

INSTRUCTIONAL DESIGN AND ASSESSMENT

The Age Game: An Interactive Tool to Supplement Course Material in a Geriatrics Elective

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Objective. The objective of this study was to evaluate the effectiveness of *The Age Game* as an interactive learning tool for geriatrics-related topics.

Methods. Forty-seven students enrolled in the geriatrics elective offered at 2 colleges of pharmacy completed a survey after playing *The Age Game*.

Results. Students reported that *The Age Game* enhanced problem-solving skills, challenged them to think critically, actively involved them in the learning process, and prepared them to counsel geriatric patients and become competent pharmacists.

Conclusion. *The Age Game* can serve as a useful learning tool to complement geriatrics-related topics taught to pharmacy students.

Keywords: elderly, geriatrics, interactive learning, elective course

INTRODUCTION

With the projected doubling of the elderly population (>65 years of age) from 35 million in 2000 to 70 million by 2030, pharmacists must be prepared to understand pharmacodynamic changes that occur with age and to communicate with and educate this complex population in order to provide pharmaceutical care.¹ Those older than 85 years of age are the fastest growing segment of the elderly population and will comprise approximately 9 million or 2.5% of the national population by 2030.¹ The increased use of prescription medications by the elderly population predisposes them to adverse drug events that can lead to confusion, falls, depression, disability, loss of independence, hospitalizations, and/or death. In order to improve patient outcomes, pharmacists and other healthcare professionals require knowledge of the special needs of the elderly. Many schools or colleges of pharmacy provide limited training in geriatrics as an integrated theme throughout their curriculum or through practice experiences; however, few first-professional degree or post-BS PharmD students enroll in a required didactic or experiential course entirely devoted to geriatrics.²⁻⁴

As an additional learning experience, simulation games that educate healthcare students about the elderly population have been developed and are described in the literature. In the pharmacy setting, *The Geriatric Medication Game* has been used at the St. Louis College of Pharmacy and was developed to specifically address the challenges experienced by elderly patients when managing their medications. The game allows students to temporarily experience the changes in memory, dexterity, sight, sound, and perception that are prevalent in the elderly, as well as some of the stereotypes older patients encounter. Students who played the game showed increased sensitivity to the problems associated with the elderly when taking their medications. As a result, the game has been integrated into the professional communications course at St. Louis College of Pharmacy.⁵

The Aging Game was developed for use by medical students between their first and second year of school. The game has 3 phases. The first phase encourages students to evaluate what would be important to them as they age; the second phase provides experiences that allow them to imagine the transition from independent living to complete dependence, and the third phase provides an opportunity for them to share their thoughts about *The Aging Game*. Students reported feelings of frustration, anger, withdrawal/resignation, grief/depres-

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Table 1. Course Content for Geriatrics Electives

Course Content
<ul style="list-style-type: none">• Biology of aging• Communicating with the elderly• Geriatric assessment/geriatric syndromes• Insomnia and sleep disorders• Long term care regulations• Medication-related problems (adverse drug reactions, medication appropriateness, Beer's criteria)• Nutrition (anorexia, cachexia, obesity)• Palliative care/death and dying• Pharmacokinetic and pharmacodynamic changes• Pressure ulcers• Preventive health (immunizations, exercise, falls prevention)• Sexuality• Urinary incontinence

sion, and rebelliousness after participating in the game. Student comments about the game indicated that the experience was unique and made learning about the elderly more fun.⁶

Simulation Exercises for Aging and Disability (SEAD) have also been described. These exercises allowed psychology students and students enrolled in adulthood and aging classes to experience first-hand the declining vision, hearing, and mobility that can occur with aging. Student evaluations have shown that they enjoyed SEAD and that learning through this method is preferred to lecture or text.⁷ Another game described the use of cards that have true and false statements about the elderly. The object of that game is for the players to collect the most cards with true or correct statements.⁸ A similar format is used for *The Road of Life* game in which participants try to maintain "life units" as they progress through the game.⁹

DESIGN

The Age Game was developed as a supplement for use in a geriatrics elective at 2 colleges of pharmacy. The course content for the geriatrics electives is provided in Table 1. *The Age Game* integrates the pharmaceutical care issues that are emphasized in *The Geriatric Medication Game* and the social issues that are emphasized in SEAD. *The Age Game* provides participants with an opportunity to learn about geriatric assessment (ie, assessment of dementia, depression, and tardive dyskinesia), experience sensory decline that occurs during aging (ie, decreased vision due to glaucoma, decreased hearing, and decreased sensitivity to touch), and expose participants to practical issues encountered while caring for the geriatric patient (ie, medication compliance and diet). The objective of this

study was to implement and evaluate *The Age Game* in geriatrics electives offered at 2 colleges of pharmacy.

The Age Game allows students to actively learn about the health-related needs of older patients. *The Age Game* also serves to develop participants' critical thinking skills and prepares them to counsel the older adult, and stimulates thought and discussion regarding the factors that can complicate drug therapy in the senior population, such as diet, decreased hearing, and decreased vision.

The Age Game consists of a set of interactive scenarios created to stimulate discussion regarding age-related changes and disease states, geriatric assessment, and communication skills necessary to assist in the counseling of older patients. To administer *The Age Game*, students are divided into groups of 3 to 5 players. Players use a "game piece" to move about the board. The game board is composed of solid color spaces interspersed between spaces with instructions for movement on the game board. Scenario cards are placed face down in the middle of the game board. Each player rolls a die to determine the order of play. The player who rolls the highest number proceeds first and then the game continues in a clockwise direction. Advancement around the board is based on the number showing on the rolled die.

Solid-color spaces on the game board do not have instructions for movement. When a player lands on a solid-color space, the player takes a scenario card from the center of the game board. The player reads the scenario card to the rest of the group and follows the instructions. The player may then advance or retreat based on their performance of the described task or whether they provide a correct or incorrect response to a question on the scenario card. The scenario card is then placed at the bottom of the deck. Examples of scenarios are shown in Table 2. Other scenario cards include explanations of such topics as different salt substitutes, compliance aids, urinary incontinence, activities of daily living, instrumental activities of daily living, monitoring parameters for nutritional status, the difference between Parkinson's disease and essential tremor, and the difference between aphasia and dysphasia. Some cards require the player to act out the described scenario, which may involve such things as applying capsaicin cream or using adaptive devices. Players cannot advance any further once they land on a solid-color space for a second time during their turn. The game is over when the first player reaches the last board space and wins the game.

New scenario cards may be developed and added to *The Age Game*. Scenarios may also be deleted if necessary. A guide that gives the correct answers or information for the scenario cards is provided for the instructor. Other supplies needed for the game are listed in Table 3.

Table 2. Example Scenarios

Topic	Example of a Scenario Card
Geriatric assessment of cognitive impairment	Have a fellow player administer the MMSE. For each point you miss, move backwards one space.
Geriatric assessment of tardive dyskinesia	Administer the AIMS or DISCUS scale on a fellow player. Then move forward one space, if you can name at least two types of medications that may cause this problem. (Discuss the differences between the AIMS and DISCUS).
Geriatric assessment of depression	Have a fellow player administer the GDS to you. For each positive point, move backwards one space.
Decreased vision	Put on glasses covered with vaseline and read the scenario card. If you can't read the card, move backwards two spaces.
Decreased hearing	Put in ear plugs and have a conversation with a fellow player. If you can't understand them, move backwards two spaces.
Arthritis	Place rubber gloves on hands and open a pill bottle. Place pills into a pill box. If successful, move forward two spaces. If not, move backwards two spaces.
Hemiparesis	Use the opposite hand you write with to put on a shirt. Move forward two spaces, if you can button the shirt before a fellow player can count to 30.
Administration of medications	Describe and demonstrate how to properly use an eyedropper, inhaler, spacer, tablet cutter, or pill crusher. If the eye drops roll down your face or the device is improperly used, go backwards two spaces.

MMSE = Mini Mental State Examination; DISCUS = Dyskinesia Identification System Condensed User Scale; AIMS = Abnormal Involuntary Movement Scale; GDS = Geriatric Depression Scale

Table 3. Supplies Needed for Administration of *The Age Game*

- Die
- 3-5 playing pieces / board markers
- One "Age Game" board
- Scenario cards
- Mini Mental State Examination
- Geriatric Depression Scale
- Abnormal Involuntary Movement Scale
- Dyskinesia Identification System Condensed User Scale
- Distorting glasses / eyeglasses with vaseline
- Ear plugs
- Gray wig
- Rubber gloves
- Medication vial with safety cap
- Medication vial snap caps
- Flat object / coin
- Long sleeve button down shirt
- Artificial tears / eye drops
- Safety eye dropper
- Assortment of pill boxes
- Tablet crusher / tablet splitter
- Placebo inhaler and spacer
- Bulking laxative
- Capsaicin arthritis cream
- Salt substitute
- Sugar-free candy
- Nutritional supplement drink
- Standing walker / quad cane
- Occupational Therapy assistive devices

Using a simulation game format in a traditional classroom setting allows students to become more active in their learning. This could make the learning experience more enjoyable and relevant for the learner. The goal of *The Age Game* is to challenge students to think about their role in caring for older patients and to recognize the limitations and barriers that the senior population faces. The disadvantages are the time commitment required for game preparation and the costs of the supplies needed for the game.

The Age Game was incorporated into the geriatrics elective at Auburn University Harrison School of Pharmacy (AUHSOP), in Auburn, AL, and the *Introduction to Geriatrics Elective* at Nova Southeastern University College of Pharmacy (NSUCOP), Fort Lauderdale, Fla, during the fall semester of 2002. Courses were offered to all pharmacy students. Fourth-year students completing geriatrics advanced-learning experiences at both sites also participated. Participants were required to read pregame material to become familiar with assessment tools including the Mini Mental State Examination (MMSE), Geriatric Depression Scale (GDS), and the Activities of Daily Living scale.¹⁰ The game was played during a 2-hour course period. Group sizes ranged from 3 to 5 participants. A facilitator rotated among the groups. A postgame survey using a 5-point Likert scale that assessed the participants' perception of *The Age Game* was administered to all participants in the fall semester of 2002.

Table 4. Survey responses after completion of *The Age Game* (N = 47)

Survey Item	Responses, n (%)				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. The AGE GAME helped me to learn the geriatric related subject matter included in this course.	1 (2)	0	5 (11)	22 (47)	19 (40)
2.	2 (4)	0	7 (15)	15 (32)	13 (27)
a. The AGE GAME was well written (NSUCOP)					
b. The AGE GAME instructions were difficult to follow. (AUHSOP)	5 (11)	5 (11)	0	0	0
3. The AGE GAME serves as a useful supplement to the information provided during the course.	0	1 (2)	5 (11)	21 (45)	20 (42)
4. The AGE GAME enhanced my problem solving skills.*	0	1 (2)	13 (28)	26 (55)	6 (13)
5. The AGE GAME challenged me to think critically about my approach to geriatric patients.	0	0	8 (17)	29 (62)	10 (21)
6.	0	0	2 (4)	17 (36)	18 (38)
a. The AGE GAME actively involved me in the learning process. (NSUCOP)					
b. The AGE GAME did not actively involve me in the learning process. (AUHSOP)	8 (17)	2 (4)	0	0	0
7. The AGE GAME helped me to prepare for real life counseling of geriatric patients.	1 (2)	0	12 (25)	21 (45)	13 (28)
8. Interactive games, such as the AGE GAME will help prepare me to become a competent pharmacist.	1 (2)	1 (2)	9 (19)	15 (32)	21 (45)
9. The AGE GAME is a useful learning tool.	0	1 (2)	5 (11)	16 (34)	25 (53)
10. The AGE GAME should continue to be made available to future students.	0	2 (4)	5 (11)	16 (34)	24 (51)

NSUCOP = Nova Southeastern University College of Pharmacy; AUHSOP = Auburn University Harrison School of Pharmacy

* One student did not evaluate this statement.

RESULTS

Forty-seven students participated in *The Age Game* at AUHSOP and NSUCOP. All participants completed the postgame survey (37 at NSUCOP and 10 at AUHSOP). There were 5 fourth-year students (11%), 22 third-year students (47%), 19 second-year students (21%), and 1 first-year student (2%). Thirty-eight students (81%) had previous pharmacy work experience. Responses to the postgame survey questions based on a 5-point Likert scale are shown in Table 4.

Open-ended questions about the most- and least-valuable scenarios, areas for improvement, and additional comments were used to provide descriptive feedback about *The Age Game*. These comments are shown in Table 5. Students especially enjoyed the sensitivity exercises (eg, putting on and buttoning a shirt using only their nondominant hand, using ear plugs, experiencing blurry vision, and filling a pill box wearing gloves).

DISCUSSION

While not specifically asked of the participants in this study, those who played the game reported having an

enjoyable experience, improved attitudes and increased empathy toward the elderly, and a greater appreciation of the challenges experienced with aging, and being better able to care for the elderly.⁵⁻⁹

Interactive learning tools, such as *The Age Game*, *The Geriatric Medication Game*, *Aging Game*, and SEAD, can provide participants with opportunities to discuss topics that may not be covered in traditional pharmacy school curriculums. In the advanced practice experience setting, interactive learning tools can be used to identify areas that may need further attention.

In general, student feedback about *The Age Game* indicated that they enjoyed the experience and found it a good way to learn. Students reported having a better understanding of the challenges that are encountered by the older adult. Students did state that the game moved players backwards on the board often, making advancement difficult. Students also thought the game should have more scenarios and more props so that all players could experience each scenario.

Since *The Age Game* continues to be used at both NSUCOP and AUHSOP, improvements have been made

Table 5. Descriptive Responses and Additional Comments About *The Age Game*

Open-ended Questions and Comments	Response (n)
What was the most valuable scenario/activity of <i>The AGE GAME</i> ? Why?	<ul style="list-style-type: none"> • Arthritis (8) • Memory decline (8) • All scenarios (5) • Hearing loss (5) • Visual decline (4) • Adaptive equipment/walker (4) • Hemiparesis (3) • Inhaler/spacer demonstration (1)
What was the least valuable scenario/activity of <i>The AGE GAME</i> ? Why? (AUHSOP)	<ul style="list-style-type: none"> • None (1) • Cost of medications (1) • Hearing loss - could still hear (1) • Visual loss - could still see/read (1) • Inhaler/spacer demonstration (1) • Tardive dyskinesia assessment scales (DISCUS/AIMS) (1)
How would you improve <i>The AGE GAME</i> ?	<ul style="list-style-type: none"> • Better movement on the board - more moving forward cards or less moving back cards (6) • Clearer or simpler instructions (4) • More scenarios - taste sensation (2) • More objects to use (1) • Provide handouts reviewing key points (1) • More time (1) • Smaller groups (NSUCOP) (1) • More players (AUHSOP) (1) • No change - I learned a great deal! (1)
Additional comments	<ul style="list-style-type: none"> • “You can not fully understand what it is like to have these problems until you actually experience them. Although not exactly the same as aging, it was still a good experience.” • “I thought the game was very educational on exposing students to concepts the elderly deal with on a daily basis.” • “I learned a great deal.” • “Great way to learn and remember.” • “Enjoyed ‘The Age Game’.” • “It was helpful and involved hands-on-learning.”

DISCUS = Dyskinesia Identification System Condensed User Scale; AIMS = Abnormal Involuntary Movement Scale; NSUCOP = Nova Southeastern University College of Pharmacy; AUHSOP = Auburn University Harrison School of Pharmacy

and continue to occur based upon student feedback. In response to the comments listed in Table 5, the following improvements will be made: more scenario cards will be added (eg, taste sensations); correct responses and an information sheet will be provided to each student after completing *The Age Game*; more discussion of the experience will occur after completing *The Age Game*; improvements will be made to the pace at which players progress around the game board; additional props will be obtained to allow all players to participate in all scenarios; an instruction manual will be developed and provided to students prior to starting the game; and key points brought out in the game will be reinforced during subsequent lectures in the course.

This study has several limitations. The small number of participants is a weakness. The study was not designed

to evaluate the validity of *The Age Game*. In addition, a pregame assessment did not take place and a control group was not used to determine whether a change in perceptions, beliefs, or knowledge about the elderly occurred after participation in *The Age Game*. The postgame survey asked only about students’ opinions and was not developed to evaluate whether a change in behavior or communications with the elderly would occur after *The Age Game* experience. Whether participation in *The Age Game* affects interactions between pharmacy students and the elderly could not be determined from the study results. The use of *The Age Game* has not been evaluated in disciplines other than pharmacy.

Future studies should be conducted with a larger number of participants utilizing a pregame/postgame

assessment and/or a control group to measure whether changes in perceptions, beliefs, or knowledge about the elderly occur after participating in *The Age Game*. If possible, communication skills or interactions with the older adult should be evaluated to determine whether playing *The Age Game* is able to affect changes in behavior, clinical skills, or knowledge.

CONCLUSIONS

The Age Game was a useful supplement and helped students learn the topics discussed in 2 geriatrics electives. *The Age Game* enhanced problem-solving skills, challenged students to think critically, actively involved students in the learning process, prepared students to counsel geriatric patients, and helped prepare students to become competent pharmacists. *The Age Game* can serve as a useful learning tool to complement geriatric-related topics for pharmacy students. Simulation games can serve as a model for other institutions to incorporate geriatric-related discussion into the curriculum.

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REFERENCES

1. Older population by age: 1900 to 2050, US Bureau of the Census. Available at: http://www.aoa.gov/prof/Statistics/online_stat_data/AgePop2050.asp. Accessed December 15, 2003.
2. Beizer JL, Delafuente JC, McClure KL, et al. Geriatric-related topics in the curricula of colleges of pharmacy in the United States and Canada. Poster presentation at the American Association of Colleges of Pharmacy Annual Meeting. July 2002, Kansas City, Mo.
3. Kirschenbaum HL, Rosenberg JM. Geriatric training programs offered at schools and colleges of pharmacy. *Am J Pharm Educ*. 1995;59:284-286.
4. Simonson W, Pratt CC. Geriatric pharmacy curriculum in US pharmacy schools: a nationwide survey. *Am J Pharm Educ*. 1982;46:249-252.
5. Oliver CH, Hurd PD, Beavers M, et al. Experiential learning about the elderly: the geriatric medication game. *Am J Pharm Educ*. 1995;59:155-158.
6. McVey LJ, Davis DE, Cohen HJ. The 'Aging Game'. An approach to education in geriatrics. *JAMA*. 1989;262:1507-1509.
7. Clark MC, Foos PW, Faucher MH. You can touch this: simulation exercises for aging and disability. *Educ Gerontol*. 1995;21:643-651.
8. Robertson D, Brocklehurst J. The aging game: a new teaching method in geriatric medicine. *J Am Geriatr Soc*. 1981;29:576-578.
9. Menks F. The use of a board game to simulate the experiences of old age. *Gerontologist*. 1983;23:565-568.
10. Miller KE, Zylstra RG, Standridge JB. The geriatric patient: a systematic approach to maintaining health. *Am Fam Physician*. 2000;61:1089-1104.