INSTRUCTIONAL DESIGN AND ASSESSMENT

Impact of the Geriatric Medication Game on Pharmacy Students' Attitudes Toward Older Adults

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Objective. To examine the impact of participation in the *Geriatric Medication Game* on pharmacy students' perceptions of and attitudes toward older adults and familiarity with common disabilities that affect them and the process of seeking health care.

Design. In the game, first-year pharmacy students "became" older adults during a 3-hour pharmacy practice laboratory. They were given aging-related challenges (eg, impaired vision or mobility) and participated as patients in simulated healthcare scenarios, such as a visit to a physician's office and a pharmacy.

Assessment. After playing the game, students completed a 5-question reflection about their experiences and attitudes toward older adults. Content analysis was performed to identify themes from 4 years of student (n = 625) reflections. Predominant themes included: improved attitudes toward older adults, better understanding of patient experiences, and increased willingness to provide assistance.

Conclusions. Incorporating the *Geriatric Medication Game* into the pharmacy curriculum may facilitate students' understanding of the challenges that older adults face and improve future interactions.

Keywords: attitudes, pharmacy education, geriatrics, assessment

INTRODUCTION

By 2030, an estimated 22% of the US population will be ages 65 years or older,¹ increasing from 12.9% in 2009.² Because older adults are the largest consumers of prescription medications,³ pharmacists and student pharmacists should be well-prepared to address the medication-related needs of the growing population of older adults.⁴ However, students and new pharmacist practitioners may have difficulty understanding and empathizing with older adults as they may not have yet experienced aging-related challenges, such as disability and disease.

Although data from 2 decades ago indicate that healthcare professionals had negative views of aging and older adults,⁵⁻⁷ recent studies among healthcare professionals demonstrate positive attitudes regarding older adults' abilities, the aging process, and older adults in general.⁸⁻¹⁰ These improvements in attitudes may be attributable to curricular changes, as many universities and colleges educating healthcare professionals have incorpo-

rated geriatric-specific education into the required and elective curriculum.^{8,9,11-16}

The importance of displaying professional attitudes and values during all health care interactions is recognized by the Accreditation Council for Pharmacy Education (ACPE) in their revised standards for pharmacy education as well as the American Association of Colleges of Pharmacy (AACP) in their outcomes for pharmacy education.¹⁷⁻¹⁹ Therefore, activities that improve student understanding and attitudes toward different patient populations should be integrated within the curriculum to promote patient-centered care. This can be accomplished using several means, such as clinical experiences, interprofessional practice experiences, introductory and advanced pharmacy practice experiences (IPPEs and APPEs), and geriatric elective courses.^{4,8,12,15,20} Simulation games also are a useful method for teaching concepts to students because they actively involve students in the learning process^{4,6,21} and allow them to experience and respond to situations in a safe learning environment without real consequences.^{6,21}

Several games have been developed to simulate the aging process and improve student healthcare professional attitudes and knowledge,^{6,11,13,14,23-25} but few

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focus on medication-related problems.²² The *Geriatric Medication Game*, developed by the St. Louis College of Pharmacy, specifically addresses medication-related challenges of older adults.^{13,22} In this simulated experience, students “become” older adults who experience physical, psychological, and financial problems while navigating the healthcare system and tackling challenges.^{13,22} Therefore, a modified version of the game was incorporated into the Purdue University College of Pharmacy curriculum as part of a pharmacy practice skills laboratory. The objective of this study was to examine the impact of participation in the *Geriatric Medication Game* on student pharmacists’ perceptions of and attitudes toward older adults and familiarity with common disabilities that affect them, as well as to familiarize students with the process of seeking healthcare for treatment of a chronic illness.

DESIGN

The purpose for integrating the *Geriatric Medication Game* into the curriculum was to: (1) improve pharmacy students’ perceptions of and attitudes toward older adults and (2) to familiarize pharmacy students with disabilities common among older adults as well as with the process of seeking health care for treatment of a chronic illness. The specific learning objectives for this exercise were for students to identify: (1) limitations occurring as a result of disabilities, (2) barriers older adults face when seeking health care, (3) personal attitudes toward older adults, (4) ways health care practitioners can help older adults, and (5) how the US healthcare system functions.

A modified version of *The Geriatric Medication Game* was implemented during a 3-hour first-year pharmacy practice skills laboratory. Students were given directions and an overview prior to beginning the game. First, students were asked to select 3 personal characteristics they wished to retain as an older adult from a list that included emotionally stable, energetic, good-looking, good memory, independent, mentally alert, physically active, sexually active, and social.¹³ Students were then randomly assigned physical disabilities (eg, vision loss, hearing loss, dexterity loss, difficulty with balance, general disability, or mobility loss) and their financial status.¹³ Physical disabilities were simulated through aids,¹³ such as petroleum jelly-coated goggles to simulate vision loss and walkers or wheelchairs to simulate mobility loss.

As part of the game, students received 1 of 3 different categories of financial resources. Each category was comprised of a different amount of “health credits,” ie, wealth, which was used to cover co-pays or fees for services.¹³ Students in the highest and middle categories received 200 and 150 health credits, respectively, and had private

health insurance. Students in the lowest category received 100 health credits and had Medicaid.

Students were asked to navigate a simulated healthcare system,¹³ with 6 different stations: physician’s office, pharmacy, other healthcare provider, laboratory tests and healthcare benefits, home, and activities. Modifications to the game included the addition of the activities station and the removal of the transportation station, which allowed students to spend more time in other areas.

At each station, students were asked to either perform an activity or draw a card describing a healthcare situation that “occurred.”¹³ The cards required students to incorporate new diseases and/or medications into their role-playing and would often result in being sent to another station. Activities could be knowledge-based, such as reciting their medication list, or skills-based, such as accurately filling a pill box with their medications for the week. The activities station corresponded to activities of daily living and instrumental activities of daily living, such as buttoning up a shirt or opening a food package (Table 1). Many students were given dexterity limitations or physical disabilities that made these activities more challenging and reflected what an older adult may experience.¹³ In addition to drawing cards and performing activities, a facilitator acted as “fate.” While students were waiting in line to see a healthcare provider, “fate” would visit them and could take away or add personal characteristics, diseases, disabilities, or medications.

To simulate the delays that often occur within the healthcare system, students had to wait to see healthcare professionals and stood in lines at each station. The differences in empathy and caring displayed by health-care professionals toward patients were simulated by having some treat older adults poorly, rushing them through activities or office visits, and displaying ageism. Examples of ageism²⁶ used in the game included talking to older adults as though they were children or treating them as though they had lost mental capabilities.

Table 1. Activities Station Tasks in the *Geriatric Medication Game*

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1. Open a bandage and place on your wrist.
 2. Open a cracker package.
 3. Read the directions aloud from a nonprescription product.
 4. Put on a shirt and button it.
 5. Shuffle a deck of cards.
 6. Pick up a penny from the counter.
 7. Open a unit dose medication package.
 8. Open an alcohol swab packet.
 9. Rip a trash bag off the roll and tie it using the provided twist-tie.
 10. Open the peppermint wrapper.
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As a modification to the game, students were asked at the conclusion of the simulation to complete a guided open-ended questionnaire regarding their experience navigating the healthcare system as an older adult. Questions were developed to match the purpose and learning objectives of the laboratory (Table 2). Previous work examining curricular efforts with *The Geriatric Medication Game* used standardized questionnaires,¹³ which may not provide as detailed or as in-depth information regarding the student experience as can be obtained by means of a qualitative analysis.²⁷

Students then engaged in a discussion with the facilitator about their reflections, and the facilitator identified and discussed any misperceptions regarding older adults and the healthcare system. For example, the facilitator explained to students that not all older adults have disabilities and shared with the students pictures of and stories about highly active older adults.³⁵ The importance of healthy lifestyles to prevent aging-related disease and disability also was discussed.

Prizes were awarded to students based on who retained the most health credits (ie, financial resources)

and personal characteristics, and who completed the most station activities. Prizes such as large-print crossword puzzle books, lotion, and body powder were given to the winners, as these are items that many perceive as valued by older adults. The facilitator also engaged students in a discussion regarding the perceived value of these items. Institutional Review Board approval for evaluation of this project was granted.

The written student reflections were transcribed into word-processing software. Content analysis of the reflections was performed to identify themes grounded in the students' comments²⁷ using QSR NVivo v.8 (NVivo, Doncaster, Victoria, Australia) which aids in organizing qualitative data into themes. For a theme to be considered predominant, a threshold of 25% or more of students commenting on the aspect was established.

EVALUATION AND ASSESSMENT

All students (N = 624) in their first year of the doctor of pharmacy (PharmD) degree program completed the practice skills laboratory in the spring semester of 2007 (n = 159), 2008 (n = 157), 2009 (n = 149), and 2010 (n = 159)

Table 2. Pharmacy Students' Reflections After Participating in the *Geriatric Medication Game*

Purpose and Learning Outcome to Be Measured	Reflection Questions	Learning (Bloom's Taxonomy)
Purpose: To familiarize pharmacy students with disabilities commonly found in older adults	What were some of the feelings or emotions that you experienced while playing the game?	Knowledge
Learning Outcomes:		
1. To identify limitations occurring as a result of disabilities.	Why do you think you experienced those feelings/emotions?	Analysis
2. To identify barriers older adults face when seeking health care.	What did you learn about the elder experience from playing this game?	Knowledge
Purpose: To improve pharmacy students' perceptions of and attitudes toward older adults	Has your attitude towards elderly patients changed from playing the game? How?	Analysis
Learning Outcome:		
1. To identify personal attitudes toward older adults.		
Purpose: To familiarize students with the process of seeking health care in the treatment of a chronic illness	Now that you have played the game, how do you think it will affect your practice as a pharmacy intern and future pharmacist?	Analysis
Learning Outcome:		
1. To identify ways health care practitioners can help older adults.	What changes do you plan on making to your practice from playing the game?	Synthesis
Purpose: To familiarize students with the process of seeking health care in the treatment of a chronic illness	What did you learn about the United States health care system and how it functions from playing the game?	Knowledge
Learning Outcome:		
1. To identify how the United States health care system functions.		

and submitted written reflections. Several predominant themes were identified through the guided-reflection questions (Table 3).

Theme 1: Students felt frustrated while playing the game. Prompted by the question regarding what feelings and emotions they experienced, over 75% of students across all 4 years indicated they experienced frustration from participating in the game. While several other feelings and emotions, such as impatience, annoyance, confusion, and anger, were expressed frequently, frustration was the only emotion reaching the minimum threshold.

Theme 2: Students experienced frustration and other emotions for several different reasons, including loss of ability, difficulty completing tasks, and having to wait for services. Students were asked to reflect on why they thought they experienced these feelings and emotions. Overall, students indicated that they experienced frustration (and other emotions) because many were given disabilities, such as vision or dexterity loss. Tasks that were previously easy for them, such as buttoning a shirt or opening a prescription bottle, became challenging or impossible, causing frustration. Students also experienced frustration and other emotions because they were unaccustomed to waiting for healthcare services.

Theme 3: Students learned that disabilities make it difficult for older adults to complete tasks. Students were asked to reflect on what they learned about the experience of older adults from the game. Several different items were mentioned including being more aware of older adults' feelings, better understanding their experiences in the healthcare system, and realizing that older

adults often face stereotypes or prejudice because of their age or disabilities. These were mentioned by between 14% and 23% of students, which was not enough to be considered a predominant theme. However, nearly 50% of students learned that disabilities make it challenging to complete the tasks required to navigate both the health-care system and daily life. Experiencing difficulty in completing tasks was a new concept to many students, who never realized that these "simple" tasks could be difficult for some individuals.

Theme 4: Students had improved attitudes toward older adults after the activity. When asked whether their attitude toward older adults had changed, nearly 88% of students agreed that their attitude had improved.

Theme 5: Students felt that their attitude had changed because they had gained an awareness and understanding of the experience of older adults. As a follow-up to the prior question regarding attitudinal changes, students were asked how their attitudes had changed. They indicated that they felt more aware of the difficulties that older adults' experience and would be more understanding toward older adults when they encountered them as health care professionals. Students mentioned that they did not realize how challenging it could be to complete tasks with disabilities, such as loss of hearing, vision, or mobility. Other changes in attitude and practice, although mentioned by less than 25% of students, were improved patience, willingness to provide more assistance, greater respect, and greater empathy for older adults. Most students who indicated that their attitudes had not improved reported that they had had prior

Table 3. Summary of Predominant Themes Expressed in Student Reflections (N = 624)^a

Theme	No. (%)
Theme 1: Students felt frustrated while playing the game.	469 (75.2)
Theme 2: Students experienced frustration and other emotions for several reasons:	
1) loss of abilities they currently have	364 (58.3)
2) had difficulty completing tasks required	240 (38.5)
3) had to wait at health care stations	216 (34.6)
Theme 3: Students learned that disabilities make it difficult for older adults to complete tasks quickly or at all.	307 (49.2)
Theme 4: Students felt that their attitude towards older adults had improved.	517 (82.9)
Theme 5: Students felt that their attitude had changed because they:	
1) were more aware of difficulties experienced by older adults.	324 (51.9)
2) understood more about the experience of older adults.	161 (25.8)
Theme 6: Students learned that in the U.S. health care system it often takes visits to multiple health care providers to completely address health care needs.	215 (34.5)
Theme 7: Students felt that, in their future practice setting, they would:	
1) be more patient with older adults.	263 (42.1)
2) provide more assistance to older adults.	207 (33.2)
3) be more understanding toward older adults.	205 (32.6)

^a For a theme to be considered predominant, a minimum threshold of 25% of the students needed to comment on the aspect.

experiences with older adults (either with family or in IPPEs at the local veterans' home) and already had positive attitudes toward older adults.

Theme 6: Students learned more about the US healthcare system; for example, it often takes visits to multiple healthcare providers to completely address healthcare needs. Students indicated that they learned many things about the US healthcare system and how it functions during the game. Nearly 40% of students learned that they often had to visit multiple healthcare providers, such as a physician, laboratory technician, and pharmacist, to resolve their health issues. A quarter of the students also learned that the US healthcare system can be costly, with copayments for office visits, laboratory tests, and prescription medications. These costs were different based on type of health insurance they had, and many students were frustrated because they had to pay more than other "patients" had to pay. Students also learned about issues surrounding care coordination. Although not a predominant theme, 19% of students felt there was a lack of care coordination among healthcare professionals, which contributed to longer wait times, unnecessary trips to a healthcare provider, and potential errors.

Theme 7: Students planned on making positive changes in their future practice setting by being more patient and understanding as well as providing more assistance. Students were asked to reflect on how playing the game would affect their future practice as pharmacists. Overall, students planned on making positive changes, such as improving their patience, being more understanding, and providing more assistance to older adults. Students indicated many changes they would like to achieve in their future practice, such as spending more time with patients, ensuring that patients understand their medications and diseases, improving their listening skills, being more aware of patient needs, and having more respect for older adults. The few students across all 4 classes who indicated that the experience had not influenced their plans for future practice already had prior experiences working with older adults and felt that their care was appropriate.

DISCUSSION

The increasing number of older adults within the US population creates a challenge in the education of future healthcare professionals. Healthcare providers are expected to display professional attitudes toward all patients, but some healthcare providers may have difficulties in understanding and empathizing with certain patient groups, as they may not yet have experienced similar challenges personally. Because most new pharmacists are in their 20s and have not personally experienced aging-related challenges, there is a need to improve student understanding

of and attitudes toward older adults. The current ACPE standards and the AACP outcomes for pharmacy education also deem professional attitudes and knowledge of different patient groups an important aspect to address within pharmacy education. To address this challenge activities, and experiential learning should be incorporated within the pharmacy curriculum.

Based on the results of the analysis, incorporation of *The Geriatric Medication Game* into the professional pharmacy curriculum met all 5 learning objectives and improved students' understanding of and attitudes toward older adults. Similar to other research examining the change in students' attitudes or empathy toward older adults after completing an aging-related simulation game, these students indicated positive changes in their attitudes toward older adults^{6,11,13,14,25} and greater knowledge and understanding regarding the experience of older adults within the healthcare system.¹³

Healthcare students and professionals who already work with older adults are more likely to have positive attitudes toward older adults.^{9,16} In their reflections, students who had more extensive interactions with older adults, either through family members or through IPPEs at a local state veterans' home, indicated positive attitudes toward older adults prior to the laboratory experience. Spending time with older adults could aid students in learning about the experiences of older adults and dispel any related preconceived ideas or societal stereotypes. For example, individuals with these stereotypes, or ageism, may believe older adults have less mental capacity and may then treat them as mentally incompetent individuals or like children.²⁶ By working with older adults, healthcare professionals may learn that these stereotypes do not accurately represent all older adults.

However, not all students have the opportunity to interact with older adults prior to IPPEs or APPEs. Therefore, the game was integrated into the first-year pharmacy practice laboratory to advance student understanding of and attitudes toward older adults, which can be reinforced in IPPEs and APPEs throughout the professional curriculum. Because the exercise improved attitudes toward older adults, most students anticipated making many changes to their future practice by incorporating what they had learned, such as being more patient, providing more assistance, and being more understanding toward older adults. These students then may increase the amount of time spent counseling, which has been shown to improve patient outcomes.²⁸⁻³²

Students also need to be aware of how the healthcare system functions in order to better understand the experiences of their patients. Many students have had limited experience as a "patient," since younger adults make

fewer visits to healthcare professionals than older adults.³³ In the game, students experienced a simulated healthcare system, with multiple provider visits and wait times for services. Students learned that patients experience a long and often costly day of visiting multiple health-care providers in order to resolve health-care issues. Greater understanding of the health-care system and the patient experience may help students manage patients who may be frustrated, tired, and impatient by the time they reach the pharmacy.

Many students indicated that they would demonstrate greater patience because of their improved understanding of the healthcare system. Not only did students experience personal frustration navigating the healthcare system, they also were frustrated by dealing with disabilities and facing difficulties completing tasks. Similar emotions were experienced by health professions students playing other aging-simulation games.¹³

A facilitator-led discussion at the completion of the game was added to the end of the activity because of a potential problematic outcome. While the game attempts to distribute disability in a manner that is representative of aging, many students perceived disability as inevitable and became afraid of aging. Therefore, the facilitator-led discussion was implemented to dispel these misconceptions. The facilitator discussed health-related diversity among older adults with pictures and stories of older adults who are, for example, weightlifters in their 90s and aerobics instructors at 100 years old.³⁵ The facilitator also made the point that healthcare professionals are more likely to encounter older adults who are experiencing disease and disability, as those individuals are seeking assistance. While the change in student perceptions regarding the inevitability of disability and disease were not measured, anecdotally, the discussion between the facilitator and students indicated that the students better understood the range of physical abilities and health statuses among older adults.

This study has some limitations. Because guided reflections were used, the depth and breadth of student responses to the game may have been limited. Students may have learned about other aspects of health care, which were unrelated to the questions asked. The reflection questions were generated to measure the learning outcomes for the activity, but the use of open-ended or free-form reflections may have revealed other items that students learned.

Students also may have felt the need to respond favorably to the questions, introducing social desirability bias, which refers to the inclination of individuals to minimize or avoid socially undesirable traits or statements (ie, negative attitudes toward older adults) and to maximize socially desirable traits or statements (ie, positive atti-

tudes toward older adults).³⁴ Attempts were made to minimize social desirability bias by having students complete the reflections prior to the game discussion.

It is unknown whether these changes in attitude persisted over time. Student attitudes and knowledge improved when measured after the activity, but the goal of incorporating these types of activities into the curriculum is to impact student attitudes and knowledge of a particular patient population (in this case older adults) and have these attitudes and knowledge reinforced by practices experiences (IPPEs/APPEs) throughout the curriculum. There is potential for this activity to have lasting impact, as Galanos and colleagues incorporated an aging-simulation game in their medical school curriculum and found a lasting impact on students, even 3 years after the experience.²⁴ Future research should examine whether there is a long-term effect of the game and other experiences on student attitudes toward and understanding of older adults.

Future educational activities should apply the results of the qualitative analysis to inform the design of a quantitative questionnaire to further assess changes in student attitudes and gains in knowledge as well as measure the learning outcomes described in Table 1. These changes should be measured not only after the activity but also periodically within the curriculum to examine the longitudinal impact. Other healthcare professional students could be incorporated within the activity as an interprofessional experience, as improvements in attitudes and increases in knowledge regarding the experience of older adults is important for all healthcare professionals.

CONCLUSION

The Geriatric Medication Game was incorporated into the PharmD curriculum to address the ACPE standards and AACP outcomes regarding the display of professional attitudes toward and knowledge of patient populations. After participation in the game, written student reflections demonstrated that students met the learning outcomes for the activity. Students gained an understanding of feelings and emotions older adults may experience, improvement in their attitudes toward older adults, and knowledge regarding the US healthcare system. Furthermore, students indicated that they planned to make positive changes in their future practice based on this experience.

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