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Abstract

Due to advancements in medical science leading to increased life expectancy, the number of older adults is on the rise. Empathy is crucial in catering to the unique needs of this vulnerable population. The use of geriatric simulation suits to cultivate empathy among health science students is gaining traction. Nevertheless, the efficacy of this teaching approach remains unexplored among occupational therapy students. We recruited a convenience sample of 21 occupational therapy graduate students for a mixed methods study. Participants engaged in a two-hour session during which they performed daily tasks like meal preparation, laundry, and dressing while wearing various components of a geriatric simulation suit. Empathy levels were evaluated before and after simulation using an abridged and modified version of the Comprehensive State Empathy Scale. Participants engaged in focus group discussions regarding their experiences with using the geriatric suit. Thematic analysis was employed to analyze the qualitative data. A significant rise ($p < 0.001$) in mean empathy scores following geriatric simulation was noted. Three main themes and nine sub-themes emerged from the focus group discussions, indicating that participants gained a deeper understanding of the challenges encountered by older adults and demonstrated greater empathy towards them. The findings of this study address the existing gap in literature, demonstrating that geriatric simulation is an effective method for promoting empathy towards older persons among occupational therapy graduate students.

Keywords

Empathy, geriatric simulation, occupational therapy education

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Using Experiential Geriatric Simulation to Foster Empathy Among Occupational Therapy Students: A Mixed Methods Study

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ABSTRACT

Due to advancements in medical science leading to increased life expectancy, the number of older adults is on the rise. Empathy is crucial in catering to the unique needs of this vulnerable population. The use of geriatric simulation suits to cultivate empathy among health science students is gaining traction. Nevertheless, the efficacy of this teaching approach remains unexplored among occupational therapy students. We recruited a convenience sample of 21 occupational therapy graduate students for a mixed methods study. Participants engaged in a two-hour session during which they performed daily tasks like meal preparation, laundry, and dressing while wearing various components of a geriatric simulation suit. Empathy levels were evaluated before and after simulation using an abridged and modified version of the Comprehensive State Empathy Scale. Participants engaged in focus group discussions regarding their experiences with using the geriatric suit. Thematic analysis was employed to analyze the qualitative data. A significant rise ($p < 0.001$) in mean empathy scores following geriatric simulation was noted. Three main themes and nine sub-themes emerged from the focus group discussions, indicating that participants gained a deeper understanding of the challenges encountered by older adults and demonstrated greater empathy towards them. The findings of this study address the existing gap in literature, demonstrating that geriatric simulation is an effective method for promoting empathy towards older persons among occupational therapy graduate students.

The imperative to cultivate empathy within the healthcare sector, particularly in occupational therapy, is increasingly recognized as a cornerstone of effective patient-centered care. This is especially pertinent in geriatric care, where the ability to empathize with older adults can significantly enhance therapeutic outcomes and patient satisfaction. The demographic shift towards an aging population worldwide highlights the urgency for occupational therapy practitioners to be adept in addressing the

complex needs of older adults (Reynolds et al., 2022). Among the innovative pedagogical strategies emerging to meet this challenge, immersive geriatric simulation technologies have shown promise in enhancing empathetic understanding among health science students. These technologies offer a simulated experience of the physical and sensory challenges associated with aging, aiming to foster a deeper understanding and empathy for older adults (Perot & Belmin, 2020).

While these technologies have been explored in various healthcare disciplines, their application and impact within occupational therapy programs have not been comprehensively examined, particularly in the context of blending both quantitative and qualitative methods to assess empathy development (Gholamzadeh et al., 2018; Newington et al., 2022; Srinivas et al., 2023). This study seeks to fill this significant gap by investigating the effects of immersive geriatric simulation on empathy among occupational therapy students. By addressing this oversight in literature, the research aims to elucidate the potential of geriatric simulations in occupational therapy education, contributing to the development of more effective, empathetic practitioners prepared to address the complexities of geriatric care.

The objective of this study was to examine the impact of a geriatric simulation suit on occupational therapy students' empathy towards older adults.

Literature Review

The Role of Occupational Therapists in Geriatric Care

Aging is an inevitable multidimensional process characterized by numerous physiological changes such as reduced muscle mass and strength, visual impairments, cognitive deterioration, hearing loss, and degeneration of joint cartilage (Sieck, 2018). Innovations in medical science and technology have ultimately led to increased life expectancy. In the United States (U.S.), the percentage of individuals aged 65 years and older has increased fivefold since 1920. As of 2020, one out of every six people in the U.S. was aged 65 years and over (U.S. Department of Health and Human Services, 2022).

Older adults are susceptible to falls and face difficulties in carrying out daily tasks due to reduced mobility, cognitive changes and decreased function. These factors inadvertently decrease their quality of life and limit social participation. Occupational therapists play a vital role in geriatric care, particularly by offering assistance with daily living, implementing home modifications to prevent falls, teaching self-care skills, aiding memory rehabilitation, enhancing visual awareness, and delivering holistic care to enhance the overall quality of life for older adults (Alawad et al., 2022; Altuntaş et al., 2017).

Additionally, occupational therapists offer valuable support to older adults managing chronic conditions like diabetes, arthritis, and heart disease. They educate clients on energy conservation techniques, joint protection strategies and the use of adaptive tools to facilitate daily activities (Fields, 2021). Occupational therapists play a crucial role in

facilitating successful transitions across care settings. They assess the functional abilities of older adults and provide recommendations for necessary home modifications. They also educate caregivers and older adults on useful routines that enable them to live fulfilling and independent lives (Liebzeit et al., 2021).

The Value of Empathy in Geriatric Care

To serve the needs of this unique and vulnerable population, healthcare personnel must inculcate empathy in their practice. Empathy is defined as the capacity to comprehend, acknowledge, and empathize with the emotions and thoughts of another, including recognizing and validating their fears, anxiety, pain, and circumstances (Cuff et al., 2016). Empathy is a fundamental characteristic that shapes the quality of care delivered by a healthcare professional. It fosters a dynamic therapist-client relationship, resulting in favorable health outcomes (Moudatsou et al., 2020). A recent systematic review conducted by Keshtkar et al. (2024) reported greater patient satisfaction with empathetic health practitioners. Furthermore, higher empathy scores among healthcare professionals has been correlated with better treatment adherence, improved functional performance, greater pain control and better health-related quality of life (Cánovas et al., 2018; Eltaher et al., 2020; Licciardone et al., 2024). Displaying empathy towards clients demonstrates competence and enhances the standard of care (Teófilo et al., 2019). Research indicates that healthcare professionals who demonstrate empathy tend to experience lower burnout, increased job satisfaction, and decreased rates of malpractice claims (Birkhäuser et al., 2017). Therefore, embracing this attribute early in training can undoubtedly set the trajectory for a fulfilling and rewarding career.

Though it may be viewed as an abstract concept, empathy is a teachable skill (Robinson et al., 2023). Teaching empathy to health science students is especially crucial, considering that studies have revealed a decline in empathy levels as students advance in their training (Dinoff et al., 2023; Neumann et al., 2011; Nunes et al., 2011). Nevertheless, this trend can be overturned by rectifying the deficiency in the students' curriculum. Hizomi Arani et al. (2021) found that participation in empathy-focused courses was linked to increased empathy scores among medical students.

Various instructional methods have been utilized to improve empathy among health science students, such as visual arts education (Rezaei et al., 2023), narrative medicine-based education (Zhao et al., 2023), virtual reality (Mistry et al., 2023), case-based learning and simulation-based learning (Adams, 2019; Ayed et al., 2021; Chen et al., 2015). Most of these methods were shown to be effective in enhancing empathy among participants. However, these studies have predominantly focused on medical and nursing education, with less attention given to the unique context of occupational therapy.

Geriatric Simulation to Promote Empathy

The use of educational technologies, including a simulation suit to enable students to gain hands-on learning opportunities, is steadily gaining popularity. Simulation-based education allows students to practice clinical skills in a controlled and safe environment, bridging the gap between theory and clinical practice (Alinier & Oriot, 2022; Koukourikos

et al., 2021). Within the broader healthcare disciplines, simulation has been used to replicate a wide range of clinical scenarios, from acute care settings to the nuanced complexities of geriatric care (Lamé & Dixon-Woods, 2020).

Geriatric simulation suits serve as valuable tools for gaining a deeper insight into the challenges of aging. These suits are designed to replicate muscle weakness, sensory alterations, joint stiffness, balance issues, reduced mobility, and visual abnormalities commonly experienced by older adults. They facilitate experiential learning, enabling users to empathize with and better understand the population they care for (Watkins et al., 2021). Previous studies exploring the effectiveness of geriatric simulation suits in fostering empathy among healthcare professionals in geriatrics have shown that participants showed a better consideration of the challenges encountered by older adults and developed greater empathy towards them (Bouwmeester Stjernetun et al., 2024; Chen et al., 2015; Giner Perot et al., 2020). Notwithstanding, some drawbacks have been identified. Simulation suits have been shown to trigger negative emotions such as guilt, embarrassment, anxiety and frustration (Nario-Redmond et al., 2017). Another meta-analysis found a lack of effectiveness of disability simulation among participants (Flower et al., 2007).

Although the advantages of geriatric simulation have gained recognition across a spectrum of healthcare disciplines, its integration and scrutiny within the realm of occupational therapy education remain limited. Particularly, there exists a notable deficiency in research dedicated to investigating the influence of geriatric simulation on the cultivation of empathy among occupational therapy students, with an acute absence of studies adopting an exhaustive mixed-methods framework (Rowan et al., 2018). Previous inquiries into the use of geriatric simulation in occupational therapy educational settings have largely overlooked the critical dimension of empathy enhancement (Perot & Belmin, 2020). This gap highlights the imperative for investigative efforts that transcend quantitative analysis to encompass the rich, qualitative dimensions of student experiences, thereby offering a holistic appraisal of the simulation's impact on empathy development.

Methodology

Study Design

This study utilized a mixed-methods design (Creswell & Creswell, 2023). Mixed-methods research, combining quantitative and qualitative methodologies, is particularly well-suited to exploring complex phenomena like empathy development. This approach allows for a holistic understanding of educational interventions, capturing the measurable outcomes of empathy assessments while also delving into the subjective experiences of students undergoing geriatric simulation (Harder, 2023).

The study was designed in accordance with the guidance of the Healthcare Simulation Standards of Best Practice™, which delineates eleven criteria for the development of an educationally appropriate simulation process (Watts et al., 2021).

The simulation suit used in this study was the RealCare™ Geriatric simulator. This simulation suit comprised of a weight vest – about 20 lbs., 2 ankle weights each about 5 lbs., 4 wrist weights - about 2.5 lbs. each, 2 elbow restraints, 2 knee restraints, 2 gloves, a cervical collar, a set of 6 visual impairment glasses (glaucoma, macular degeneration, cataracts, diabetic retinopathy, retinal detachment, retinitis pigmentosa), and a walker (see Figure 1).

Figure 1

The RealCare Geriatric Simulator



Note. Students pictured provided consent for photo release.

A pre-briefing session was conducted to prepare participants for the simulation experience. During this session, the objectives were discussed, procedures were carefully outlined and participants were introduced to the simulation environment and simulation suit.

Participants underwent one session lasting two hours, in which they engaged in activities of daily living; namely functional mobility (walking, standing from a seated position, and ascending and descending a flight of stairs), lower body dressing, meal preparation tasks in the kitchen, and laundry while wearing the simulation suit. Specific components of the simulation suit were worn to perform the designated tasks (see Table 1).

Table 1

Designated Tasks and the Simulation Suit Component Used.

Task Performed	Simulation Suit Component
Functional mobility	Knee restraints, elbow restraints, wrist weights, cervical collar, weighted vest, walker
Lower body dressing	Hand gloves, cataract glasses, weighted vest, knee restraints, elbow restraints, wrist weights, ankle weights, cervical collar
Meal preparation	Hand gloves, cataract glasses, weighted vest, knee restraints, elbow restraints, wrist weights, ankle weights
Laundry	Hand gloves, cataract glasses, weighted vest, knee restraints, elbow restraints, wrist weights, ankle weights, cervical collar

Participants

The participants were recruited via purposeful sampling of convenience (Luciani et al., 2019). Occupational therapy students enrolled in the university’s occupational therapy Clinical Applications in Older Adulthood course were eligible to participate in the study. Twenty-two (22) students were eligible to participate in the research. Students who met the eligibility criteria were invited to participate in the study through printed invitation letters. These letters provided clear information about the study’s objectives and procedures. Students with any medical condition contraindicating the use of weights or any other component of the geriatric simulation suit were excluded.

Ethical Considerations

Ethical approval was obtained from the university’s Institutional Review Board (IRB) on January 22, 2024 (Approval Number: 24-0102-002). Written informed consent was obtained from all study participants. To minimize any perception of coercion, invitation letters sent to eligible students emphasized that the study was separate from the regular course curriculum and solely for research purposes. The letters explicitly stated that students’ decisions about participation would not affect their grades in any way. Participation was completely voluntary, and students could decline if they chose. Additionally, potential participants were informed of the likelihood that the simulation suit could trigger negative emotions. Participants could withdraw from the study at any time.

Quantitative Data Collection

Participants undertook an initial pre-test empathy assessment to determine the baseline level of empathy felt towards older adults. The assessments were administered in-person. The questionnaire was adapted from the Comprehensive State Empathy Scale (CSES; Levett-Jones et al., 2017) and modified to incorporate questions specific to the field of occupational therapy (see Table 2). This scale was selected because it assesses state empathy (empathy at a specific moment in time) rather than trait empathy (empathy as an inherent psychological trait), making it more appropriate for a pre-post test study (Reid-Searl & Levett-Jones, 2018).

The CSES is made up of thirty questions assessing six subscales – empathic concern, distress, shared affect, empathetic imagination, helping motivation and cognitive empathy. The questionnaire used in this study was designed to assess each of the domains in the CSES excluding the distress scale. The authors substituted the distress subscale with ‘value of experience’ as that is more suitable to the context of this research. The adapted questionnaire was further reviewed by experts in the department.

Prior to implementation, the tool was pilot-tested among two research assistants who were both administrative personnel in the occupational therapy department. Piloting the questionnaire revealed an ambiguous term in domain 2, which was subsequently modified to convey the statement clearly.

Participants responded to five questions, each assessing one of the following domains: cognitive empathy, empathetic imagination and emotional resonance, shared affect, helping motivation, and value of experience. Each item was rated on a five-point Likert scale, with responses ranging from 1 (completely untrue) to 5 (completely true). Participants underwent a post-intervention empathy assessment at the end of the practical session of geriatric simulation.

Table 2
Empathy Assessment Tool

Domain	Assessment
Cognitive empathy	I can understand the daily physical challenges faced by older adults.
Empathetic imagination and Emotional Resonance	I feel emotionally connected to the difficulties older adults experience in performing everyday tasks.
Shared affect	I can put myself in the place of an older adult and see things from their perspective.
Helping motivation	I feel confident in my ability to provide compassionate and empathetic care to older adults
Value of experience	I believe that experiencing the physical limitations of aging through simulation will enhance my professional skills as an occupational therapist.

Qualitative Data Collection

The participants from the quantitative study were invited to participate in focus group discussions (FGD) to provide insights into their views on this teaching approach and how it enhances empathy towards older adults. These FGDs served as the debriefing process for the simulation.

All participants agreed to take part in the FGD. Participants were randomly assigned into three groups for the discussion. Randomization was performed using sealed opaque envelopes assigning participants to either FGD1, FGD2 or FGD3. Each group consisted of seven participants to promote participation and ensure equal involvement in the discussion. The FGDs were moderated by both authors, who were Doctors of Occupational Therapy. Both had extensive experience ranging from 2 to 5 years in qualitative research. The FGDs were conducted in the Clinical Applications in Older Adulthood laboratory room, with only the research team and participants present.

The moderators were supported by two research assistants who were both administrative personnel in the department. The research assistants received adequate training prior to the commencement of the FGDs and were responsible for taking notes. Participants were given numbered placards for identification during the discussion. The research assistants ensured that the scope of discussion was thoroughly addressed and tracked participant involvement to ensure that everyone received an equal chance to contribute to the discussion. Participants were encouraged to express their views, reservations and experiences with the simulation teaching method. The FGDs lasted for a median of 62.8 minutes.

Table 3
Focus Group Discussion Guide

Session	Duration	Questions
Arrival and opening	10 minutes	Assignment of numbered placards and clarification of the purpose of the discussion
Main discussion	40 minutes	Can anyone share their initial thoughts about participating in this simulation? How did the experience affect your understanding of an older adult’s daily challenges? Were there moments of frustration or revelation that stood out to you? How do you believe this experience will impact your professional identity as you move forward in your career?
Summary	10 minutes	Are there any additional aspects you wish to mention beyond what has been discussed?
Farewell	5 minutes	Do you have any feedback on this discussion we have had and how it can be structured better in the future?

Data Analysis

Quantitative Data Analysis

Descriptive statistics were used to report the demographics of participants. Means and standard deviation of empathy scores were calculated for each domain. Differences between pre- and post-simulation empathy scores in each domain were analyzed using paired sample t-tests. All analyses were performed using SPSS (SPSS Statistics 26). The statistical level was set at $p < 0.05$ (2-tailed tests).

Qualitative Data Analysis

The FGDs were transcribed verbatim using a University Transcription service. The transcripts were analyzed by adopting an inductive approach. Thematic analysis was applied to the data (Braun & Clarke, 2022).

The transcripts were checked by both authors to verify accuracy and to familiarize themselves with the data (step 1). In the first phase of the analysis, each author independently reviewed the transcripts, generating codes and documenting key impressions and thoughts (step 2). Following this, both authors met to discuss and

reconcile the identified codes and to deliberate on any emerging themes (steps 3 and 4). In subsequent meetings, the authors reviewed, modified and further defined the themes and sub-themes (step 5). Lastly, the findings were written up collaboratively by both authors, ensuring a comprehensive presentation of the results (step 6).

The study adhered to the four criteria of data trustworthiness (Ahmed, 2024). Independent coding by each author and peer debriefing were conducted to ensure credibility and dependability. Detailed descriptions of participants, methods, and the research context have been provided to address transferability. Additionally, reflexive journaling was implemented to enhance confirmability.

Results

Participant Demographics

A total of twenty-one (21) students participated in this study, yielding a response rate of 95%. Of these participants, seventeen (80%) were female, and the remaining four (20%) were male. The mean age of the participants was 26.4 years (SD = 3.7), with ages ranging from 22 to 32 years. Two-thirds of the participants (14 students) were enrolled in a master's degree program in occupational therapy, while the remaining (7 students) were pursuing a doctoral degree. All were in the final year of their didactive coursework.

Quantitative Study Results

The initial mean empathy scores ranged from 3.0 to 3.5 out of 5, with the lowest scores observed for empathetic imagination and emotional resonance and the highest score in the domain of value of experience. After using the geriatric simulation suit, the mean empathy scores increased significantly ($p < 0.001$), and ranged from 4.5 to 4.9 (see Table 4).

Table 4

Differences Between Pre- and Post-simulation Assessment Empathy Scores

Domain	Pre-test Mean score (SD)	Post -test mean score (SD)	T	P value
Cognitive empathy	3.2 (0.83)	4.5 (0.52)	9.76	< 0.001
Empathetic imagination and emotional resonance	3.0 (0.76)	4.6 (0.49)	10.42	< 0.001
Shared affect	3.4 (0.79)	4.7 (0.46)	9.89	< 0.001
Helping motivation	3.3 (0.88)	4.8 (0.4)	10.01	< 0.001
Value of experience	3.5 (0.81)	4.9(0.32)	10.57	< 0.001

Abbreviation: SD – standard deviation

Qualitative Study Results

Three main themes and nine sub-themes emerged from the focus group discussions.

Theme 1: Understanding the Daily Experiences of Older Adults

Responses from the FGDs indicated that the students gained a better understanding of what daily life entails from the perspective of an older adult.

- **Variable Feelings Pre-simulation.** Participants experienced a range of emotions prior to undergoing the geriatric simulation process. Some participants felt hopeful, some were doubtful and others were a bit apprehensive on what the outcomes would be. Some quotes expressing their thoughts are outlined below:

‘There was a bit of apprehension for me. I worried about the physical aspect of the simulation and whether I’d find it too challenging or uncomfortable.’ P07

‘I felt a mix of anticipation and nervousness. Anticipation for the learning opportunity and nervousness about whether I’d be able to fully empathize with the elderly’s experiences through the simulation.’ P10

‘Honestly, I was skeptical at first. I wondered how wearing weights and vision-impairing glasses could truly mimic the experiences of aging. But I was open to seeing how it would go.’ P18

- **Tangible Realizations.** Participants were struck by the harsh reality of the struggles of an older adult. It became apparent that the challenges were more profound and debilitating than they had imagined. One participant said:

‘It was more challenging than I anticipated. The physical limitations, the frustration of not being able to do simple tasks—I felt a glimpse of what many older adults go through every day.’ P05

Several participants highlighted the profound effects of the visual impairment glasses.

‘For me, it was the sensory impairments that hit home. Struggling to see and hear clearly was isolating...’ P20

‘Using the vision impairment glasses was a real eye-opener, no pun intended. Trying to perform basic living tasks, like reading medication labels in the cupboard or navigating through a room, was incredibly challenging...’ P13

‘Absolutely, and it wasn’t just about the blurriness. The loss of peripheral vision made me feel so confined and unsure in my movements...’ P09

Other participants experienced a moment of realization regarding how things that appeared routine to them were significant issues for older adults.

'For me, it was the task of lower body dressing to sit on the toilet that hit home. With the simulated decrease in range of motion at the elbow and knee joints, I felt so unstable. It was a wake-up call to how even the most private, basic tasks we take for granted can feel daunting and unsafe.' P19

'And climbing out of bed wasn't any easier. The limitations made me feel vulnerable and dependent, something I've never experienced before. It was a powerful insight into the daily realities many older adults face...' P15

- **Resilience in Older Adults.** Participants made comments emphasizing how the vulnerability experienced during the simulation underscored the strength required to navigate aging. Someone expressed:

'...understanding the daily resilience required by many elderly people was humbling.' P21

Theme 2: Geriatric Simulation: A Crucial Learning Tool

When asked about their views on this learning approach, participants agreed that it was a crucial learning tool for them.

- **Simulation Training Should be a Part of the Course.** Participants opined that the experience was very beneficial and should be incorporated into the course curriculum for every student to undergo. One student said,

'I think every student should go through this simulation. Maybe even make it a recurring part of our training, with reflections and discussions like this one to deepen our learning.' P02

Participants stepped into the shoes of older adults and comprehended their daily challenges more effectively than a series of lectures could have accomplished. One student said,

'The simulation bridged the gap between theoretical empathy and tangible understanding.' P11

- **Evoked Emotional Empathy.** Participants noted that the simulation training sparked an emotional connection to older adults. As a result, they believed they would now perceive things from a different perspective and genuinely empathize with the limitations of old age. In their own words:

'The frustration and isolation I felt when I couldn't rely on my sight for basic tasks...' P16

'The loss of peripheral vision made me feel so confined and unsure in my movements.' P03

'Empathy was always a concept I valued, but now it's a lived experience.' P05

'Struggling to see and hear clearly was isolating.' P09

'There was a moment of helplessness I felt when I couldn't complete a task, which was very revealing.' P01

- **Broader Perspectives.** Participants expressed that they had gained broader perspectives to the unique needs and requirements of older adults. They realized that caring for older adults goes beyond providing aids and walkers; mental, social and emotional support must also be provided. Some of them said:

'This simulation has shown me the critical need for empathy, patience, and innovative solutions in our care for the elderly with visual impairments.' P11

'It was an eye-opener—making me understand why some older adults may be fearful of these everyday activities. It's not just a physical limitation; it's the fear of falling, the fear of injury. It is genuinely scary.' P04

'It's made me more grateful for my mobility and more aware of the thoughtful approach we need to take in assisting patients with these 'simple' tasks.' P06

'... and tailoring our care to address not just their physical, but emotional and social needs.' P14

Theme 3: Applicability to Future Practice

Participants were questioned about the impact of this experience on their future practice, and they shared various insights on the decisions they had made.

- **Decision to Adopt Empathetic Practice.** The students felt a renewed resolve to integrate empathy into their practice. Some of them articulated their thoughts below:

'I'll carry this understanding into every patient interaction, ensuring I'm always patient, considerate, and genuinely empathetic.' P05

'The experience was transformative, compelling me to integrate empathy more consciously into my therapeutic approach.' P07

- **Renewed Commitment to Comprehensive Geriatric Care.** Understanding the needs of older adults translated into a commitment to providing comprehensive geriatric care. One participant stated:

'The simulation has inspired me to adopt a more holistic approach, ensuring my practice addresses the full spectrum of needs faced by elderly patients.' P10

'...the meal preparation task made me realize the importance of designing safer, more accessible living environments for the elderly.' P08

'The experience ..., making me consider the societal dimensions of elder care and the importance of dignity in treatment.' P11

'It's made me more committed to becoming ... a compassionate advocate for the elderly.' P17

- **Re-appraisal and Appreciation of Professional Identity.** Engaging with the simulation prompted students to critically reflect on their professional identity.

'It's solidified my passion for occupational therapy. Understanding the deep impact, we can have by approaching care with empathy and respect has motivated me to pursue further specialization in geriatric care.' P15

'... I see now how crucial our role is in enhancing not only their physical but also their emotional well-being.' P12

These findings illustrate the depth of the students' experiences and the multifaceted impact of geriatric simulation on their development as empathetic occupational therapy practitioners. The themes highlight the potential of such simulations to not only enhance understanding and empathy towards older adults but also to foster a more holistic, respectful approach to geriatric care within the field of occupational therapy.

Discussion

This mixed-methods study provides a rigorous examination of the impact of an immersive geriatric simulation on empathy development within occupational therapy education. The integration of quantitative and qualitative methodologies allowed for a comprehensive exploration of how simulating the physical and sensory challenges faced by older adults enhances empathetic understanding among occupational therapy students. The significant increase in empathy levels, as demonstrated through the pre- and post-test surveys, coupled with the depth of insight garnered from the focus group discussions, offer valuable contributions to the field, addressing a notable gap in the existing literature.

The quantitative results demonstrated the effectiveness of this pedagogical approach in enhancing empathetic understanding towards older adults among occupational therapy students. Our findings align with that of Sari et al. (2020), who observed a statistically significant increase in mean empathy scores of nursing students, measured by Kogan's Attitude towards Old People Scale and the Basic Empathy Scale, after carrying out tasks using an aged simulation suit. Contrarily, in a randomized controlled trial to examine the impact of aging simulation suits on the empathy levels of pharmacy students, no significant difference was found between self-rated empathy scores of the intervention group compared to the control population. The control population group received a 60-minute workshop session with two older adults who shared their experiences and difficulties. While an improvement in empathy scores was observed for

both experimental and control groups, there were no inter-group differences, suggesting that case-based education is also an effective method for promoting empathy among health science students (Lee & Teh, 2020).

The qualitative findings revealed that students not only developed a greater empathetic understanding but also reported a profound impact on their professional identity and approach to care. These insights are especially significant, suggesting that immersive geriatric simulation does more than enhance empathy; it catalyzes a deeper commitment to the values central to occupational therapy. This shift in perspective is crucial for the evolution of healthcare education, emphasizing the importance of experiential learning in developing well-rounded, empathetic practitioners. Our findings are similar to the qualitative findings of Bowden et al. (2023), who reported an increase in nursing students' behavioral empathy, evident by key themes such as 'enhancing my empathy', 'impact of aging' and 'person-centered moments' after participating in a 4-hour aging simulation study.

The findings from this research fill a critical gap by empirically demonstrating the value of simulation suits in fostering empathy toward geriatric individuals—a key component of effective patient-centered care. The enhanced empathetic understanding highlighted by this study is particularly relevant for occupational therapy, where the ability to connect with and understand the patient's experience is crucial for designing effective interventions. This study underscores the necessity of embedding such experiential learning opportunities within occupational therapy curricula to better prepare students for the complexities of geriatric care.

Although this study showcased the effectiveness of geriatric simulation suits in facilitating learning among occupational therapy students, the optimal timing for integrating this teaching method remains uncertain. According to Ardenghi et al. (2024), educational interventions aimed at fostering empathy should be introduced during the pre-clinical years, allowing students to develop coping strategies early in their education. Also, in a longitudinal study of pre-clinical and clinical medical students, Mahoney et al. (2016) observed that first year students had significantly lower empathy scores by the end of the year. This implies that implementing instructional interventions to enhance empathy early in students' education may yield greater benefits.

In addition, the results of this study revealed that participants experienced negative emotions during the simulation, such as isolation, helplessness, and frustration, which are consistent with prior research (Ma & Mak, 2022; Nario-Redmond et al., 2017). In the short term, participants seemed to channel these emotions into enhancing their empathy towards older adults. Nonetheless, educators should be mindful of the potential for long-term effects such as anxiety, fear, or aversion stemming from such experiences. Utilizing standardized simulation frameworks may help to ensure appropriate and effective simulation-based experiences (Watts et al., 2021).

Limitations and Recommendations for Future Research

While the study's findings are compelling, limitations exist, including the small sample size, homogenous gender group and the potential for response bias in self-reported measures. Also, both authors were professors of the students who were enrolled in this study, and this may have influenced the findings.

Future research should aim to replicate these findings across diverse educational settings and with larger sample sizes to enhance generalizability. Additionally, the pre-post study design may exaggerate the effects of this instructional method, so researchers should consider using comparative controlled studies in the future. The post-test questionnaire was administered immediately after the geriatric simulation; therefore, subsequent studies should investigate the persistence of changes in empathy scores by assessing empathy levels over longer periods.

Implications for Occupational Therapy Education

The efficacy of immersive geriatric simulations, as demonstrated in this study, signifies a pivotal shift towards integrating experiential learning strategies within occupational therapy curricula to enhance empathy towards older adults. These findings advocate for incorporating simulations that closely mimic the physical, sensory, and mobility impairments common in aging. This approach moves beyond traditional didactic methods to foster a deeper and more personal understanding of the challenges faced by this population. Such immersive experiences, complemented by reflective debriefing and discussion, not only solidify students' empathetic skills but also prepare them for the complexities of geriatric care, emphasizing the value of holistic empathy training in occupational therapy education.

The outcomes of this research highlight the importance of continuous curriculum development and educational research focused on empathy as a core competency. Educators can benefit from workshops and training sessions that develop skills in simulation-based learning and reflective debriefing. Faculty development programs that include role-playing exercises and scenario-based training can enhance their ability to facilitate immersive learning experiences effectively. Participation in professional conferences and collaboration with colleagues from other institutions can also provide valuable insights and innovative strategies for integrating empathy training into the curriculum. This necessitates a commitment to innovative curriculum design and an investment in professional development opportunities at the faculty level.

Some barriers to implementation, such as limited resources, resistance to change, and logistical challenges, may emerge. To overcome these barriers, educational institutions can form interdisciplinary committees to plan and execute the integration of simulations. Engaging stakeholders early in the process and demonstrating the value of empathy training through pilot study results can help build support. Additionally, securing grants and external funding can alleviate financial constraints. Institutions can start with pilot programs to gauge student engagement and learning outcomes, incorporating low-cost simulation tools and leveraging technology, such as virtual reality, to make these experiences more accessible.

The successful implementation of immersive geriatric simulations also calls for advocacy for resource allocation within academic institutions. Building partnerships with local healthcare facilities, community organizations, and alumni can provide additional support and resources. Showcasing the positive impact of these simulations on student learning and patient outcomes can strengthen the case for institutional investment. Establishing a clear link between empathy training and improved patient care can attract philanthropic donations and sponsorships. Demonstrating the tangible benefits of these educational interventions on patient outcomes can garner the necessary support for acquiring simulation equipment, training faculty, and developing curricula that prioritize empathy.

By championing these resources, occupational therapy programs can ensure that students are not only technically proficient but also deeply empathetic practitioners. This dual focus on technical skills and empathy prepares students to meet the needs of older adults with compassion and understanding. Integrating such comprehensive training into the curriculum aligns with the broader goals of occupational therapy, which emphasizes client-centered care and the promotion of health and well-being across the lifespan.

Conclusion

In essence, the results of this study highlight the critical role of immersive geriatric simulations in developing empathetic competencies within occupational therapy education. By incorporating this immersive approach, occupational therapy programs can cultivate a new generation of healthcare professionals skilled in delivering patient-centered care, ultimately improving therapeutic outcomes and patient satisfaction in geriatric care settings.

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