

INSTRUCTIONAL DESIGN AND ASSESSMENT

The Geriatric Medication Game in Pharmacy Education

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Objective. To evaluate whether the *Geriatric Medication Game* increases understanding, awareness, and empathy towards geriatric patients and the challenges they encounter in our health care system, especially as those challenges relate to medication use.

Design. One hundred two students from the St. Louis College of Pharmacy participated in the game and 96 students completed a pretest and posttest questionnaire that assessed their attitudes and experiences. The players were asked to rate the level of emotions they experienced and their awareness of geriatric needs.

Assessment. Students' perceptions changed significantly for the majority of the items assessed. Frustration was the highest emotion experienced (median=4). Over 70% of students stated the game increased empathy and understanding toward patients.

Conclusion. The *Geriatric Medication Game* serves as a resource for increasing pharmacy students' awareness of the perceptions and experiences of geriatric patients.

Keywords: role play, geriatric patients, pharmacy education, medication

INTRODUCTION

Fifteen years ago, the Commission to Implement Change in Pharmaceutical Education declared that the mission of pharmacy practice is to render pharmaceutical care.¹ The Commission described pharmaceutical care as including basic knowledge and skills as well as a pharmacist's attitude, behavior, and concern for the patient. *Background Paper II*, issued by the same Commission, identified role playing as a mechanism for students to develop the communication and interpersonal skills necessary to provide pharmaceutical care.²

Role-playing and simulations, including those designed to sensitize participants to the environments of older persons, have been a part of education for many years. For example, Pestalan, Moutz, and Merrill allowed participants to experience age-related sensory loss, and found that doing so had more effect upon students' attitudes than a traditional lecture program on the subject.³ Ellington, Addinall, and Percival examined the educational value of combining games (competition governed by rules) with simulations (an artificial duplication of a real social situation).⁴ They concluded that simulations could be engineered to address specific needs of instruction, while reducing the complexity of real-life situations; and that games allowed players to

apply everyday skills to contrived situations. Wight reported an innovative simulation in which students assumed the identities of older persons, went into public areas in the surrounding community in groups of 5 to 7 students, and were instructed to "act like older persons" for 5 consecutive hours.⁵ The experience revealed to participants how older persons were viewed and treated in society, and forced the students to define their encounters as older persons would and respond to situations in character.

Several simulation and role-playing experiences to improve student attitudes toward caring for elderly patients have appeared in medical school curricula. For example, *The Aging Game* sensitizes medical students to difficulties experienced by elderly persons in society.^{6,7} Participants experience the living situations encountered by elderly patients at various life stages and are reminded of the financial, self-image, and physical handicaps often experienced by this population. Students perceived the experience as a valuable learning tool.⁶

The Geriatric is another role-playing game used within a medical school curriculum.⁸ This board game is intended to "sensitize medical students to the concerns and perspectives of key participants in the geriatric health care system" through the development of empathy towards elderly patients and health care providers and to encourage understanding of the difficulties and dilemmas encountered when caring for the elderly. In the game, participants confront various crises that arise

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among physicians, health care staff members, family members, and elderly patients. Players debate facts and stereotypes of older persons, with a faculty member serving as moderator to determine the winner of the game. Most of the students surveyed agreed that they learned some facts regarding geriatric patient care by playing *Geriatrics* and over half of the students learned something about their own attitudes towards aging.

Other simulations have focused on disabilities that patients face as an effect of aging or chronic illnesses.^{9,10} After participating in the "Half-Full Aging Simulation Experience," students at Southern Illinois University School of Medicine had a more positive view of geriatric patients.⁹ In the simulation, students' temporarily impaired their senses by wearing items such as glasses with yellow lenses and inserting cotton balls in their ears and then attempted to perform everyday tasks. Unlike other reported simulations, students were later given an activity to help them adapt to the sensory changes and make the tasks somewhat easier to perform. In a course focusing on chronic illness, pharmacy students at Drake University participated in simulations focusing on disabilities of mobility, hearing, vision, and fine motor skills.¹⁰ Although this helped the students develop more empathy toward patients with chronic diseases, it did not draw attention to the difficulties geriatric patients face with medication issues.

The Aging Game, *Geriatrics*, and other simulation experiences focused on training the medical professional or focused on specific disabilities. However, little of the content within these simulations drew attention to the difficulties that geriatric patients have adhering to medication regimens. Pharmacy educators have used simulations in practice laboratories and provided didactic preparation for site rotations and residencies where students were placed in roles within an apprenticeship model. In this way, the knowledge and skills of the pharmacist were assured, but establishing sensitivity to the uniqueness of individual geriatric patients warranted improvement.

In 1991, faculty members and a select group of students at St. Louis College of Pharmacy responded to this oversight. They developed an active-learning simulation, the *Geriatric Medication Game*, to increase student awareness of the difficulties confronting geriatric patients in the ambulatory care setting and their medication use. In the simulation, students experienced structured situations that challenge them with physical, social, psychological, and financial problems to sensitize them to how difficult medication adherence can be for geriatric patients.

An assessment of the *Geriatric Medication Game* found that students became sensitized to the emotions that geriatric patients experience in response to the health care system.¹¹ Furthermore, after playing the *Geriatric Medication Game*, participants' perceptions of geriatric patients improved, while another group of students who participated in a health care role-playing exercise not involving age-related activities maintained their negative perceptions of elderly persons.

In 2002, the College's Office for Research on Aging revised and updated the game. In its current form, the *Geriatric Medication Game* provides a basic structure in which players interact with each other and a variety of health care providers, and with their own personal prejudices. The revised *Game* recognizes that as pharmaceutical care expands, the geriatric population is consuming a significant amount of these available resources. Furthermore, pharmacy students must learn how to interact with other members of the health care team, and become cognizant of the difficulties that often affect a patient's ability to utilize the health care system.

DESIGN

The purpose for developing the revised *Geriatric Medication Game* was to improve the pharmaceutical care that pharmacy students provide to geriatric patients. To fulfill this purpose, the game increases understanding and awareness of geriatric needs in our health care system by

1. assessing existing attitudes and perceptions towards geriatric patients;
2. providing well-defined, non-threatening simulations that present selected difficulties and challenges experienced by geriatric patients;
3. increasing empathy for geriatric patients seeking health care, especially as it relates to medication;
4. recognizing how variables in the health care system can affect patient behavior and attitudes;
5. demonstrating the challenges of providing pharmaceutical care to older adults with varied functional, mental, and physical capacities.

The objective of this study was to evaluate whether the *Geriatric Medication Game* increases understanding, awareness, and empathy towards geriatric patients and the challenges they encounter in our health care system, especially regarding medication use.

Description of the *Geriatric Medication Game*

The *Geriatric Medication Game* allows up to 30 players to participate and consists of 3 phases. The game is best played in a large room with 6 separate tables rep-

representing the game's 6 stations. Each station is operated by a station facilitator, (either a faculty member or a student who has played the game previously). One moderator is needed to distribute medication playing cards. One to 1½ hours should be allowed to complete all 3 phases of the game.

In phase 1, or the "Identity Phase," players are assigned a portion of their elder identity that includes physical disabilities (eg, difficulty hearing, dexterity problem) and financial resources ("health credits"). The players are given "aides" to help identify their physical disabilities, such as a sling to simulate a general disability or yellow-tinted glasses to simulate vision impairment. Players are responsible for completing their elder identity by selecting from a list 3 personal characteristics that they hope to have when they are age 65 years or older (eg, sexually active, mentally alert).

Active play occurs in phase 2, or the "Encounters and Challenges Phase," in which players must accumulate points and keep as many health credits as possible. During this phase, players move among the game's stations (physician's office, pharmacy, health care provider, home, test and benefits, and transportation). At the stations, players are instructed to draw a health system playing card or attempt a health care-related challenge, which requires effort and may cost financial resources. Health system playing cards give players real-life scenarios in which they must role play. For example, a health system playing card at the physician's office station may diagnose the player with diabetes, sending the player to the health care provider station to see the diabetic educator and receive a glucose monitor. Even though this takes time, the player will be rewarded with an automatic pass for the station (ie, they do not draw a card or attempt a challenge) once they reach the front of the line. If a player is not instructed to draw a health system playing card, a challenge must be performed. There are 4 possible challenges at each station. For example, at the pharmacy station, a player may be asked to put on gloves and attempt to pour liquid from a medication bottle into a spoon, then empty the liquid into a cup. This task helps illustrate the challenges a geriatric patient faces when his or her dexterity is reduced.

While players are moving between the stations or standing in line at the stations, they may be asked by the roving moderator to draw a medication playing card, which may identify an immediate medication-related outcome. This medication outcome can cost the player financial resources, add to his or her existing physical handicaps, cause the player to lose one of his or her selected personal characteristics, or otherwise compli-

cate the player's ability to compete and thus prevent the game and its outcome from becoming predictable. At the conclusion of this phase, points are determined by the number of personal characteristics retained, number of challenges completed successfully, and amount of financial resources remaining.

Phase 3, or the "Reflection Phase," is the final phase of the *Geriatric Medication Game*. During this phase, players and facilitators discuss their experiences during and perspectives about the game. This phase is designed for players to identify or develop ways to aid elderly persons in the improved use of medications and the health care system.

ASSESSMENT

Game participants completed a pretest and posttest questionnaire. The pretest questionnaire requested general information from the participant, including gender, age, and date of birth (to match participants' pretest and posttest questionnaires). The pretest questionnaire included 12 common perceptions of elderly persons for which participants were asked to rate their level of agreement on a Likert scale of 1 to 5 (strongly disagree, disagree, neutral, agree, strongly agree).

The posttest questionnaire included evaluation of the same 12 perceptions of elderly persons. In addition, participants were asked to rate their emotional responses to the game eg, "frustration," "sadness," using a 5-point Likert scale (from "very" = 5 to "not at all" = 1; values 2, 3, and 4 were not assigned labels). Additional questions on the posttest questionnaire asked participants whether their awareness, empathy, and understanding of the difficulties encountered by geriatric patients within the pharmacy and health care systems increased as a result of the game. These questions were scored using the same Likert scale as the emotional responses. Finally, participants were asked about prior experience with geriatric patients, specifically if they had ever worked in a pharmacy or provided health care services to geriatric patients through volunteering or employment. Additionally, a free-text answer section was provided in which participants were asked if they had obtained another college degree, what effect the game had on them, and if they had any other comments regarding the game.

Differences between pretest and posttest questionnaire responses (n=96) were evaluated using the Wilcoxon signed rank test. The Mann-Whitney rank sum test was used to evaluate differences between posttest responses given by men and women. Data were analyzed with *SigmaStat*, version 2.03, (Access Softek, Inc,

Table 1. Perceptions Toward the Elderly Significantly Affected by the *Geriatric Medication Game* Using a Pretest and Posttest Comparison, N=96

	Pre-Test*	Percentile		Post-Test*	Percentile	
		25th	75th		25th	75th
Understanding the needs of older adults will strengthen my professional relationship with geriatric patients	5	4	5	5 [†]	5	5
An adequate amount of attention is focused on geriatric health issues in the U.S.	3	2	4	2 [‡]	2	3.5
It is important for health care providers to understand their geriatric patients' family circumstances and social environments	4	4	5	4 [§]	4	5
Visual impairment makes it difficult for older patients to take their medications properly	4	4	5	5 [‡]	4	5
In general, older patients have a difficult time taking their medications properly	4	3	4	4 [‡]	4	5
Geriatric patients can successfully utilize the health care system in this country.	3	2	3	2	2	3
Geriatric patients can successfully utilize the pharmacy system in this country	3	2	4	2 [‡]	2	3
Transportation is easily accessible for geriatric patients	2	2	3	2 [¶]	2	3

*Median.

Likert Scale: 1= Strongly Disagree, 2=Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree. The 25th percentile is the median of the lower/first 50% of data. The 75th percentile is the median of the upper/last 50% of data.

[†] $p=0.04$

[‡] $p\leq 0.001$

[§] $p=0.02$

^{||} $p=0.026$

[¶] $p=0.047$

Berkeley, Calif) with an alpha level less than 0.05 accepted as significant.

RESULTS

In the 2003 fall semester, 102 pharmacy students played the *Geriatric Medication Game*. The game was an exercise in a required professional communications class taken by all students during their first-professional year of the 6-year PharmD program.

Most students (n=96) who played the game completed the pretest questionnaire approximately 1 week before playing the game. Students were not given any information or introduction to the game prior to completing the questionnaire. The posttest questionnaire was administered to all students immediately following phase 2 and before starting phase 3 of the game.

Forty-four (45%) of the participants were men and 54 (55%) were women; 4 students did not report their gender. The mean age of the students was 21 years. Twenty-six percent of the students had completed a college degree; 74% had worked in a retail pharmacy; and 62% had provided health care services to geriatric patients (through employment or volunteering).

Most changes reported by players regarding their perceptions of older persons, as recorded on the pretest and posttest questionnaires, were anticipated and were consistent with the purpose of the *Geriatric Medication Game*. Six students who played the game had not completed a pretest questionnaire; therefore, their posttest

questionnaire results were not included in the analysis in Table 1. Table 1 represents 8 of the participants' perceptions of geriatric patients that were affected by playing the game (n=96). Changes in these 8 perceptions were statistically significant. According to these players, the perceptions of the importance of the financial difficulties associated with health care and the ability to easily recall medication names were not significantly affected by playing the game.

Men and women experienced similar changes among the 8 significant perceptions. However, after playing the game, women were more likely to disagree that elderly patients could financially cope in our health care and pharmacy systems ($p=0.037$ and $p=0.044$, respectively.) While not statistically significant, male players were more likely to agree that transportation was not as easily accessible as previously thought after playing the game. On the posttest questionnaire, responses of both men and women changed significantly compared to the pretest questionnaire for the following perceptions (Table 1): an adequate amount of attention is focused on geriatric health in the United States (changed from neutral to disagree); visual impairment makes it difficult for older patients to take their medications properly (changed from agree to strongly agree); older patients have a more difficult time taking their medications properly (no change in median response; however, significant change in distribution of answers from neutral to strongly agree); and geriatric patients can successfully utilize

Table 2. Intensity of Emotions Experienced While Playing the *Geriatric Medication Game*

Emotion	All Students* (n=102)
Frustration	4
Helplessness	3.5
Anger	3
Anxiety	3
Feeling withdrawn	2
Sadness	2

*Median

Likert scale: 1= not at all; 5= very (2,3, and 4 were not assigned labels)

the pharmacy system in this country (changed from neutral to disagree).

The emotional response the players (n=102) reported being most aware of while playing the game was frustration as indicated in Table 2. Nearly 60% of the students rated their level of frustration as a 4 or 5. Sadness was experienced the least throughout the game, with 36% of the students reporting they felt no sadness at all. Emotions experienced by men and women while playing the game were congruent; however, women rated “helplessness” higher than men (median rating of 4 and 3, respectively).

Table 3 represents how the students (n=102) felt the game impacted their awareness, empathy, and understanding of geriatric situations in our health care and pharmacy systems. Nearly 75% of the students stated that playing the game increased their awareness of problems encountered by geriatric patients in our health care system. Only 1% reported that playing the game did not increase awareness at all. Eighty percent of the students said the game greatly increased their empathy toward geriatric patients in the health care and pharmacy systems. Finally, 75% of all those who played the game reported improved understanding of how they could help geriatric patients in our country’s health care and pharmacy systems. Although female and male participants provided similar responses overall to questionnaire items, women agreed more strongly than men that the game increased their empathy for geriatric patients in the pharmacy system ($p = 0.012$) and improved their understanding of how to help geriatric patients in our health care system ($p=0.043$).

DISCUSSION

The simulated situations in the *Geriatric Medication Game* are commonly experienced by geriatric patients. Players concentrating on the goals of the game quickly become aware of how prejudices, dependencies, disabilities, resources, and circumstances beyond a patient’s

Table 3. Impact of Geriatric Medication Game on Students*†

	5 Very	4	3	2	1 Not at All
Awareness of Problems Encountered by Geriatric Patients in our Health Care System	29	43	24	3	1
Empathy for Geriatric Patients in our Health Care System	37	44	15	5	0
Empathy for Geriatric Patients in our Pharmacy System‡	37	42	17	4	1
Understanding of how to Help Geriatric Patients in our Health Care System§	30	44	23	2	1
Understanding of how to Help Geriatric Patients in Pharmacy System	34	40	22	3	1

*Percents are rounded to the nearest whole number.

† n=102

‡ p=0.012

§ p=0.043

Likert scale: 1= Not at all (no impact or influence); 5= Very (much impact or influence) (2,3, and 4 were not assigned labels)

control affect his or her pursuit of those goals. Role-playing and simulations provide learning experiences without the penalties associated with the actual situation. The *Geriatric Medication Game* is fun and players have the advantage of seeing events from the perspectives of a participant and an observer.

The majority of the players in this assessment had prior experience with geriatric patients. Almost 75% had worked in a pharmacy, and more than 60% had provided health services to older persons through employment or volunteering. This is a possible explanation for the results presented in Table 1, which indicate that changes in perceptions between pretest and posttest were statistically significant, but not necessarily clinically significant. However, students’ responses indicated that playing the game increased their understanding, awareness, and empathy towards geriatric patients; and this was further validated in discussion during phase 3 of the game. Furthermore, after playing the game, both men and women agreed that there is not enough attention focused on geriatric health issues in this country. Comments written on the posttests underscore this observation: “I used to think the elderly weren’t my problem to deal with. Now I know this attitude is improper.” “I now have a greater understanding of the problems geriatric patients face when obtaining health care.” The fact that these players are future health care providers was not lost

amidst the self-reflection: "I have a new outlook on how to treat geriatrics patients." "The Game has made me realize I need to be sympathetic and have patience when dealing with elderly patients." "This is a great game in which all health care professionals should partake."

Both men and women reported an increase in their perception that older patients have a difficult time taking their medications. However, as one of the challenges in the game, players are given a list of medications to memorize and then repeat to the station facilitator. These players found no difficulty with this challenge and consistently concluded that geriatric patients are able to recall medication names with ease. The significant increase in the perception that "older patients have difficulty taking medications" among the players is consistent with the players' conclusions that geriatric patients are able to recall the names of medications. This may be explained by the majority of students having pharmacy work experience; thus, they were probably familiar with medication names and had minimal difficulty recalling them.

One of the intentions behind this version of the game is to simulate actual experiences of geriatric patients. For example, women reported a significant change associated with a particular aspect of personal care: the financial difficulties of geriatric patients; while men reported a change (although not significant) associated with a task behavior of assistance to geriatric patients: transportation accessibility. These responses are consistent with gendered stereotypes for care giving to older patients in this society. Such a gender consistent response indicates that the experiences of the game are consistent with experiences these players can anticipate and is consistent with their socialization in society.

Men and women reported similar effects of the game on their emotions. None of the 6 emotions evaluated revealed a significant difference between men and women. Frustration and helplessness were the most highly emotional responses players reported. During phase 3, many students stated they experienced frustration because of the challenges presented to them or the effects of the health system playing cards (for example, redirection to another station, waiting in long lines for each station, or having difficulty performing a challenge because of a physical disability). Station facilitators were trained; therefore, they were able to exaggerate certain attitudes (such as disrespect, indifference, or ill-temper) to illicit players' emotions. As a result, players had an opportunity to evaluate their own responses to the situations, as well as examine the behavior of facilitators as representatives of health care providers. Many of these situations made it difficult for players to cope with the health care

system related to their medications. Consequently, when helplessness is induced, frustration tends to develop as well. Sadness was rated relatively low by both men and women. Perhaps the swift pace of the game interfered with players' ability to evaluate this emotion. On the other hand, the young age of players (assuming limited life experiences or limited concerns about aging during this age) could have interfered with this emotional response. As a side note, when we offered the game to a group of practicing health care professionals, they rated sadness much higher than the students and added comments reflecting their concerns about their own aging.

The intense activity of the game encourages emotional expression from the players. All scenarios involve at least 2 persons, thus establishing a minimal level of emotional involvement of the players in the situations. It is the lack of any statistical difference between men and women regarding any of the 6 emotional dimensions that is an important observation. This emotional involvement, irrespective of gender, elicited by playing the game, can affect the development of empathy by players toward elderly persons.

The posttest questionnaire specifically queried players for their assessment of the impact the game had upon them in terms of the 5 sub-purposes described earlier for developing the game. As a result of playing the game, approximately 70% of the players reported a greater understanding of geriatric patients and increased empathy for these patients in the health care system. Despite the fact that almost 75% of the players have, or were currently working, in retail pharmacies, they reported positive effects associated with increased empathy for, and improved understanding of, geriatric patients in the pharmacy and health care systems of our nation. Nearly 75% of these future pharmacists reported that playing the game had increased their awareness of problems encountered by geriatric patients in our health care system. It is difficult to explain why women had more empathy for geriatric patients in the pharmacy system and a better understanding of how to help geriatric patients in the health care system than men after playing the game, given the gender similarities across the remainder of the assessment. While communication was not formally assessed in the game, players were able to verbally interact with station facilitators who may have used stereotypical approaches to the elderly. Through this interaction, students are able to see how to more appropriately communicate with geriatric patients as well as how to help them maneuver throughout the health care system. This aspect of improving communication skills was further emphasized by playing the game in a professional communications class.

Overall, there are 3 potential limitations in this assessment of the game. First, all players participated in the game as members of a class. They had been together, in a learning situation, for approximately 8 weeks prior to playing the game. It is possible that they were mutually reinforcing one another in a learning mode while they were playing the game, and were more aware of the lessons to be garnered from their participation.

A second possible limitation is that anytime a before/after indicator is used to study change there is possible recall bias. This could encourage some players to indicate responses in what they perceive as the desired direction as appreciation for playing a game instead of sitting in a classroom. In this case, however, students were required to participate but received no extra points for it, so there appears to be little incentive to disguise honest responses on the posttest questionnaire. Furthermore, most of this assessment utilizes additional information gathered after completion of the game to elaborate the pretest and posttest information. The phase 3 discussion immediately following termination of play reinforced the beneficial results of the game by allowing players to suggest how they would use the lessons they had acquired from the simulations.

The third possible limitation is the use of a Likert scale to determine changes in perceptions and attitudes. Determining the degree of change is difficult since there is not a definition of magnitude between numbers. Even though a statistical difference was found with many of the perceptions, clinical significance was difficult to determine because of the use of the Likert scale.

CONCLUSIONS

The *Geriatric Medication Game* increased student empathy and understanding of geriatric patients, which may help them realize their responsibility for improving

the delivery of pharmaceutical care to these patients. Central to this delivery are improved communication skills and reflecting empathy and patience when interacting with older patients. Other health care professionals would likely benefit from including the game in their professional development programs. The *Geriatric Medication Game* focuses on the application of medications within the health care system, but also underscores the interdependency of health care professions.

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