

8-2011

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

Aleda M.H. Chen

*Purdue University*, amhess@purdue.edu

Kimberly S. Plake

*Purdue University*, kplake@purdue.edu

Karen S. Yehle

*Purdue University*, kyehle@purdue.edu

Mary E. Kiersma

*Purdue University*

Follow this and additional works at: <http://docs.lib.purdue.edu/nursingpubs>

---

## Recommended Citation

Chen, Aleda M.H.; Plake, Kimberly S.; Yehle, Karen S.; and Kiersma, Mary E., "Assessment of the Impact of the Geriatric Medication Game© on Pharmacy Students' Attitudes Toward Older Adults" (2011). *School of Nursing Faculty Publications*. Paper 22.  
<http://dx.doi.org/10.5688/ajpe758158>

This document has been made available through Purdue e-Pubs, a service of the Purdue University Libraries. Please contact [epubs@purdue.edu](mailto:epubs@purdue.edu) for additional information.

## Instructional Design and Assessment

### TITLE PAGE

**Title:** Assessment of the Impact of the Geriatric Medication Game<sup>©</sup> on Pharmacy Students'

Attitudes Toward Older Adults

**Authors:** Aleda M. H. Chen, PharmD, MS,<sup>1,4</sup> Kimberly S. Plake, PhD, RPh,<sup>2,4</sup> Karen S. Yehle, PhD, MS, RN<sup>3,4</sup>, Mary E. Kiersma, PharmD, MS<sup>1</sup>

<sup>1</sup>Graduate Research Assistant, Department of Pharmacy Practice, College of Pharmacy, Purdue University, West Lafayette, Indiana

<sup>2</sup>Associate Professor, Department of Pharmacy Practice, College of Pharmacy, Purdue University, West Lafayette, Indiana

<sup>3</sup>Assistant Professor, School of Nursing, College of Health and Human Sciences, Purdue University, West Lafayette, Indiana

<sup>4</sup>Center on Aging and the Life Course, Purdue University, West Lafayette, Indiana

### Corresponding Author:

Aleda M. H. Chen, Pharm.D., M.S.

Mailing Address: Purdue University, College of Pharmacy, 575 Stadium Mall Drive, West Lafayette, IN 47907

Phone: 419-260-1478 Fax: 765-494-7650 E-mail: [amhess@purdue.edu](mailto:amhess@purdue.edu)

**Keywords (3-5):** student attitudes, pharmacy education, geriatrics, assessment

## **ABSTRACT**

**Objective:** To examine the impact of participation in the *Geriatric Medication Game* on pharmacy students' (1) perceptions of and attitudes toward older adults and (2) familiarity with common disabilities and the process of seeking healthcare.

**Design:** In the *Game*, first professional year students “became” older adults during a three hour pharmacy practice laboratory. They were given aging-related challenges (e.g., impaired vision or mobility) and participated as patients in simulated healthcare scenarios, such as a physician’s office and pharmacy.

**Assessment:** After the *Game*, students completed a five question reflection about their experiences and attitudes towards older adults. Content analysis was performed to identify themes from four 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 older adults face and improve future interactions.

## INTRODUCTION

By 2030, it is estimated that nearly 22 percent of the United States (U.S.) population will be ages 65 or older,<sup>1</sup> increasing from 12.9 percent in 2009.<sup>2</sup> Since older adults are the largest consumers of prescription medications,<sup>3</sup> pharmacists and student pharmacists should be well-prepared to address the medication-related needs of the growing population of older adults.<sup>4</sup> However, students and new pharmacist practitioners may have difficulties in understanding and empathizing with older adults, as they may not yet have experienced aging-related challenges, such as disability and disease.

Two decades earlier, data indicated that healthcare professionals had negative views of aging and older adults.<sup>5-7</sup> However, recent studies among healthcare professionals demonstrated positive attitudes regarding older adults' abilities, the aging process, and older adults in general.<sup>8-</sup><sup>10</sup> These improvements in attitudes may be due to curricular changes, as many universities and colleges educating healthcare professionals have incorporated geriatric-specific education into the required and elective curriculum.<sup>8, 9, 11-16</sup>

The Accreditation Council for Pharmacy Education (ACPE) in their revised standards for pharmacy education and the American Association of Colleges of Pharmacy (AACCP) in their outcomes for pharmacy education recognize the importance of displaying professional attitudes and values during all healthcare interactions.<sup>17-19</sup> Therefore, integrating activities within the curriculum that improve student understanding and attitudes towards different patient populations are needed to promote patient-centered care. This can be accomplished by several means, such as clinical rotations, interprofessional practice experiences, Introductory and Advanced Pharmacy Practice Experiences (IPPEs and APPEs), and geriatric elective courses.<sup>4, 8,</sup><sup>12, 15, 20</sup> Simulation games also are a useful method for teaching concepts to students, by actively

involving them in the learning process<sup>4, 6, 21</sup> and allowing students to experience and respond to situations in a safe learning environment, without real consequences.<sup>6, 21</sup>

Several games have been developed to simulate the aging process and improve student healthcare professional attitudes and knowledge,<sup>6, 11, 13, 14, 23-25</sup> but many have little focus on medication-related problems.<sup>22</sup> *The Geriatric Medication Game*, developed by the St. Louis College of Pharmacy, specifically addresses medication-related challenges of older adults.<sup>13, 22</sup> Students become older adults and experience physical, psychological, and financial problems while navigating the healthcare system and performing challenges.<sup>13, 22</sup> Therefore, a modified version of *The Geriatric Medication Game* was incorporated into the Purdue University College of Pharmacy curriculum as part of a pharmacy practice skills laboratory.

## **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 commonly found in older adults and the process of seeking healthcare in the 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 healthcare, (3) personal attitudes toward older adults, (4) ways healthcare practitioners can help older adults, and (5) how the United States healthcare system functions.

### **Description of the Modified Geriatric Medication Game**

A modified version of *The Geriatric Medication Game* was implemented during a three-hour first professional year pharmacy practice skills laboratory. Students were given directions and an overview prior to beginning the *Game*. First, students were asked to select three personal

characteristics they wished to retain as an older adult from a list, including: emotionally stable, energetic, good-looking, good memory, independent, mentally alert, physically active, sexually active, and social.<sup>13</sup> Then, students were randomly assigned physical disabilities (e.g., vision loss, hearing loss, dexterity loss, difficulty with balance, general disability, or mobility loss) and financial status.<sup>13</sup> Physical disabilities were simulated through aids,<sup>13</sup> 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 one of three different categories of financial resources. Each category was comprised of a different amount of “health credits,” i.e. wealth, which was used to pay co-pays or fees for services.<sup>13</sup> 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 insurance.

Students were asked to navigate a simulated healthcare system,<sup>13</sup> with six different stations: physician’s office, pharmacy, other healthcare provider, laboratory tests and healthcare benefits, home, and activities. (The transportation station in the *Game* was removed to allow students to spend more time in other activities, and the activities station was a *Game* modification.) At each station, students drew a card describing a healthcare situation that “occurred” or were asked to perform an activity.<sup>13</sup> 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 for the week with their medications. The activities station corresponded to activities of daily living (ADLs) and instrumental activities of daily living (IADLs), 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.<sup>13</sup> 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 healthcare professionals toward patients were simulated by having some healthcare professionals treat older adults poorly, rushing them through activities or office visits, and displaying ageism. Examples of ageism<sup>26</sup> utilized in the *Game* included talking to older adults as though they are children or treating older adults as though they have lost mental capabilities.

As a modification to the *Game*, students were asked to complete a guided open-ended questionnaire (after the *Game* ended) regarding their experience. 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 discussed with students that not all older adults have disabilities and shared pictures and stories with the students about highly active older adults.<sup>35</sup> In addition, the importance of healthy lifestyles to prevent aging-related disease and disability was discussed.

Prizes also were awarded to students based on the most remaining number of health credits (i.e., financial resources), the most remaining personal characteristics, and completing the most station activities. Prizes such as large-print crossword puzzle books, lotion, and body powder were given to the winners, as they are items that are perceived by many as valued by

older adults. The facilitator also engaged students in a discussion regarding the perceived value of these items.

### **Student Assessment**

Institutional Review Board (IRB) approval for evaluation of this project was granted. At the end of the activity, students were asked to reflect upon their experience as an older adult navigating the healthcare system. 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* utilized standardized questionnaires,<sup>13</sup> which may not provide as detailed or as in-depth of information regarding the student experience that qualitative analysis can provide.<sup>27</sup>

The written student reflections were transcribed into word-processing software. Content analysis of the reflections was performed to identify themes grounded in the students' comments<sup>27</sup> using QSR NVivo v.8, which aids in organizing qualitative data into themes. For a theme to be considered predominant, a threshold of 25 percent or more of students commenting on the aspect was established.

## **EVALUATION AND ASSESSMENT**

All students (N = 624) in their first professional year of pharmacy completed the practice skills laboratory in the spring semester of 2007 (N = 159), 2008 (N = 157), 2009 (N = 149), and 2010 (N = 159) and submitted a written reflection. Several predominant themes were identified (Table 3) through the guided reflection questions.

### ***Theme 1: Students felt frustrated while playing the game.***

Prompted by the question regarding what feelings and emotions they experienced, over 75 percent of students across all four years indicated they experienced frustration from

participating in the *Game*. While several other feelings and emotions were expressed frequently (such as impatience, annoyance, confusion, and anger), no other emotion reached 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) since many were given disabilities (such as vision or dexterity loss) in the *Game*. Tasks that were previously easy for them, such as buttoning up 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, understanding more of their experience in the healthcare system, and how older adults may often face stereotypes or prejudice because of their age or disabilities. These were mentioned by between 14 and 23 percent of students, which was not enough to be considered a predominant theme. However, nearly 50 percent of students learned that disabilities make completing the tasks required to navigate both the healthcare system and daily life challenging. Difficulty completing tasks was a new concept to many students, who never realized that these "simple" tasks could be difficult for other 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 percent of students agreed that their attitude had improved.

***Theme 5: Students felt that their attitude had changed because they were now more aware 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 difficulties older adults experience and would be more understanding toward older adults when they encounter them as healthcare professionals. Students mentioned that they did not realize how challenging it could be completing tasks with disabilities, such as loss of hearing, vision, or mobility. Other changes in attitude and practice, although mentioned by less than 25 percent 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 indicated that they had prior experiences with older adults (either with family or in IPPEs at the local Veteran's Home) and already had positive attitudes toward older adults.

***Theme 6: Students learned more about the U.S. 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 U.S. healthcare system and how it functions during the game. Nearly 40 percent of students learned that they often had to visit multiple healthcare providers, such as the physician, the laboratory, and the pharmacist, to resolve their health issues. A quarter of the students also learned that the U.S. healthcare system can be costly, with co-pays for office visits, laboratory tests, and prescription medications. These costs were different based on the type of health insurance they had, and caused frustration for many students to be paying more than someone else. Students also learned about issues

surrounding care coordination. Although not a predominant theme, 19 percent of students felt there was a lack of care coordination between healthcare professionals, which contributed to longer wait times, unnecessary trips to a healthcare provider, and potential errors.

***Theme 7: Students plan 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 will affect their future practice as a pharmacist. 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 patients understand their medications and diseases, improving listening skills, being more aware of patient needs, and having more respect for older adults. Few students across all four classes indicated that the experience had not influenced their plans for future practice, but these students already had prior experiences with older adults and felt that their care was appropriate.

## **DISCUSSION**

The increasing number of older adults within the U.S. 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. Since many new pharmacists tend to be in their twenties and have not personally experienced aging-related challenges, there is a need to improve student understanding of and attitudes toward older adults. Furthermore, the current ACPE standards and the AACCP outcomes for pharmacy education deem professional attitudes and knowledge of

different patient groups an important aspect to address within curricular efforts. Within the pharmacy curriculum, activities and experiential learning should be incorporated to address this challenge.

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

Healthcare students and professionals who already work with older adults are more likely to have positive attitudes toward older adults.<sup>9, 16</sup> In their reflections, students who have had more extensive interactions with older adults, either through family members or through IPPEs at a local state Veteran's Home, indicated positive attitudes toward older adults prior to the laboratory. Spending time with older adults could aid students in learning about the experiences of older adults and dispel any preconceived ideas or societal stereotypes regarding older adults. 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.<sup>26</sup> By working with older adults, healthcare professionals may learn 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 professional 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. Since the exercise improved attitudes towards older adults, most students anticipated making many changes to their future practice by incorporating what they 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.<sup>28-32</sup>

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 less visits to healthcare professionals than older adults.<sup>33</sup> 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 healthcare providers in order to resolve healthcare issues. Greater understanding of the healthcare 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. Students also experienced personal frustration navigating the healthcare system. Not only did students experience frustration from navigating the healthcare system, they also experienced frustration dealing with disabilities and facing difficulties completing tasks. Similar emotions also were experienced in other aging simulation games.<sup>13</sup>

The facilitator-led discussion at the completion of the *Game* was added to the end of the activity due to 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. During the discussion, the facilitator discussed health-related diversity among older adults with pictures and stories of older adults who are, for example, weight lifters in their 90s and aerobics instructors at 100 years old.<sup>35</sup> The facilitator also discussed that healthcare professionals more often 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 was not measured, anecdotally, the discussion between the facilitator and students indicates that students better understood the diversity among older adults.

### **Limitations**

Since guided reflections were utilized, the depth and breadth of student responses to the *Game* may have been limited. Students may have learned about other aspects of healthcare, 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. Social desirability bias refers to the inclination of individuals to minimize or avoid socially undesirable traits or statements (i.e., negative attitudes toward older adults) and to maximize socially desirable traits or statements (i.e. positive attitudes toward older adults).<sup>34</sup> 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 three years after the experience.<sup>24</sup> Future research should examine whether there is a long-term effect of the game and other experiences on student attitudes and understanding of older adults.

## **CONCLUSION**

*The Geriatric Medication Game* was incorporated into the professional pharmacy 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*, pharmacy students reflected on their perceptions of and attitudes toward older adults as well as the process of seeking healthcare for a chronic illness. Written reflections demonstrated that student participation in the *Game* provided results which met the learning outcomes for the activity. Students gained an understanding of feelings and emotions older adults may experience, improved attitudes toward older adults, and gained knowledge regarding the U.S. healthcare system. Furthermore, students indicated that they planned to make positive changes in their future practice, based on this experience.

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 to measure the learning outcomes described in Table 1. Not only should these changes be measured after the activity, but periodically within the curriculum to examine the longitudinal impact. Also, other healthcare professional students could be incorporated within the activity as an interprofessional experience, as improvements in attitudes toward older

adults and increases in knowledge regarding the experience of older adults within the healthcare system is important for all healthcare professionals.

**Acknowledgements:** Support for Aleda M. H. Chen was provided by the National Institute on Aging (T32AG025671) and the Purdue University Center on Aging and the Life Course.

## REFERENCES

1. U.S. Census Bureau. Projections of the population by selected age groups and sex for the United States: 2010 to 2050.  
<http://www.census.gov/population/www/projections/summarytables.html>. Accessed May 26, 2011.
2. U.S. Census Bureau. Annual estimates of the resident population for the United States, regions, states, and Puerto Rico: April 1, 2000 to July 1, 2009.  
<http://www.census.gov/popest/states/NST-ann-est.html>. Accessed May 26, 2011.
3. Qato DM, Alexander GC, Conti RM, Johnson M, Schumm P, Lindau ST. Use of prescription and over-the-counter medications and dietary supplements among older adults in the United States. *JAMA*. 2008;300(24):2867-2878.
4. Odegard PS, Breslow RM, Koronkowski MJ, Williams BR, Hudgins GA. Geriatric pharmacy education: a strategic plan for the future. *Am J Pharm Educ*. 2007;71(3):Article 47.
5. Marte AL. How does it feel to be old? Simulation game provides "into aging" experience. *J Contin Educ Nurs*. 1988;19(4):166-168.
6. Bonstelle SJ, Govoni AL. Into aging: Exploring aging through games. *Rehabil Nurs*. 1984;9(2):23-27.
7. Slevin ODA. Ageist attitudes among young adults: implications for a caring profession. *J Adv Nurs*. 1991;16:1197-1205.
8. Damron-Rodriguez J, Kramer BJ, Gallagher-Thompson D. Effect of geriatric clinical rotations on health professions trainees' attitudes about older adults. *Gerontol Geriatr Educ*. 1998;19(2):67-79.

9. Courtney M, Tong S, Walsh A. Acute-care nurses' attitudes towards older patients: A literature review. *Int J Nurs Pract.* 2000;6(2):62-69.
10. Lookinland S, Anson K. Perpetuation of ageist attitudes among present and future health care personnel: implications for elder care. *J Adv Nurs.* 1995;21:47-56.
11. Douglass C, Henry BW, Kostiwa IM. An aging game simulation activity for allied health students. *Educ Gerontol.* 2008;34(2):124-135.
12. Estus EL, Hume AL, Owens NJ. An active-learning course model to teach pharmacotherapy in geriatrics. *Am J Pharm Educ.* 2010;74(3):Article 38.
13. Evans SL, Lombardo M, Belgeri MT, Fontane PE. The Geriatric Medication Game in pharmacy education. *Am J Pharm Educ.* 2005;69(3):304-310.
14. Kennedy DH, Fanning KD, Thornton PL. The Age Game: an interactive tool to supplement course material in a geriatrics elective. *Am J Pharm Educ.* 2004;68(5):Article 115.
15. Sauer BL. Student-directed learning in a community geriatrics advanced pharmacy practice experience. *Am J Pharm Educ.* 2006;70(3):Article 54.
16. Stewart JJ, Giles L, Paterson JE, Butler SJ. Knowledge and attitudes towards older people: New Zealand students entering health professional degrees. *Phys Occup Ther Geriatr.* 2005;23(4):25-36.
17. Accreditation Council for Pharmacy Education. *Accreditation standards and guidelines for the professional program in pharmacy leading to the doctor of pharmacy degree.* Chicago, IL: Accreditation Council for Pharmacy Education; 2006.

18. American Association of Colleges of Pharmacy, Center for the Advancement of Pharmaceutical Education. Educational outcomes. <http://aacp.org/resources/education/Documents/CAPE2004.pdf>. Accessed May 26, 2011.
19. American Association of Colleges of Pharmacy, Center for the Advancement of Pharmaceutical Education. Social and administrative sciences supplemental educational outcomes. <http://aacp.org/resources/education/Documents/SocialandAdminDEC06.pdf>. Accessed May 26, 2011.
20. Furze J, Lohman H, Mu K. Impact of an interprofessional community-based educational experience on students' perceptions of other health professions and older adults. *J Allied Health*. 2008;37(2):71-77.
21. Schmall V, Grabinski CJ, Bowman S. Use of games as a learner-centered strategy in gerontology, geriatrics, and aging-related courses. *Gerontol Geriatr Educ*. 2008;29(3):225 - 233.
22. Oliver CH, Hurd PD, Beavers M, Gibbs E, Goeckner B, Miller K. Experiential learning about the elderly: the Geriatric Medication Game. *Am J Pharm Educ*. 1995;59(2):155-158.
23. Evans SL, Belgeri MT, Fontane PE. Improving the understanding of geriatric needs in today's health care system through role play: the Geriatric Medication Game. *Pharmacotherapy*. 2003;23(10):1335.
24. Galanos AN, Cohen HJ. Medical education in geriatrics: The lasting impact of the Aging Game. *Educ Gerontol*. 1993;19(7):675.
25. Varkey P, Chutka DS, Lesnick TG. The Aging Game: Improving medical students' attitudes toward caring for the elderly. *J Am Med Dir Assoc*. 2006;7(4):224-229.

26. Giles LC, Paterson JE, Butler SJ, Stewart JJ. Ageism among health professionals: A comparison of clinical educators and students in physical and occupational therapy. *Phys Occup Ther Geriatr.* 2002;21(2):15-26.
27. Berg BL. *Qualitative research methods for the social sciences.* 6th ed. Boston: Pearson Education, Inc. and Allyn and Bacon; 2007.
28. Lee SSC, Cheung P-YP, Chow MSS. Benefits of individualized counseling by the pharmacist on the treatment outcomes of hyperlipidemia in Hong Kong. *J Clin Pharmacol.* 2004;44(6):632-639.
29. Murray MD, Young J, Hoke S, et al. Pharmacist intervention to improve medication adherence in heart failure: a randomized trial. *Arch Intern Med.* 2007;146:714-725.
30. Murray MD, Ritchey ME, Wu J, Tu W. Effect of a pharmacist on adverse drug events and medication errors in outpatients with cardiovascular disease. *Arch Intern Med.* 2009;169(8):757-763.
31. Hanlon JT, Lindblad CI, Gray SL. Can clinical pharmacy services have a positive impact on drug-related problems and health outcomes in community-based older adults? *Am J Geriatr Pharmacother.* 2004;2(1):3-13.
32. Simpson RJ. Challenges for improving medication adherence. *JAMA.* 2006;296(21):2614-2616.
33. U.S. Census Bureau. Statistical Abstract of the United States: Table 162: Percent distribution of number of visits to health care professionals, by selected characteristics <http://www.census.gov/compendia/statab/2011/tables/11s0162.pdf>. Accessed May 26, 2011.

34. Nederhof AJ. Methods of coping with social desirability bias: A review. *Eur J Soc Psychol.* 1985;15(3):263-280.
35. Clark E. *Growing old is not for sissies II: Portraits of senior athletes.* Rohnert Park, CA: Pomegranate Artbooks; 1995.

**Table 1. Activities Station Tasks**

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.
9. Rip a trash bag off the roll and tie it using the provided twist-tie.
10. Open the peppermint.

**Table 2. After Game Reflection**

<b>Purpose and Learning Outcome to be Measured</b>	<b>Reflection Question</b>	<b>Learning (Bloom's Taxonomy)</b>
<p><b>Purpose:</b> To familiarize pharmacy students with disabilities commonly found in older adults</p> <p><b>Learning Outcomes:</b></p> <ol style="list-style-type: none"> <li>To identify limitations occurring as a result of disabilities.</li> <li>To identify barriers older adults face when seeking healthcare.</li> </ol>	<p>What were some of the feelings or emotions that you experienced while playing the game?</p> <p>Why do you think you experienced those feelings/emotions?</p> <p>What did you learn about the elder experience from playing this game?</p>	<p>Knowledge</p> <p>Analysis</p> <p>Knowledge</p>
<p><b>Purpose:</b> To improve pharmacy students' perceptions of and attitudes toward older adults</p> <p><b>Learning Outcome:</b></p> <ol style="list-style-type: none"> <li>To identify personal attitudes toward older adults.</li> </ol>	<p>Has your attitude towards elderly patients changed from playing the game? How?</p>	<p>Analysis</p>
<p><b>Purpose:</b> To familiarize students with the process of seeking healthcare in the treatment of a chronic illness</p> <p><b>Learning Outcome:</b></p> <ol style="list-style-type: none"> <li>To identify ways healthcare practitioners can help older adults.</li> </ol>	<p>Now that you have played the game, how do you think it will affect your practice as a pharmacy intern and future pharmacist?</p> <p>What changes do you plan on making to your practice from playing the game?</p>	<p>Analysis</p> <p>Synthesis</p>
<p><b>Purpose:</b> To familiarize students with the process of seeking healthcare in the treatment of a chronic illness</p> <p><b>Learning Outcome:</b></p> <ol style="list-style-type: none"> <li>To identify how the United States healthcare system functions.</li> </ol>	<p>What did you learn about the United States healthcare system and how it functions from playing the game?</p>	<p>Knowledge</p>

**Table 3. Summary of Predominant Themes from Student Reflections (N = 624)<sup>a</sup>**

<b>Theme</b>	<b>N<sup>b</sup></b>	<b>Percentage<sup>c</sup> (%)</b>
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 healthcare 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. healthcare system it often takes visits to multiple healthcare providers to completely address healthcare 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

<sup>a</sup>For a theme to be considered predominant, a minimum threshold of 25 percent of the students needed to comment on the aspect.

<sup>b</sup>N refers to the total number of students who expressed the theme out of the 624 reflections assessed.

<sup>c</sup>Percentage refers to the percent of students who expressed the theme out of the 624 reflections assessed.