

6-25-2015

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Recommended Citation

Chen, Aleda M.H.; Kiersma, Mary E.; Yehle, Karen S.; and Plake, Kimberly S., "Impact of an Aging Simulation Game on Pharmacy Students' Empathy for Older Adults" (2015). *Pharmacy Practice Faculty Publications*. 223.
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RESEARCH

Impact of an Aging Simulation Game on Pharmacy Students' Empathy for Older Adults

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Submitted July 21, 2014; accepted October 1, 2014; published June 25, 2015.

Objective. To evaluate changes in empathy and perceptions as well as game experiences among student pharmacists participating in an aging simulation game.

Methods. First-year student pharmacists participated in an aging simulation game. Changes were measured pre/post-activity using the Kiersma-Chen Empathy Scale (KCES) and Jefferson Scale of Empathy – Health Professions Scale (JSE-HPS) for empathy and the Aging Simulation Experience Survey (ASES) for perceptions of older adults' experiences and game experiences. Wilcoxon signed rank tests were used to determine changes.

Results. One hundred fifty-six student pharmacists completed the instruments. Empathy using the KCES and JSE-HPS improved significantly. Of the 13 items in the ASES, 9 significantly improved.

Conclusion. Simulation games may help students overcome challenges demonstrating empathy and positive attitudes toward elderly patients.

Keywords: empathy, attitudes, pharmacy students, geriatrics, game

INTRODUCTION

With an increasingly older and ethnically-diverse patient population, empathy and understanding are important skills for health care providers to possess, as provider attitudes can influence care quality.^{1,2} Health care providers must be able to grasp patients' perspectives (cognitive empathy) and relate to their feelings and experiences (affective empathy).³ Understanding the perspectives of others can be challenging, particularly if one has not experienced aging or disease-related disability; thus, health care professionals have been found to lack empathy and understanding toward older adults.⁴⁻⁷

Incorporation of curricular items related to aging and older adults may help improve empathy and attitudes in health professions students and prepare them to work with older adults. Clinical practice experience and active learning exercises are effective in improving attitudes.⁸⁻¹¹ Simulation games are also effective for teaching students about caring for others because students have an opportunity to

actively learn in a simulated experience.^{5,12,13} Little is known about the impact of simulation games on pharmacy students' empathy toward older adults specifically. Once students engage in clinical experiences, there is a possibility of encountering negative attitudes or lack of empathy among practitioners, which can lead to the development or reinforcement of negative caring behaviors among students.^{7,14} Wilson et al found third-year pharmacy students had less empathy than first-year students for patients and suggested that the timing of curricular interventions may be crucial in empathy development.¹⁴ By incorporating simulated experiences or games into curriculum, students can gain perspective and understanding of the patient experience prior to engaging in clinical experiences, create their own perceptions, and develop empathy.^{5,12}

The Accreditation Council for Pharmacy Education (ACPE) and the American Association of Colleges of Pharmacy (AACP) recognize the importance of pharmacist empathy for patients. Thus, ACPE and AACP standards and outcomes recommend student empathy be considered during the admission process and incorporated in the curriculum.^{15,16} It is important to integrate curricular activities, such as a simulated experience or

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game that promote student empathy toward a variety of patient groups. For several years, the Purdue College of Pharmacy incorporated the *Geriatric Medication Game* (GMG), a simulation game created by the St. Louis College of Pharmacy, into the first professional year in the curriculum to impact student attitudes and understanding toward older adults and to address ACPE Standards and Center for the Advancement of Pharmacy Education (CAPE) Outcomes. Previously, the outcomes had only been measured qualitatively.¹⁷ After reviewing the qualitative analyses, it was found that students seemed to experience empathy and attitudinal changes as a result of the experience. Also, the simulation game impacted student perceptions regarding the experiences of older adults. Since little was known about how simulation games impacted empathy, attitudes, and perceptions toward older adults, a quantitative instrument measuring changes in student empathy, the KCES,¹⁸ and a quantitative instrument measuring attitudinal and perception changes, the ASES, were created to be used with the GMG at Purdue University. Using these instruments, our study was conducted to evaluate changes in empathy and perceptions and game experiences among pharmacy students after participating in an aging simulation game.

METHODS

A modified version of the GMG, as described previously,¹⁷ was implemented by Purdue University College of Pharmacy in a 3-hour, required, first professional year pharmacy skills laboratory. Some students had completed community-based introductory pharmacy practice experiences (IPPEs), but the GMG was incorporated as early as possible into the curriculum to address student perceptions of older adults. Briefly, the GMG is an aging simulation game that incorporates the experiences and challenges of older adults in health care.^{19,20} Students “role-play” an older adult with assigned physical, financial, or psychological issues, navigate the health care system, and execute different tasks (eg, reciting their medication list, accurately filling a weekly pill box). Students must pay (using “health credits”) for health services based on their financial status. The simulated experience includes 6 stations: physician’s office, nurse practitioner visit, pharmacy, tests and benefits, “home,” and activities. Cards drawn at a station send students to another station, ask them to perform an activity, or add a new condition or medication. Station facilitators mimic real health care providers and exhibit different amounts of empathy or caring. An additional facilitator, acting as “fate,” visits students while they wait in line for a station and makes positive or negative changes in their health and well-being (eg, add a new medication, remove a disability).^{17,20} At the end of the activity,

a facilitator engages students in a reflective discussion to identify and discuss any misperceptions regarding older adults (eg, not all older adults are disabled) and the health care system.¹⁷

All students who participated in the laboratory were invited to complete the survey instruments (KCES, JSE-HPS, and ASES) at the beginning of the activity and immediately after completing the activity (but before the debriefing session). An anonymous identifier was used to link pretests with posttests. Students were informed that all responses would be confidential and their responses would remain anonymous. Exempt status approval was obtained from the Purdue University Institutional Review Board.

The KCES and the JSE-HPS were used to measure changes in empathy. The JSE-HPS (20 items, 7-point Likert-type, 1=strongly disagree...7=strongly agree) is a commonly used, valid measure of empathic qualities and tendencies in health professions students and in pharmacy students specifically.²¹⁻²⁴ Scores range from 20-140, with higher scores indicative of more empathy. The KCES (15 items, 7-point Likert-type, 1=strongly disagree...7=strongly agree) is validated for use in pharmacy and nursing students and is a reliable measure.¹⁸ It measures the cognitive qualities (understanding/ viewing from other perspectives) and affective qualities (relating to others’ experiences/ feelings),³ with higher scores indicative of more empathy (range 15-105).

Four years of pharmacy students’ postGMG reflections from open-ended questionnaires were used to create ASES, the quantitative questionnaire. Qualitative content analysis was performed on the reflective responses and predominant themes were identified.¹⁷ The ASES was developed from the predominant themes. In the ASES, 13 items were created (7-point Likert-type, 1=strongly disagree...7=strongly agree) to be completed before and after the activity regarding older adults’ experiences in the health care system and that system’s structure. Higher scores, with the exception of 2 negatively-worded items, were indicative of greater understanding and positive perceptions. Another 8 items (7-point Likert-type, 1=strongly agree, 7=strongly disagree) were to be completed post-activity only and assessed student experiences with the activity.

Demographic information (age, gender, year in school, prior experience with older adults) and feelings experienced during the activity were obtained with the postassessment. Analyses were performed utilizing SPSS v21.0 (IBM Corp., Armonk, NY). An a priori level of $\alpha=0.05$ was used for determining statistical significance. Demographic information was analyzed using descriptive statistics. Since the data was ordinal in nature and did not

pass the Shapiro-Wilk test for normality, Wilcoxon signed rank tests were used to analyze the differences between pretest and posttest results for the KCES, JSE-HPS, and ASES.

RESULTS

One hundred fifty-six student pharmacists participated in the laboratory session (response rate 100%); however, not all students completed all survey items (N=122, 78.2%). Of the 156 respondents, 95 (60.9%) were female. The majority (66.7%) was between the ages of 19 and 21, and all students were in their first professional year of pharmacy school (Table 1).

Table 1. Demographics of Student Pharmacists Participating in the Simulation

	n (%)*
Gender	
Male	50 (32.1)
Female	95 (60.9)
Age	
19-21	104 (66.7)
22-24	34 (21.8)
25-27	11 (7.1)
28-30	1 (0.6)
31-33	2 (1.3)
34-36	1 (0.6)
46-48	1 (0.6)
Year	
First	155 (100.0)
I have a close relationship with an older adult (ie, family member or friend).	
Strongly agree	46 (29.5)
Agree	48 (30.8)
Somewhat agree	21 (13.5)
Neutral	22 (14.1)
Somewhat disagree	4 (2.6)
Disagree	4 (2.6%)
Strongly disagree	1 (0.6)
I believe I have more experience working with older adults than my peers.	
Strongly agree	15 (9.6)
Agree	17 (10.9)
Somewhat agree	21 (13.5)
Neutral	28 (17.9)
Somewhat disagree	13 (8.3)
Disagree	30 (19.2)
Strongly disagree	8 (5.1)

*N=156, 1 student did not complete the demographic survey and would be considered missing in each category; some students may not have completed all questions

Students’ overall empathy significantly increased on both the KCES (82(8) to 86(9), $p<0.001$, Table 2) and the JSE-HPS (105(11) to 109(15), $p<0.001$). There were significant increases on 7 of the 20 items on the JSE-HPS. For the KCES, 14 of the 15 items had significant increases from preintervention to postintervention ($p<0.05$, Table 2). For example, students’ agreement significantly increased that it is necessary for a health care practitioner to be able to comprehend someone else’s experiences (agree/strongly agree preintervention: 73.8%; postintervention: 89.8%) and to express an understanding of someone’s feelings (agree/strongly agree preintervention: 55.8%; postintervention: 72.4%). Students also responded with higher agreement postintervention that they were capable of seeing the world from another person’s perspective and valued someone else’s point of view. There was no significant change with the statement that students have difficulty identifying with someone else’s feelings.

Student perceptions of older adults’ experiences in the health care system and of the health care system itself significantly improved for 9 of the 13 items on the ASES (see Table 3). For example, students postgame had greater agreement that disabilities make it more challenging to accomplish tasks and that older adults can be treated differently by health care providers because of their age. Students also became more cognizant of older adults’ feelings and of the different treatment patients can receive based on their type of health insurance. Decreases were seen on the 2 negatively-worded statements that patients need to visit one health provider in order to resolve a health issue and that the amount of communication between providers is acceptable. There was no change in the remaining 2 items regarding plans on being caring toward older adults in the future and providers treating older patients differently.

On the ASES posttest, 8 additional questions examined student experiences during and following the game (Table 4). Students agreed that they experienced frustration when they were unable to complete a task easily, that they planned to provide assistance to older adults in their future practice, and that they would try to be patient with older adults in the workplace. Furthermore, students agreed that their attitudes toward older adults changed as a result of the game experience. During the game, common emotions experienced were frustration, annoyance, and impatience (Table 5).

DISCUSSION

After integrating an aging simulation game into a pharmacy practice laboratory, first professional year pharmacy students reported significant improvement in their empathy and attitude toward older adults and

Table 2. Changes in Student Empathy Assessed by the Kiersma-Chen Empathy Scale, n (%)

Statement	Pretest						Posttest						p value		
	SD ^a	D ^b	SD ^c	N ^d	SA ^e	A ^f	SA ^g	SD ^a	D ^b	SD ^c	N ^d	SA ^e		A ^f	SA ^g
It is necessary for a health care practitioner to be able to comprehend someone else's experiences.	0 (0)	1 (0.6)	5 (3.2)	4 (2.6)	30 (19.2)	72 (46.2)	43 (27.6)	0 (0)	2 (0.6)	3 (1.9)	1 (0.6)	11 (7.1)	72 (46.2)	68 (43.6)	<0.001
I am able to express my understanding of someone's feelings.	0 (0)	1 (0.6)	9 (5.8)	10 (6.4)	48 (30.8)	72 (46.2)	15 (9.6)	0 (0)	1 (0.6)	2 (1.3)	6 (3.8)	34 (21.8)	88 (56.4)	25 (16.0)	<0.001
I am able to comprehend someone else's experiences.	0 (0)	0 (0)	4 (2.6)	13 (8.3)	57 (36.5)	70 (44.9)	11 (7.1)	0 (0)	0 (0)	0 (0)	9 (5.8)	47 (30.1)	76 (48.7)	23 (14.7)	<0.001
I will not allow myself to be influenced by someone's feelings when determining the best treatment.*	3 (1.9)	26 (16.7)	46 (29.5)	44 (28.2)	27 (17.3)	9 (5.8)	0 (0)	5 (3.2)	19 (12.2)	36 (23.1)	29 (18.6)	40 (25.6)	23 (14.7)	4 (2.6)	<0.001
It is necessary for a health care practitioner to be able to express an understanding of someone's feelings.	0 (0)	0 (0)	3 (1.9)	8 (5.1)	29 (18.6)	83 (53.2)	30 (19.2)	0 (0)	0 (0)	1 (0.6)	4 (2.6)	23 (14.7)	75 (48.1)	51 (32.7)	<0.001
It is necessary for a health care practitioner to be able to value someone else's point of view.	0 (0)	0 (0)	3 (1.9)	8 (5.1)	29 (18.6)	83 (53.2)	30 (19.2)	0 (0)	0 (0)	0 (0)	2 (1.3)	15 (9.6)	65 (41.7)	74 (47.4)	0.032

(Continued)

Table 2. (Continued)

Statement	Pretest					Posttest					p value				
	SD ^a	D ^b	SD ^c	N ^d	SA ^e	A ^f	SA ^g	SD ^a	D ^b	SD ^c		N ^d	SA ^e	A ^f	SA ^g
I believe that caring is essential to building a strong relationship with patients.	0 (0)	0 (0)	1 (0.6)	1 (0.6)	11 (7.1)	61 (39.1)	81 (51.9)	0 (0)	0 (0)	0 (0)	0 (0)	7 (4.5)	54 (34.6)	95 (60.9)	0.005
I am able to view the world from another person's perspective.	0 (0)	0 (0)	7 (4.5)	11 (7.1)	54 (34.6)	63 (40.4)	20 (12.8)	0 (0)	1 (0.6)	4 (2.6)	5 (3.2)	43 (27.6)	81 (51.9)	22 (14.1)	0.008
Considering someone's feelings is not necessary to provide patient-centered care.*	1 (0.6)	9 (5.8)	6 (3.8)	7 (4.5)	40 (25.6)	62 (39.7)	30 (19.2)	3 (1.9)	5 (3.2)	5 (3.2)	11 (7.1)	26 (16.7)	56 (35.9)	50 (32.1)	0.026
I am able to value someone else's point of view.	0 (0)	0 (0)	2 (1.3)	6 (3.8)	27 (17.3)	94 (60.3)	26 (16.7)	0 (0)	0 (0)	0 (0)	0 (0)	26 (16.7)	87 (55.8)	41 (26.3)	0.001
I have difficulty identifying with someone else's feelings.*	2 (1.3)	6 (3.8)	13 (8.3)	22 (14.1)	49 (31.4)	50 (32.1)	13 (8.3)	2 (1.3)	5 (3.2)	18 (11.5)	17 (10.9)	43 (27.6)	59 (37.8)	12 (7.7)	0.799
To build a strong relationship with patients, it is essential for a health care practitioner to be caring.	0 (0)	0 (0)	2 (1.3)	1 (0.6)	23 (14.7)	74 (47.4)	55 (35.3)	0 (0)	0 (0)	2 (1.3)	2 (1.3)	16 (10.3)	61 (39.1)	73 (46.8)	0.013
It is necessary for a health care practitioner to be able to identify with someone else's feelings.	0 (0)	0 (0)	7 (4.5)	7 (4.5)	30 (19.2)	77 (49.4)	34 (21.8)	0 (0)	0 (0)	5 (3.2)	1 (0.6)	32 (20.5)	63 (40.2)	55 (35.3)	<0.001

(Continued)

Table 2. (Continued)

Statement	Pretest					Posttest					p value				
	SD ^a	D ^b	SD ^c	N ^d	SA ^e	A ^f	SA ^g	SD ^a	D ^b	SD ^c		N ^d	SA ^e	A ^f	SA ^g
It is necessary for a health care practitioner to be able to view the world from another person's perspective.	0 (0)	0 (0)	3 (1.9)	8 (5.1)	27 (17.3)	82 (52.6)	35 (22.4)	0 (0)	0 (0)	1 (0.6)	6 (3.8)	27 (17.3)	72 (46.2)	50 (32.1)	0.013
A health care practitioner should not be influenced by someone's feelings when determining the best treatment.	6 (3.8)	31 (19.9)	37 (23.7)	30 (19.2)	34 (21.8)	14 (9.0)	3 (1.9)	7 (4.5)	20 (12.8)	34 (21.8)	23 (14.7)	42 (26.9)	24 (15.4)	6 (3.8)	0.002

^aSD = strongly disagree; ^bD = disagree; ^cSD = somewhat disagree; ^dN = neutral; ^eSA = somewhat agree; ^fA = agree; ^gSA = strongly agree
 *Reverse-Coded Item, score shown is reverse-coded

perceptions of older adults' experiences in the health care system. Researchers have found similar success among other health care professionals when incorporating aging simulation games into curricula.^{9,12,13,19,25,26}

Pharmacy students had fairly high levels of empathy toward older adults before the simulation, but even these levels improved significantly, as evidenced by scores on the KCES and the JSE-HPS. All individual items on the KCES either significantly improved or were maintained after the simulation. Since there is no published research evaluating empathy in pharmacy students using the KCES, the comparability of empathy scores to other research is not possible. However, the scale does correspond to the JSE-HPS, and similar empathy scores have been documented by Fjortoft and colleagues using the JSE-HPS to examine overall patient empathy in first-year pharmacy students (110.7(12.1)).²⁷ Many students in our study indicated that they had a close relationship with an older adult, which may explain why they had high empathy levels before the intervention. However, simulation experiences may be able to assist students in reinforcing and improving their empathy, as previously seen among nursing students¹³ and as was demonstrated in our study.

The aging simulation game was incorporated into the first professional year to modify or reinforce students' empathy, attitudes, and perceptions prior to or at the beginning of clinical experiences and appeared to successfully do so. Once students engage in clinical practice, negative attitudes from other health care providers could be adopted, or students may create their own misperceptions of patient attitudes. For example, a patient who visits the pharmacy at the end of the long day of laboratories and doctor appointments may seem "cranky." Students in health professions schools are typically younger and may not have experienced the health care system as much as their patients,²⁸ so they may misunderstand a patient's perspective or interpret a patient's attitude incorrectly and, over time, assign those attitudinal characteristics to all similar patients (ie, stereotype). The literature yields similar findings, as researchers report students further in their professional program have less empathy for patients.^{7,14} Thus, the timing of curricular interventions may be crucial in the development of empathy, attitudes, and perceptions.¹⁴ Adopting early experiences, such as the GMG, can be useful to positively impact students. Indeed, students in the GMG experienced patient emotions, such as frustration and impatience after a long "day" of health care visits.

The GMG provided an opportunity for students to experience a "health care system," such as visiting multiple providers, waiting in line, paying for services, and remembering complicated medication directions. Students'

Table 3. Changes in the Aging Simulation Experience Survey (ASES) from Presimulation to Postsimulation, n (%)

Statement	Pretest						Posttest						P value	
	SD ^a	D ^b	SD ^c	N ^d	SA ^e	A ^f	SA ^e	D ^b	SD ^c	N ^d	SA ^e	A ^f		SA ^e
Disabilities make it challenging for older adults to accomplish tasks.	0 (0)	0 (0)	0 (0)	1 (0.6)	15 (9.6)	82 (52.6)	58 (37.2)	0 (0)	1 (0.6)	1 (0.6)	0 (0)	49 (31.4)	78 (50.0)	<0.001
I am aware of older adults' challenges in the health care system.	1 (0.6)	4 (2.6)	9 (5.8)	9 (5.8)	77 (49.4)	41 (26.3)	15 (9.6)	0 (0)	1 (0.6)	1 (0.6)	3 (1.9)	70 (44.9)	24 (15.4)	<0.001
Patients need to visit one health provider in order to resolve a health issue.*	7 (4.5)	20 (12.8)	30 (19.2)	49 (31.4)	28 (17.9)	18 (11.5)	3 (1.9)	24 (15.4)	17 (10.9)	14 (9.0)	8 (5.1)	16 (10.3)	4 (2.6)	<0.001
When I am a health care practitioner, I plan to be understanding toward older adults.	0 (0)	0 (0)	0 (0)	3 (1.9)	9 (5.8)	62 (39.7)	82 (52.6)	1 (0.6)	0 (0)	0 (0)	0 (0)	58 (37.2)	66 (42.3)	0.597
Providers treat older adults differently because of their age.	0 (0)	0 (0)	5 (3.2)	9 (5.8)	60 (38.5)	65 (41.7)	17 (10.9)	0 (0)	9 (5.8)	9 (5.8)	39 (25.0)	58 (37.2)	17 (10.9)	0.644
I am aware of older adults' feelings.	0 (0)	8 (5.1)	10 (6.4)	23 (14.7)	63 (40.4)	43 (27.6)	7 (4.5)	0 (0)	2 (1.3)	7 (4.5)	48 (30.8)	55 (35.3)	21 (13.5)	<0.001
Health care can be costly for patients.	0 (0)	0 (0)	0 (0)	0 (0)	5 (3.2)	33 (21.2)	118 (75.6)	0 (0)	0 (0)	0 (0)	1 (0.6)	45 (28.8)	82 (52.6)	0.002
Young people take good health for granted.	1 (0.6)	4 (2.6)	5 (3.2)	9 (5.8)	53 (34.0)	56 (35.9)	28 (17.9)	0 (0)	1 (0.6)	1 (0.6)	8 (5.1)	66 (42.3)	34 (21.8)	<0.001
I have patience toward older adults.	0 (0)	1 (0.6)	5 (3.2)	12 (7.7)	40 (25.6)	76 (48.7)	22 (14.1)	0 (0)	0 (0)	0 (0)	1 (0.6)	66 (42.3)	42 (26.9)	<0.001

(Continued)

Table 3. (Continued)

Statement	Pretest					Posttest					P value			
	SD ^a	D ^b	SD ^c	N ^d	SA ^e	A ^f	SA ^g	SD ^c	D ^b	SD ^c		N ^d	SA ^e	A ^f
Patients are treated differently based on their type of health insurance.	1 (0.6)	8 (5.1)	25 (16.0)	35 (22.4)	42 (26.9)	32 (20.5)	13 (8.3)	0 (0)	1 (0.6)	4 (2.6)	21 (13.5)	33 (21.2)	42 (26.9)	32 (20.5)
Older adults spend a lot of time in the health care system.	0 (0)	0 (0)	2 (1.3)	11 (7.1)	47 (30.1)	73 (46.8)	22 (14.1)	0 (0)	0 (0)	1 (0.6)	5 (3.2)	7 (4.5)	63 (40.4)	56 (35.9)
I have respect for older adults.	0 (0)	0 (0)	0 (0)	0 (0)	9 (5.8)	66 (42.3)	80 (51.3)	0 (0)	0 (0)	0 (0)	1 (0.6)	6 (3.8)	44 (28.2)	82 (42.9)
The amount of communication between providers is acceptable.*	5 (3.2)	19 (12.2)	43 (27.6)	39 (25.0)	33 (21.2)	14 (9.0)	3 (1.9)	13 (8.3)	30 (19.2)	39 (25.0)	24 (15.4)	15 (9.6)	8 (5.1)	4 (2.6)

^aSD = strongly disagree; ^bD = disagree; ^cSD = somewhat disagree; ^dN = neutral; ^eSA = somewhat agree; ^fA = agree; ^gSA = strongly agree
*Negatively worded

understanding of the experiences of patients improved significantly or remained the same on 11 of 13 items, which may ultimately help students provide better care and gain more empathy for patients. The only 2 items that declined were negatively-worded and indicated improvement of student understanding. Past research shows that aging simulation games improve student understanding of the experience of older adults in the health care system.^{5,12,13,19} The ASES, designed from years of qualitative data and experiences with the GMG, can be a useful tool to assess the impact of this curricular integration.

Given the final scores regarding student empathy, attitudes, and perceptions, there is still room for improvement. While incorporation of a single activity has immediate impact and potentially has long-term impact, curricular items should be incorporated to reinforce these concepts and prevent students from losing empathy for patients as they engage in IPPEs and advanced pharmacy practice experiences (APPEs). For example, preceptors can incorporate experiences related to patient populations being studied at that time in the didactic curriculum. Practice experiences also could be directed at improving student empathy, attitudes, and perceptions. These aspects should be assessed longitudinally to determine what is impactful and how empathy, attitudes, and perceptions change over time.

Incorporation of the age simulation game, while in a fairly large class size (N=156), has limited generalizability as it was only incorporated and assessed at a single university with a single student cohort. These results should be validated at other universities with multiple cohorts. It also was a single curricular integration targeted at students' understanding of older adults with assessments before and after the simulation; therefore, evaluations of students' empathy, attitudes, and perceptions may not reflect long-term changes and may not be maintained when engaging in patient care. Additional coursework, activities, and experiences should be integrated and assessed. The goal of incorporating the GMG into the curriculum was to improve empathy toward older adults prior to the majority of clinical experiences, so that positive attitudes and understanding could be reinforced in IPPEs and APPEs. While the assessments in this study could not assess long-term impact, Galanos and Cohen did find that an aging simulation game had a long-term impact on medical students.²⁹

The ASES underwent peer and expert review prior to administration, but it is not a validated instrument. Thus, it may not accurately measure student understanding and perceptions. The ASES should undergo psychometric validation in order to determine its utility with the

Table 4. Aging Simulation Experience Survey (ASES) Regarding Experiences with the Aging Simulation Game, n (%)

Item	Median	SD ^a	D ^b	SD ^c	N ^d	SA ^e	A ^f	SA ^g
I experienced frustration when I lost an ability.	6	1 (0.5)	3 (1.4)	3 (1.4)	13 (6.0)	19 (8.8)	88 (40.7)	60 (27.8)
My attitude toward older adults did not change as a result of this experience.	2	28 (13.0)	77 (35.6)	44 (20.4)	12 (5.6)	11 (5.1)	8 (3.7)	7 (3.2)
I plan to be patient with older adults when I am working.	7	1 (0.5)	2 (0.9)	1 (0.5)	5 (2.3)	11 (5.1)	64 (29.6)	102 (47.2)
I experienced frustration when I was unable to complete a task easily.	6	1 (0.5)	1 (0.5)	3 (1.4)	7 (3.2)	27 (12.5)	70 (32.4)	77 (35.6)
I became impatient when I had to wait in line to see a health care provider.	7	2 (0.9)	0 (0)	4 (1.9)	6 (2.8)	16 (7.4)	54 (25.0)	104 (48.1)
I plan to provide assistance to older adults in my future practice.	6	0 (0)	0 (0)	2 (0.9)	4 (1.9)	17 (7.9)	76 (35.2)	88 (40.7)
When I was not treated well by a provider, it upset me.	6	0 (0)	2 (0.9)	4 (1.9)	12 (5.6)	22 (10.2)	63 (29.2)	84 (38.9)
I have respect for older adults.	7	0 (0)	0 (0)	0 (0)	1 (0.5)	6 (2.8)	74 (34.3)	105 (48.6)

^aSD = strongly disagree; ^bD = disagree; ^cSD = somewhat disagree; ^dN = neutral; ^eSA = somewhat agree; ^fA = agree; ^gSA = strongly agree

Table 5. Disabilities and Feelings Students Experienced During the Aging Simulation Game

Type	n (%)
Disability	
Dexterity	56 (35.9)
Vision	55 (35.3)
Balance	51 (32.7)
General	47 (30.1)
Hearing	44 (28.2)
Mobility	27 (17.3)
Feeling	
Annoyance	119 (76.3)
Impatience	119 (76.3)
Frustration	117 (75.0)
Helplessness	97 (62.2)
Tiredness	85 (54.5)
Being upset	61 (39.1)
Confusion	60 (38.5)
Embarrassment	51 (32.7)
Anger	49 (31.4)
Sadness	26 (16.7)

GMG. As these were self-report measures, there is a risk of social desirability bias.³⁰ This potential impact was minimized as much as possible with the anonymous survey. However, these results also may not reflect reality, as students may have believed they were empathetic but may not have displayed empathetic behavior in patient care. Results from this study are consistent with other research, but future studies should validate our results using other methods of measuring empathy, such as patient perceptions or faculty evaluations.

CONCLUSION

Students who may not have spent time as a patient in the health care system may not understand the experiences of older adults. Incorporating aging simulation activities, such as the GMG, into the curriculum to address student empathy, attitudes, and perceptions may help students better understand the patient experience. Utilizing assessment instruments, such as the KCES and ASES, can help faculty members decide whether educational activities actually meet student outcomes and inform curricular design. Since empathy and attitude impact patient care, these curricular interventions may lead to improved care quality for older adults.

ACKNOWLEDGMENTS

Support for this project was provided by the Purdue University Learning Outcomes Assessment Grant and the Purdue University College of Pharmacy. Support for Aleda Chen while a graduate student was provided by

the National Institute on Aging through the Purdue University Center on Aging and the Life Course and the American Foundation for Pharmaceutical Excellence. The authors thank Stephanie Cailor, pharmacy student at Cedarville University, for her assistance in preparing this manuscript.

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