PCC by providing a patient-perspective; students may experience the physical, cognitive, and sensory impairments often associated with dementia. With increased awareness of dementia, care may include more components of personhood.

Following the virtual reality dementia experience, as a group, students participated in a debrief by discussing their initial reactions of the video and simulation (share your thoughts/feelings about this experience, how has this influenced your perception of dementia). They also wrote a one-two page reflection due the day of the simulation with the following prompts:

> *What are your perceptions of dementia?*
> *What are your perceptions of dementia management/treatment?*
> *Describe what was easy and/or difficult during the simulation.*
> *Describe what, if anything, surprised you during the simulation.*
> *Did your perceptions change after completing the simulation? If so, how?*

Then, students wrote a second short-term treatment goal for "Barbara". They only wrote two goals due to time constraints.

Outside of regular class time, students voluntarily signed informed consent and participated in a focus group through zoom. Consent was only required for focus groups because the course required the other forms of data collection (goals and reflective essay). Focus group questions sought to reveal students' perceptions of how the virtual reality dementia experience may inform their future clinical practice. This served as a debrief as well with fewer students in a group to enhance participation. See Appendix A for focus group questions.

Quantitative Analysis

Pre and post simulation treatment goals were analyzed for inclusion and relevance of a target behavior and life participation components. These components link to previous coursework about writing SMART goals aimed at increasing life participation. Measuring the target behavior and life participation components represents application of knowledge from coursework. For the purposes of this study, a target behavior was defined as a behavior identified for change, a measurable skill for "Barbara" to obtain, improve, or use (e.g. use memory book). Life participation, as defined by the WHO (2002) "is involvement in a life situation" (p. 10). Thus, goals were analyzed for a life participation component indicating that the participant had considered how the goal would impact or improve "Barbara's" participation in life. Examples of life participation components related to increased independence or navigating independently in the home. Inclusion of the life participation component relates to PCC because students may look beyond the specific task (memory) to how the task impacts the participant's life (remembering location of house). The life participation component also individualizes goals (Haley et al., 2019).

The second author developed a systematic scoring procedure for goals. Each goal could earn a total of four points: two points for target behavior and two points for life participation (Appendix B). The points for each component within the goal are arbitrary but present a consistent scoring system used by multiple raters. For the target behavior; one point was given if a target behavior was present in the goal and another point was given if the target behavior was relevant. A relevant behavior was in the scope of practice of speech-language pathology. For example, a goal that targets utilizing utensils would not be appropriate, as targeting the fine motor skills involved in using utensils is not within the scope of practice of SLPs. However, a goal that targeted labeling utensils would be considered relevant because SLPs are licensed to treat language and cognition.

Similar to the scoring procedure of the target behavior, each goal could earn up to two points for the life participation component. One point was given if a life participation component was present and another point could be earned if the life participation component was relevant to "Barbara." Thus, a total of four points could be obtained. Students were not informed about the scoring system due to compromising the purpose of the study.

Three researchers (the first author, the second author, and a graduate research assistant) scored the goals. The second author developed the scoring framework (Appendix B) for treatment goals and trained the other researchers. The research assistant participated in a one-hour training that included a description of the purpose of the study, measurements (treatment goals), scoring for the measurements, as well as data management procedures. Then, she and the second author independently scored the goals. Inter-rater reliability was 90% and any discrepancies were discussed prior to scoring the remaining goals.

To determine differences between pre and post goals in relation to target behavior and life participation components, a Wilcoxin signed rank test was performed using SPSS.

Qualitative Analysis

Focus groups were transcribed verbatim (see Appendix A for questions). In the focus groups, students' names were removed by research assistants prior to analysis and unknown to authors. For the reflective essays, pseudonyms were given to all students. Data from focus groups and reflective essays were analyzed using thematic analysis (Attride-Stirling, 2001; Braun & Clark, 2006) to reveal themes associated with students' perspectives of the relationship between a virtual reality dementia experience and future clinical practices as a SLP. Thematic analysis aims to identify relationships and trends in focus group responses and reflective essays. This may provide a deeper, richer sense of the data. More specifically, thematic analysis generated and associated recurring patterns to create a story reflecting students' views of a virtual dementia simulation. Thematic analysis included four phases (familiarity with data, code, themes, and story).

Familiarity with the data

First, data from the focus groups were transcribed verbatim. Then, researchers became familiar with the data by reading the students' reflections numerous times and identifying similarities in the data.

Codes

Transcriptions from the focus groups and reflective essays were read line by line and semantic codes were highlighted. Codes reflected an actual quote from the participant or a general idea of the data extract. Codes were developed for reflective essays and focus groups separately. Then, they were combined to generate themes representing the data as a whole.

Themes

Next, similar codes were organized and sorted into themes. The themes were defined and reviewed to ensure no overlap and adequate representation of the data.

Story

The themes were organized into a storyline to reflect the students' views. Qualitative analysis was completed by five researchers: first and second authors as well as three graduate students. Graduate students participated in a one-hour training session related to the research study and data analysis steps. One graduate student transcribed the audiotapes from the focus groups. Two other graduate students coded the reflective essays and focus groups. The codes they generated were reviewed by the first and second authors.

Mixed Methodology Analysis

Following quantitative and qualitative data analysis, findings were merged to identify a deep understanding of students' perceptions of the dementia simulation in relation to PCC. The qualitative findings enhanced the quantitative results (Creswell & Creswell, 2018).

Validation Procedures

During all phases of data analysis, two researchers (first two authors) frequently referred to the data to ensure the analysis represented the words expressed by the students. Audiotapes from the focus groups were verified for accuracy. No transcription errors were identified. To increase credibility of findings, member checking was used in which students read the story (final data analysis) to ensure all of their views were expressed accurately. 15 out of 16 students were in agreement with the findings. One participant did not respond to the member checking request. An audit trail was kept with numbers of codes at each phase of the data analysis. Methodological triangulation was used to increase the validity of the findings. Three forms of data were collected: pre and post treatment goals, reflective essays, and focus groups. These data sources were thoroughly analyzed to offer a variety of data related to students' views of the dementia simulation.

Results and Integration

Students included 16 second year female graduate students between the ages of 22 and 24. All students completed reflective essays and wrote pre and post treatment goals for "Barbara." Eleven of these students volunteered to participate in one of three focus groups, each lasting approximately 20 minutes. Focus groups were led by the second author. Two focus groups included four students and one focus group included three students. Although the sample size was relatively small, the intent of this study was not to identify the experiences of all second-year graduate students, but describe the experiences of this cohort of graduate students, which may permit understanding of future graduate students in CSD programs. The following sections highlight the findings from quantitative and qualitative analysis as well as converging the findings. Quotes from students in focus groups will be cited as 'focus group number, participant number'. Quotes from reflective essays will include the participant's pseudonym.

Quantitative Results

What is the difference between the treatment goals for persons with dementia developed by students before and after participation in a virtual reality dementia experience?

Data from the pre and post treatment goals were analyzed using a sign test. A *p*-value of .687 was achieved, meaning that the change in scores following the virtual reality dementia experience was not statistically significant.

Qualitative Results

What is the perspective of graduate CSD students on a virtual reality dementia experience in relation to providing person centered care?

Thematic analysis of the reflective essays and focus group transcriptions yielded 51 codes that were organized into four main themes. Each theme described the overall perspective of graduate CSD students on a virtual reality dementia experience as it related to treating persons with dementia using PCC.

Theme 1: Sizing up to the Shoes of Persons with Dementia

This theme encapsulated students' pre-simulation perceptions of dementia and how the virtual reality dementia experience altered their understanding of living with the disease. Thus, this theme described how students "sized up" to the shoes of persons with dementia through a virtual reality dementia experience in a way that immersed them into the physical and psychological deficits experienced by persons with dementia.

Prior to the virtual reality dementia experience, students expressed that their perceptions of dementia were primarily limited to their own clinical or academic experiences. Most had little experience interacting or treating persons with dementia. Thus, their perceptions were based on knowledge obtained from textbooks, academic resources, or an experience with a family member:

> *"All of my knowledge about dementia treatment/management at this time is theoretical, what I learned in classes and by reading." (Amy)*
> *"My grandmother had memory issues." (Focus group 3, participant 2)*

Some students even expressed concerns for treating persons with dementia and acknowledged their fears of treating persons with dementia prior to the virtual reality dementia experience:

> *"I'm truly terrified of treating someone with dementia." (Focus group 1, participant 4)*
> *"I know types of treatment to implement but it's just harder for me to grasp what treatment of dementia will look like." (Focus group 1, participant 3)*

Following the virtual reality dementia experience, students indicated that the experience enabled them to better understand the deficits and difficulties that persons with dementia encounter in their everyday lives. The virtual reality dementia experience provided a more personal learning approach that allowed students to virtually navigate life as a person with dementia including the emotions, anxieties, fears, and personality changes that impact persons with dementia:

> *"I could (literally) feel the stress that that individual with dementia was feeling and the anxiety." (Focus group 2, participant 3)*
> *"I don't know if I had ever thought about the emotions that they feel before" (Focus group 1, participant 3)*

> *"It helped me appreciate the levels of anxiety and fear people with dementia endure when they are disoriented, or after a disruption." (Maria)*
> *"After watching the dementia simulation, I feel that I have gained insight into how individuals with dementia may feel." (Kelsey)*

Students also expressed increased awareness of hallucinations and visual and cognitive deficits:

> *"Experienced terrifying hallucinations, visual field deficits, confusion, anxiety, food preferences changes, and impaired proprioception." (Maria)*
> *"I was able to literally see through the eyes of someone who has dementia." (Hannah)*
> *"I did not expect the degree of visual distorting and time loss that coincided with the disorientation." (Maria)*

Students explained that the ability to walk in the shoes of a person with dementia not only allowed them to gain a better understanding of the difficulties persons with dementia encounter in their everyday routines, but that the experience impacted their original perception of dementia. They reported more consideration and empathy for persons with dementia:

> *"My perception has changed in a way that I will be as considerate as I possibly can be with individuals who have dementia." (Anna)*
> *"Made me as a clinician become much more empathetic with what clients with dementia are going through." (Haley)*

Theme 2: Providing for the Person

This theme captured the students' post-simulation thoughts of designing treatment that focuses on the person, rather than disease. Although dementia is a disease that often requires treatment, students emphasized the importance of personalizing care and implementing strategies that help maintain personhood. Students shared that the virtual reality dementia experience highlighted the importance of providing personalized care that represents the client's interests and needs. They suggested developing individualized, personally relevant treatment goals and plans of care. Students also considered the importance of designing treatment that enables persons with dementia to participate in meaningful activities:

> *"Every client is going to be different and that you need to tailor your activities and goals to them." (Focus group 2, participant 3)*
> *"I have an even better understanding of why dementia treatment must be personally relevant and contextual to the client's everyday life." (Jamie)*
> *"Focus should be on what is going to make the patient most comfortable and most functional so that they feel as if they have a purpose." (Beth)*
> *"In the future, I plan to use the information I have learned through this simulation to make more accurate and personalized decisions for assessment and treatment of dementia." (Haley)*

In addition to taking a personal approach to treatment, students suggested reducing the complexity of tasks to alleviate the cognitive load and teach clients compensatory strategies to participate in daily activities:

> *"The neurological connects lost from the disease cannot be recovered; however, compensatory strategies can be used to increase a patient's quality of life." (Amy)*
> *"Try to keep things as simple as possible to avoid information overload." (Anna)*

Overall, students expressed that the virtual reality dementia experience heightened their awareness of providing personalized, relevant treatment and strategies for persons with dementia. They suggested that the ideas and insights gained will guide their future interactions with persons with dementia:

> *"I will remind myself of the experience and use it to guide the intervention that I provide." (Mary)*

Theme 3: Coaching the Caregivers on Communication

This theme illustrated the students' recognition of caregivers in terms of dementia care and treatment. Following the virtual reality dementia experience, students indicated increased awareness of the roles caregivers play in the life of a loved one with dementia. They recognized that caregivers spend a significant amount of time with the client and are involved in many of their daily activities or routines. They claimed the virtual reality dementia experience highlighted the burden that caregivers may feel as a result of caring for a person with dementia:

> *"They spend a lot more time with them than we would." (Focus group 3, participant 2)*
> *"I perceive dementia management and training to be emotionally and physically taxing to the caregiver and the professionals involved." (Mary)*
> *"The emotional toll it takes on the caregiver." (Focus group 2, participant 3)*

Thus, students explained the importance of training caregivers to better communicate with their loved ones with dementia to reduce communicative breakdowns and the burden of care. In this way, they recognized that SLPs should treat and work with the client's family in addition to the client:

> *"Not just treating the person with dementia, you're also treating their family members and caregivers." (Focus group 1, participant 4)*
> *"Management and treatment should also involve caregivers so that when they are communicating with the individual, they know how to best respond during moments of confusion to facilitate comfort for the individual." (Beth)*

Theme 4: The Eminence of Education

This theme described the students' perspectives regarding education and the future of simulation-based learning, such as a virtual reality dementia experience. In addition to coaching the caregivers to communicate more effectively with persons with dementia, students also explained the importance of educating other professionals who interact with persons with dementia. This included medical professionals and community members. The students proposed that a virtual reality dementia experience such as this may educate other professionals and improve communicative efficacy when working with individuals with dementia. As future SLPs, they felt as if they were advocates for persons with dementia.:

> *"Made me think about the importance of educating those in the community." (Focus group 1, participant 1)*

Additionally, the students (CSD graduate students) felt that a virtual reality dementia experience would be equally valuable for speech-language pathology students and would promote better treatment outcomes. They felt that virtual reality provided an understanding that textbooks and other academic resources could not. Thus, students expressed that a virtual reality dementia experience would serve as a valuable component to supplement dementia education for CSD students:

> *"Simulation really strongly focused on what the individual is experiencing, and I think that's a different angle than what we usually get." (Focus group 2, participant 1)*
> *"Being placed in the shoes of someone with dementia was really beneficial." (Focus group 2, participant 3)*

Converging the Data

The lack of statistical significance in the changes from the pre and post treatment goals made it difficult to effectively determine the overall effect of a virtual reality dementia experience on graduate CSD students' perceptions of PCC for future clinical practices. Although these findings were statistically insignificant, the qualitative findings support that students felt strongly about the importance of designing personalized care for persons with dementia. In this way, consideration of the target behavior and life participation components is related to providing PCC. The students expressed that the behaviors targeted in therapy must be relevant and associated with involvement in some aspect of life participation.

Discussion

This study sought to describe graduate CSD students' perceptions of a virtual reality dementia experience on PCC. Quantitative and qualitative data were analyzed and converged to better understand the relationship between a virtual reality dementia experience and graduate students' perceptions of PCC. Based on findings from the convergence of the data, there is evidence from multiple sources of data to support the theory that a virtual reality dementia experience may impact students' awareness of PCC to use in future clinical practices for persons with dementia. Although the change in treatment goal scores following the virtual reality dementia experience was statistically insignificant, analysis indicated there was a small margin of score improvement. Students demonstrated relatively high pre-simulation treatment goal scores, as 14 out of 16 scored two on the target behavior component and 10 out of 16 scored two on the life participation component. A slight increase in post-simulation scores was observed, but the overall ability for improvement was limited and may have impacted the statistical analysis of the scores.

Despite the lack of statistical significance in change of treatment goal scores, the slight increase in post-simulation scores supports the qualitative findings that a virtual reality dementia experience impacts students' awareness of PCC.

An important factor in providing PCC is demonstrating empathy. Simulation has been studied in other realms of healthcare and has proven to facilitate empathy among healthcare providers (Eaton, 2018). Although empathy relates to several components of PCC, the notion of providing person-centered treatment goes beyond being empathetic. In addition to empathy, students highlighted other essential components of PCC: respecting the person with dementia, treating their unique needs, viewing the world from their perspective, and creating a positive environment with relationship-building (Brooker, 2004). The first component of PCC, respecting the person with dementia and those who care for them, includes providing education using familiar language and involving the person with dementia and their caregiver(s) in treatment decision-making. The second component of PCC, treating their unique needs, encompasses providing individualized services. The third component of PCC, viewing the world from their perspective, facilitates the caregiver's or professional's understanding of potential communication behaviors (repetitive questions, wandering, etc.). The fourth component of PCC, relationship building, includes fostering an environment in which the person with dementia and/or caregiver(s) feel comfortable and welcome to share information.

Three of the four themes that emerged from the reflective essays and focus groups relate to the concept of providing PCC. The first component of PCC (respecting the person with dementia) relates to the second theme, providing for the person. Students explained that therapy must be designed in a personalized manner that considers the client's needs, interests, and aspirations, thus facilitating life participation. This was also evident in the post-simulation treatment goals, as slight increases were observed in the number of students that included or improved the target behavior and/or life participation components. Our results add to those of Jennings et al. (2017) who found that individuals with dementia and their caregivers prefer goals related to life participation.

The second and third components of PCC (treating their unique needs and viewing the world from their perspective) relate to the first theme, sizing up to the shoes of persons with dementia. Students in this study emphasized that the virtual reality dementia experience facilitated empathy by immersing themselves in the experience of persons with dementia. Many explained that prior to the simulation, they were unaware of the difficulties persons with dementia faced physically and emotionally. Following the experience, many students felt as if they better understood the impact of living with dementia.

The fourth component of PCC (creating a positive environment with relationship-building) relates to the third theme, coaching caregivers on communication. Students emphasized the importance of educating caretakers and family members to effectively communicate with their loved ones with dementia. As stated by Buron (2008) and emphasized by ASHA (n.d.), one must consider the client's family and/or caregivers in addition to the client. These individuals are actively involved in the lives of persons with dementia and require communication training to better understand and meet the needs of the client. After engaging in the virtual reality dementia experience, students recognized the role of the family in caring for a person with dementia, as well as the amount of support families need. Students recognized that caring for the family and providing an open line of communication and support was essential to providing PCC.

The future of simulation-based learning in terms of preparing students to provide PCC was discussed in this study. A recent study conducted by Putter-Katz (2018) evaluated the perspectives of students regarding the efficacy of simulation-based learning. The researcher found that students reported growth in their professional skills, however, these findings were limited in that they were self-reported and assessed professional development rather than acquisition of clinical skills, such as the ability to design person-centered treatment. Unlike the previous study, this study not only elicited students' perceptions, but also measured students' intent to provide person-centered treatment through analysis of pre and post simulation treatment goals. Students ultimately reported that the virtual reality dementia experience provided an experience that textbooks or classroom resources could not facilitate. Thus, they felt strongly that a virtual reality dementia experience would support students' awareness and potentially promote PCC beyond graduation.

Limitations

While this study found that a virtual reality dementia experience enabled graduate CSD students to consider elements of PCC, the findings are limited in that they cannot be translated to the practices of licensed clinicians. Because this study was conducted with students, one cannot accurately suggest that these findings would generalize to actual practice. Thus, more research is warranted to suggest whether a virtual reality dementia experience effectively facilitates the use of PCC in the clinical setting.

Additionally, the small sample size may have impacted the statistical analysis of the pre and post simulation treatment goal scores. The students also attended the same university and received dementia-related training from the same professor. Prior exposure to appropriate treatment goals for persons with dementia may have impacted the findings of this study, as students were trained on goal writing and the inclusion of target behaviors and life participation components in their graduate coursework. This may reflect the students' initially high scores on the pre-simulation treatment goals.

Furthermore, this study was completed during the COVID-19 pandemic. Students were attending graduate school remotely during this time and thus completed this study virtually. This may have impacted the findings, as the written treatment goals and reflective essays were not proctored, and outside resources may have been used. Additionally, the stressors that students faced during the COVID-19 pandemic may have impacted their performance in the study. COVID-19 may have limited the number of students available to attend the focus groups, as the focus groups also had to be conducted remotely.

Future Research

There are many directions that may be taken in terms of expanding and investigating the limitations of this study. Following the students into the clinical setting and then evaluating their use of PCC in real-life practices would be a way of comparing didactic coursework learned, such as facilitation of person-centered treatment, into clinical practice. Another area of interest is the use of simulation-based learning, such as a virtual reality dementia experience, in other educational programs like physical therapy or occupational therapy. Finally, the type of simulation used could be altered to include a more realistic, hands-on experience. In this way, students in a future study could be equipped with materials that help simulate deficits that persons with dementia may encounter and then try to complete a task. This may alter or improve the simulation experience and yield new insights or realizations for students. Additionally, replicating this study with a different cohort of students taught by a different professor may validate our findings related to simulation-based learning's impact on PCC.

Academic Training Application

Ensuring graduate students transfer academic knowledge into clinical practice, specifically PCC, serves as an essential component of many academic programs in applied healthcare. This study highlighted the impact of a virtual reality dementia experience on the multiple components of PCC (Brooker, 2004) for graduate CSD students. This information can be applied to both academic and clinical coursework for multiple healthcare disciplines. For academic coursework, faculty may provide virtual simulations for the various disorders, specifically low incidence disorders, to heighten active learning. Dudding and Nottingham (2018) highlighted benefits of simulation-based learning including increased student confidence and preparation for clinical practice, reduced anxiety, a safe environment with repeated practice, and access to various clients (p. 76). Furthermore, professors may use the method and measurement of goal writing to assess students' application of target behaviors and life participation components following training.

For clinical coursework, virtual simulations afford students an opportunity to gain an appreciation for a disorder and develop PCC interventions. With an increased awareness of a disorder as seen through the eyes of the client, students may develop more person-centered interventions instead of task-oriented treatment (Kitwood, 1997). Consequently, students better understand how a disorder impacts an individual's life which is reflected in goal writing. Including a life participation component in goals not only highlights the personhood of goals but also allows students to see the big picture/outcome related to goals. Several studies have investigated client and family member preferences for goals (Jennings et al., 2017; Wallace et al., 2017; Worrall et al., 2011). They note that clients with dementia (Jennings et al., 2017) or aphasia (Wallace et al., 2017; Worrall et al., 2011) as well as family members prefer goals related to maintaining social networks, increased independence in daily tasks and safety, as well as participating in previously enjoyed meaningful activities (work and family life).

Conclusion

The numbers continue to rise for individuals in America living with dementia, which are expected to triple to over 14 million by 2060 (Matthews et al., 2018). The benefits of healthcare providers' understanding, through academic and clinical training, this diagnosis is imperative to treatment success using PCC. Simulation-based learning experiences as a component of collegiate programming may assist with this success in treatment. Knowledge transfer from the academic to the clinical practice setting is not well understood. However, the understanding of the diagnosis through simulation-based learning not only promotes understanding of the diagnosis, but also has the potential to increase application-based knowledge of PCC by healthcare providers.

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Appendix

Appendix A: Focus Group Questions.

1. What is your previous experience with dementia?
    1. Personal
    2. Academic
2. Prior to the simulation experience, what ideas or attitudes did you have about dementia?
    1. What did you think about dementia? What was your first thought when you heard of someone with dementia?
3. What ideas or attitudes did you have about treating persons with dementia prior to the simulation experience?
4. How do you feel about the simulation experience?
5. Did the simulation experience change your perception of living with dementia? If so, how?
6. How does the dementia simulation impact your ideas of treatment for persons with dementia?
    1. How did it impact your goal writing?
    2. What are your general thoughts of dementia simulation for graduate training?

Appendix B. Scoring Framework for Goals

Target Behavior: A target behavior is a behavior identified for change. In this case, it may be a skill in which the clinician wants the client to obtain, improve, or use.

Scoring

There are 2 possible points for life participation:
1 point if a target behavior component is present
1 point if the target behavior component is "relevant" to speech therapy

Life Participation: Life participation, as defined by the International Classification of Functioning, Disability and Health (ICF), "is involvement in a life situation." Thus, there must be a life participation component in the goal indicating that the clinician has considered how the goal will impact/improve the client's participation in life. Examples of life participation components could be to increase independence or to navigate independently in the home.

Scoring

There are 2 possible points for life participation:
1 point if a life participation component is present
1 point if the life participation component is "relevant"
*The life participation component is considered "relevant" if it is appropriate for the case study client, Barbara.

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